



FCC Test Report

FCC Part 15.247 for DSSS systems/ CANADA RSS-210

FOR:

PERSONAL COMPUTER

MODEL #: PCG-4F1L

SONY CORPORATION
6-7-35, KITASHINAGAWA, SHINAGAWA-KU
TOKYO 141-001

FCC ID: AK8PCG4F1L
IC ID: 409B-PCG4F1L

TEST REPORT #: EMC_1008_2005_WLAN
DATE: AUGUST 17, 2005



TTI-P-G 081/94-A0

Accredited according to ISO/IEC 17025



Bluetooth Qualification
Test Facility
(BQTF)



FCC listed # 101450

IC recognized # 3925

CETECOM Inc.

411 Dixon Landing Road • Milpitas, CA 95035 • U.S.A.

Phone: + 1 (408) 586 6200 • Fax: + 1 (408) 586 6299 • E-mail: info@cetecomusa.com • <http://www.cetecom.com>

CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686
Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

TABLE OF CONTENTS

| | | |
|----------|---|-----------|
| 1 | Assessment | 3 |
| 2 | Administrative Data | 4 |
| 2.1 | Identification of the Testing Laboratory Issuing the EMC Test Report | 4 |
| 2.2 | Identification of the Client | 4 |
| 2.3 | Identification of the Manufacturer | 4 |
| 3 | Equipment under Test (EUT) | 5 |
| 3.1 | Identification of the Equipment under Test | 5 |
| 4 | Subject Of Investigation | 6 |
| 5 | Measurements | 7 |
| 5.1 | MAXIMUM PEAK OUTPUT POWER § 15.247 (RADIATED) | 7 |
| 5.1.1 | LIMIT SUB CLAUSE § 15.247 (b) (1) (2) (3) (4) | 7 |
| 5.1.2 | EIRP b MODE: | 7 |
| 5.1.3 | EIRP g MODE: | 7 |
| 5.2 | RESTRICTED BAND EDGE COMPLIANCE RADIATED §15.247/15.205 | 14 |
| 5.2.1 | LIMITS | 14 |
| 5.2.2 | b MODE (2412MHz) | 15 |
| 5.2.3 | b MODE (2462MHz) | 17 |
| 5.2.4 | g MODE (2412MHz) | 19 |
| 5.2.5 | g MODE (2462MHz) | 21 |
| 5.3 | TRANSMITTER SPURIOUS EMISSIONS RADIATED § 15.247/15.205/15.209 | 23 |
| 5.3.1 | LIMITS | 23 |
| 5.3.2 | RESULTS b MODE | 24 |
| 5.3.3 | RESULTS g MODE | 33 |
| 5.4 | RECEIVER SPURIOUS RADIATION § 15.209/RSS210 | 42 |
| 5.4.1 | LIMITS | 42 |
| 5.4.2 | RESULTS | 43 |
| 5.5 | CO-LOCATION | 48 |
| 5.5.1 | RESULTS | 49 |
| 5.6 | AC POWER LINE CONDUCTED EMISSIONS § 15.107/207 | 54 |
| 5.6.1 | LIMITS | 54 |
| 5.6.2 | RESULTS | 55 |
| 5.7 | TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS | 56 |
| 5.8 | BLOCK DIAGRAMS | 57 |

1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Part 15.247 of the Code of Federal Regulations and in compliance with the applicable criteria specified in Industry Canada rules RSS210.

| Company | Description | Model # |
|------------------|-------------------|----------|
| SONY CORPORATION | PERSONAL COMPUTER | PCG-4F1L |



2005-08-17
Neelesh Raj
Project Leader



2005-08-17
Lothar Schmidt
Test Lab Manager

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

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

| | |
|-------------------------------|--|
| Company Name: | CETECOM Inc. |
| Department: | EMC |
| Address: | 411 Dixon Landing Road Milpitas, CA 95035 U.S.A. |
| Telephone: | +1 (408) 586 6200 |
| Fax: | +1 (408) 586 6299 |
| Responsible Test Lab Manager: | Lothar Schmidt |
| Responsible Project Leader: | Neelesh Raj |
| Date of test: | 2005-08-05 to 2005-08-11 |

2.2 Identification of the Client

| | |
|-------------------|---|
| Applicant's Name: | SONY Corporation |
| Street Address: | 6-7-35, Kitashinagawa, Shinagawa-ku, |
| City/Zip Code | Tokyo 141-0001 |
| Country | Japan |
| Contact Person: | Takumi Ozawa |
| Phone No. | 81-3-5795-8716 |
| Fax: | 81-3-5795-8981 |
| e-mail: | ozawa@sm.sony.co.jp |

2.3 Identification of the Manufacturer

| | |
|------------------------|--|
| Manufacturer's Name: | Sony EMCS Corporation |
| Manufacturers Address: | 5432 Toyoshima, Toyoshima-machi, Minamiazumi-gun, |
| City/Zip Code | Nagano 399-8282, |
| Country | Japan |

3 Equipment under Test (EUT)

3.1 Identification of the Equipment under Test

| | |
|------------------------|---|
| Marketing Name: | VGC-TX |
| Description: | Personal Computer |
| Model No: | PCG-4F1L |
| FCC ID: | AK8PCG4F1L |
| IC ID: | 409B-PCG4F1L |
| Frequency Range: | 2400-2483.5 |
| Type(s) of Modulation: | DSSS, OFDM |
| Number of Channels: | 11 |
| Antenna Type: | WLAN: λ/monopole (Film Antenna) |
| Output Power: | b MODE: 62mW EIRP@2462MHz g MODE: 116mW EIRP@2462MHz |

4 Subject Of Investigation

All testing was performed on the PCG-4F1L referred to as EUT. The EUT carries a pre-certified WLAN module with FCC ID# PD9WM3B2200BG. This test report contains full radiated testing as per FCC15.247 on the EUT with the pre-certified WLAN module. All conducted measurements are covered under *test report# INTEL-031111*.

During the testing process all data rates vs. modes were checked, the worst case was found to be the following; all testing was performed using the following data rates on the AUX antenna (highest gain).

| 802.11b CHANNEL | DATA RATE | POWER (dBm) |
|--------------------|--------------|----------------|
| 2412 | 1 | 16 |
| 2437 | 1 | 16 |
| 2462 | 1 | 16 |

| 802.11g CHANNEL | DATA RATE | POWER (dBm) |
|--------------------|--------------|----------------|
| 2412 | 6 | 11 |
| 2437 | 6 | 11 |
| 2462 | 6 | 11 |

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations and Industry Canada rules RSS210.

5 Measurements

5.1 MAXIMUM PEAK OUTPUT POWER § 15.247 (RADIATED)

5.1.1 LIMIT SUB CLAUSE § 15.247 (b) (1) (2) (3) (4)

| Frequency range | RF power output |
|-----------------|-----------------|
| 2400-2483.5 MHz | 36dBm EIRP |

*limit is based upon antenna gain of less than or equal to 6dBi.

5.1.2 EIRP b MODE:

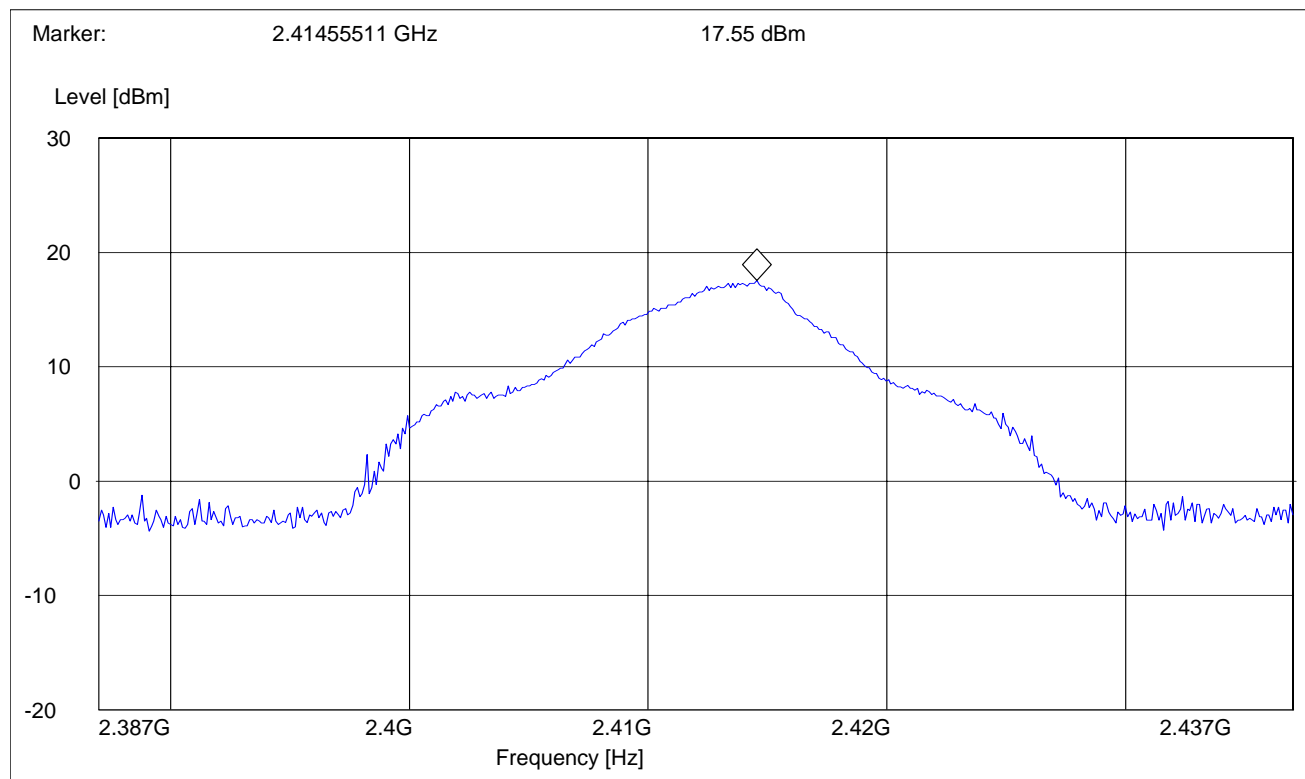
| TEST CONDITIONS | | MAXIMUM PEAK OUTPUT POWER (dBm) | | |
|-------------------------|----------------------|---------------------------------|-------|-------|
| Frequency (MHz) | | 2412 | 2437 | 2462 |
| T _{nom} (23)°C | V _{nom} VDC | 17.55 | 17.73 | 17.92 |
| Measurement uncertainty | | ±0.5dBm | | |

5.1.3 EIRP g MODE:

| TEST CONDITIONS | | MAXIMUM PEAK OUTPUT POWER (dBm) | | |
|-------------------------|----------------------|---------------------------------|-------|-------|
| Frequency (MHz) | | 2412 | 2437 | 2462 |
| T _{nom} (23)°C | V _{nom} VDC | 17.68 | 18.65 | 20.66 |
| Measurement uncertainty | | ±0.5dBm | | |

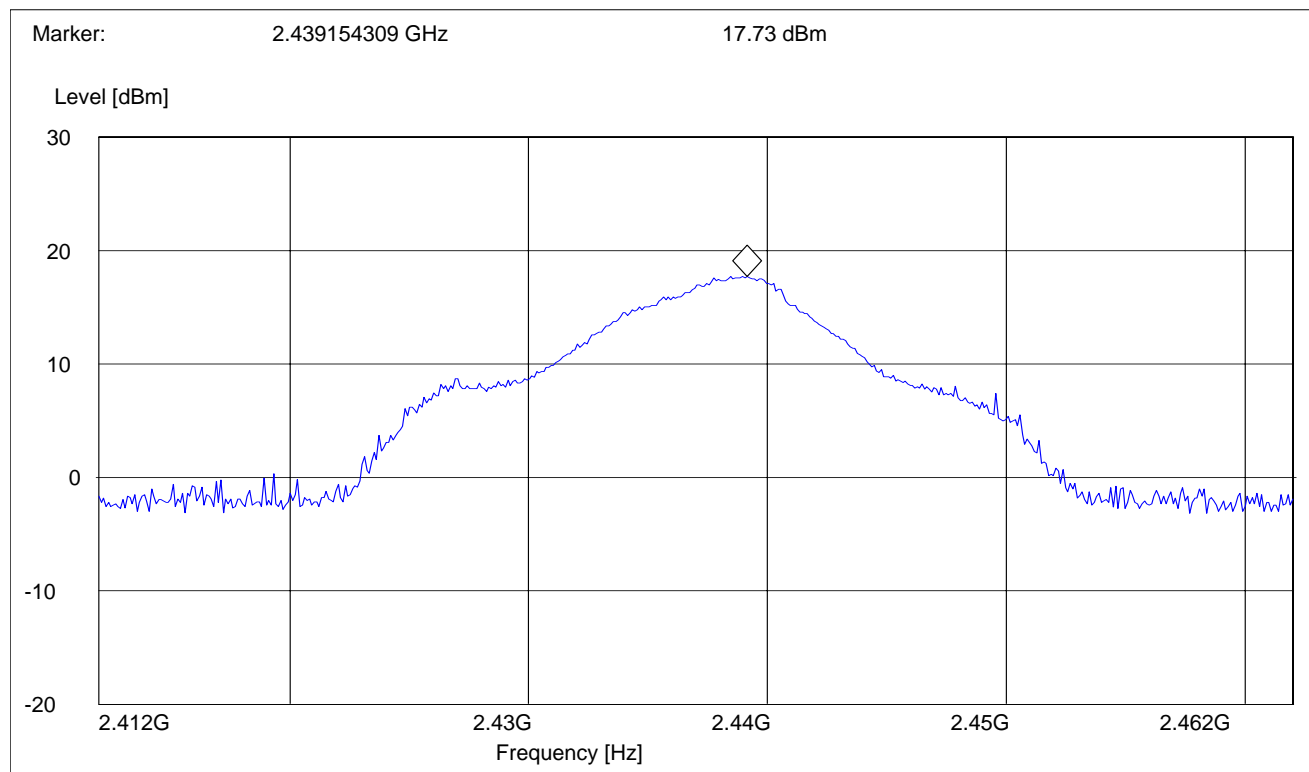
EIRP b Mode (2412MHz)

| Start Frequency | Stop Frequency | Detector | Meas. Time | IF BW |
|-----------------|----------------|----------|------------|--------|
| 2387 MHz | 2437 MHz | Max Peak | Coupled | 10 MHz |



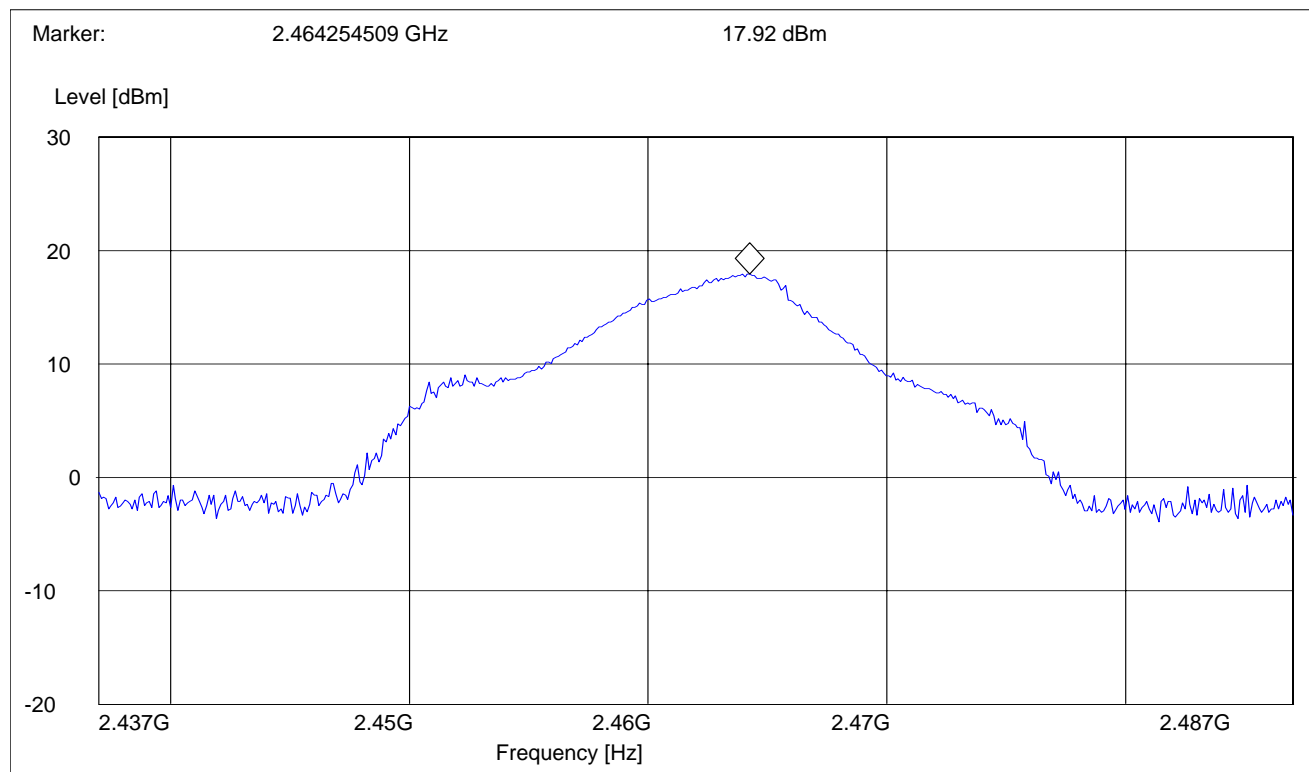
EIRP b Mode (2437MHz)

| Start Frequency | Stop Frequency | Detector | Meas. Time | IF BW |
|-----------------|----------------|----------|------------|--------|
| 2312 MHz | 2462 MHz | Max Peak | Coupled | 10 MHz |



