



Product Service

## FCC/IC - TEST REPORT

Report Number : **68.760.12.308.01** Date of Issue: 04 March, 2014

Model : **M5N001**

Product Type : MedSense Base

Applicant : General Sensing Limited

Address : Unit 716, Cyberport 1, 100 Cyberport Road, Pok Fu Lam, Hong Kong

Manufacture : General Sensing Limited

Address : Unit 716, Cyberport 1, 100 Cyberport Road, Pok Fu Lam, Hong Kong

Test Result : ☒ **Positive** ☐ **Negative**

Total pages including  
Appendices : 30

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## 2 Details about the Test Laboratory

### Details about the Test Laboratory

Test site1:

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch  
6th Floor, H Hall, Culture Creative Park,  
No. 4001, Fuqiang Road,  
Futian District 518048,  
Shenzhen, P.R.C.

Telephone: 86 755 8828 6998  
Fax: 86 755 8828 5299

Test site2:

Company name: Audix Technology (shenzhen) Co., Ltd  
Block Shenzhen, Science & Industry Park,  
Nantou, Shenzhen,  
Guangdong,  
China

Telephone: 86 755 2663 9496  
Fax: 86 755 2663 2877

### 3 Description of the Equipment Under Test

#### Description of the Equipment Under Test

Product: MedSense Base

Model no.: M5N001

Brand Name: MedSense

Options and accessories: NIL

Rating: Adaptor model: CENB1030A0503F01  
input: 100-240V~, 50-60Hz, 1.0A  
output: +5V, 4.0A

RF Transmission  
Frequency: 2402MHz - 2480.980MHz

Antenna Gain: 5dBi

Description of the EUT: NIL

Auxiliary Equipment Used during Test:

| DESCRIPTION | MANUFACTURER | MODEL NO.(SHIELD) | S/N(LENGTH) |
|-------------|--------------|-------------------|-------------|
| ---         | ---          | ---               | ---         |

## 4 Summary of Test Standards

| Test Standards                             |   |
|--|---|
| FCC Part 15 Subpart C<br>10-1-2013 Edition | PART 15 - RADIO FREQUENCY DEVICES<br>Subpart C - Intentional Radiators                  |
| RSS-Gen Issue 3<br>December 2010           | General Requirements and Information for the Certification of<br>Radio Apparatus        |
| RSS-210 Issue 8<br>December 2010           | RSS-210 — Licence-exempt Radio Apparatus (All Frequency<br>Bands): Category I Equipment |

## 5 Summary of Test Results

| Technical Requirements   |       |           |                                     |                          |                                     |
|--|-------|-----------|-------------------------------------|--------------------------|-------------------------------------|
| FCC Part 15 Subpart C, RSS-Gen, RSS-210  |       |           |                                     |                          |                                     |
| Test Condition   | Pages | Test Site | Test Result                         |                          |                                     |
|  |       |           | Pass                                | Fail                     | N/A                                 |
| 15.207 & RSS-Gen A7.2.4 Conducted emission AC power port*  | 9     | Site 2    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| §15.205(a), §15.209(a), §15.249(a), §15.249(c) & RSS-210 A2.9(a), RSS-Gen 7.2.2 Field strength of emissions and Restricted bands | 12    | Site 2    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| RSS-GEN 4.10 Receiver Spurious Emissions*  | --    | Site 2    | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| §15.249(d) & RSS-210 A2.9(b) Out of band emissions   | 21    | Site 2    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| FCC §15.215(c) 20dB bandwidth & RSS-Gen 4.6.1 99% Occupied Bandwidth   | 26    | Site 2    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |

Notice“\*”: Only radio communication receivers operating in stand-alone mode within the band 30-960 MHz and scanner receivers are subject to Industry Canada requirements, as described above. All other receivers are excluded from any Industry Canada certification, testing, labeling and reporting requirements.

## 6 General Remarks

### Remarks

This submittal(s) (test report) is intended for FCC ID: GPI-M5N001 & IC ID: 7310A-M5N001 complies with Section 15.205, 15.209, 15.249 of the FCC Part 15, Subpart C Rules; and RSS-210.

### SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: 28 November, 2012

Testing Start Date: 29 November, 2012

Testing End Date: 25 March, 2014

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch -

Reviewed by:

Prepared by:

Tested by:



Ken Li  
EMC Project Manager



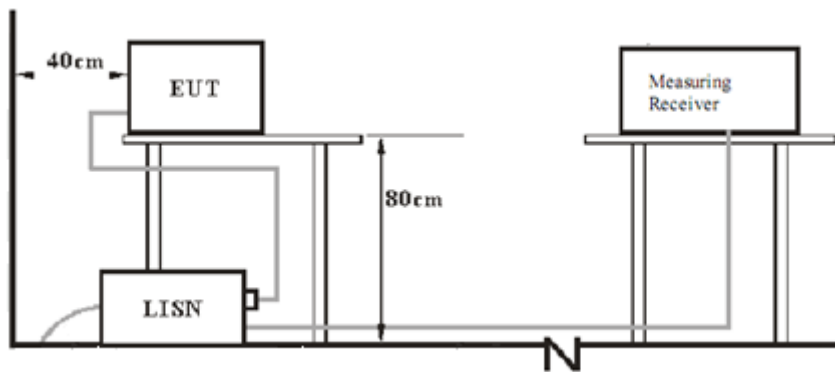
Felix Li  
EMC Project Engineer



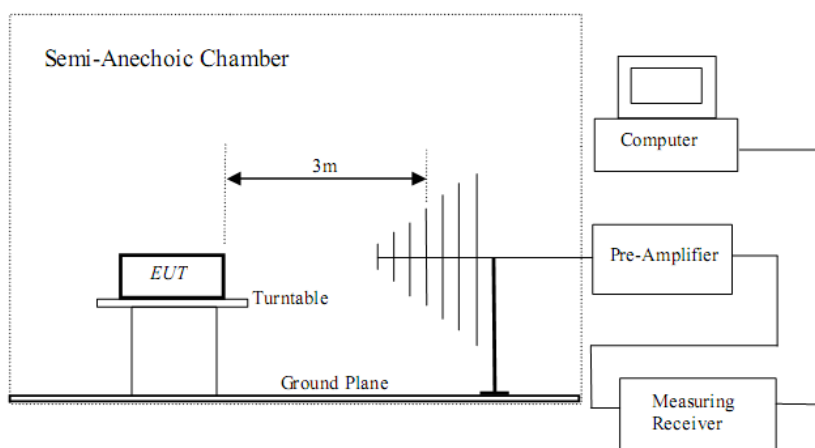
Leo Li  
EMC Test Engineer

## 7 Test setups

### 7.1 AC Power Line Conducted Emission test setups



### 7.2 Radiated test setups





## 8 Technical Requirement

### 8.1 Conducted Emission

#### Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

#### Limit

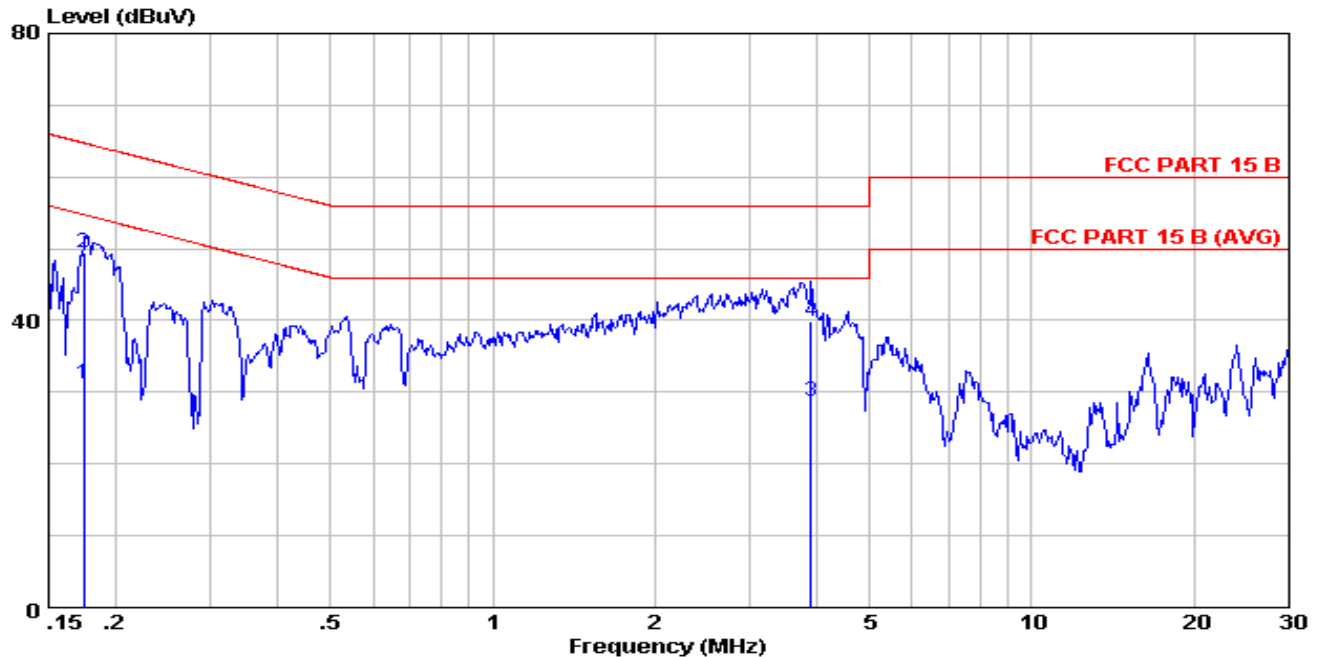
According to §15.207, conducted emissions limit as below:

| Frequency<br>MHz | QP Limit<br>dB $\mu$ V | AV Limit<br>dB $\mu$ V |
|------------------|------------------------|------------------------|
| 0.150-0.500      | 66-56*                 | 56-46*                 |
| 0.500-5          | 56                     | 46                     |
| 5-30             | 60                     | 50                     |

Decreasing linearly with logarithm of the frequency

## Conducted Emission

Product Type : MedSense Base  
M/N : M5N001  
Operating Condition : Charging &TX& Network  
Test specification : Live  
Comment : AC 120V/60Hz

