

# FCC CERTIFICATION TEST REPORT

## FOR

|                             |   |  |
|-----------------------------|---|--|
| <b>Applicant</b>            | : | Dongguan Robstep Robot Co., Ltd.   |
| <b>Address</b>              | : | #6 South Industrial Road, High-tech industrial park,<br>Songshan Lake, Dongguan, China |
| <b>Equipment under Test</b> | : | WIFI module  |
| <b>Model No</b>             | : | Robstepwifi  |
| <b>FCC ID</b>               | : | ZO4-ROBSTEPWIFI  |
| <b>Trade Mark</b>           | : | Robstep  |
| <b>Manufacturer</b>         | : | Dongguan Robstep Robot Co., Ltd.   |
| <b>Address</b>              | : | #6 South Industrial Road, High-tech industrial park,<br>Songshan Lake, Dongguan, China |

**Issued By: Dongguan Dongdian Testing Service Co., Ltd.**

**Add:** No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City,  
Guangdong Province, China, 523808

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# REPORT

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## TEST REPORT DECLARE

|                             |   |   |
|-----------------------------|---|---|
| <b>Applicant</b>            | : | Dongguan Robstep Robot Co., Ltd.  |
| <b>Address</b>              | : | #6 South Industrial Road, High-tech industrial park, Songshan Lake, Dongguan, China |
| <b>Equipment under Test</b> | : | WIFI module   |
| <b>Model No</b>             | : | Robstepwifi   |
| <b>FCC ID</b>               | : | ZO4-ROBSTEPWIFI   |
| <b>Trade Mark</b>           | : | Robstep   |
| <b>Manufacturer</b>         | : | Dongguan Robstep Robot Co., Ltd.  |
| <b>Address</b>              | : | #6 South Industrial Road, High-tech industrial park, Songshan Lake, Dongguan, China |

**Test Standard Used:** FCC Rules and Regulations Part 15 Subpart C: 2014

**Test procedure used:** ANSI C63.10:2013, ANSI C63.4:2014, KDB558074 D01 DTS Meas Guidance V03r02.

**We Declare:**

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these tests.

**After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.**

|                      |                           |                        |               |
|----------------------|---------------------------|------------------------|---------------|
| <b>Report No:</b>    | DDT-15Q0306-2R10          |                        |               |
| <b>Date of Test:</b> | Apr. 2, 2015~Apr. 8, 2015 | <b>Date of Report:</b> | Apr. 30, 2015 |

*Prepared By:*



*Leo Liu/Engineer*



*Kevin Feng/EMC Manager*

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

## 1. Summary of test results

| The EUT have been tested according to the applicable standards as referenced below. |   |         |
|---|---|---------|
| Description of Test Item  | Standard  | Results |
| 6dB Bandwidth   | FCC Part 15: 15.247<br>KDB558074  | PASS    |
| Peak Output Power   | FCC Part 15: 15.247<br>KDB558074  | PASS    |
| Power Spectral Density  | FCC Part 15: 15.247<br>KDB558074  | PASS    |
| Emissions in non-restricted frequency bands   | FCC Part 15: 15.247<br>KDB558074  | PASS    |
| Emissions in restricted frequency bands   | FCC Part 15: 15.209<br>FCC Part 15: 15.247<br>ANSI C63.10: 2013<br>ANSI C63.4:2014<br>KDB558074 | PASS    |
| Band Edge Compliance  | FCC Part 15: 15.209<br>FCC Part 15: 15.247<br>ANSI C63.10: 2013<br>ANSI C63.4:2014<br>KDB558074 | PASS    |
| Power Line Conducted Emission   | FCC Part 15: 15.207<br>ANSI C63.10: 2013<br>ANSI C63.4:2014                                     | PASS    |
| Antenna requirement   | FCC Part 15: 15.203   | PASS    |
| Note: N/A is an abbreviation for Not Applicable.                                    |   |         |

## 2. General test information

### 2.1. Description of EUT

|                          |   |   |
|--------------------------|---|---|
| EUT* Name                | : | WIFI module   |
| Model Number             | : | Robstepwifi   |
| EUT function description | : | Please reference user manual of this device   |
| Power supply             | : | DC 3.3V from DC source  |
| Radio Technology         | : | IEEE802.11b/g   |
| FCC Operation frequency  | : | IEEE 802.11b: 2412MHz—2462MHz<br>IEEE 802.11g: 2412MHz—2462MHz                      |
| Modulation               | : | IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK)<br>IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) |
| Antenna Type             | : | Integrated PCB antenna, maximum PK gain:0dBi  |
| Date of Receipt          | : | 2015/4/2  |
| Sample Type              | : | Series production   |