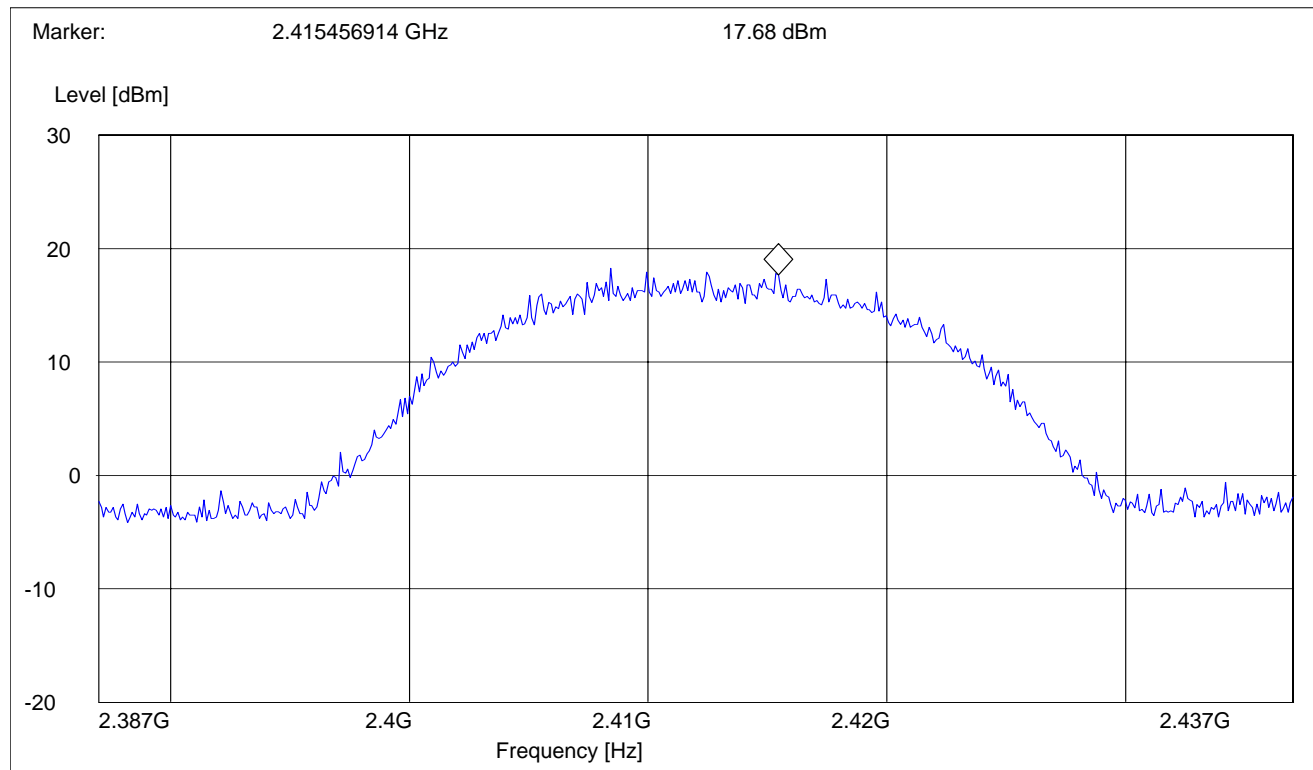
EIRP b Mode (2462MHz)

| Start Frequency | Stop Frequency | Detector | Meas. Time | IF BW |
|-----------------|----------------|----------|------------|--------|
| 2437 MHz | 2487 MHz | Max Peak | Coupled | 10 MHz |



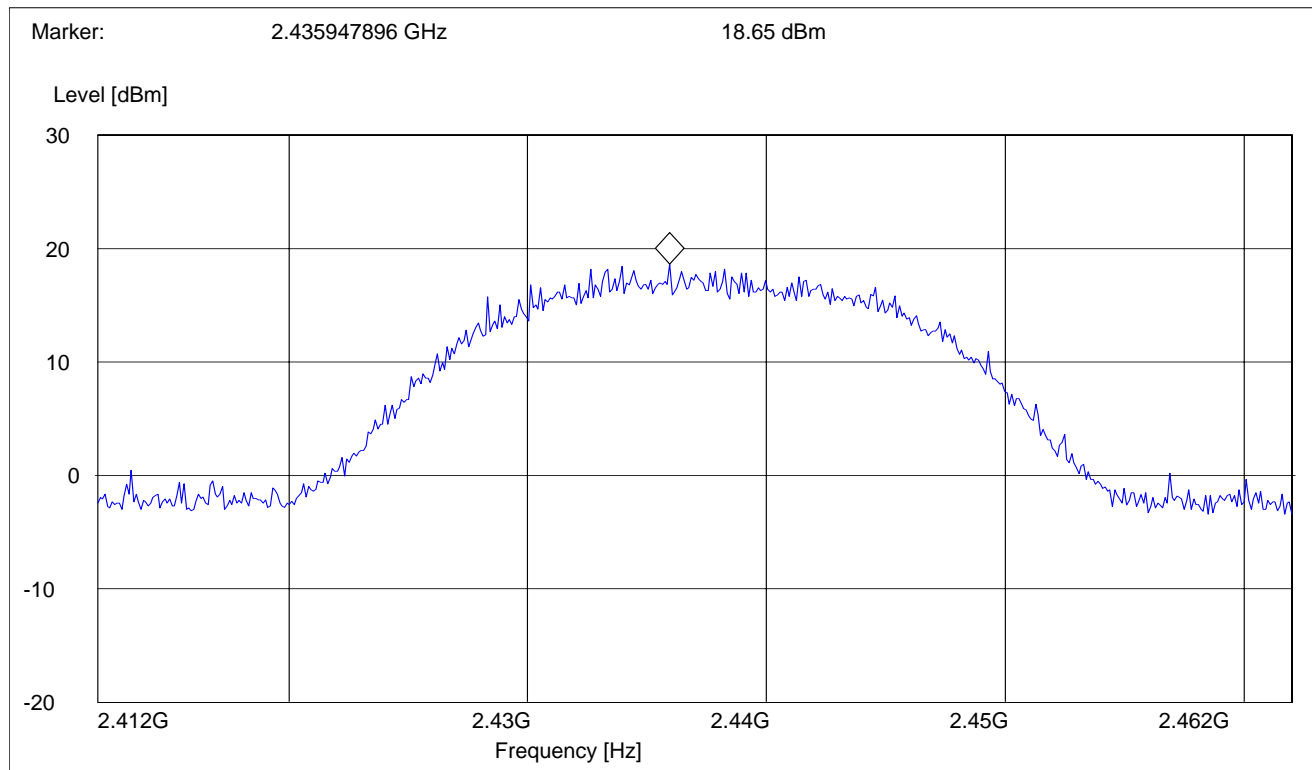
EIRP g Mode (2412MHz)

| Start Frequency | Stop Frequency | Detector | Meas. Time | IF BW |
|-----------------|----------------|----------|------------|--------|
| 2387 MHz | 2437 MHz | Max Peak | Coupled | 10 MHz |



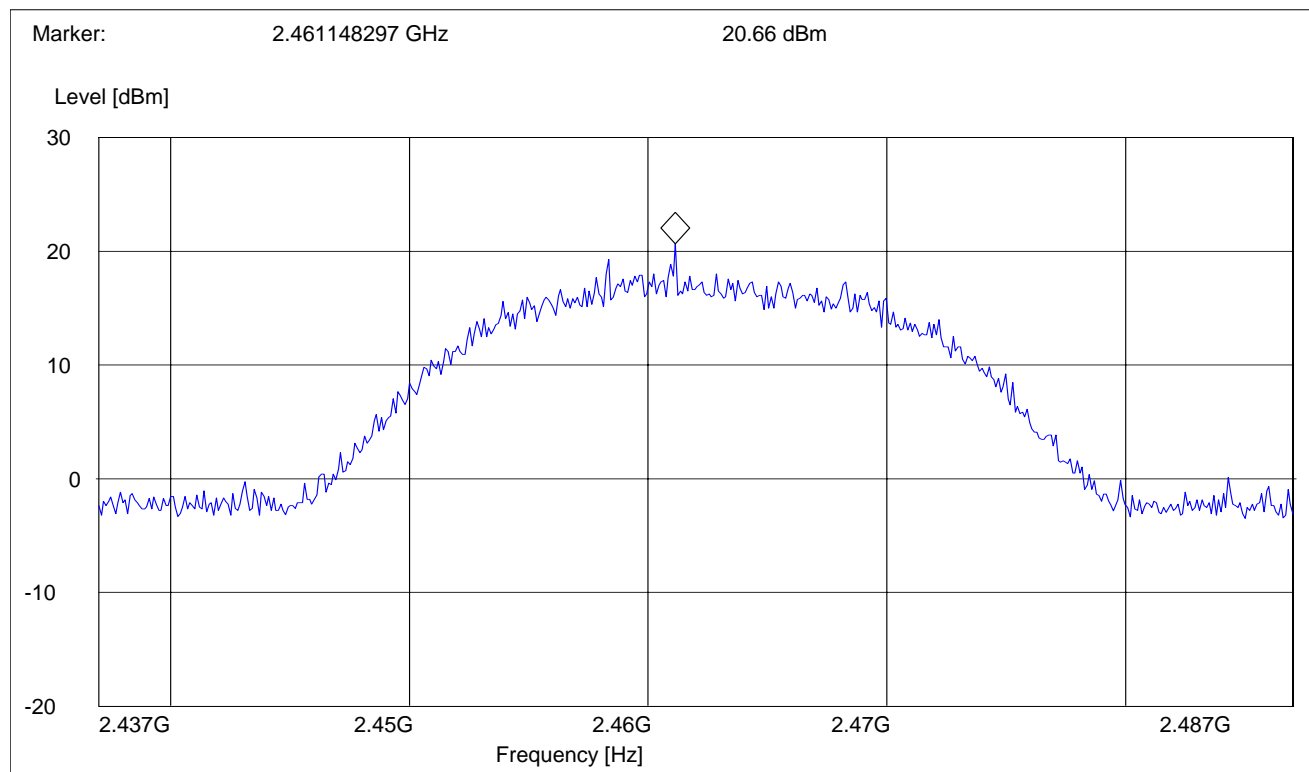
EIRP g Mode (2437MHz)

| Start Frequency | Stop Frequency | Detector | Meas. Time | IF BW |
|-----------------|----------------|----------|------------|--------|
| 2312 MHz | 2462 MHz | Max Peak | Coupled | 10 MHz |



EIRP g Mode (2462MHz)

| Start Frequency | Stop Frequency | Detector | Meas. Time | IF BW |
|-----------------|----------------|----------|------------|--------|
| 2437 MHz | 2487 MHz | Max Peak | Coupled | 10 MHz |



5.2 RESTRICTED BAND EDGE COMPLIANCE RADIATED §15.247/15.205

5.2.1 LIMITS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

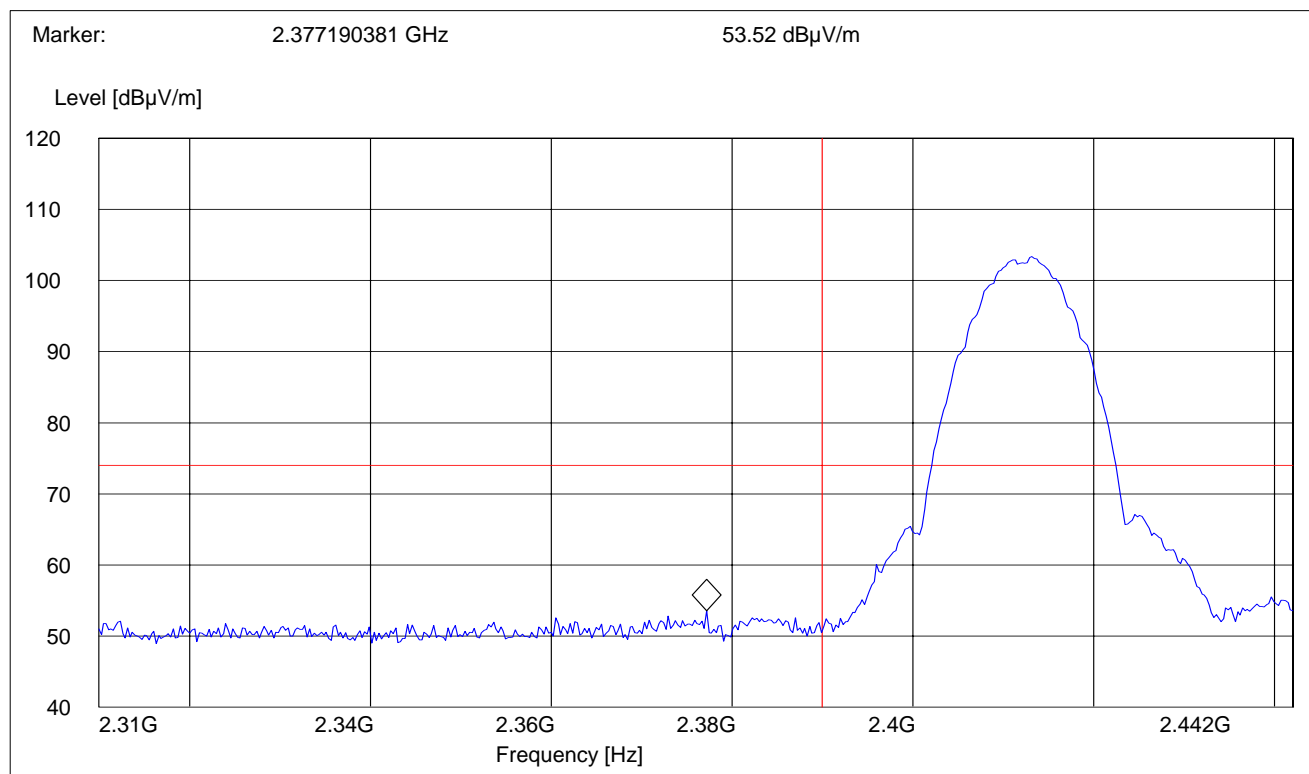
| MHz | MHz | MHz | GHz |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| ¹ 0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| 2.1735 - 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 4.17725 - 4.17775 | 37.5 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 - 1710 | 10.6 - 12.7 |
| 6.26775 - 6.26825 | 108 - 121.94 | 1718.8 - 1722.2 | 13.25 - 13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 - 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 - 16.2 |
| 8.362 - 8.366 | 156.52475 - 156.52525 | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.7 - 156.9 | 2690 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 162.0125 - 167.17 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 240 - 285 | 3345.8 - 3358 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 322 - 335.4 | 3600 - 4400 | (²) |
| 13.36 - 13.41 | | | |

*PEAK LIMIT= 74dBuV

*AVG. LIMIT= 54dBuV

5.2.2 b MODE (2412MHz)**PEAK**

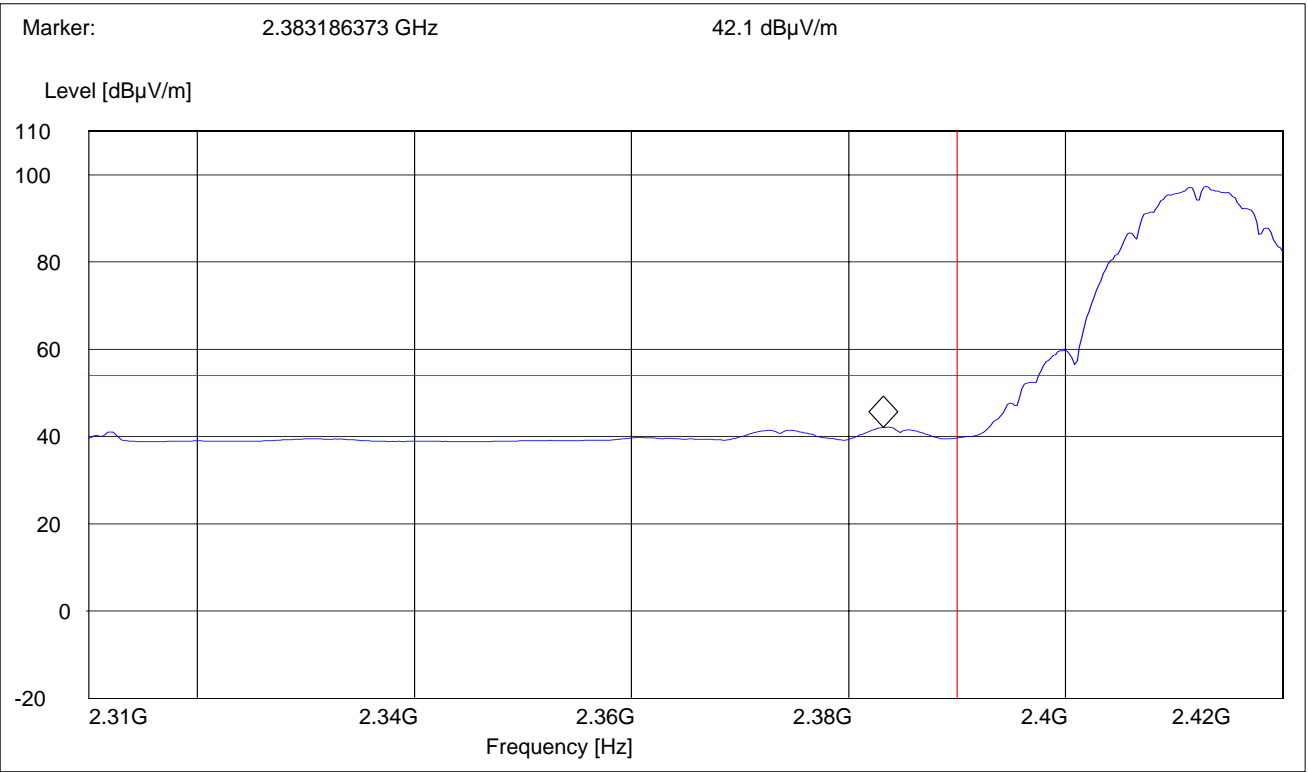
| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW | VBW |
|-----------------|----------------|----------|------------|-------|-------|
| 2310 MHz | 2412 MHz | Max Peak | Coupled | 1 MHz | 1 MHz |





AVG

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW | VBW |
|-----------------|----------------|----------|------------|-------|-------|
| 2310 MHz | 2412 MHz | Max Peak | Coupled | 1 MHz | 10 Hz |

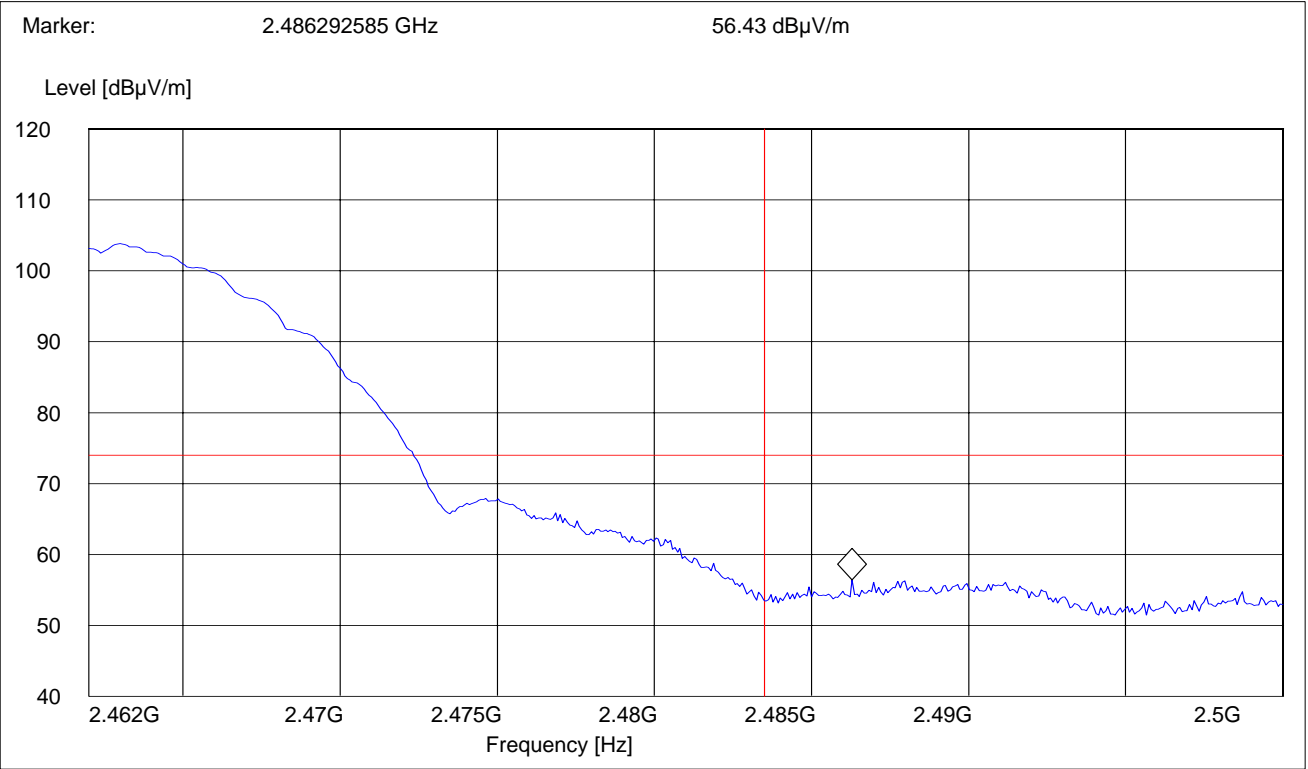




5.2.3 b MODE (2462MHz)