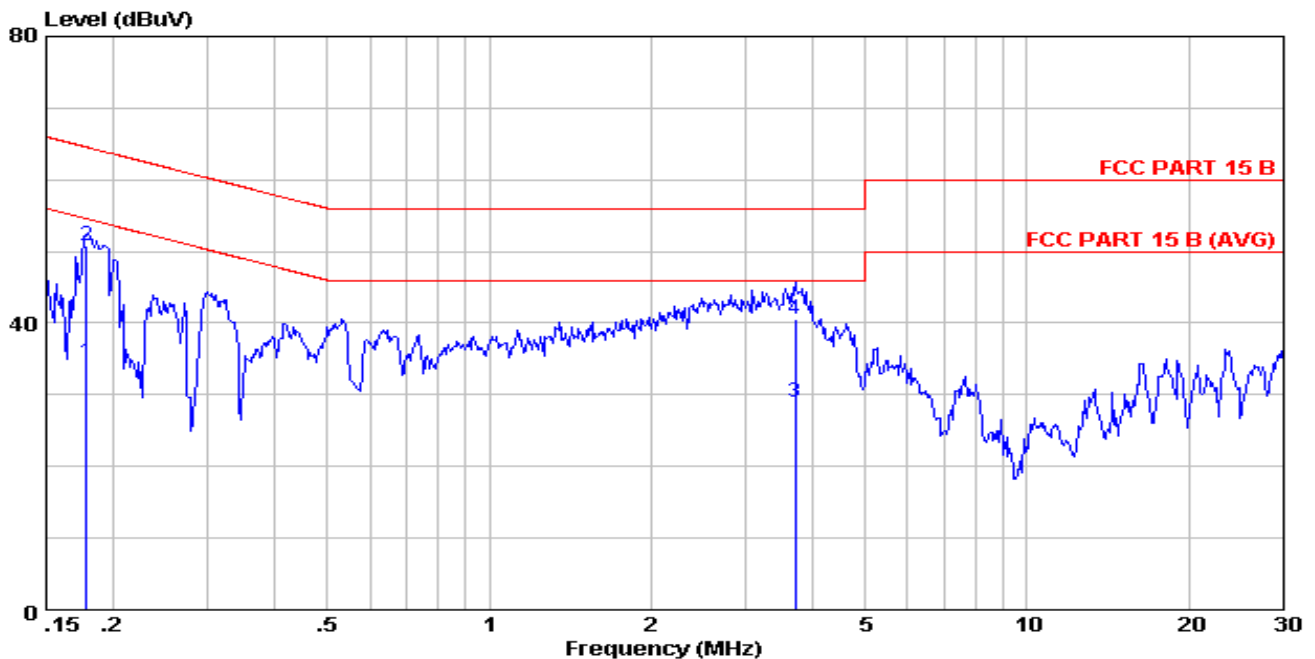


| No | Freq (MHz) | LISN Factor (dB) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV) | Limits (dBuV) | Margin (dB) | Remark  |
|----|------------|------------------|-----------------|----------------|-----------------------|---------------|-------------|---------|
| 1  | 0.17400    | 0.19             | 0.14            | 30.90          | 31.23                 | 54.77         | 23.54       | Average |
| 2  | 0.17400    | 0.19             | 0.14            | 49.20          | 49.53                 | 64.77         | 15.24       | QP      |
| 3  | 3.886      | 0.28             | 0.14            | 28.41          | 28.83                 | 46.00         | 17.17       | Average |
| 4  | 3.886      | 0.28             | 0.14            | 39.41          | 39.83                 | 56.00         | 16.17       | QP      |

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.  
2.If the average limit is met when using a quasi-peak detector. the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

## Conducted Emission

Product Type : MedSense Base  
M/N : M5N001  
Operating Condition : Charging &TX& Network  
Test specification : Neutral  
Comment : AC 120V/60Hz



| No | Freq<br>(MHz) | LISN<br>Factor<br>(dB) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV) | Limits<br>(dBuV) | Margin<br>(dB) | Remark  |
|----|---------------|------------------------|-----------------------|-------------------|-----------------------------|------------------|----------------|---------|
| 1  | 0.17800       | 0.21                   | 0.14                  | 34.20             | 34.55                       | 54.58            | 20.03          | Average |
| 2  | 0.17800       | 0.21                   | 0.14                  | 50.40             | 50.75                       | 64.58            | 13.83          | QP      |
| 3  | 3.701         | 0.32                   | 0.14                  | 28.40             | 28.86                       | 46.00            | 17.14          | Average |
| 4  | 3.701         | 0.32                   | 0.14                  | 40.10             | 40.56                       | 56.00            | 15.44          | QP      |

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.  
2.If the average limit is met when using a quasi-peak detector.  
the EUT shall be deemed to meet both limits and measurement  
with average detector is unnecessary.

## 8.2 Field strength of emissions and Restricted bands

### Test Method

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
3. Use the following spectrum analyzer settings:  
Span = wide enough to fully capture the emission being measured ,RBW = 1 MHz for  $f \geq 1\text{GHz}$ , 100 kHz for  $f < 1\text{GHz}$ , VBW  $\geq$  RBW, Sweep = auto, Detector function = peak, Trace = max hold
4. Follow the guidelines in ANSI C63.4-1992 with respect to maximizing the emission by rotating the EUT, adjusting the measurement antenna height and polarization, etc.  
The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, submit this data. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the duty cycle per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from  $20\log(\text{duty cycle}/100\text{ ms})$ , in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

### Limits

According to §15.249 (a) & RSS-210 A2.9(a) , the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

| Fundamental frequency | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) |
|-----------------------|--|--|
| 902–928 MHz           | 50   | 500  |
| 2400–2483.5 MHz       | 50   | 500  |
| 5725–5875 MHz         | 50   | 500  |
| 24.0–24.25 GHz        | 250  | 2500   |

According to §15.249 (c)& RSS-210 A2.9(a), Field strength limits are specified at a distance of 3 meters.

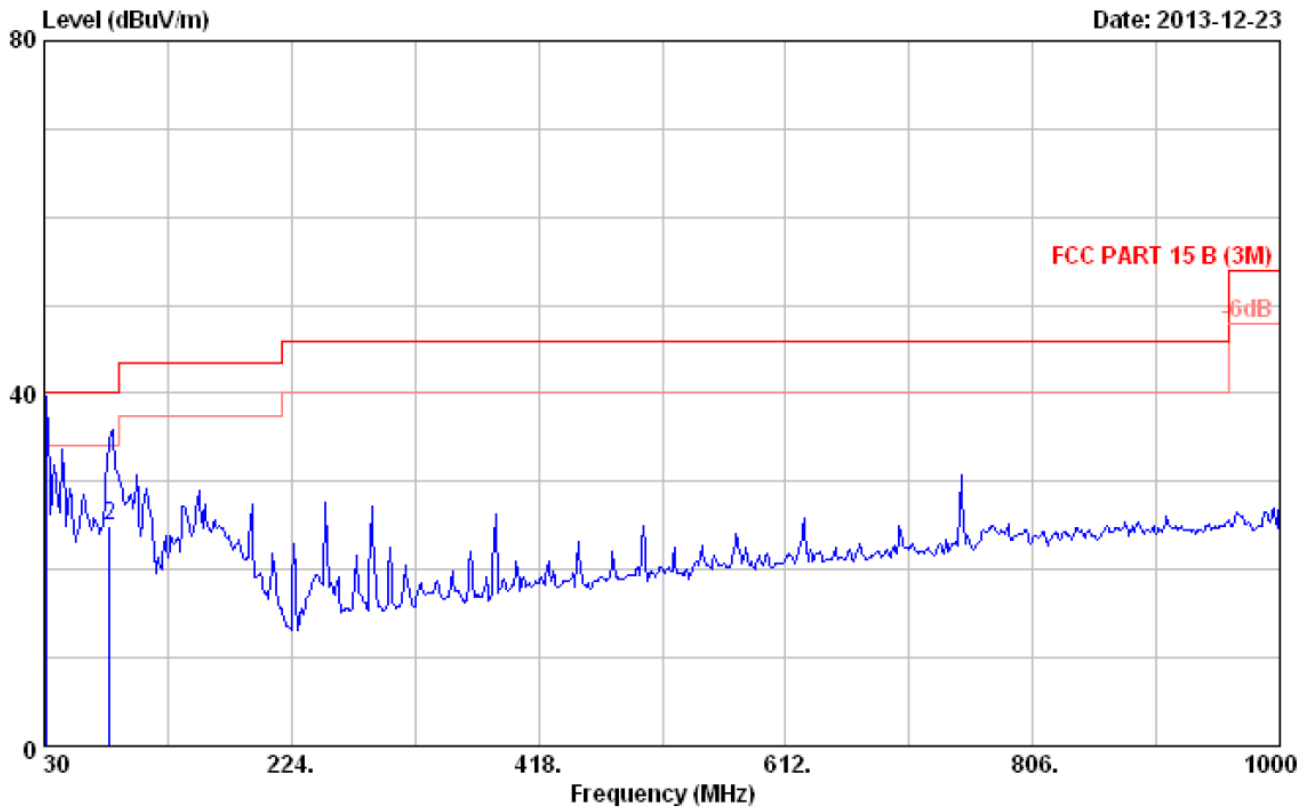
According to §15.249 (d)& RSS-210 A2.9(b), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209& RSS-Gen, whichever is the lesser attenuation.

According to §15.205 and RSS-GEN 7.2.2 Unwanted emissions falling into restricted bands in §15.205 (a) and RSS-GEN 7.2.2 Table 3 shall comply with the limits specified in §15.209 and RSS-Gen.