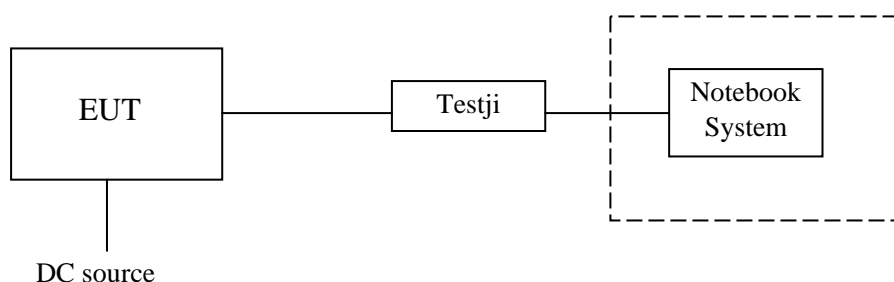
Note1: EUT is the ab.of equipment under test.

| Channle information |           |    |           |    |           |    |           |
|---------------------|-----------|----|-----------|----|-----------|----|-----------|
| CH                  | Frequency | CH | Frequency | CH | Frequency | CH | Frequency |
| 1                   | 2412      | 5  | 2432      | 9  | 2452      | /  | /         |
| 2                   | 2417      | 6  | 2437      | 10 | 2457      | /  | /         |
| 3                   | 2422      | 7  | 2442      | 11 | 2462      | /  | /         |
| 4                   | 2427      | 8  | 2447      | /  | /         | /  | /         |

### 2.2. Assistant equipment used for test

| Description of Assistant equipment | Manufacturer | Model number or Type | EMC Compliance | SN                |
|------------------------------------|--------------|----------------------|----------------|-------------------|
| Notebook                           | DELL         | Latitude D610        | FCC DOC        | 00045-534-136-300 |
| Mouse                              | HP           | M-SBF96              | FCC DOC        | 417441-001        |
| HDD                                | Click-free   | HD425                | FCC DOC        | /                 |

### 2.3. Block diagram of EUT configuration for test



The test software “NCAuth.exe” provided by manufacturer to control EUT work in Continuous TX mode (>98% duty cycle), and select test channel, wireless mode and data rate.

| Tested mode, channel, and data rate information   |                                |             |                    |
|---|--------------------------------|-------------|--------------------|
| Mode  | data rate (Mbps)<br>(see Note) | Channel     | Frequency<br>(MHz) |
| IEEE 802.11b  | 11                             | Low :CH1    | 2412               |
|   | 11                             | Middle: CH6 | 2437               |
|   | 11                             | High: CH11  | 2462               |
| IEEE 802.11g  | 6                              | Low :CH1    | 2412               |
|   | 6                              | Middle: CH6 | 2437               |
|   | 6                              | High: CH11  | 2462               |
| Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test. |                                |             |                    |

## 2.4. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

|                    |           |
|--------------------|-----------|
| Temperature range: | 21-25℃    |
| Humidity range:    | 40-75%    |
| Pressure range:    | 86-106kPa |

## 2.5. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd

Add: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808 Tel: +86-0769-22891499 <http://www.dgddt.com>

FCC Registration Number: 270092 Industry Canada site registration number: 10288A-1

**2.6. Measurement uncertainty**

| Test Item  | Uncertainty               |
|--|---------------------------|
| Occupied Channel Bandwidth                                 | $\pm 1\%$                 |
| Uncertainty for radio frequency                            | $1 \times 10^{-9}$        |
| RF Output power, conducted                                 | $\pm 0.6\text{dB}$        |
| Power Spectral Density, Conducted                          | $\pm 1.2\text{dB}$        |
| Unwanted Emissions, Conducted                              | $\pm 0.6\text{dB}$        |
| Temperature  | $\pm 0.2^{\circ}\text{C}$ |
| Humidity   | $\pm 1\%$                 |
| DC and Low frequency voltage                               | $\pm 0.5\%$               |
| Time   | $\pm 1\%$                 |
| Duty Cycle   | $\pm 1\%$                 |
| Uncertainty for Radiation Emission test<br>(30MHz-1GHz)    | 3.14 dB (Polarize: V)     |
|  | 3.16 dB (Polarize: H)     |
| Uncertainty for Radiation Emission test<br>(1GHz to 25GHz) | 2.08dB(Polarize: V)       |
|  | 2.56dB (Polarize: H)      |
| Uncertainty for Conduction emission test(150KHz-30MHz)     | 2.44dB                    |
| Uncertainty for Radiation Emission test (9KHz-150KHz)      | 3.89dB                    |
| Uncertainty for Radiation Emission test (150KHz-30MHz)     | 3.21dB                    |