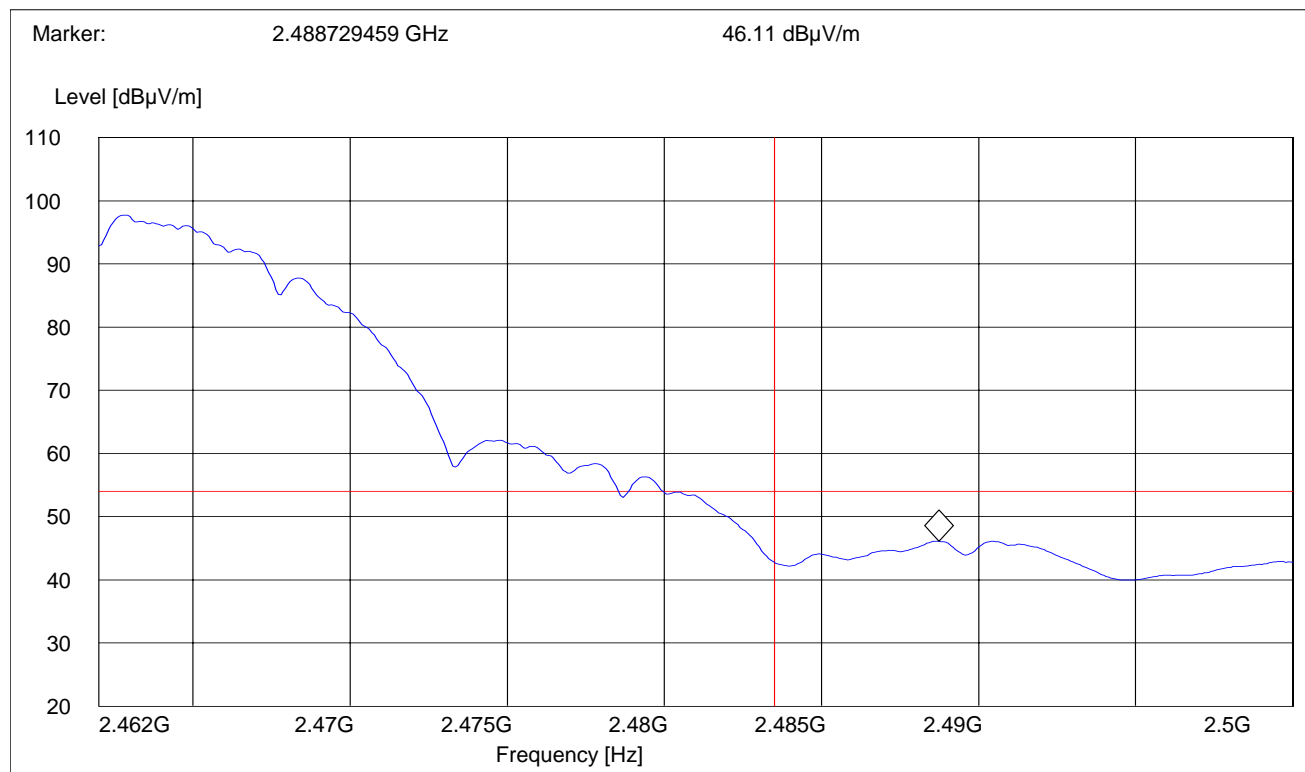
PEAK

| | | | | | |
|-----------------|----------------|----------|------------|-------|-------|
| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW | VBW |
| 2462 MHz | 2500 MHz | Max Peak | Coupled | 1 MHz | 1 MHz |



AVG

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW | VBW |
|-----------------|----------------|----------|------------|-------|-------|
| 2462 MHz | 2500 MHz | Max Peak | Coupled | 1 MHz | 10 Hz |



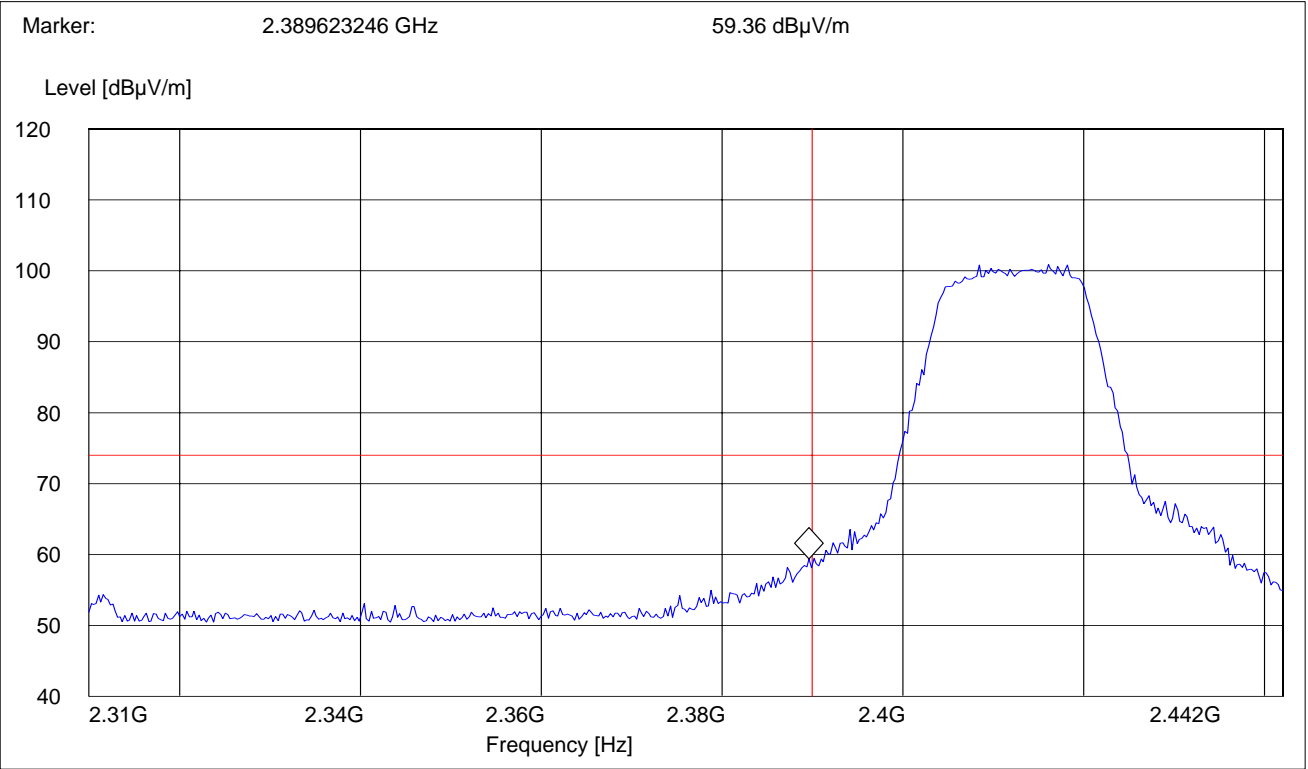
Page 19 of 57



5.2.4 g MODE (2412MHz)

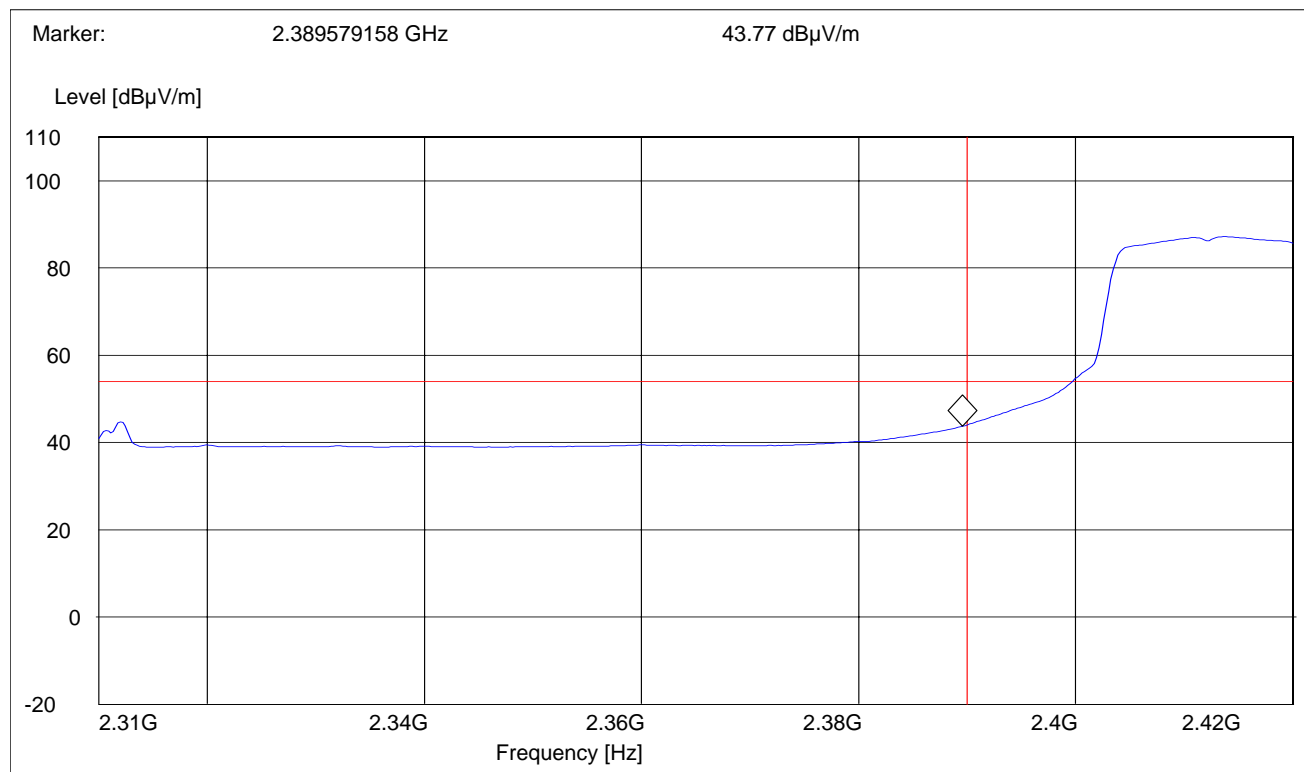
PEAK

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW | VBW |
|-----------------|----------------|----------|------------|-------|-------|
| 2310 MHz | 2412 MHz | Max Peak | Coupled | 1 MHz | 1 MHz |



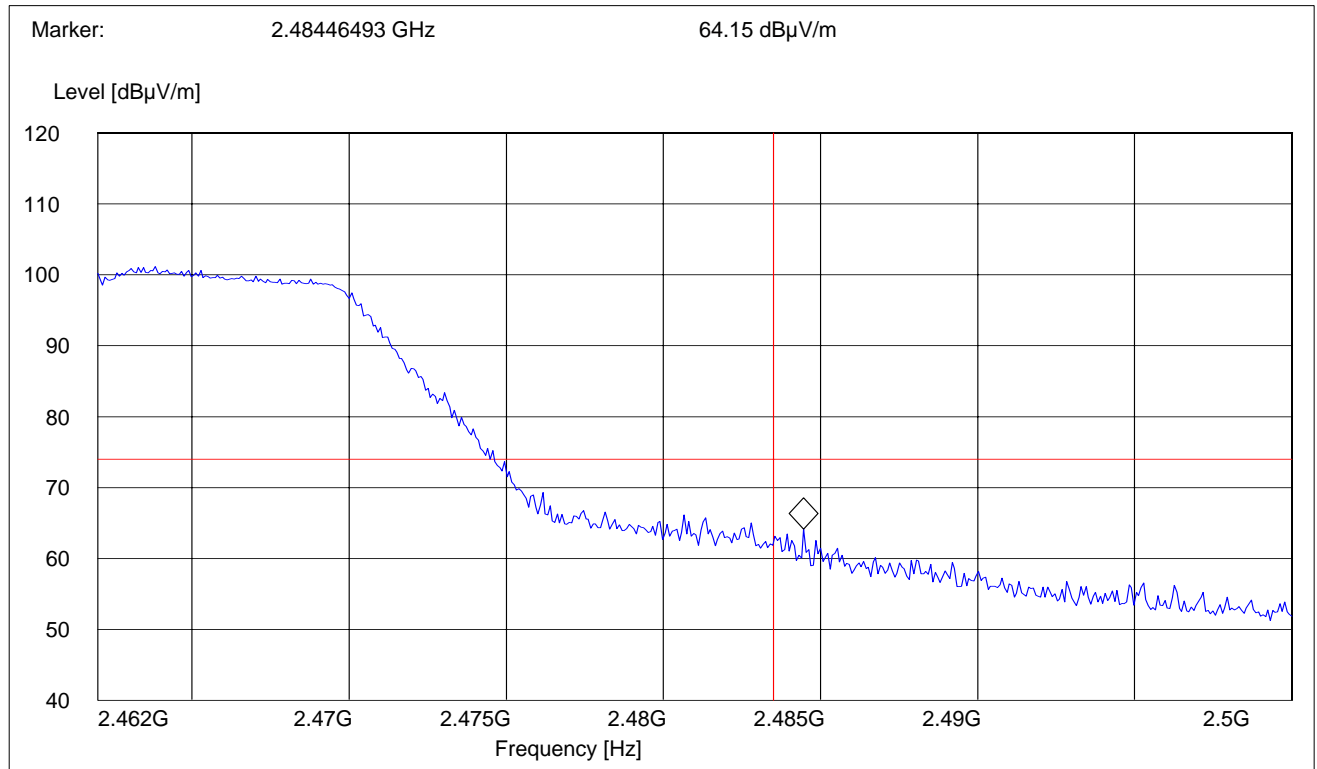
AVG

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW | VBW |
|-----------------|----------------|----------|------------|-------|-------|
| 2310 MHz | 2412 MHz | Max Peak | Coupled | 1 MHz | 10 Hz |



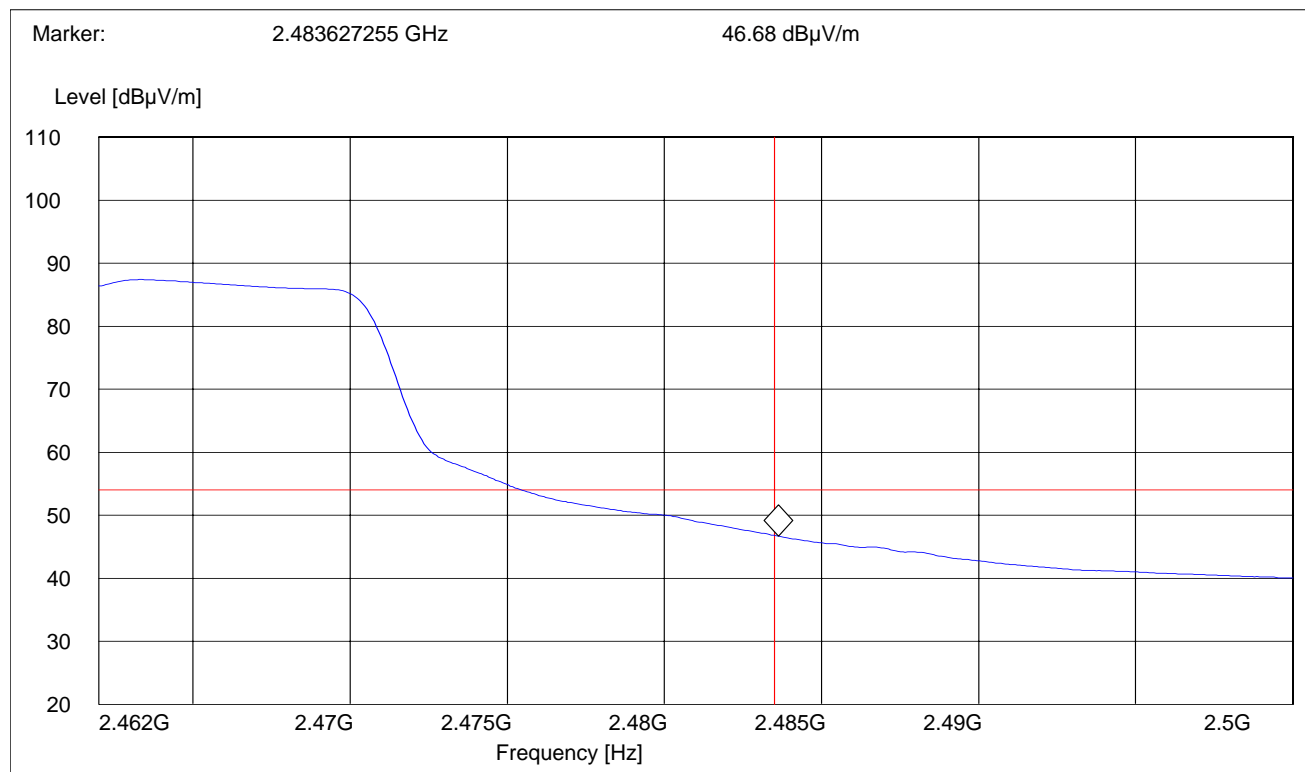
5.2.5 g MODE (2462MHz)**PEAK**

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW | VBW |
|-----------------|----------------|----------|------------|-------|-------|
| 2462 MHz | 2500 MHz | Max Peak | Coupled | 1 MHz | 1 MHz |



AVG

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW | VBW |
|-----------------|----------------|----------|------------|-------|-------|
| 2462 MHz | 2500 MHz | Max Peak | Coupled | 1 MHz | 10 Hz |



5.3 TRANSMITTER SPURIOUS EMISSIONS RADIATED § 15.247/15.205/15.209

5.3.1 LIMITS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| ¹ 0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| 2.1735 - 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 4.17725 - 4.17775 | 37.5 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 - 1710 | 10.6 - 12.7 |
| 6.26775 - 6.26825 | 108 - 121.94 | 1718.8 - 1722.2 | 13.25 - 13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 - 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 - 16.2 |
| 8.362 - 8.366 | 156.52475 - 156.52525 | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.7 - 156.9 | 2690 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 162.0125 - 167.17 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 240 - 285 | 3345.8 - 3358 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 322 - 335.4 | 3600 - 4400 | (²) |
| 13.36 - 13.41 | | | |

*PEAK LIMIT= 74dBuV

*AVG. LIMIT= 54dBuV

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 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.