## Field strength of emissions and Restricted bands

EUT: MedSense Base  
Operating Condition: Tx  
Ant. Polarity: Vertical  
Comment: 30-1000MHz

M/N: M5N001



| No. | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>Loss<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark |
|-----|----------------|--------------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1   | 31.450         | 19.16                    | 0.86                  | 17.69             | 37.71                         | 40.00              | 2.29           | QP     |
| 2   | 81.250         | 7.79                     | 1.33                  | 15.89             | 25.01                         | 40.00              | 14.99          | QP     |

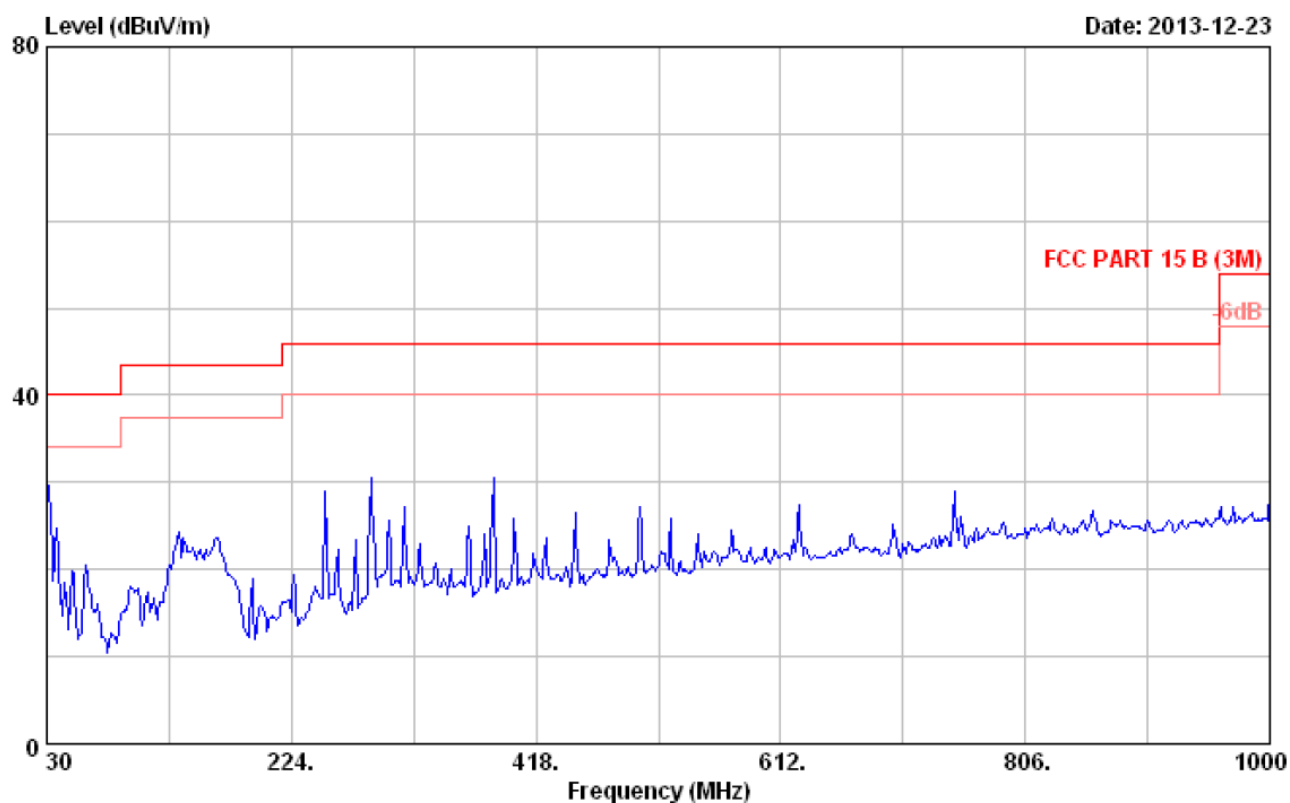
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
2. The emission levels that are 20dB below the official limit are not reported.

## Field strength of emissions and Restricted bands

EUT: MedSense Base  
Operating Condition: Tx  
Ant. Polarity: Horizontal  
Comment: 30-1000MHz

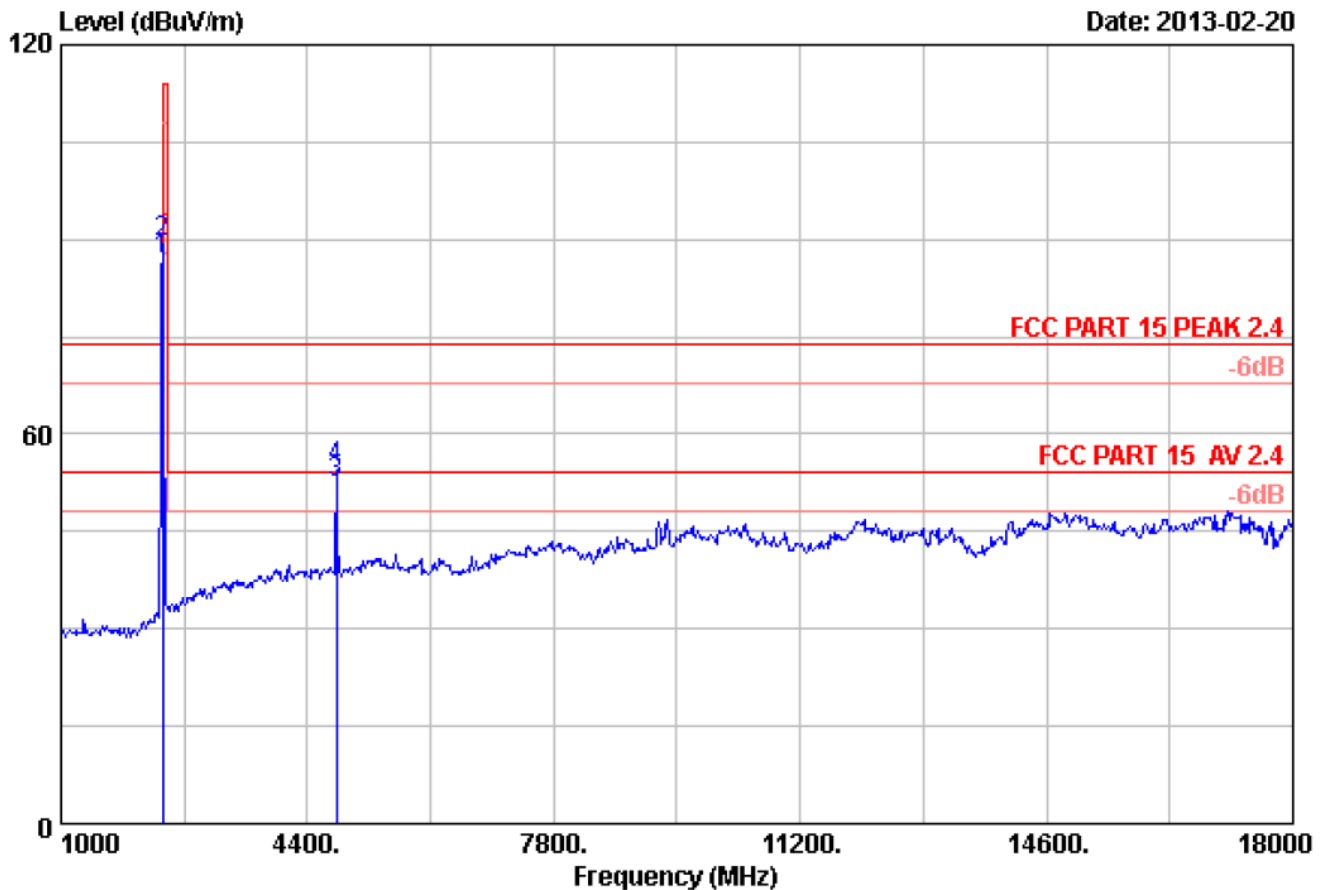
M/N: M5N001

Date: 2013-12-23



## Field strength of emissions and Restricted bands

EUT: MedSense Base M/N: M5N001  
Operating Condition: Tx, 2402MHz  
Ant. Polarity: Vertical  
Comment: Above 1GHz



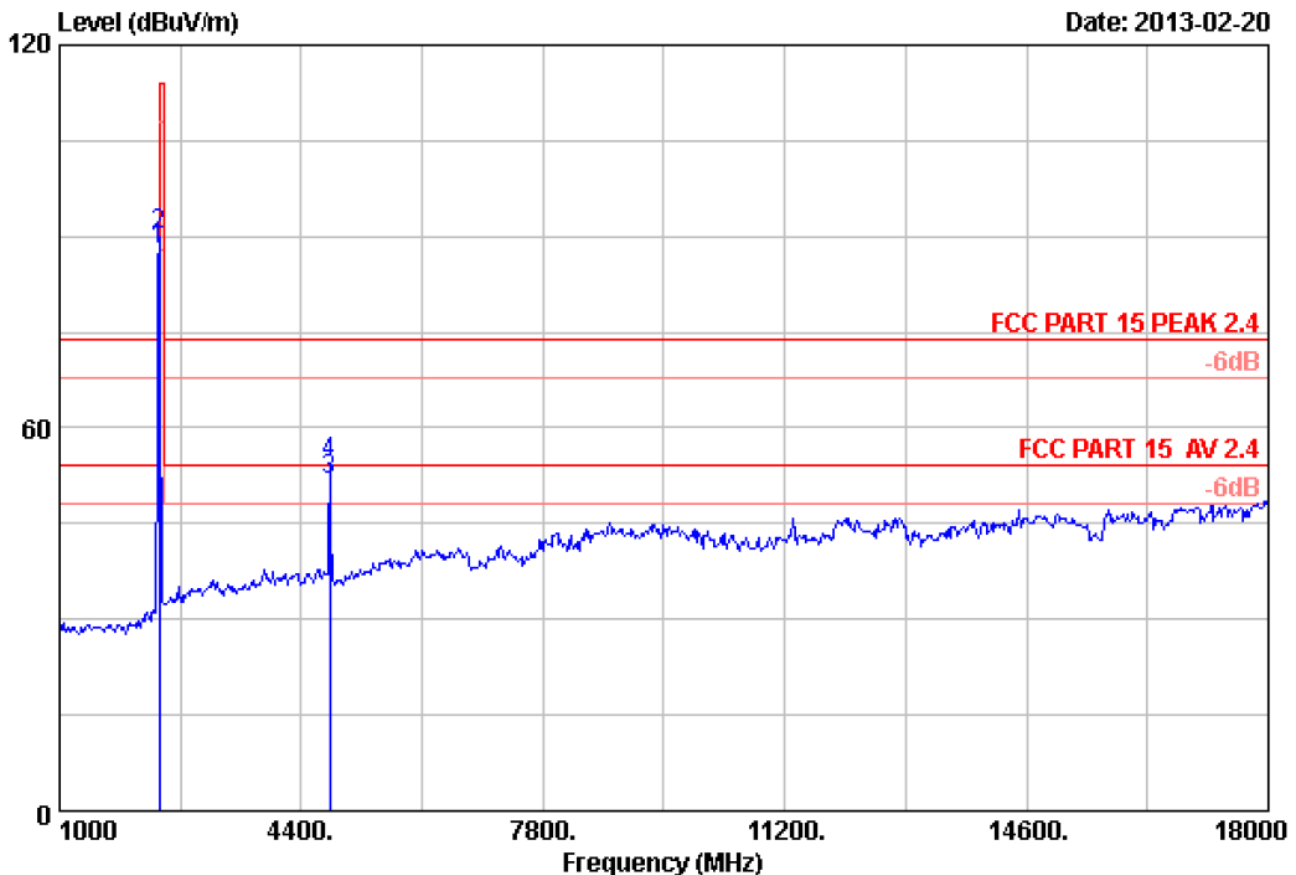
|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>loss<br>(dB) | Amp.<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|------------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 2401.999       | 26.77                    | 6.02                  | 35.92                  | 90.13             | 87.00                         | 94.00              | 7.00           | Average |
| 2 | 2401.999       | 26.77                    | 6.02                  | 35.92                  | 92.58             | 89.45                         | 114.00             | 24.55          | Peak    |
| 3 | 4804.000       | 32.47                    | 8.67                  | 35.72                  | 47.04             | 52.46                         | 54.00              | 1.54           | Average |
| 4 | 4804.000       | 32.47                    | 8.67                  | 35.72                  | 49.49             | 54.91                         | 74.00              | 19.09          | Peak    |

### Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

## Field strength of emissions and Restricted bands

EUT: MedSense Base M/N: M5N001  
Operating Condition: Tx, 2402MHz  
Ant. Polarity: Horizontal  
Comment: Above 1GHz



|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>loss<br>(dB) | Amp.<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|------------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 2401.999       | 26.77                    | 6.02                  | 35.92                  | 90.94             | 87.81                         | 94.00              | 6.19           | Average |
| 2 | 2401.999       | 26.77                    | 6.02                  | 35.92                  | 93.39             | 90.26                         | 114.00             | 23.74          | Peak    |
| 3 | 4804.000       | 32.47                    | 8.67                  | 35.72                  | 46.48             | 51.90                         | 54.00              | 2.10           | Average |
| 4 | 4804.000       | 32.47                    | 8.67                  | 35.72                  | 48.93             | 54.35                         | 74.00              | 19.65          | Peak    |

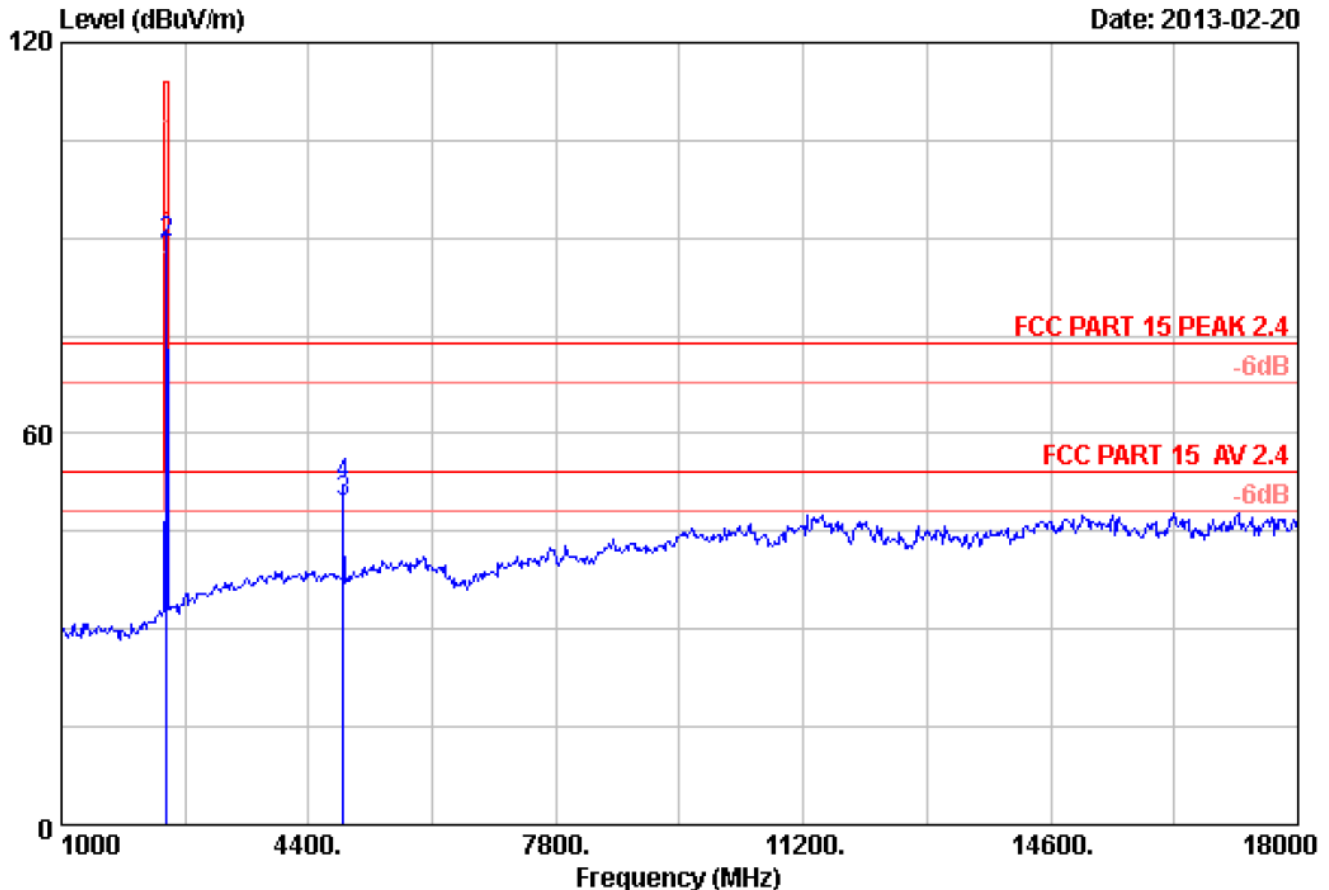
### Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



## Field strength of emissions and Restricted bands

EUT: MedSense Base M/N: M5N001  
Operating Condition: Tx, 2440.324MHz  
Ant. Polarity: Vertical  
Comment: Above 1GHz



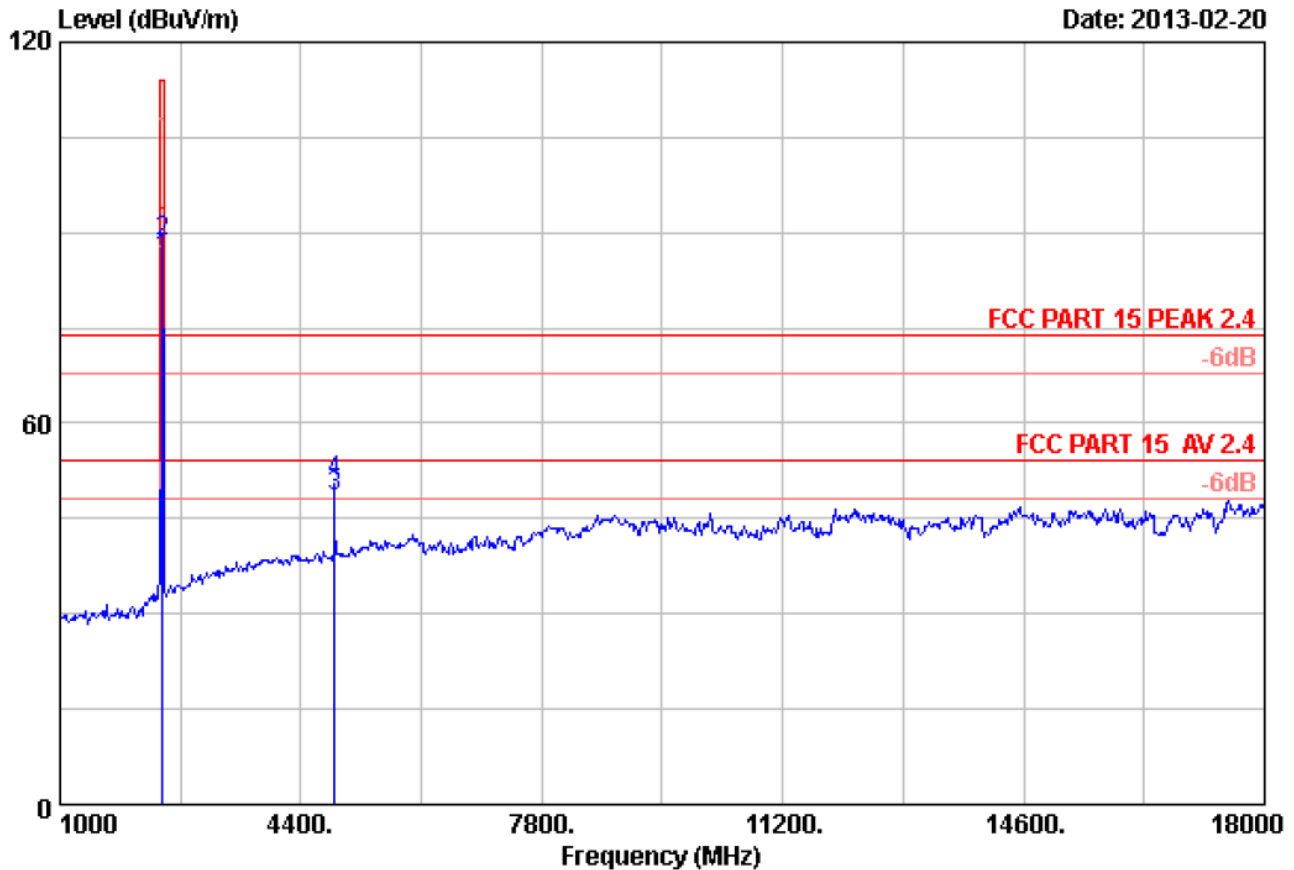
|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>loss<br>(dB) | Amp.<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|------------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 2440.294       | 27.02                    | 6.09                  | 35.92                  | 89.64             | 86.83                         | 94.00              | 7.17           | Average |
| 2 | 2440.294       | 27.02                    | 6.09                  | 35.92                  | 92.10             | 89.29                         | 114.00             | 24.71          | Peak    |
| 3 | 4880.588       | 32.64                    | 8.74                  | 35.69                  | 43.90             | 49.59                         | 54.00              | 4.41           | Average |
| 4 | 4880.588       | 32.64                    | 8.74                  | 35.69                  | 46.36             | 52.05                         | 74.00              | 21.95          | Peak    |

### Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

## Field strength of emissions and Restricted bands

EUT: MedSense Base M/N: M5N001  
Operating Condition: Tx, 2440.324MHz  
Ant. Polarity: Horizontal  
Comment: Above 1GHz



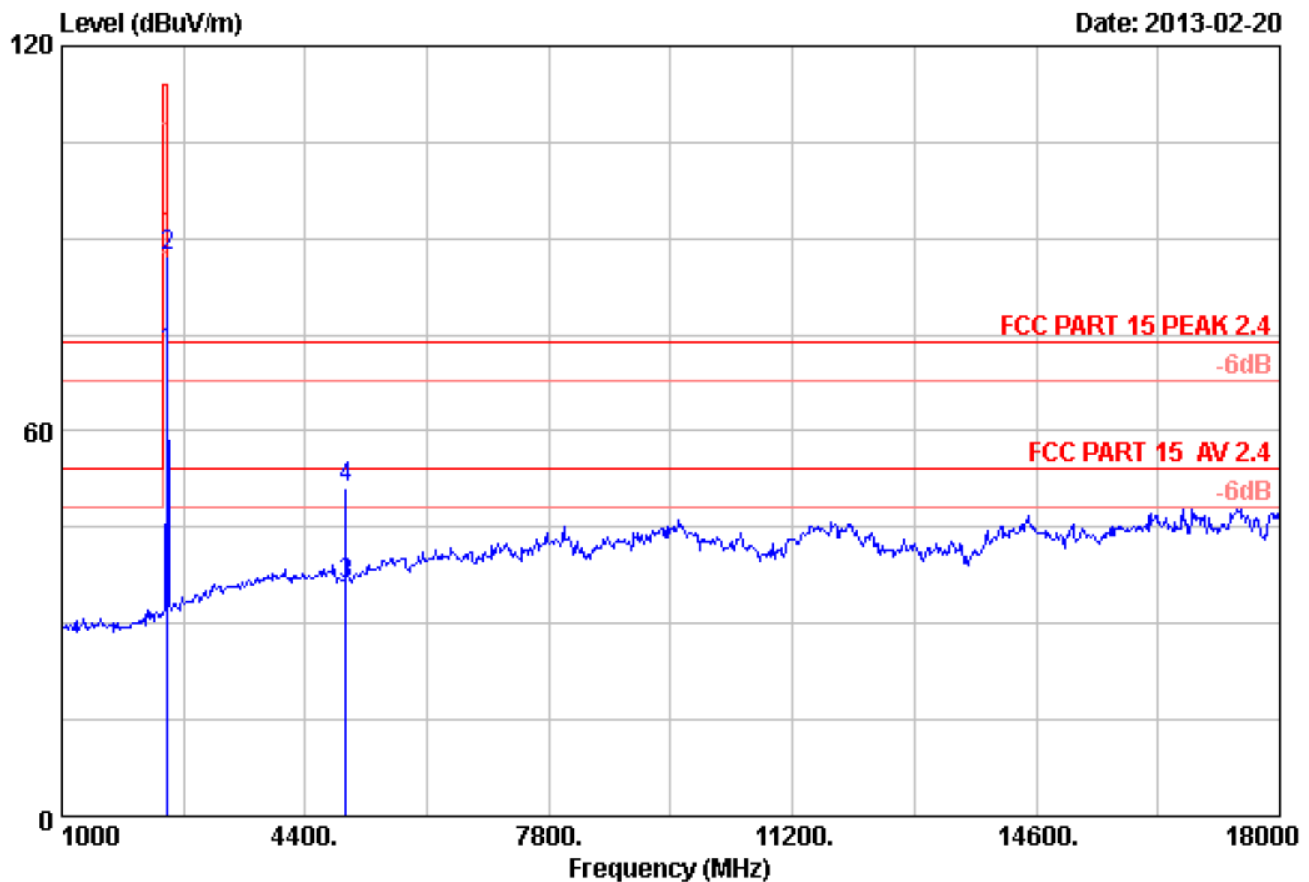
|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>loss<br>(dB) | Amp.<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|------------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 2440.294       | 27.02                    | 6.09                  | 35.92                  | 88.85             | 86.04                         | 94.00              | 7.96           | Average |
| 2 | 2440.294       | 27.02                    | 6.09                  | 35.92                  | 91.31             | 88.50                         | 114.00             | 25.50          | Peak    |
| 3 | 4880.588       | 32.64                    | 8.74                  | 35.69                  | 42.74             | 48.43                         | 54.00              | 5.57           | Average |
| 4 | 4880.588       | 32.64                    | 8.74                  | 35.69                  | 45.20             | 50.89                         | 74.00              | 23.11          | Peak    |

### Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

## Field strength of emissions and Restricted bands

EUT: MedSense Base M/N: M5N001  
Operating Condition: Tx, 2480.980MHz  
Ant. Polarity: Vertical  
Comment: Above 1GHz



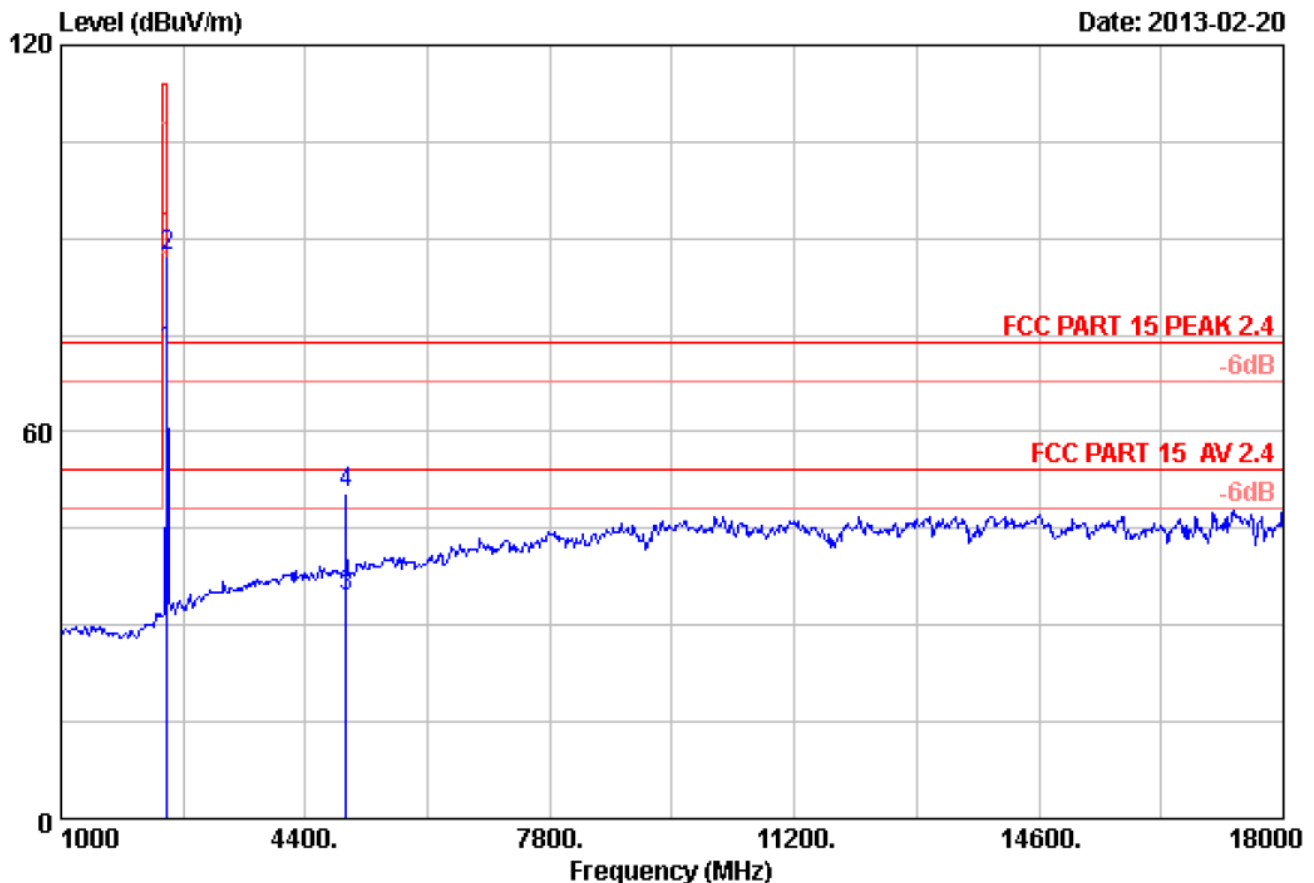
|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>loss<br>(dB) | Amp.<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|------------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 2480.920       | 27.28                    | 6.15                  | 35.92                  | 74.76             | 72.27                         | 94.00              | 21.73          | Average |
| 2 | 2480.920       | 27.28                    | 6.15                  | 35.92                  | 89.85             | 87.36                         | 114.00             | 26.64          | Peak    |
| 3 | 4961.000       | 32.81                    | 8.81                  | 35.66                  | 30.25             | 36.21                         | 54.00              | 17.79          | Average |
| 4 | 4961.000       | 32.81                    | 8.81                  | 35.66                  | 45.14             | 51.10                         | 74.00              | 22.90          | Peak    |

### Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

## Field strength of emissions and Restricted bands

EUT: MedSense Base M/N: M5N001  
Operating Condition: Tx, 2480.980MHz  
Ant. Polarity: Horizontal  
Comment: Above 1GHz



|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>loss<br>(dB) | Amp.<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|------------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 2480.920       | 27.28                    | 6.15                  | 35.92                  | 74.92             | 72.43                         | 94.00              | 21.57          | Average |
| 2 | 2480.920       | 27.28                    | 6.15                  | 35.92                  | 89.81             | 87.32                         | 114.00             | 26.68          | Peak    |
| 3 | 4961.000       | 32.81                    | 8.81                  | 35.66                  | 28.51             | 34.47                         | 54.00              | 19.53          | Average |
| 4 | 4961.000       | 32.81                    | 8.81                  | 35.66                  | 44.40             | 50.36                         | 74.00              | 23.64          | Peak    |

### Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

## 8.2 Out of Band Emissions

### Test Method

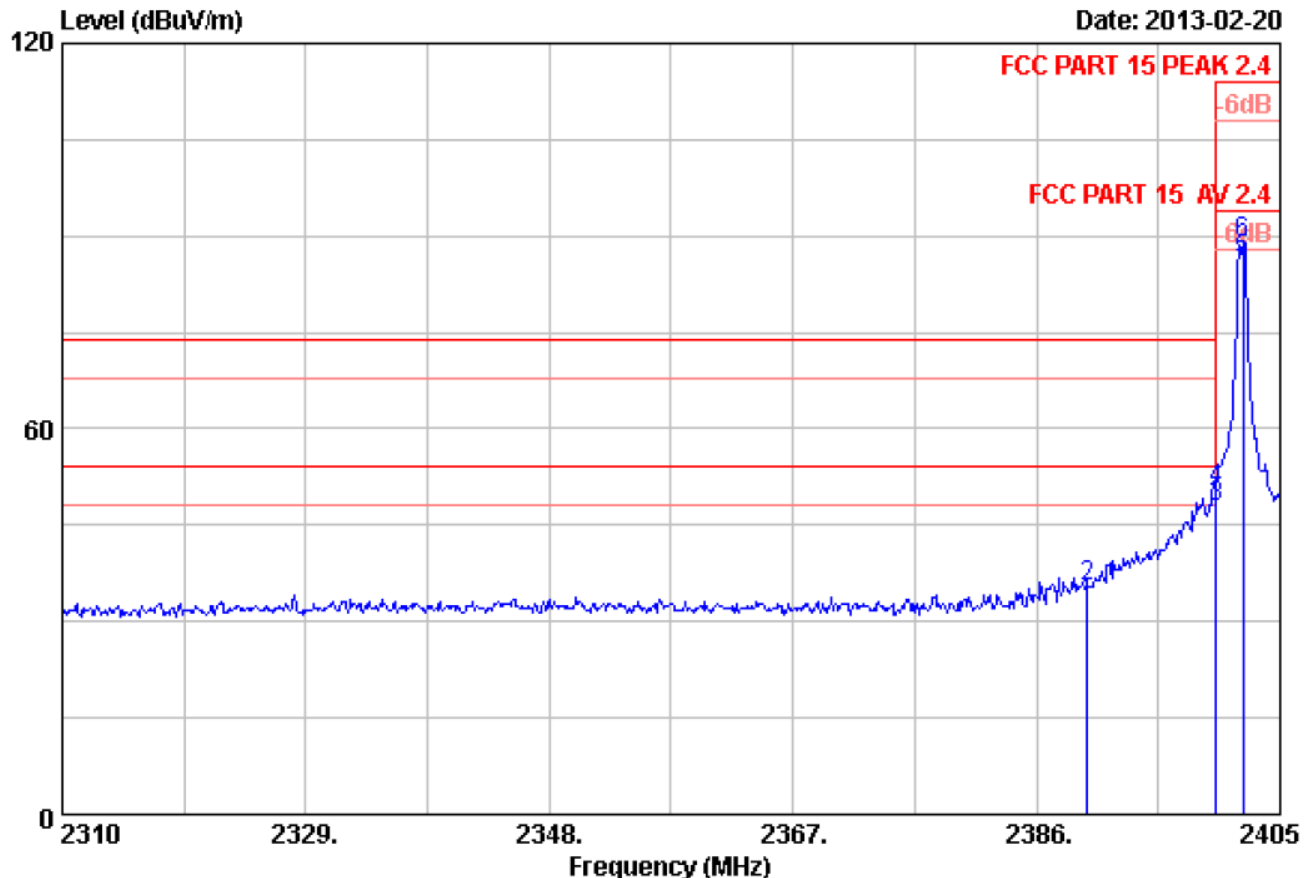
1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. The spectrum analyzer or receiver is set as:
  - (1) Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto
  - (2) Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

### Limits

According to §15.249(d) & RSS-210 A2.9(b) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209 and RSS-Gen, whichever is the lesser attenuation.

## Out of Band Emissions

EUT: MedSense Base M/N: M5N001  
Operating Condition: Tx, lower edge  
Ant. Polarity: Vertical



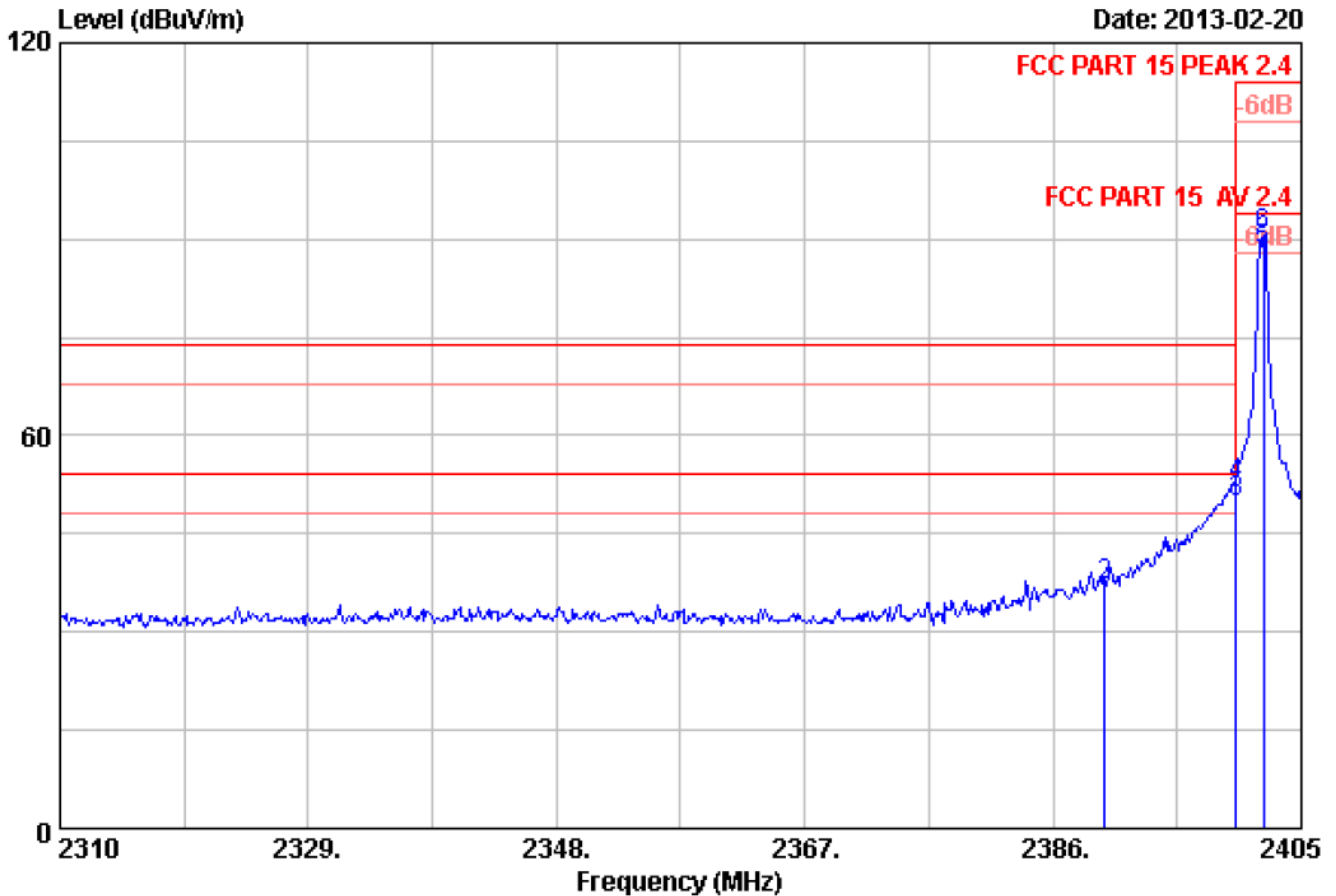
|       | Ant.   | Cable | Amp.   | Emission |          |          |        |         |
|-------|--------|-------|--------|----------|----------|----------|--------|---------|
| Freq. | Factor | loss  | Factor | Reading  | Level    | Limits   | Margin | Remark  |
| (MHz) | (dB/m) | (dB)  | (dB)   | (dBuV)   | (dBuV/m) | (dBuV/m) | (dB)   |         |
| 1     | 26.70  | 6.00  | 35.92  | 36.14    | 32.92    | 54.00    | 21.08  | Average |
| 2     | 26.70  | 6.00  | 35.92  | 38.59    | 35.37    | 74.00    | 38.63  | Peak    |
| 3     | 26.76  | 6.02  | 35.92  | 51.06    | 47.92    | 54.00    | 6.08   | Average |
| 4     | 26.76  | 6.02  | 35.92  | 53.51    | 50.37    | 74.00    | 23.63  | Peak    |
| 5     | 26.77  | 6.02  | 35.92  | 89.51    | 86.38    | 94.00    | 7.62   | Average |
| 6     | 26.77  | 6.02  | 35.92  | 91.96    | 88.83    | 114.00   | 25.17  | Peak    |

### Remarks:

- Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
- The emission levels that are 20dB below the official limit are not reported.

## Out of Band Emissions

EUT: MedSense Base M/N: M5N001  
Operating Condition: Tx, lower edge  
Ant. Polarity: Horizontal