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

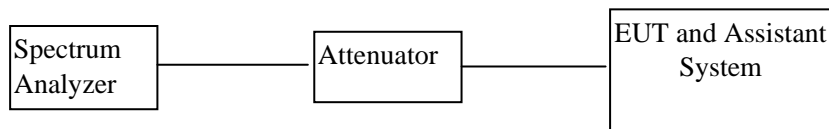


### 3. 6dB Bandwidth

#### 3.1. Test equipment

| Item | Equipment         | Manufacturer  | Model No.   | Serial No.   | Last Cal.  | Cal. Interval |
|------|-------------------|---------------|-------------|--------------|------------|---------------|
| 1    | Spectrum analyzer | R&S           | FSU         | 1166.1660.26 | 2014/10/25 | 1 Year        |
| 2    | Attenuator        | Mini-Circuits | BW-S10W2    | 101109       | 2014/10/25 | 1 Year        |
| 3    | RF Cable          | Micable       | C10-01-01-1 | 100309       | 2014/10/25 | 1 Year        |

#### 3.2. Block diagram of test setup



#### 3.3. Limits

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500 KHz

#### 3.4. Test Procedure

- (1) Configure EUT and assistant system according clause 2.3 and 3.2
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable.
- (3) Configure EUT work in test mode as stated in clause 2.3.
- (4) Set the spectrum analyzer as follows:
 

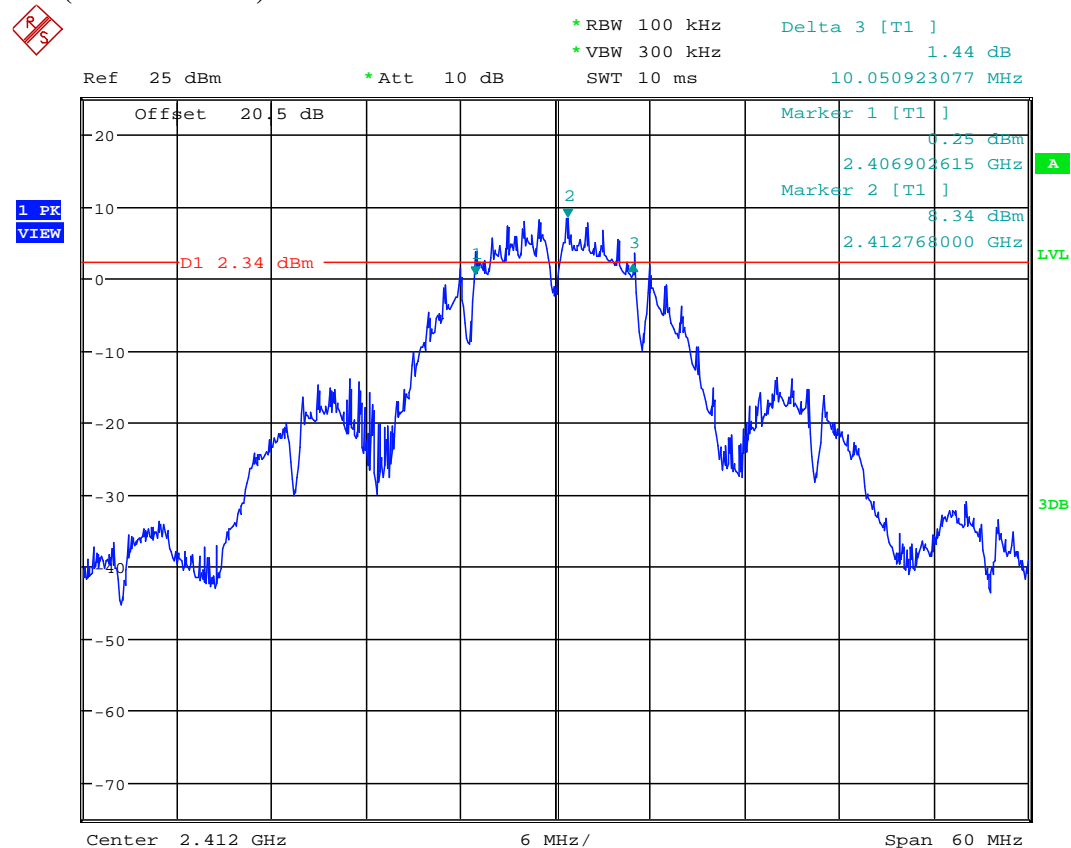
|                |          |
|----------------|----------|
| RBW:           | 100KHz   |
| VBW:           | 300KHz   |
| Detector Mode: | Peak     |
| Sweep time:    | auto     |
| Trace mode     | Max hold |
- (5) Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