2. All measurements are done in peak mode using an average limit , unless specified with the plots.

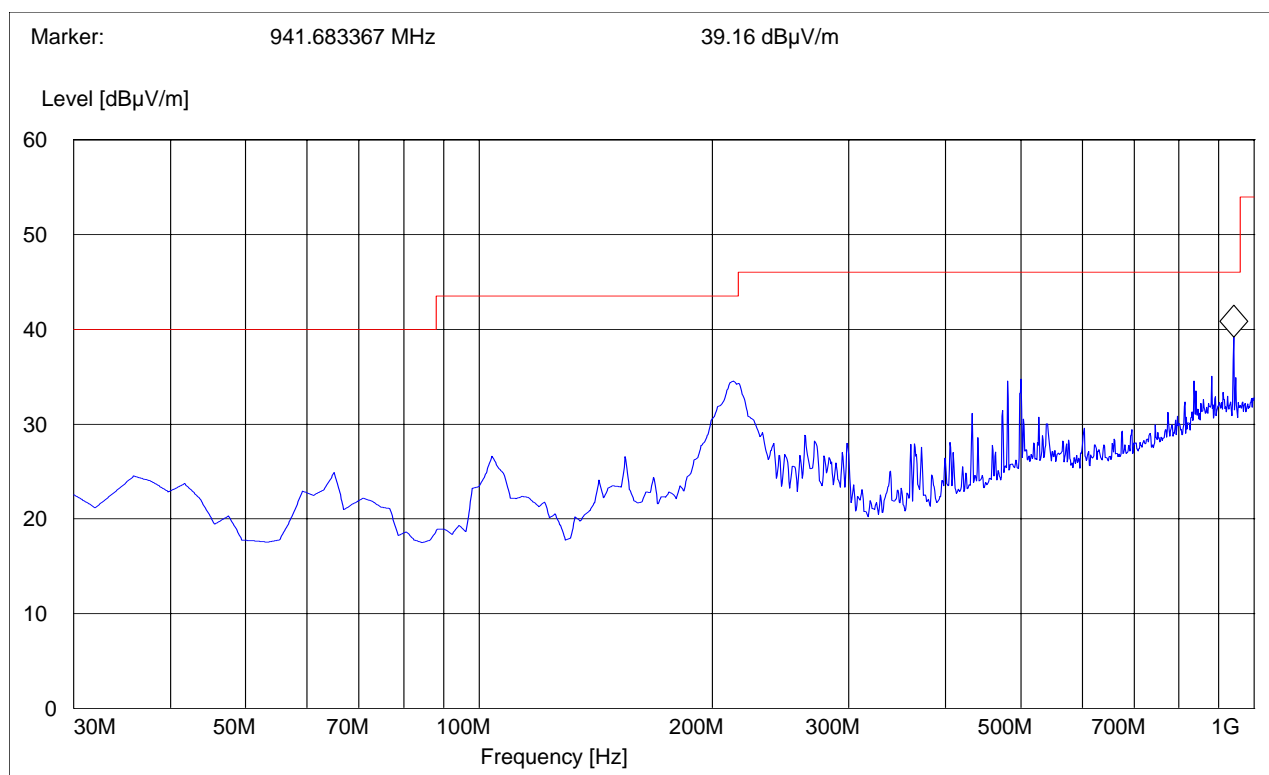
Results for the radiated measurements below 30MHz according § 15.33

| Frequency | Measured values | Remarks |
|--------------|---------------------------------------|---|
| 9KHz – 30MHz | No emissions found, caused by the EUT | This is valid for all the tested channels |

5.3.2 RESULTS b MODE

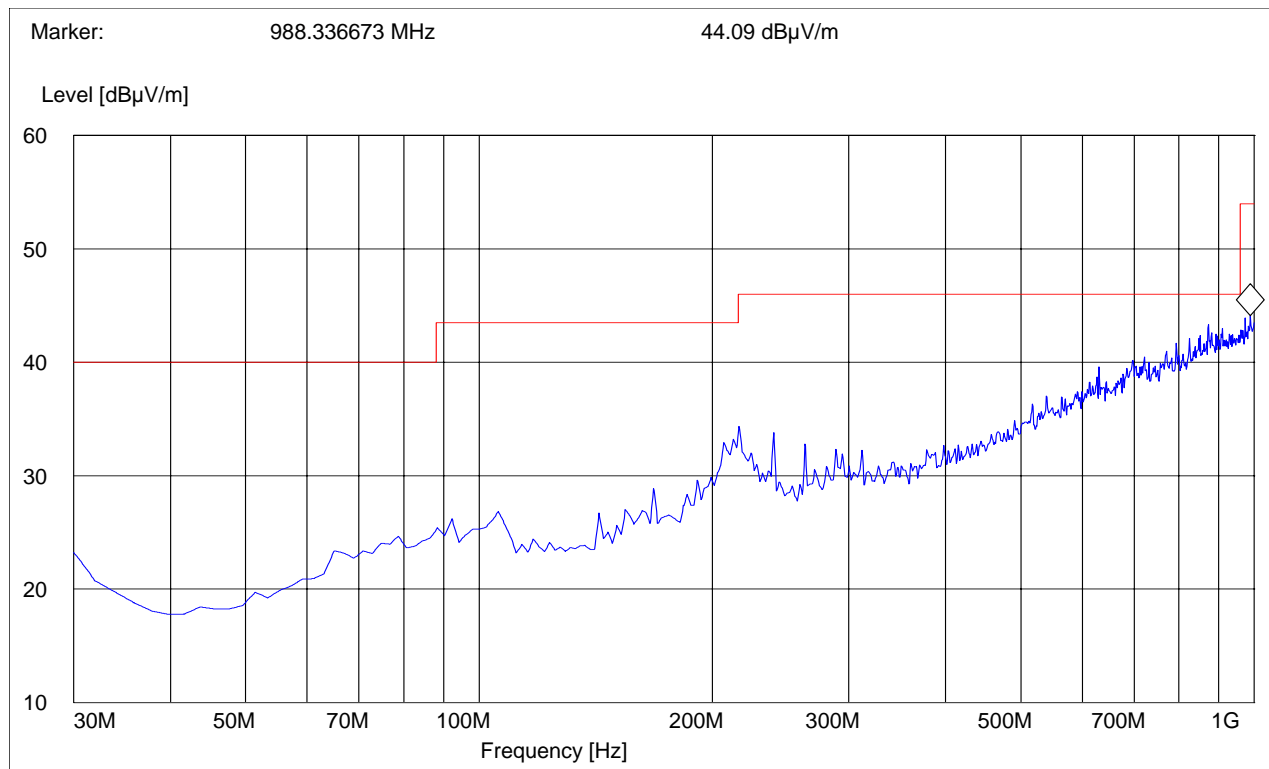
30MHz – 1GHz**Antenna: vertical**

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

Note: This plot is valid for low, mid, high channels (worst-case plot)**Note: Peak reading vs. Quasi-peak limit**

30MHz – 1GHz**Antenna: horizontal**

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

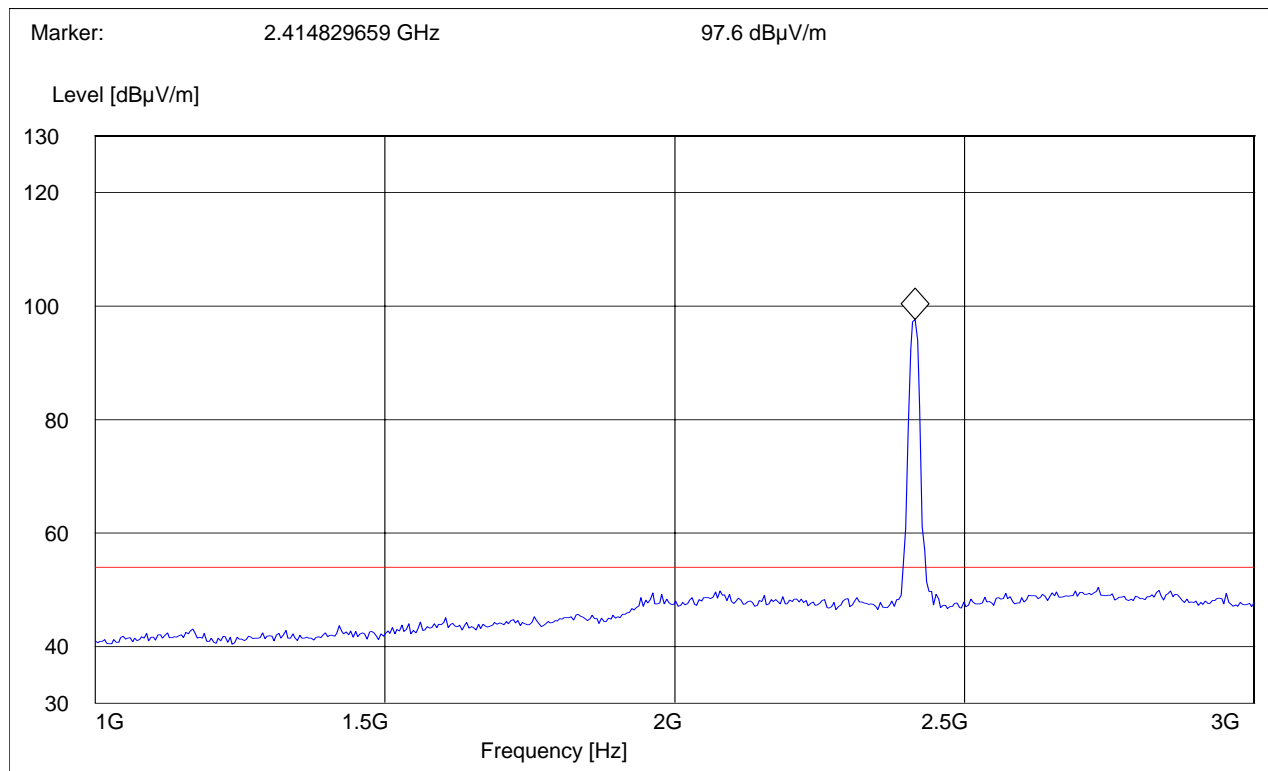
Note: This plot is valid for low, mid, high channels (worst-case plot)**Note: Peak reading vs. Quasi-peak limit**

1-3GHz (2412MHz)

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

Note: The peaks above the limit line is the carrier freq.

Note: Peak Reading vs. Average limit

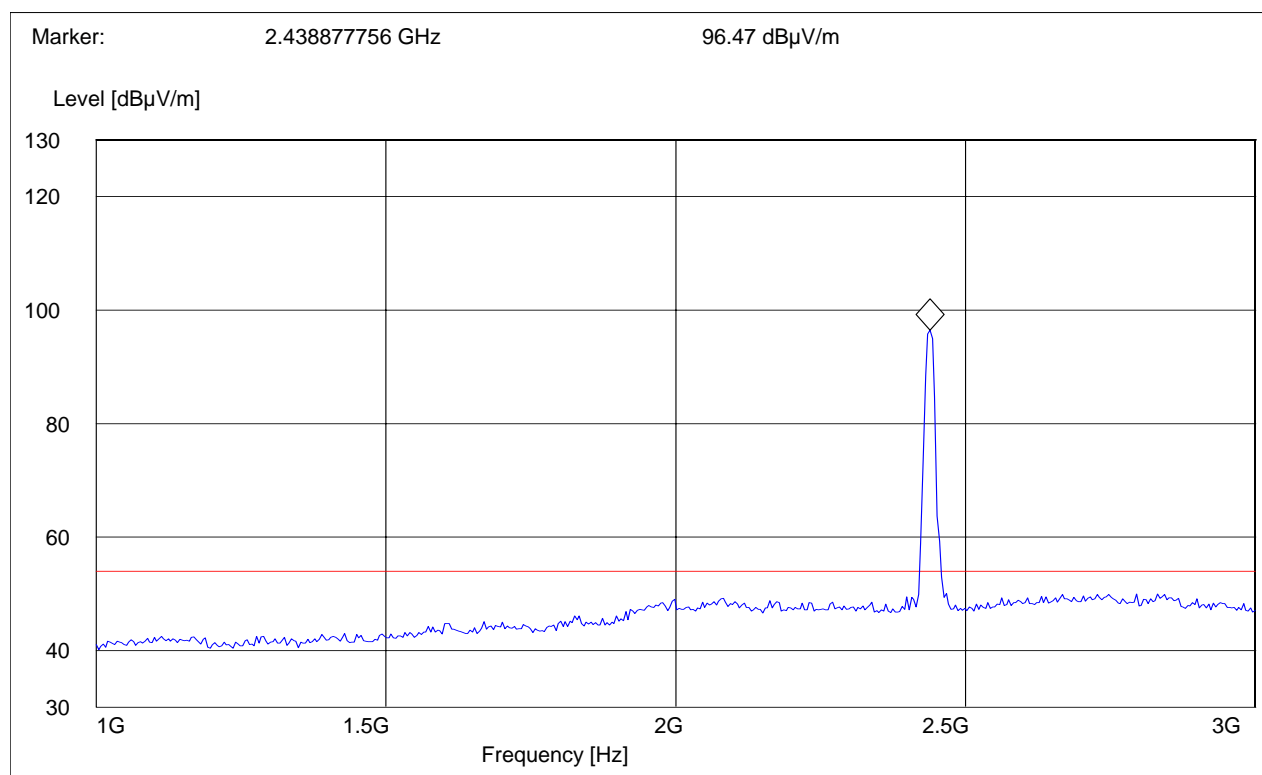


1-3GHz (2437MHz)

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

Note: The peaks above the limit line is the carrier freq.

Note: Peak Reading vs. Average limit

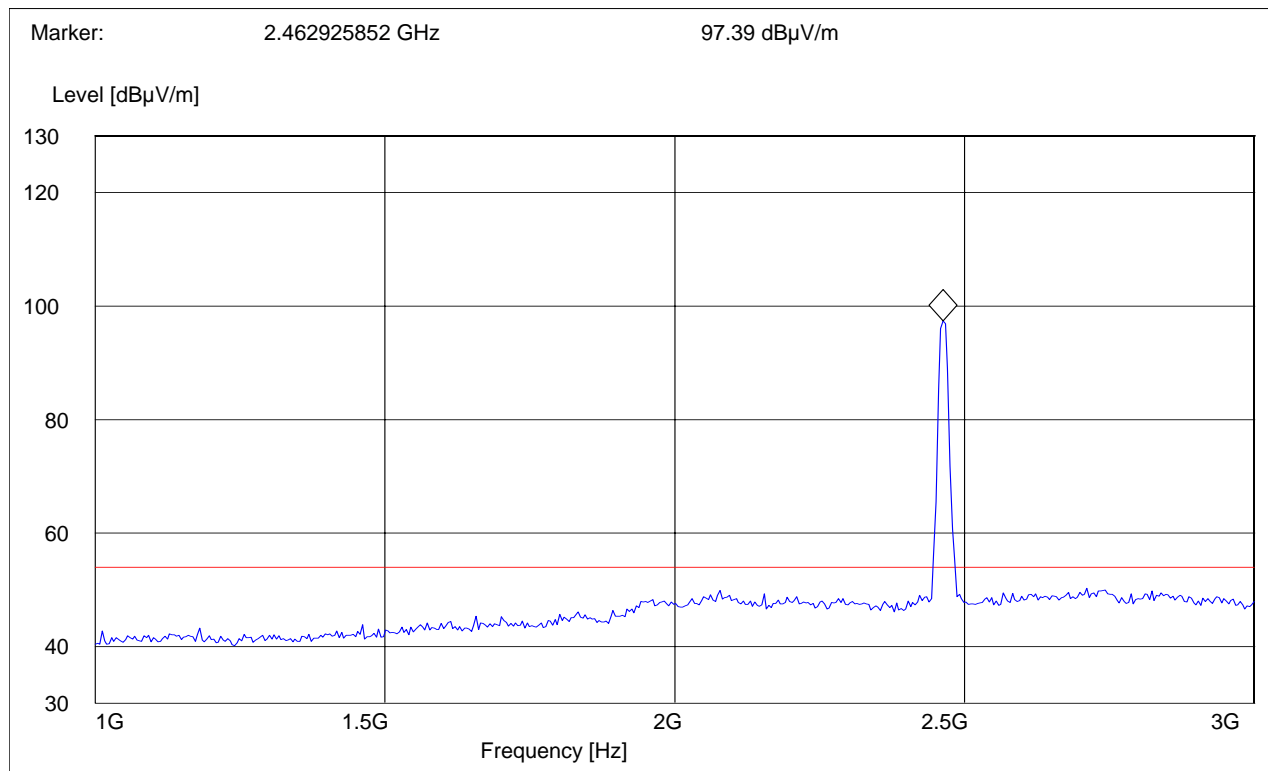


1-3GHz (2462MHz)

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

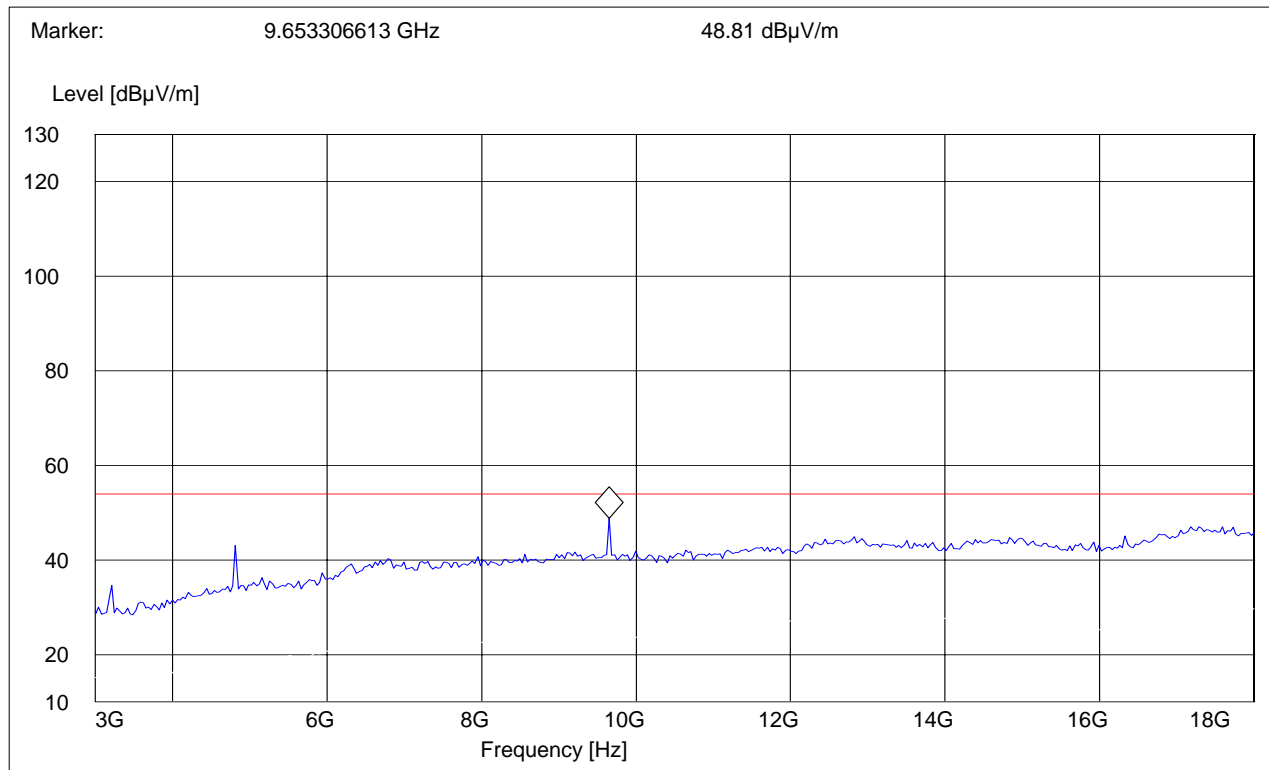
Note: The peaks above the limit line is the carrier freq.