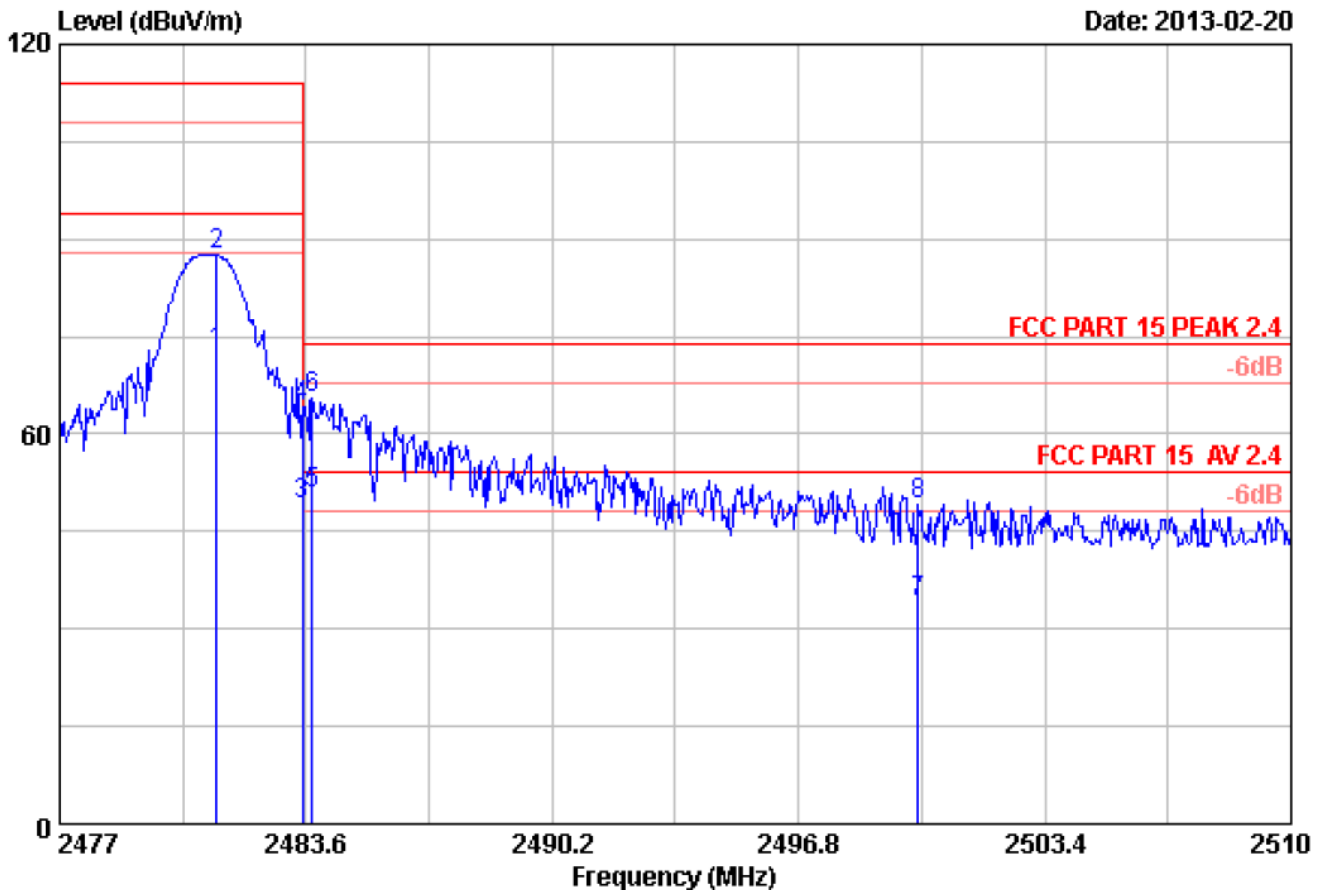
|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>loss<br>(dB) | Amp.<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|------------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 2390.000       | 26.70                    | 6.00                  | 35.92                  | 37.76             | 34.54                         | 54.00              | 19.46          | Average |
| 2 | 2390.000       | 26.70                    | 6.00                  | 35.92                  | 40.21             | 36.99                         | 74.00              | 37.01          | Peak    |
| 3 | 2400.000       | 26.76                    | 6.02                  | 35.92                  | 53.07             | 49.93                         | 54.00              | 4.07           | Average |
| 4 | 2400.000       | 26.76                    | 6.02                  | 35.92                  | 55.52             | 52.38                         | 74.00              | 21.62          | Peak    |
| 5 | 2402.150       | 26.77                    | 6.02                  | 35.92                  | 91.28             | 88.15                         | 94.00              | 5.85           | Average |
| 6 | 2402.150       | 26.77                    | 6.02                  | 35.92                  | 93.73             | 90.60                         | 114.00             | 23.40          | Peak    |

### Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

## Out of Band Emissions

EUT: MedSense Base M/N: M5N001  
Operating Condition: Tx, upper edge  
Ant. Polarity: Vertical



|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>loss<br>(dB) | Amp.<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|------------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 2481.191       | 27.28                    | 6.16                  | 35.92                  | 75.11             | 72.63                         | 94.00              | 21.37          | Average |
| 2 | 2481.191       | 27.28                    | 6.16                  | 35.92                  | 90.01             | 87.53                         | 114.00             | 26.47          | Peak    |
| 3 | 2483.501       | 27.29                    | 6.16                  | 35.92                  | 51.66             | 49.19                         | 54.00              | 4.81           | Average |
| 4 | 2483.501       | 27.29                    | 6.16                  | 35.92                  | 66.55             | 64.08                         | 74.00              | 9.92           | Peak    |
| 5 | 2483.765       | 27.30                    | 6.16                  | 35.92                  | 53.11             | 50.65                         | 54.00              | 3.35           | Average |
| 6 | 2483.765       | 27.30                    | 6.16                  | 35.92                  | 68.01             | 65.55                         | 74.00              | 8.45           | Peak    |
| 7 | 2500.000       | 27.40                    | 6.19                  | 35.93                  | 36.59             | 34.25                         | 54.00              | 19.75          | Average |
| 8 | 2500.000       | 27.40                    | 6.19                  | 35.93                  | 51.48             | 49.14                         | 74.00              | 24.86          | Peak    |

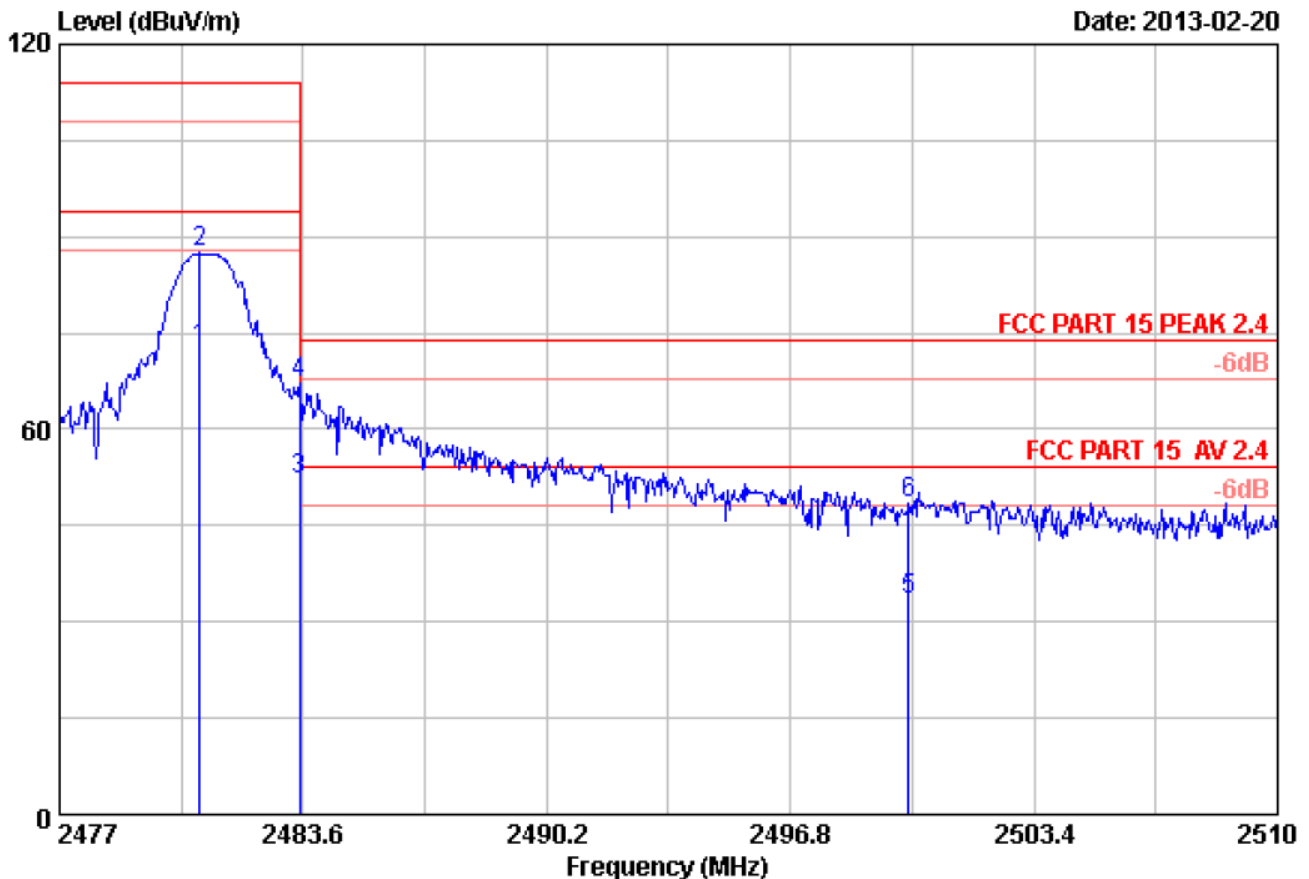
### Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



## Out of Band Emissions

EUT: MedSense Base M/N: M5N001  
Operating Condition: Tx, upper edge  
Ant. Polarity: Horizontal



|   | Freq.<br>(MHz) | Ant.<br>Factor<br>(dB/m) | Cable<br>loss<br>(dB) | Amp.<br>Factor<br>(dB) | Reading<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limits<br>(dBuV/m) | Margin<br>(dB) | Remark  |
|---|----------------|--------------------------|-----------------------|------------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 2480.795       | 27.28                    | 6.15                  | 35.92                  | 75.02             | 72.53                         | 94.00              | 21.47          | Average |
| 2 | 2480.795       | 27.28                    | 6.15                  | 35.92                  | 89.91             | 87.42                         | 114.00             | 26.58          | Peak    |
| 3 | 2483.501       | 27.29                    | 6.16                  | 35.92                  | 54.68             | 52.21                         | 54.00              | 1.79           | Average |
| 4 | 2483.501       | 27.29                    | 6.16                  | 35.92                  | 69.57             | 67.10                         | 74.00              | 6.90           | Peak    |
| 5 | 2500.000       | 27.40                    | 6.19                  | 35.93                  | 35.83             | 33.49                         | 54.00              | 20.51          | Average |
| 6 | 2500.000       | 27.40                    | 6.19                  | 35.93                  | 50.72             | 48.38                         | 74.00              | 25.62          | Peak    |

### Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

### 8.3 20dB Bandwidth & 99% Occupied Bandwidth

#### Test Method

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.