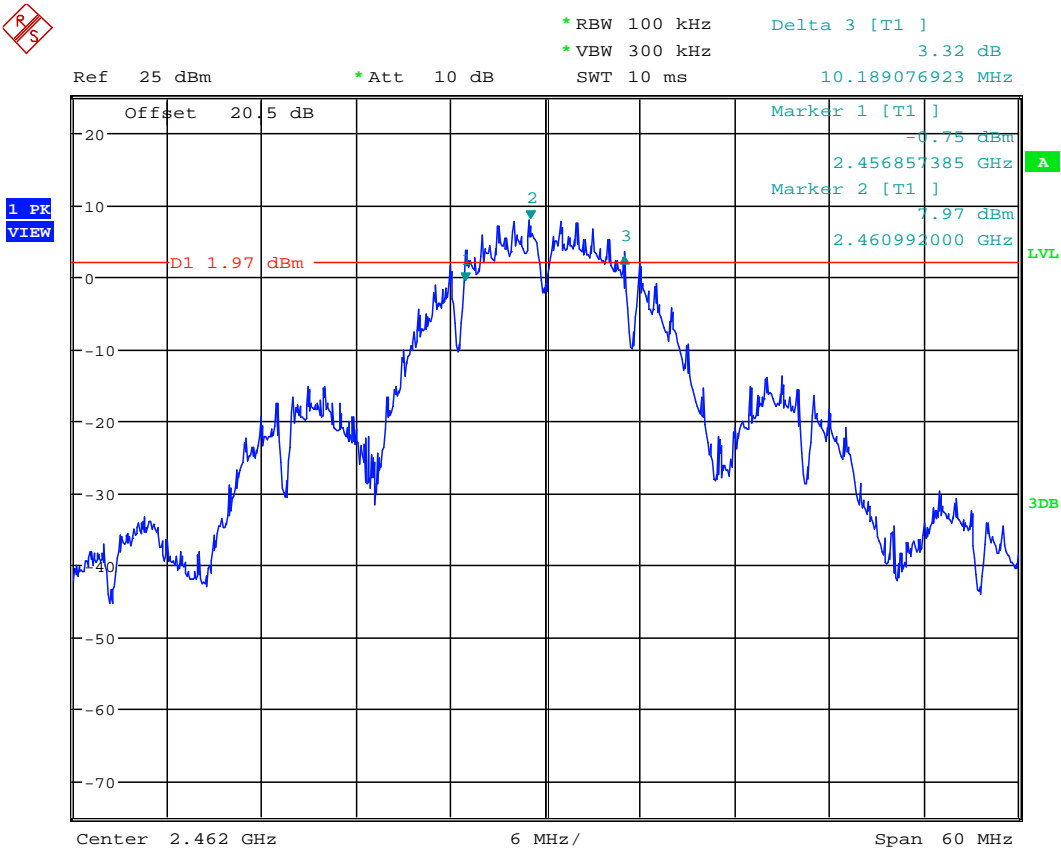
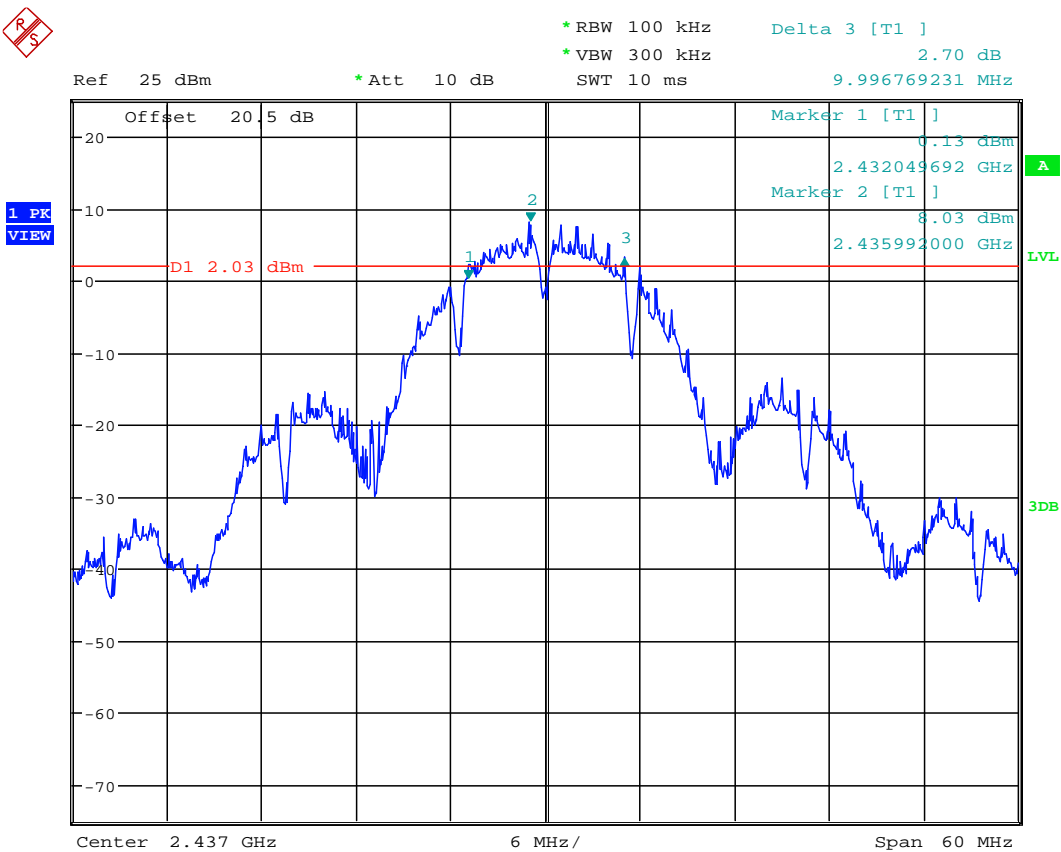
### 3.5. Test Result