Note: Peak Reading vs. Average limit



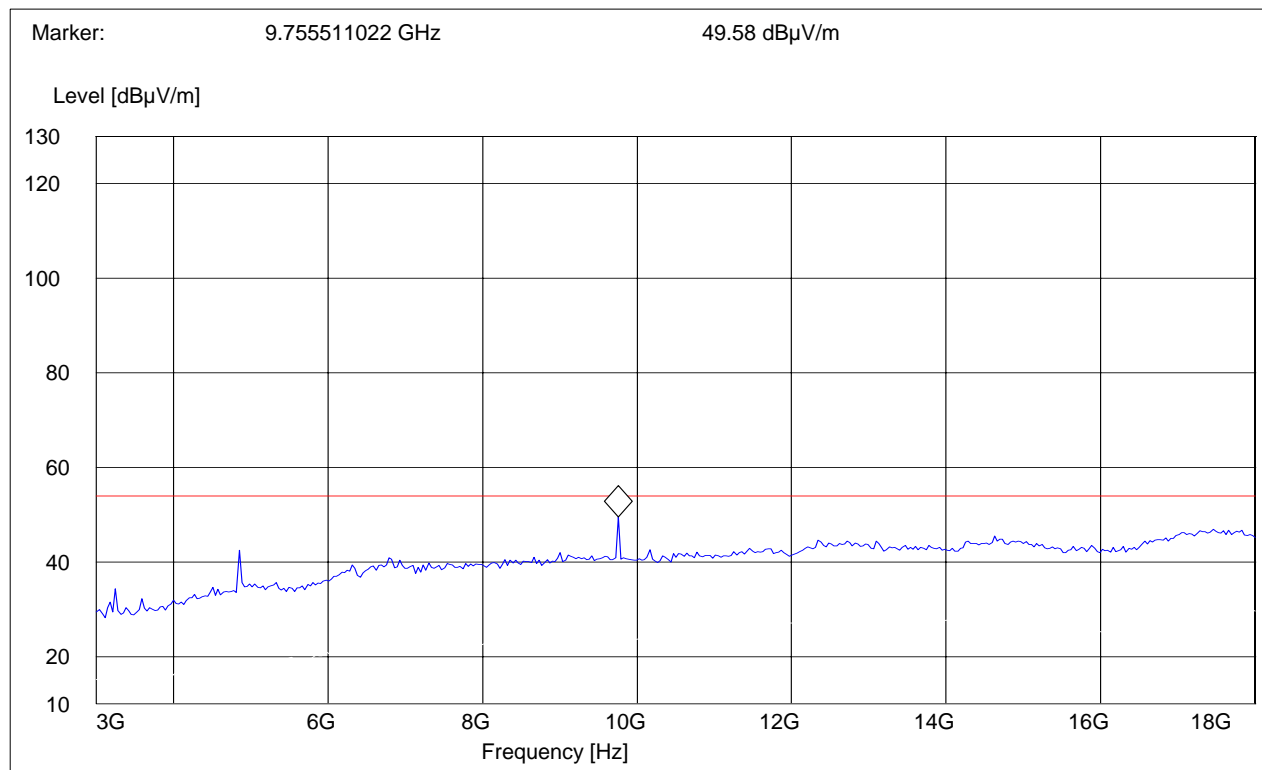
3-18GHz (2412MHz)

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

Note: Peak Reading vs. Average limit

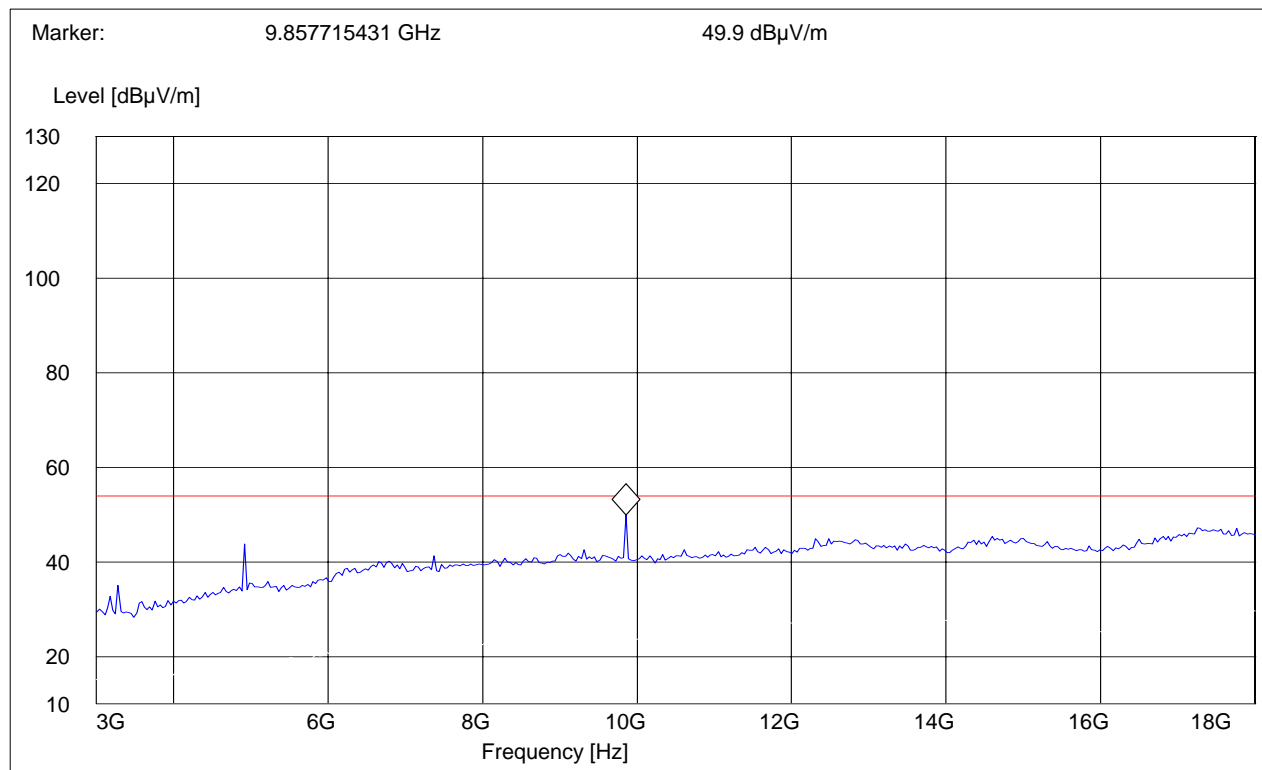
3-18GHz (2437MHz)

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

Note: Peak Reading vs. Average limit

3-18GHz (2462MHz)

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

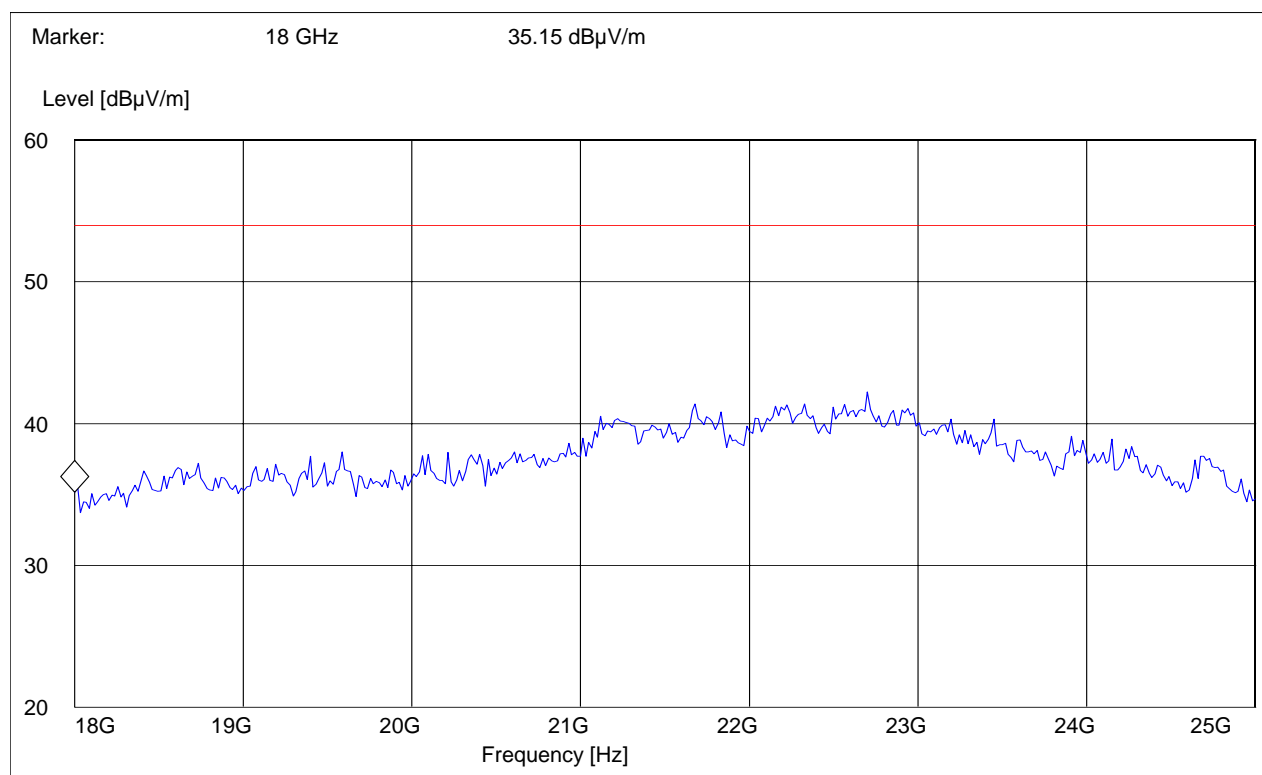
Note: Peak Reading vs. Average limit

18-25GHz

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW | VBW |
|-----------------|----------------|----------|------------|-------|-------|
| 18GHz | 25GHz | Max Peak | Coupled | 1 MHz | 1 MHz |

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

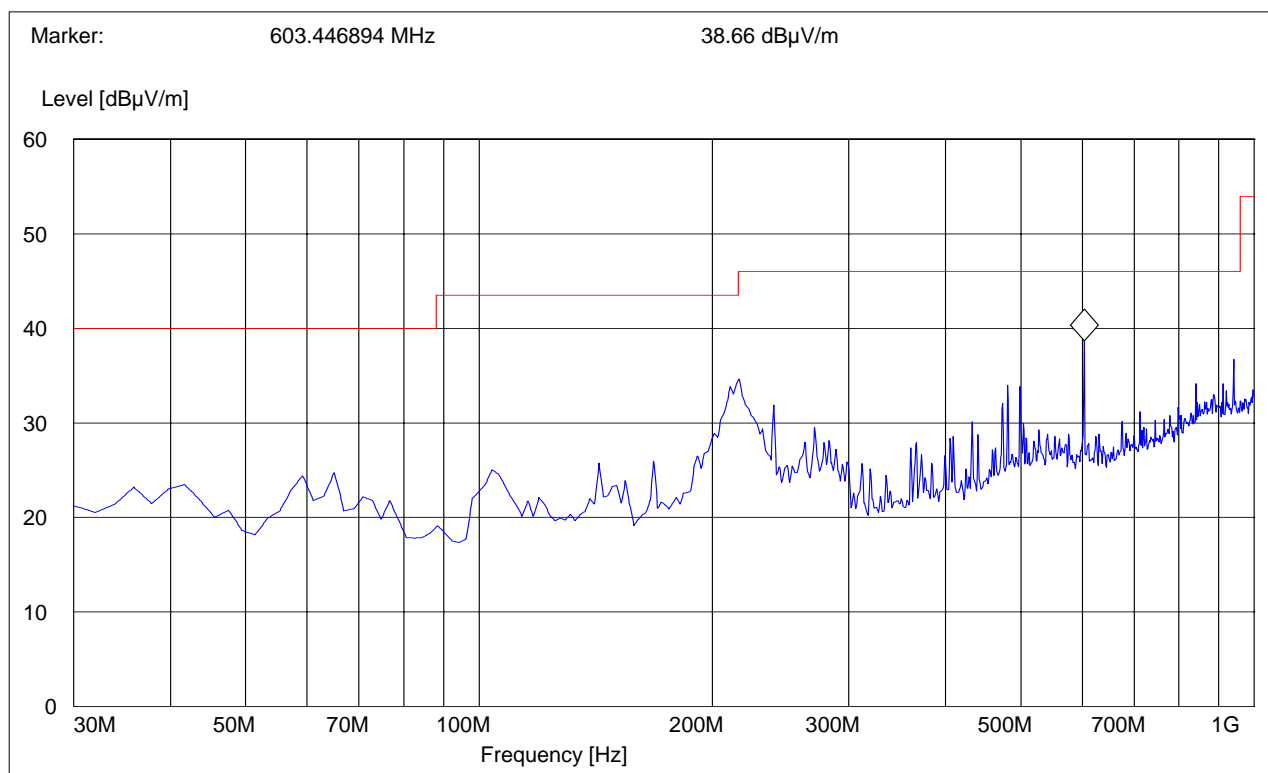
Note: Peak Reading vs. Average limit



5.3.3 RESULTS g MODE

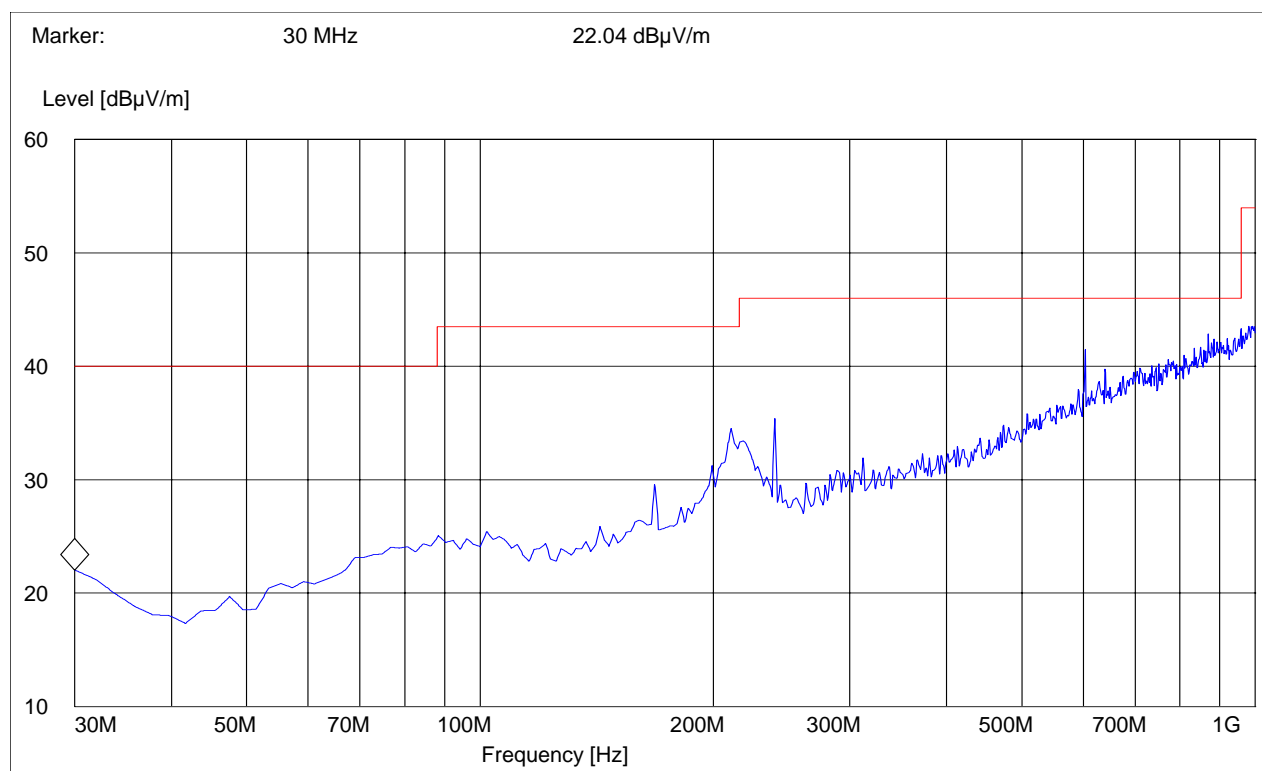
30MHz – 1GHz**Antenna: vertical**

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

Note: This plot is valid for low, mid, high channels (worst-case plot)**Note: Peak reading vs. Quasi-peak limit**

30MHz – 1GHz**Antenna: horizontal**

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

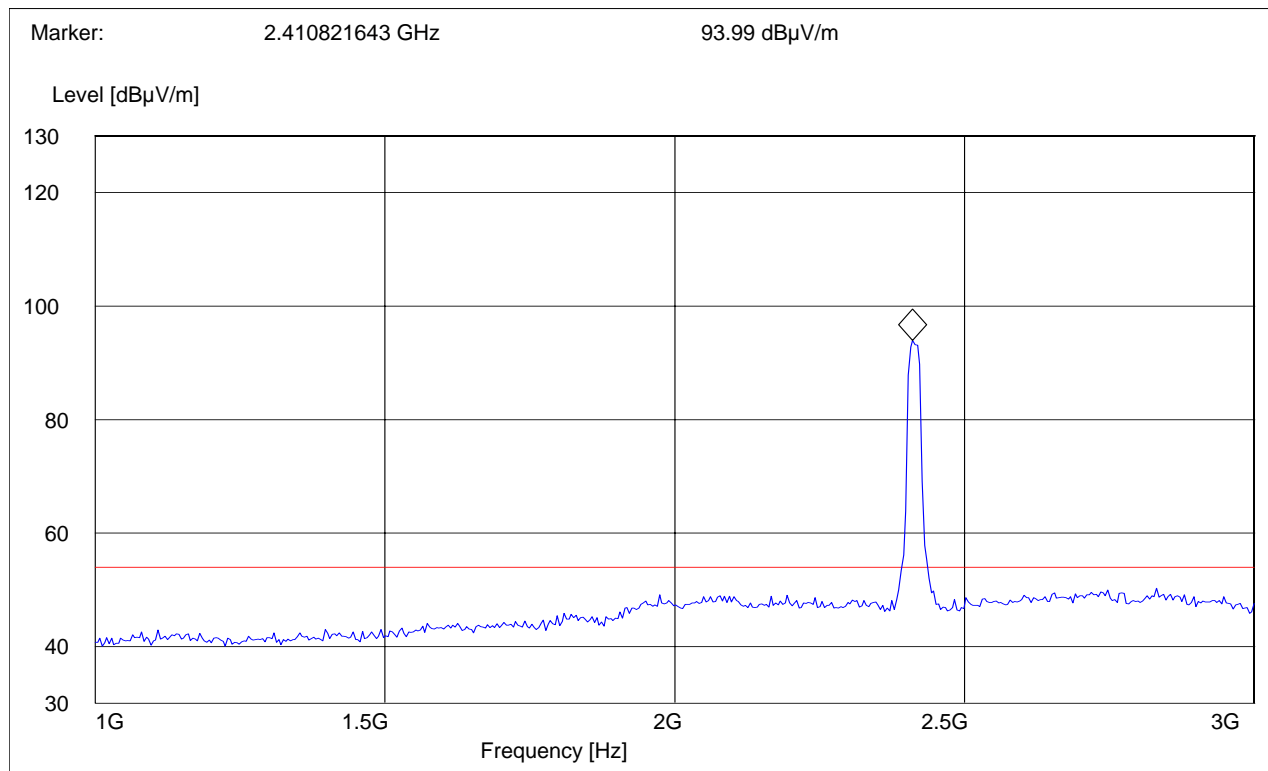
Note: This plot is valid for low, mid, high channels (worst-case plot)**Note: Peak reading vs. Quasi-peak limit**

1-3GHz (2412MHz)

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

Note: The peaks above the limit line is the carrier freq.