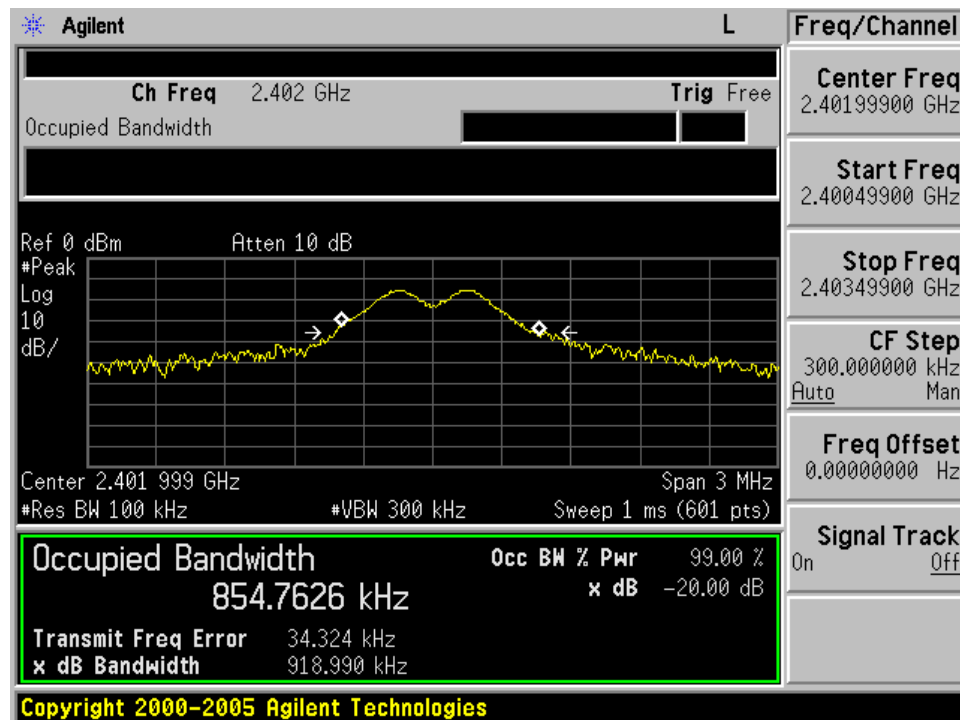
#### Limits:

According to 15.215 (c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

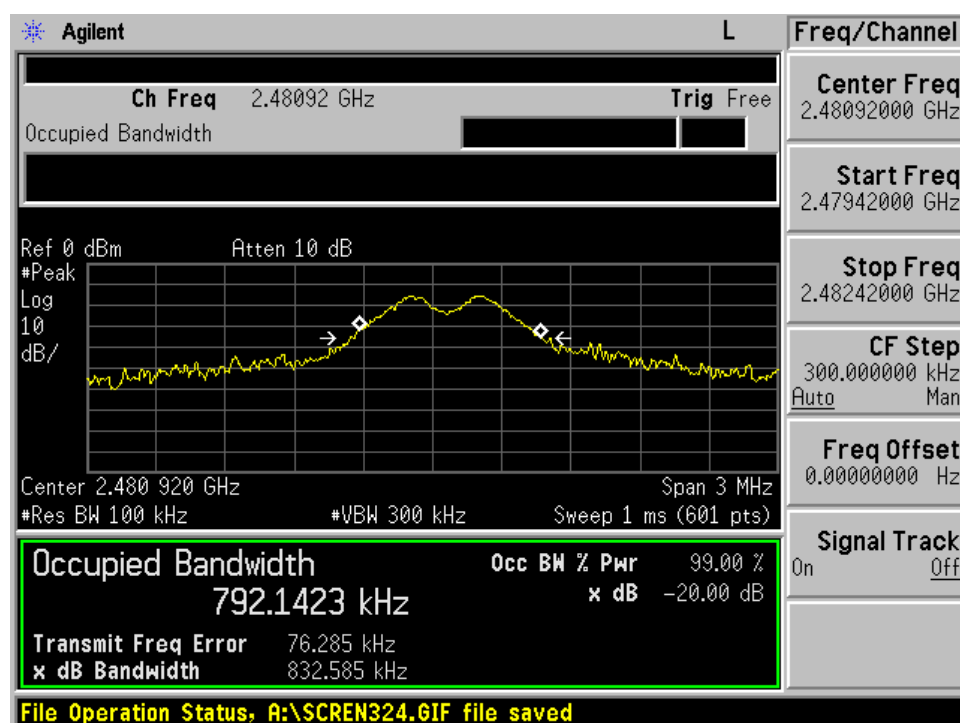
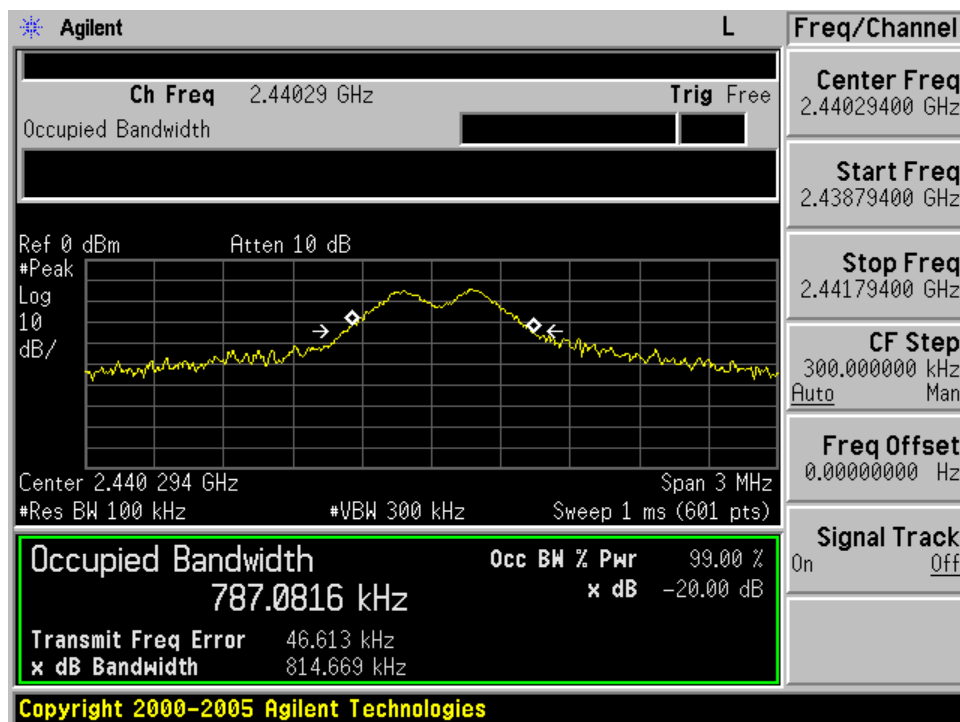
According to RSS-Gen 4.6.1 when an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

## 20dB Bandwidth & 99% Occupied Bandwidth

| Frequency<br>MHz | 20dB Bandwidth<br>kHz | 99% Bandwidth<br>kHz | Limit<br>kHz | Result |
|------------------|-----------------------|----------------------|--------------|--------|
| 2402.000         | 918.99                | 854.76               | --           | Pass   |
| 2440.324         | 814.67                | 787.08               | --           | Pass   |
| 2480.980         | 832.59                | 792.14               | --           | Pass   |



## 20dB Bandwidth & 99% Occupied Bandwidth



## 9 Test equipment list

### List of Test Instruments

|                  | DESCRIPTION            | MANUFACTURER    | MODEL NO.       | SERIAL NO.    | CAL. DUE DATE |                                     |
|------------------|------------------------|-----------------|-----------------|---------------|---------------|-------------------------------------|
| CE               | Test Receiver          | Rohde & Schwarz | ESHS10          | 838693/001    | Nov.04, 14    | <input checked="" type="checkbox"/> |
|                  | L.I.S.N.#1             | Rohde & Schwarz | ESH2-Z5         | 834066/011    | Nov.04, 14    | <input checked="" type="checkbox"/> |
|                  | L.I.S.N.#3             | Kyoritsu        | KNW-242C        | 8-1920-1      | May.07, 14    | <input type="checkbox"/>            |
|                  | RF Cable               | 3D-2W           | Fujikura        | LISN Cable 1# | May.07, 14    | <input checked="" type="checkbox"/> |
|                  | Coaxial Switch         | MP59B           | Anritsu         | M55367        | May.07, 14    | <input checked="" type="checkbox"/> |
|                  | Passive Probe          | ESH2-Z3         | Rohde & Schwarz | 299.7810.52   | May.07, 14    | <input type="checkbox"/>            |
|                  | Pulse Limiter          | ESH3-Z2         | Rohde & Schwarz | 100341        | May.07, 14    | <input type="checkbox"/>            |
| C                | Spectrum               | Agilent         | E4446A          | US44300459    | May.08, 14    | <input type="checkbox"/>            |
| RE<br>< 1<br>GHz | Test Receiver<br><1GHz | Rohde & Schwarz | ESVS10          | 834468/011    | May.07, 14    | <input checked="" type="checkbox"/> |
|                  | Amplifier < 1 GHz      | HP              | 8447D           | 2648A04738    | May.07, 14    | <input checked="" type="checkbox"/> |
|                  | HF Cable               | Hubersuhne      | Sucoflex104     | Room 2        | May.08, 14    | <input checked="" type="checkbox"/> |
|                  | Bilog Antenna          | Schaffner       | CBL6111C        | 2598          | Oct.25, 14    | <input checked="" type="checkbox"/> |
| RE<br>> 1<br>GHz | Spectrum > 1GHz        | Agilent         | E4446A          | US44300459    | May.08, 14    | <input checked="" type="checkbox"/> |
|                  | Horn Antenna           | EMCO            | 3115            | 9607-4877     | Jun. 24, 14   | <input checked="" type="checkbox"/> |
|                  | Amp > 1 Ghz            | HP              | 8449B           | 3008A08495    | May.08, 14    | <input checked="" type="checkbox"/> |
|                  | HF Cable               | Hubersuhne      | Sucoflex104     | Room1         | May.08, 14    | <input checked="" type="checkbox"/> |

#### C - Conducted RF tests

- Conducted peak output power
- 6dB bandwidth
- 20dB bandwidth and 99% Occupied Bandwidth
- Carrier frequency separation
- Number of hopping frequencies
- Dwell Time
- Power spectral density\*
- Spurious RF conducted emissions
- Band edge

## 10 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

**System Measurement Uncertainty**

| Items              |                                  | Extended Uncertainty                          |
|--------------------|----------------------------------|---|
| RE                 | Field strength (dB $\mu$ V/m)    | U=4.2dB (30MHz-1GHz)<br>U=3.57dB (1GHz-25GHz) |
| CE                 | Disturbance Voltage (dB $\mu$ V) | U=2.4dB                                       |
| Bandwidth test     | --                               | $1 \cdot 10^{-9}$                             |
| Conducted emission | --                               | 2.4dB   |