Note: Peak Reading vs. Average limit

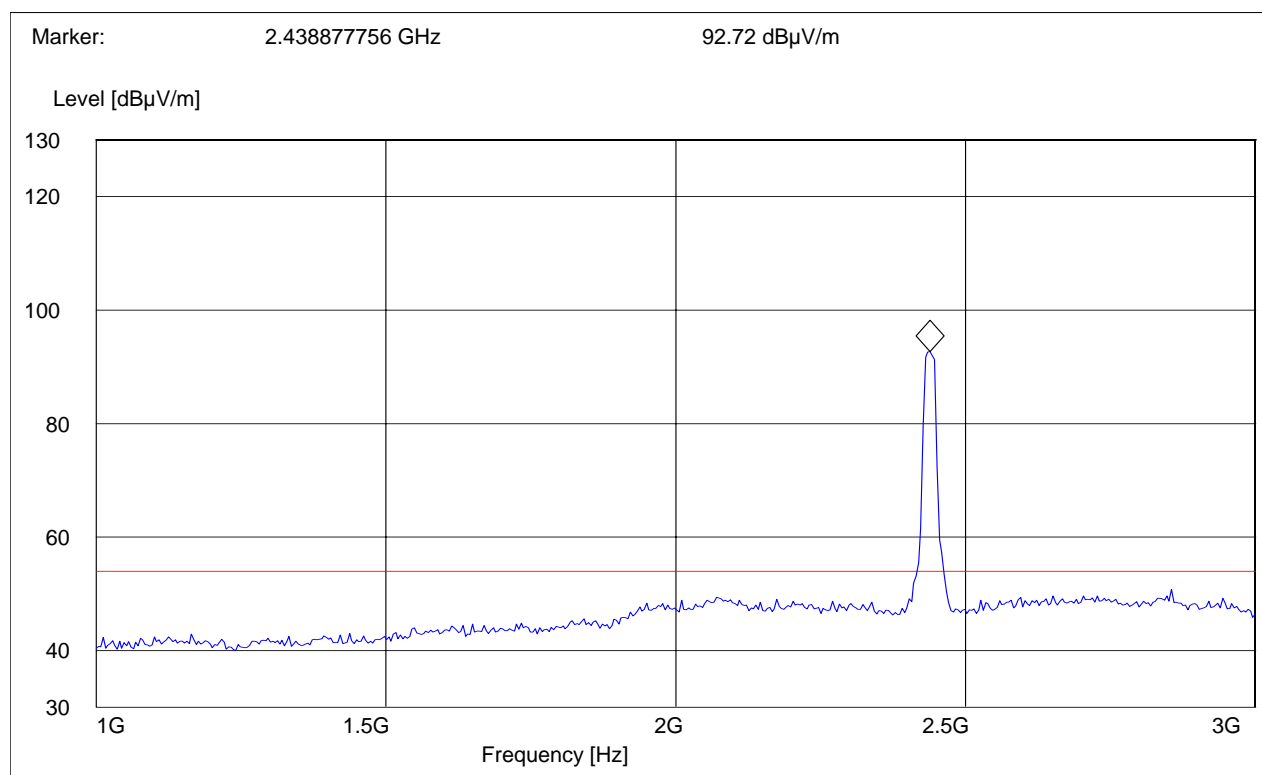


1-3GHz (2437MHz)

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

Note: The peaks above the limit line is the carrier freq.

Note: Peak Reading vs. Average limit

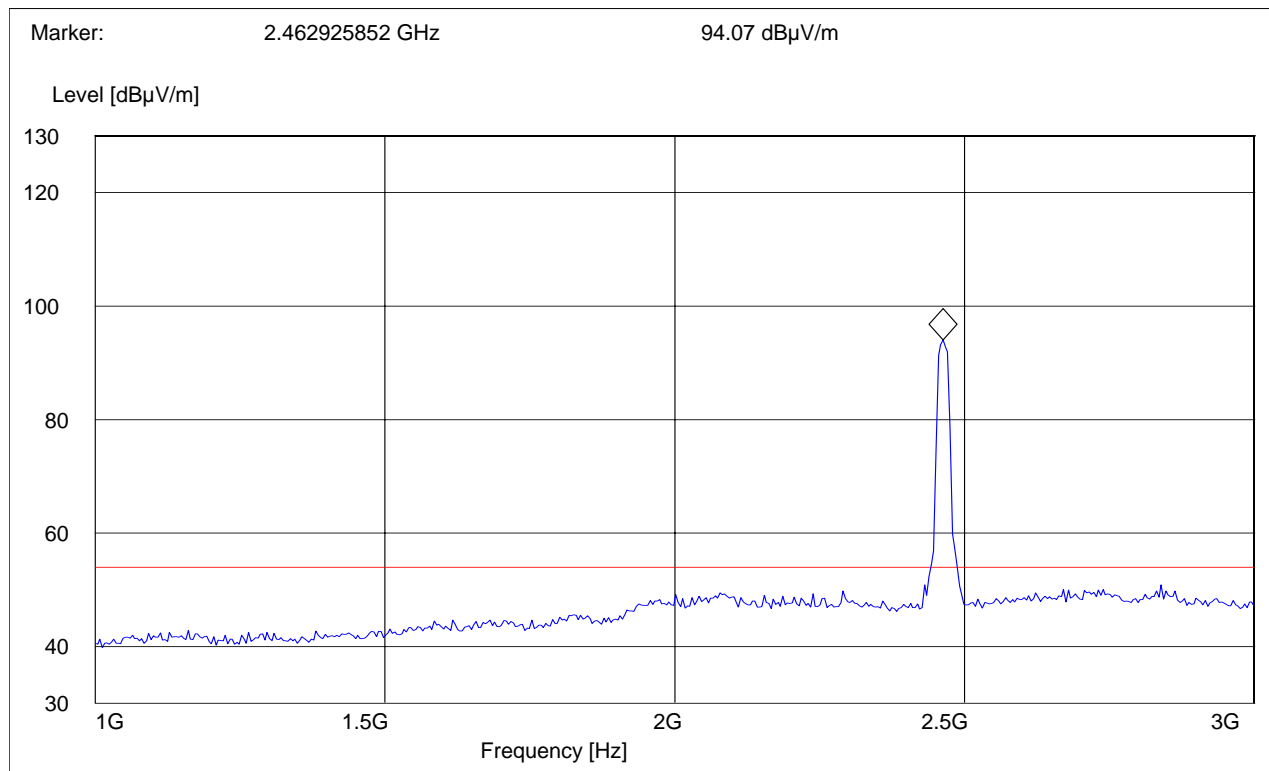


1-3GHz (2462MHz)

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

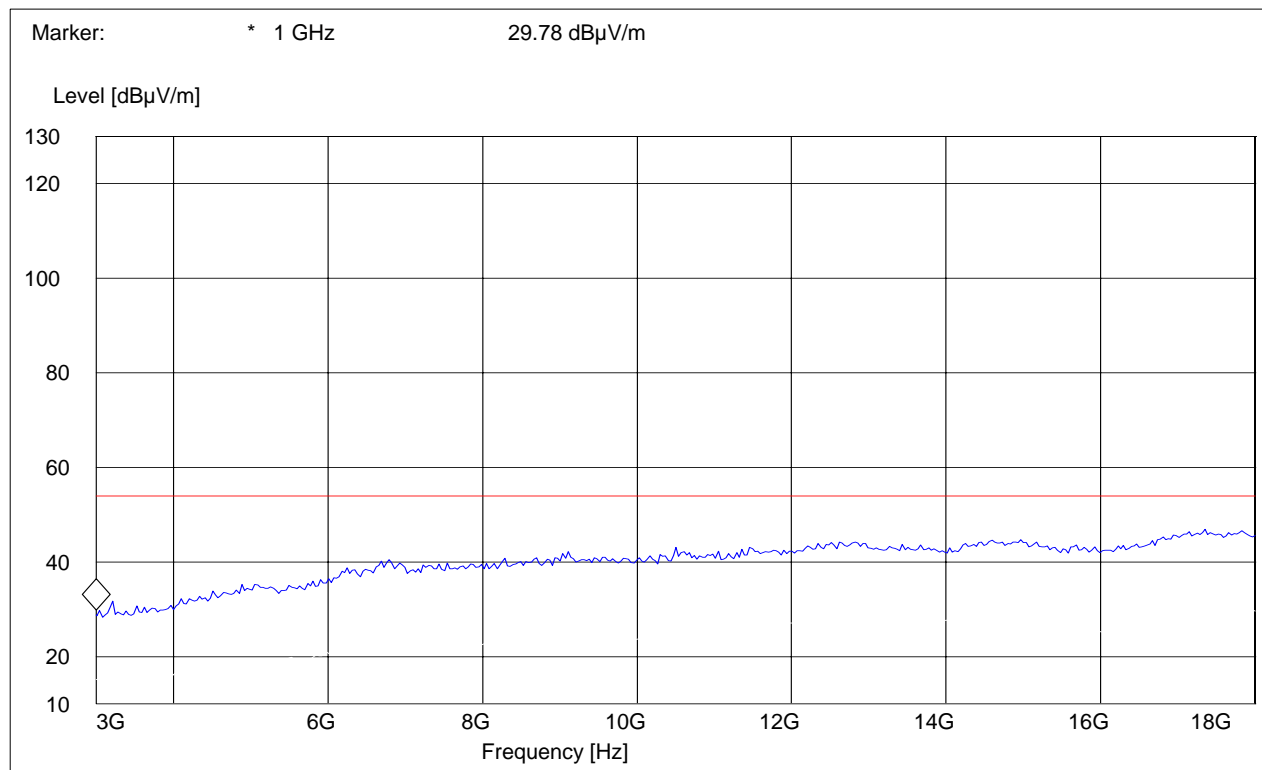
Note: The peaks above the limit line is the carrier freq.

Note: Peak Reading vs. Average limit



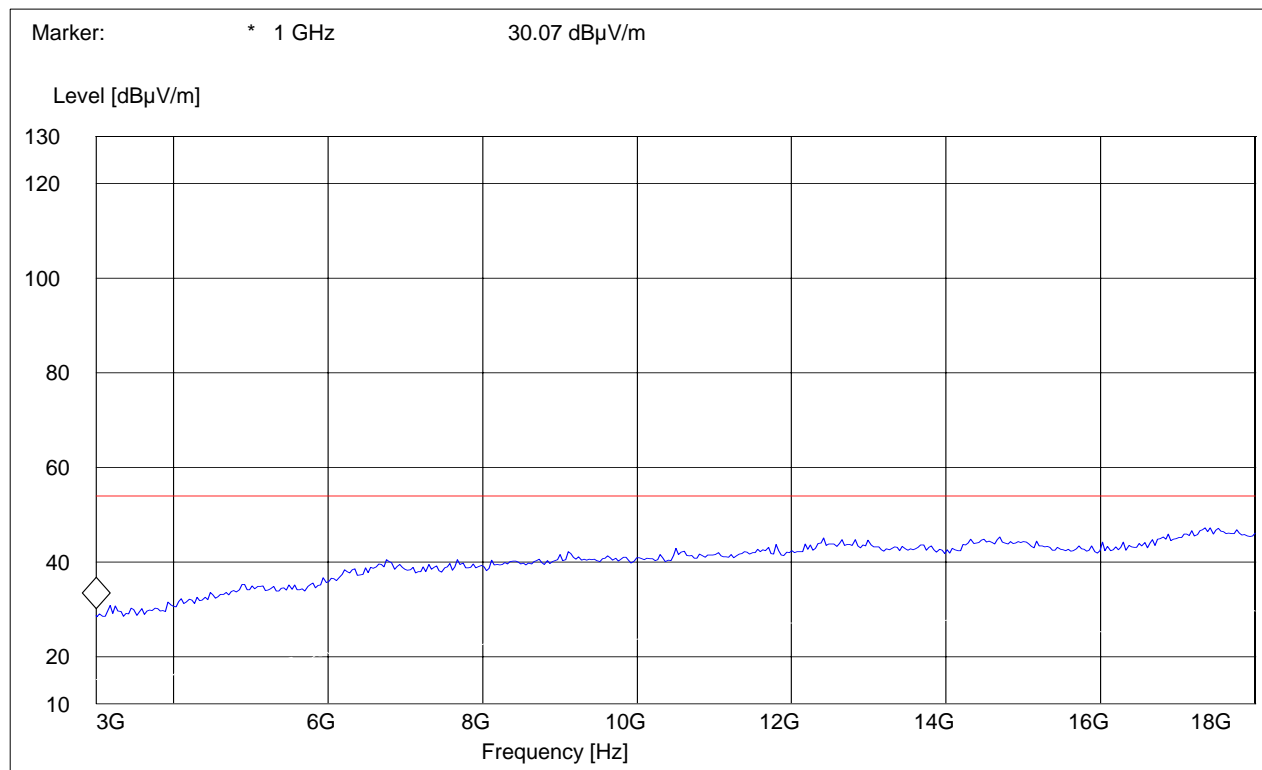
3-18GHz (2412MHz)

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

Note: Peak Reading vs. Average limit

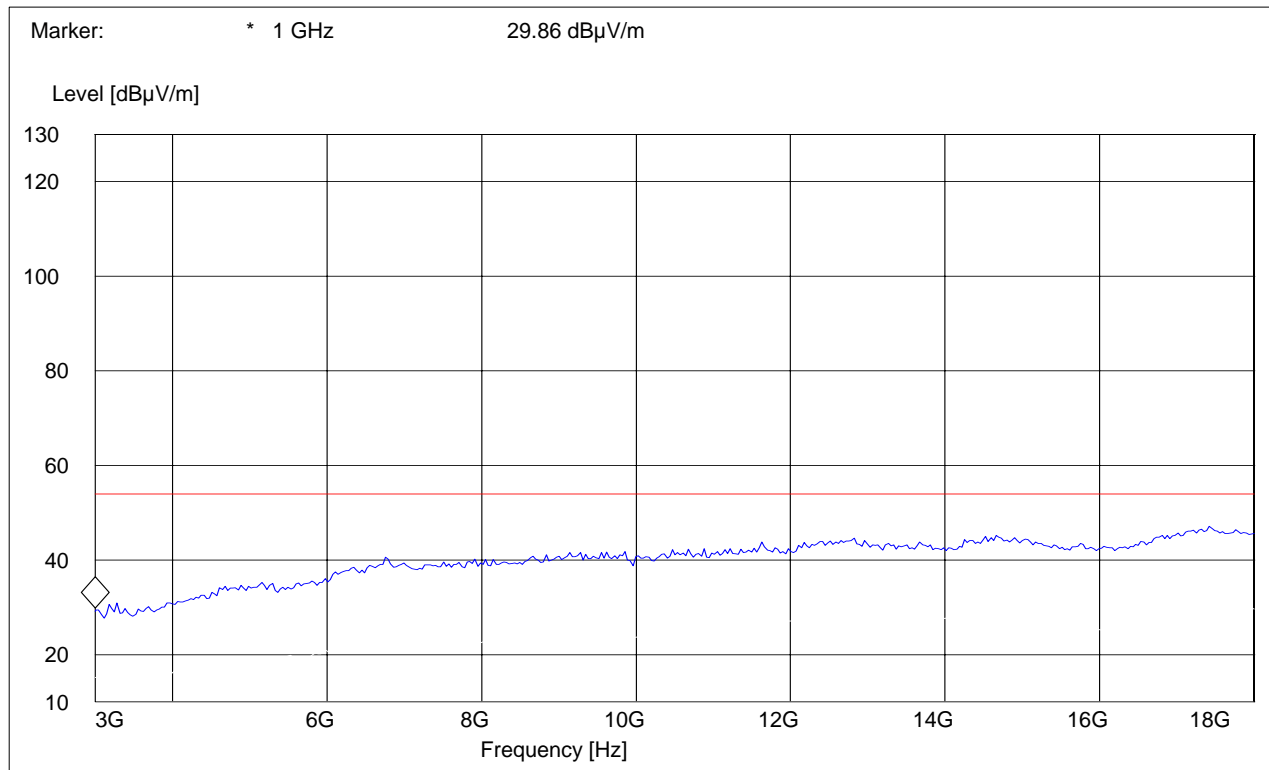
3-18GHz (2437MHz)

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

Note: Peak Reading vs. Average limit

3-18GHz (2462MHz)

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

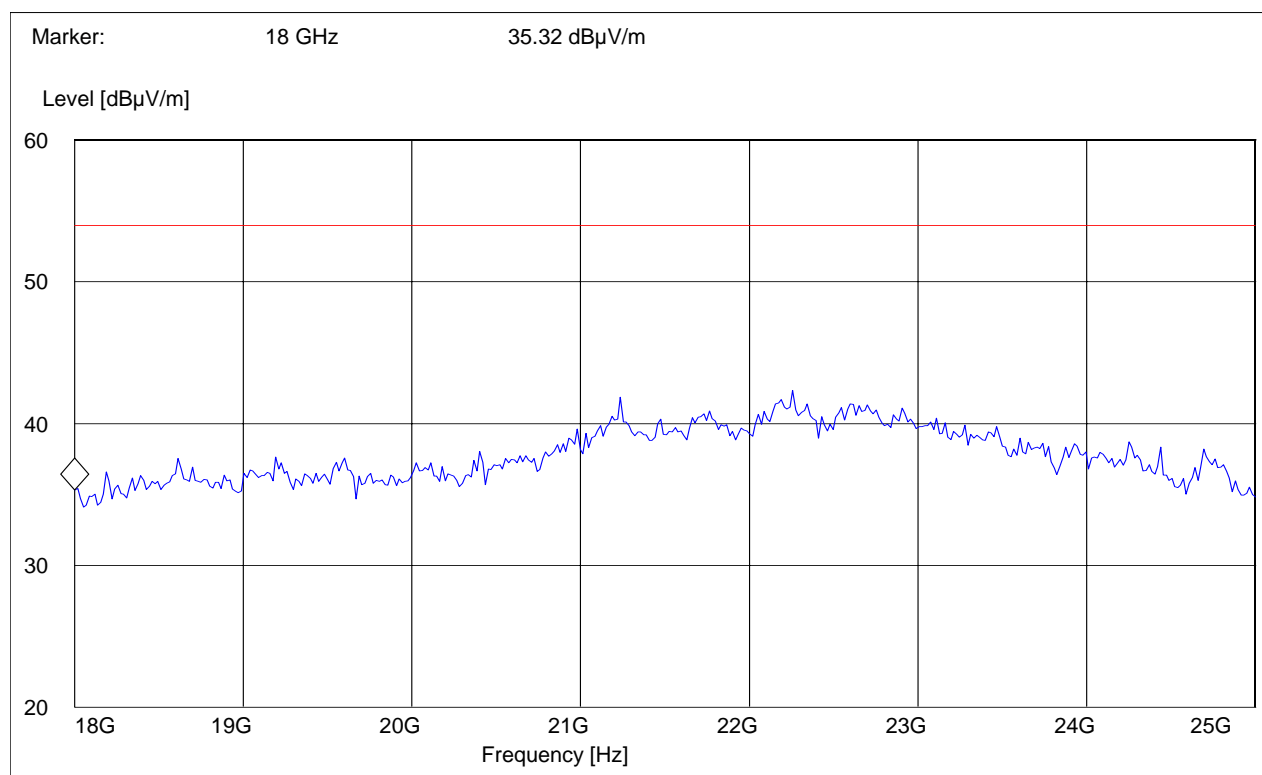
Note: Peak Reading vs. Average limit

18-25GHz

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW | VBW |
|-----------------|----------------|----------|------------|-------|-------|
| 18GHz | 25GHz | Max Peak | Coupled | 1 MHz | 1 MHz |

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

Note: Peak Reading vs. Average limit



5.4 RECEIVER SPURIOUS RADIATION § 15.209/RSS210**5.4.1 LIMITS**

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

NOTE:

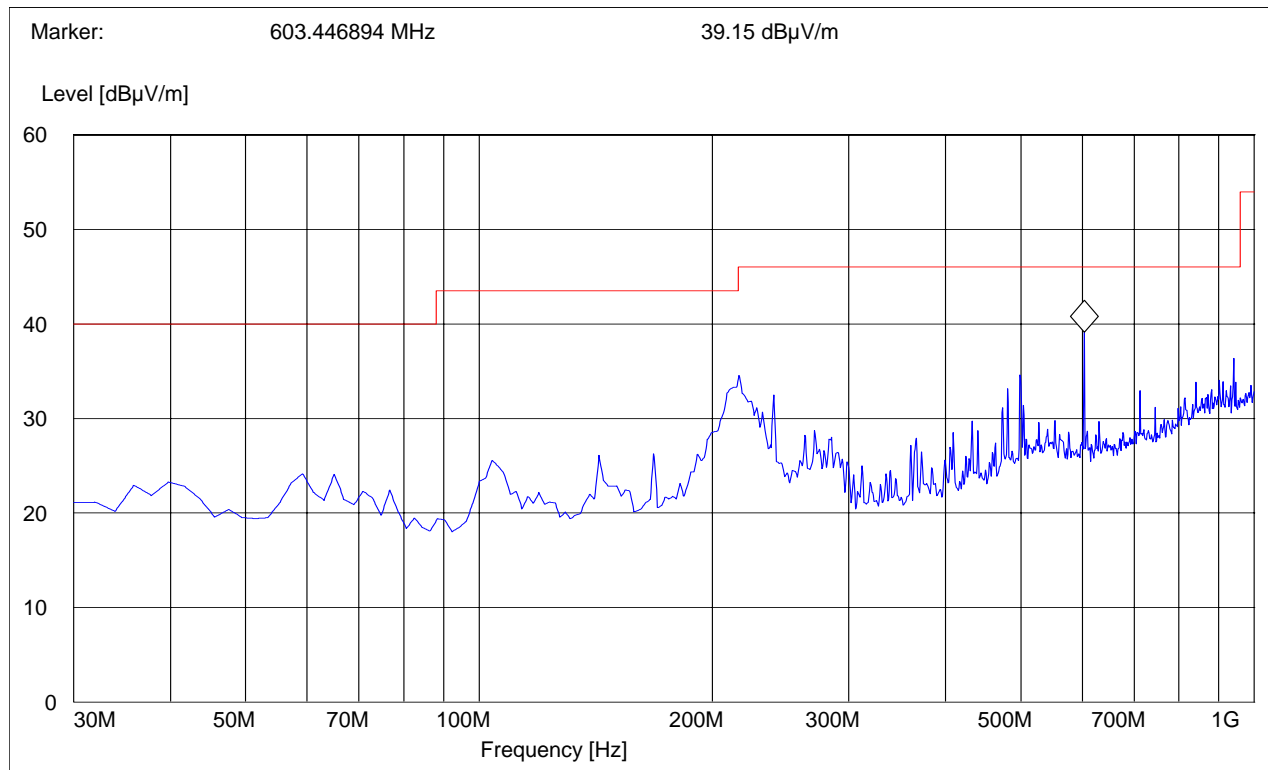
1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.

2. All measurements are done in peak mode using an average limit , unless specified with the plots.

5.4.2 RESULTS

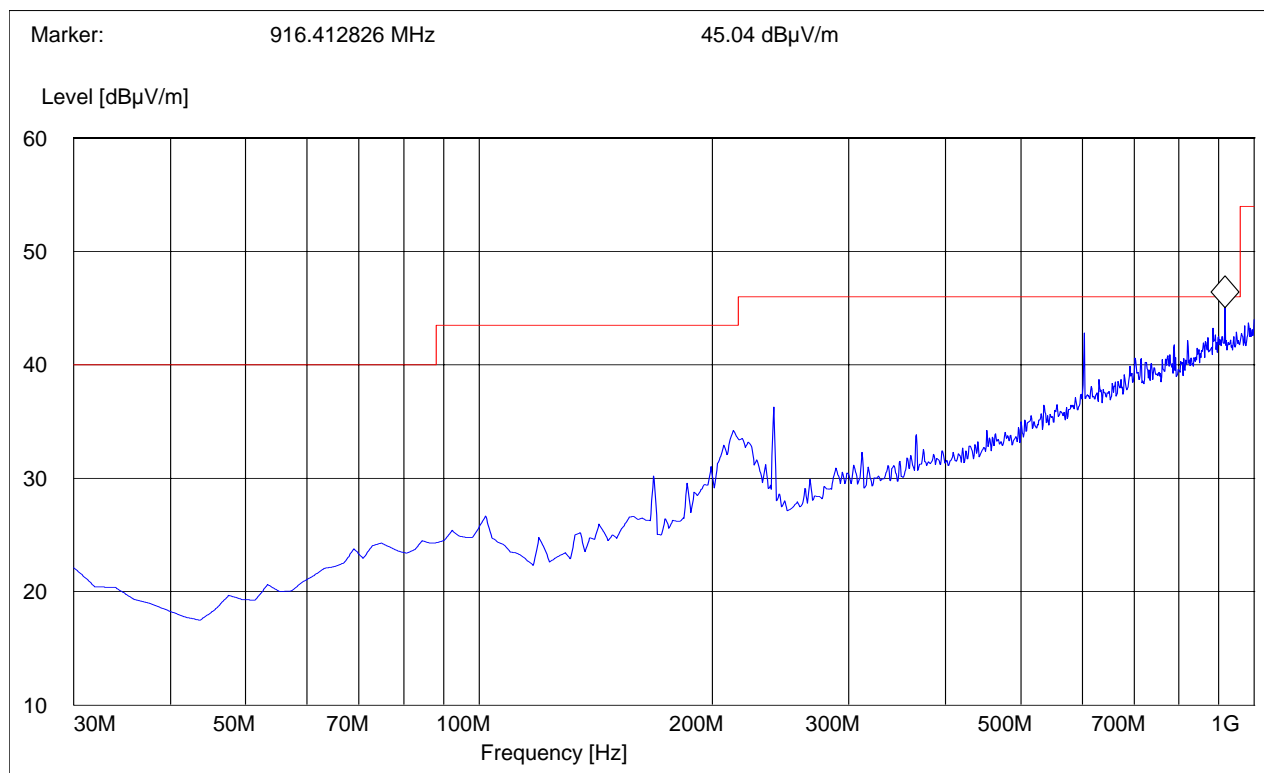
30MHz – 1GHz**Antenna: vertical**

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

Note: Peak Reading vs. Quasi-peak limit

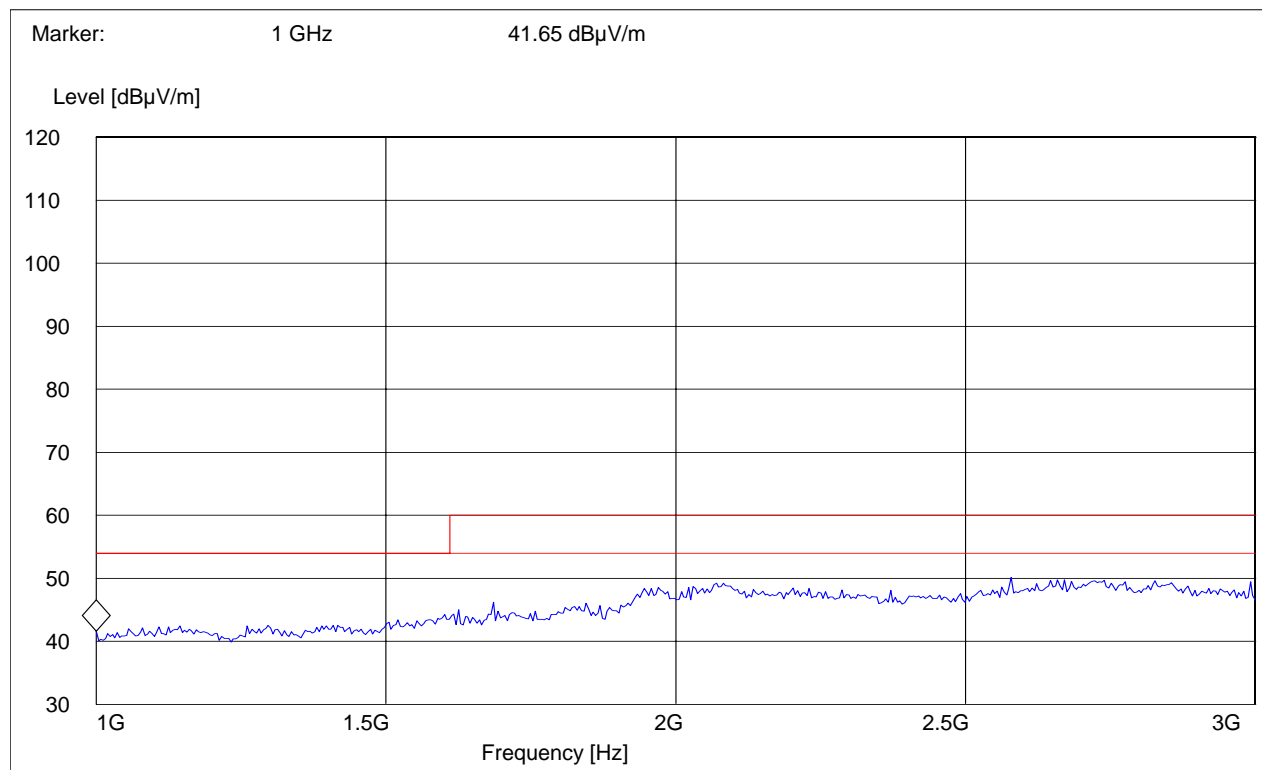
30MHz – 1GHz**Antenna: horizontal**

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

Note: Peak Reading vs. Quasi-peak limit

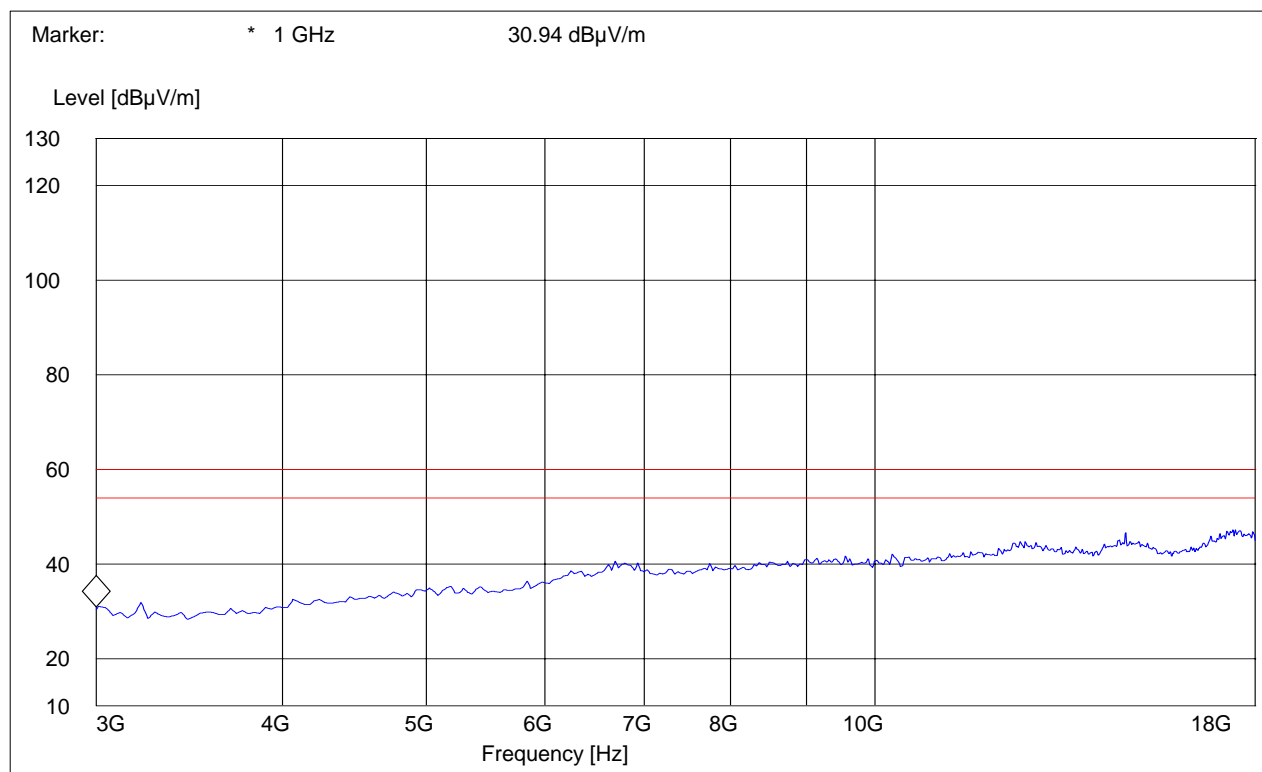
1-3GHz

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

Note: Peak Reading vs. Average limit

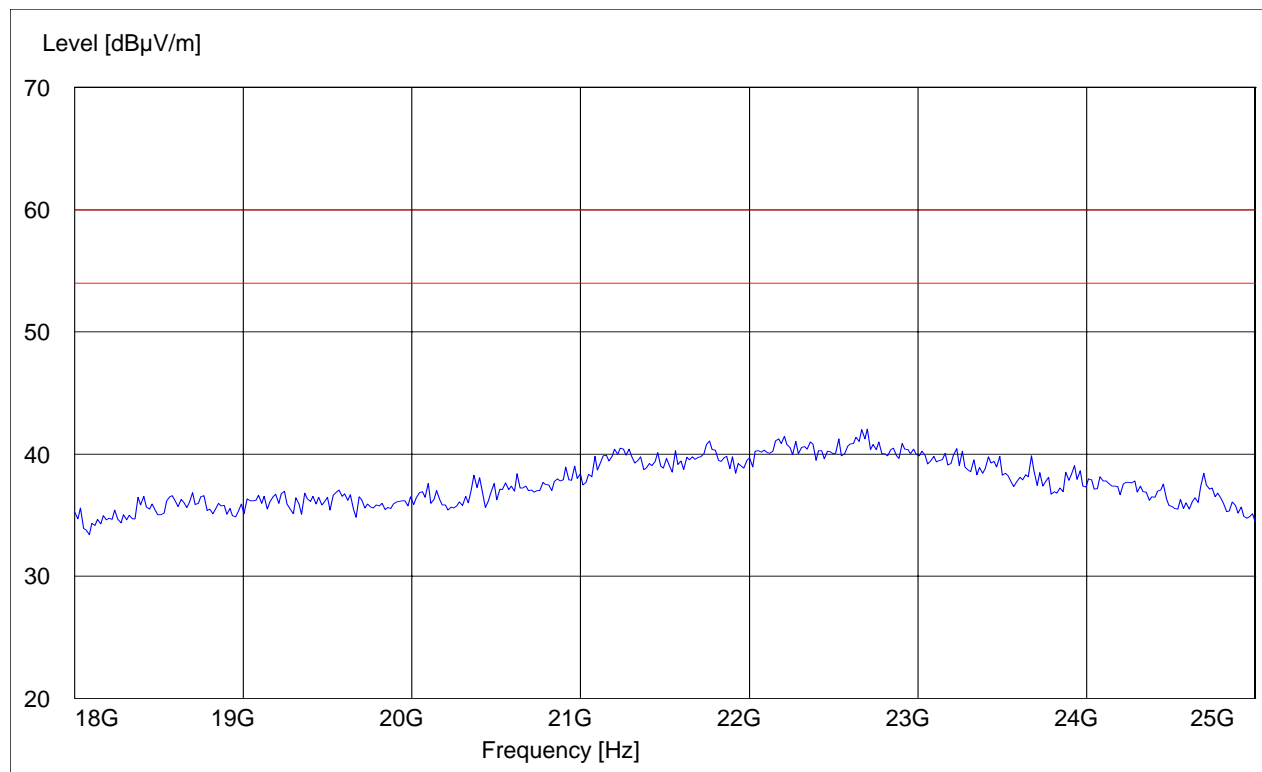
3-18GHz

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

Note: Peak Reading vs. Average limit

18-25GHz

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW | VBW |
|-----------------|----------------|----------|------------|-------|-------|
| 18GHz | 25GHz | Max Peak | Coupled | 1 MHz | 1 MHz |

Note: Peak Reading vs. Average limit



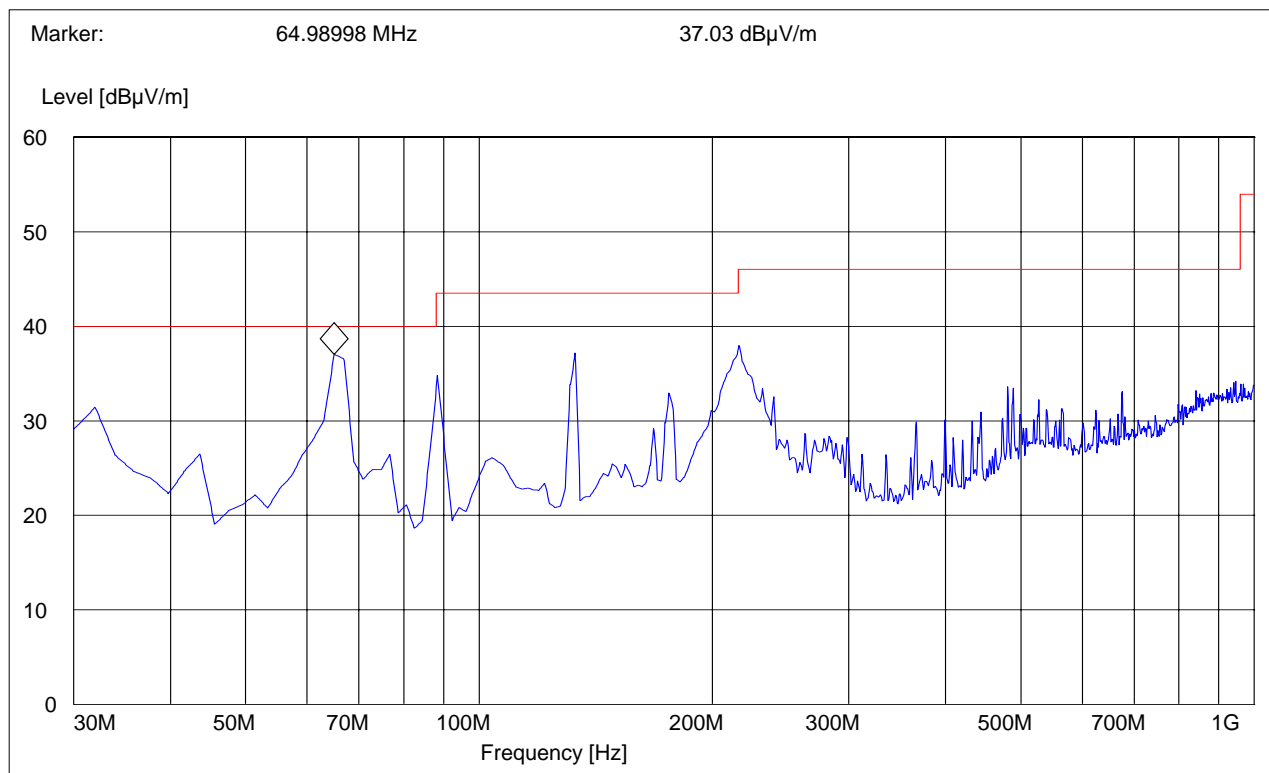
5.5 CO-LOCATION

All Co-location testing was performed with the EUT transmitting in WLAN g mode (2462MHz) and the EUT transmitting in Bluetooth mode(2402MHz). These channels were deemed worst case due to there EIRP readings. All testing was performed using FCC 15.247 procedures/limits.

5.5.1 RESULTS

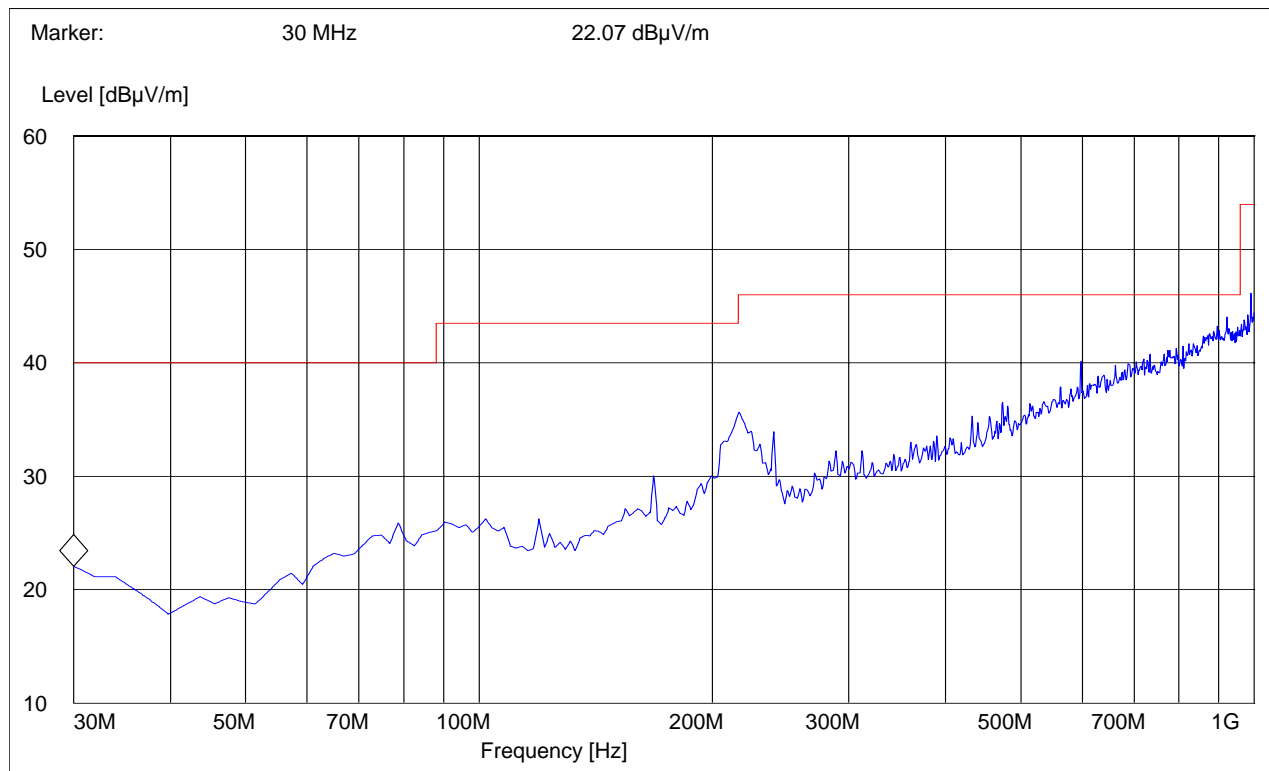
30MHz – 1GHz**Antenna: vertical**

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

Note: Peak Reading vs. Quasi-peak limit

30MHz – 1GHz**Antenna: horizontal**

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

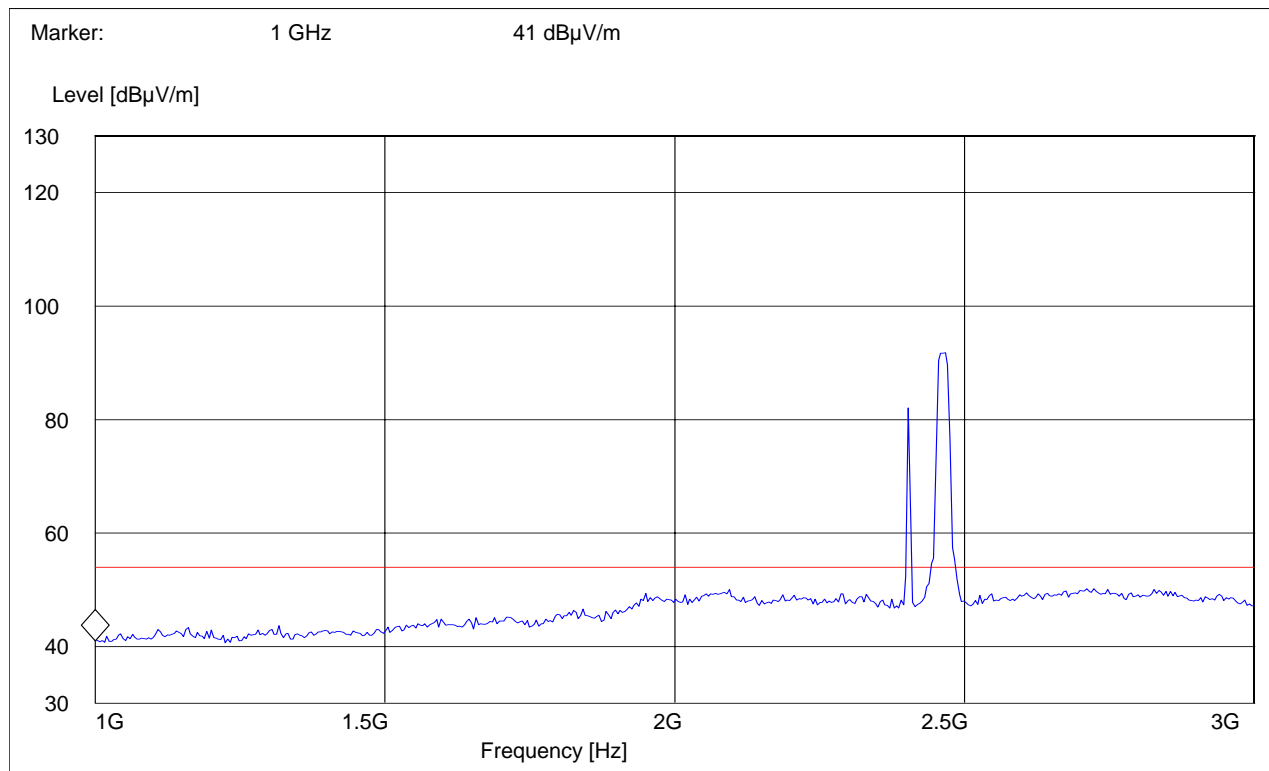
Note: Peak Reading vs. Quasi-peak limit

1-3GHz

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

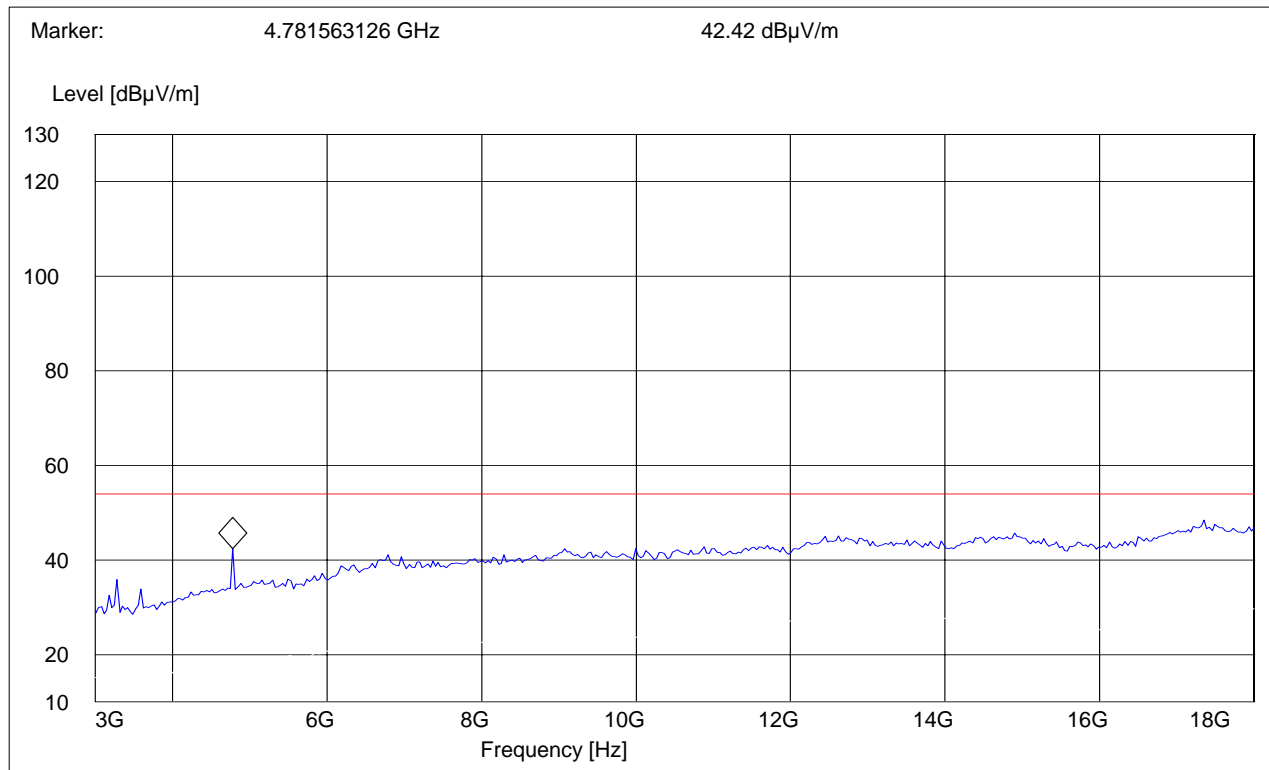
Note: The peaks above the limit line is the carrier freq of the Bluetooth and WLAN transmitter.

Note: Peak Reading vs. Average limit



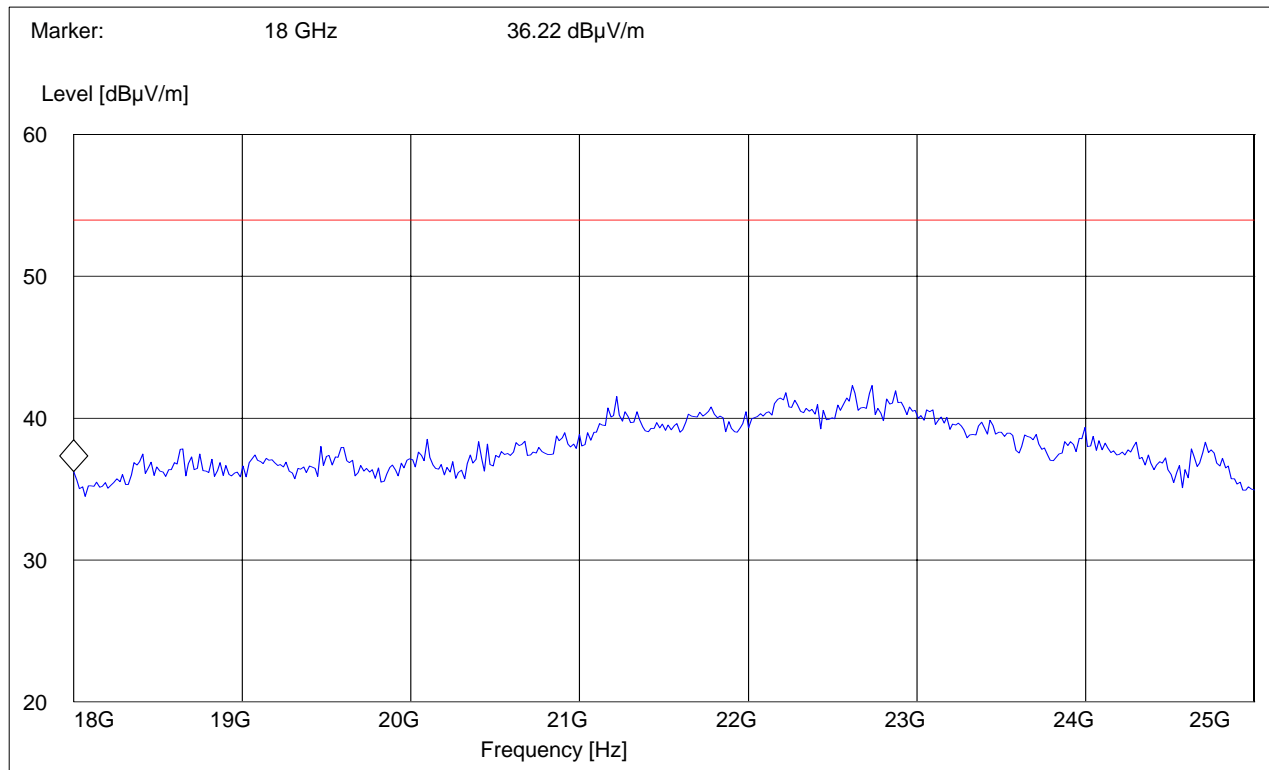
3-18GHz

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

Note: Peak Reading vs. Average limit

18-25GHz

| Start Frequency | Stop Frequency | Detector | Meas. Time | RBW | VBW |
|-----------------|----------------|----------|------------|-------|-------|
| 18GHz | 25GHz | Max Peak | Coupled | 1 MHz | 1 MHz |

Note: Peak Reading vs. Average limit

5.6 AC POWER LINE CONDUCTED EMISSIONS § 15.107/207**5.6.1 LIMITS****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***** The following results were done with the WLAN and Bluetooth transmitters operating simultaneously.**

5.6.2 RESULTS

Measured with AC/DC power adapter VGP-AC16V8

LISN

411 Dixon Landing Road, CA 95035

EUT / Description: viao

Manufacturer: sony

Test mode: co-lo(wlan @g mode 2462mhz and bluetooth@2402mhz)

Test Engineer: Neelesh

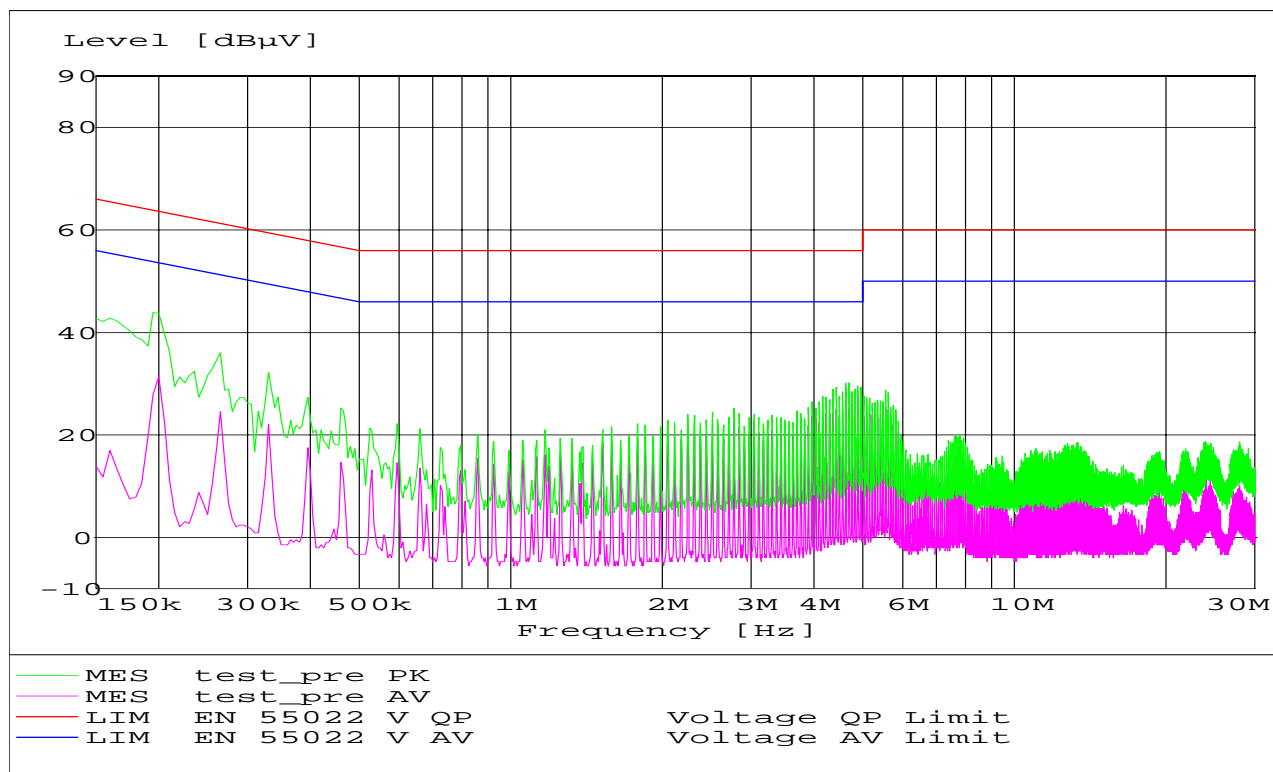
Phase: L & N

Comment: 110 volt

Start of Test: 8/11/2005 / 12:56:24PM

SCAN TABLE: "EN 55022 Voltage"

| Short Description: | | | EN 55022 Voltage | | | |
|--------------------|-----------|---------|------------------|---------|--------|------------|
| Start | Stop | Step | Detector | Meas. | IF | Transducer |
| Frequency | Frequency | Width | | Time | Bandw. | |
| 150.0 kHz | 30.0 MHz | 5.0 kHz | MaxPeak | 10.0 ms | 9 kHz | None |
| | | | Average | | | |



5.7 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 | Biconilog Antenna | 3141 | EMCO | 0005-1186 |
| 04 | Horn Antenna (700M-18GHz) | SAS-200/571 | AH Systems | 325 |
| 05 | Horn Antenna (18-26.5GHz) | 3160-09 | EMCO | 1240 |
| 06 | 2-3GHz Band reject filter | BRM50701 | Microtronics | 6 |
| 07 | Power-Meter | NRVD | Rohde & Schwarz | 0857.8008.02 |
| 08 | Pre-Amplifier | TS-ANA | Rohde & Schwarz | -- |
| 09 | Pre-Amplifier | JS4-00102600 | Miteq | 00616 |

5.8 BLOCK DIAGRAMS

Radiated Testing

ANECHOIC CHAMBER