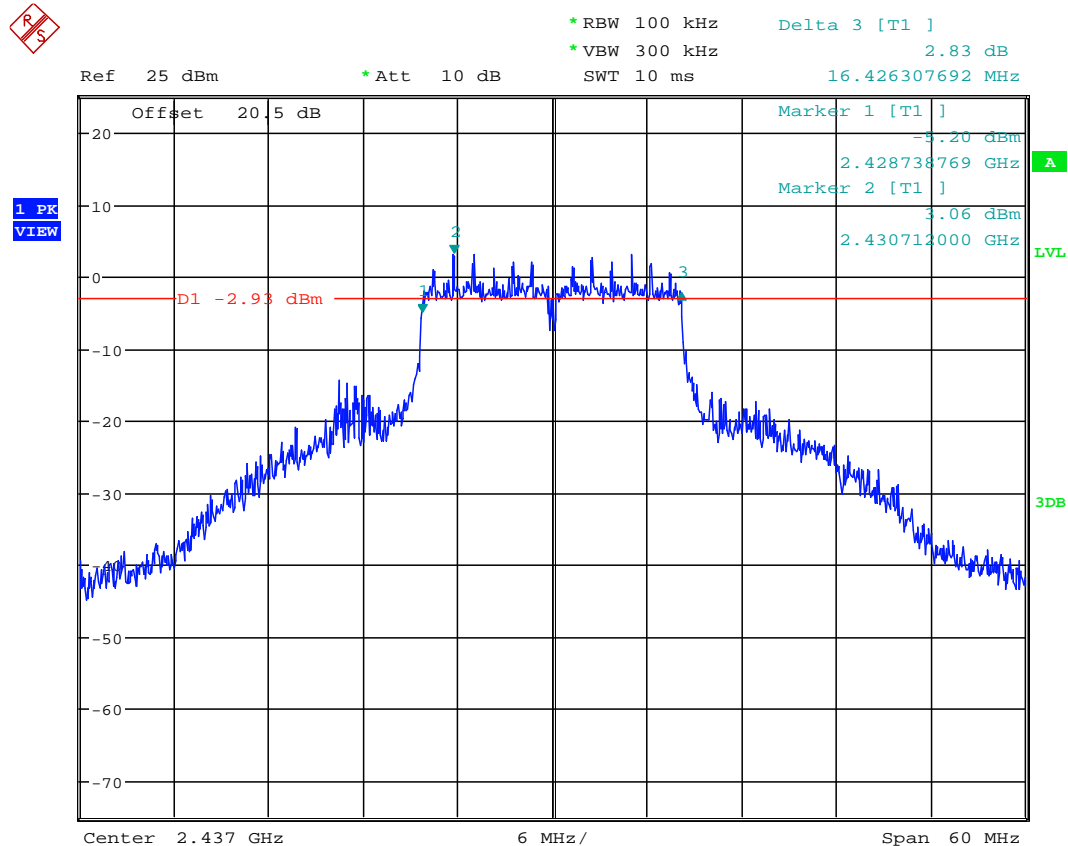
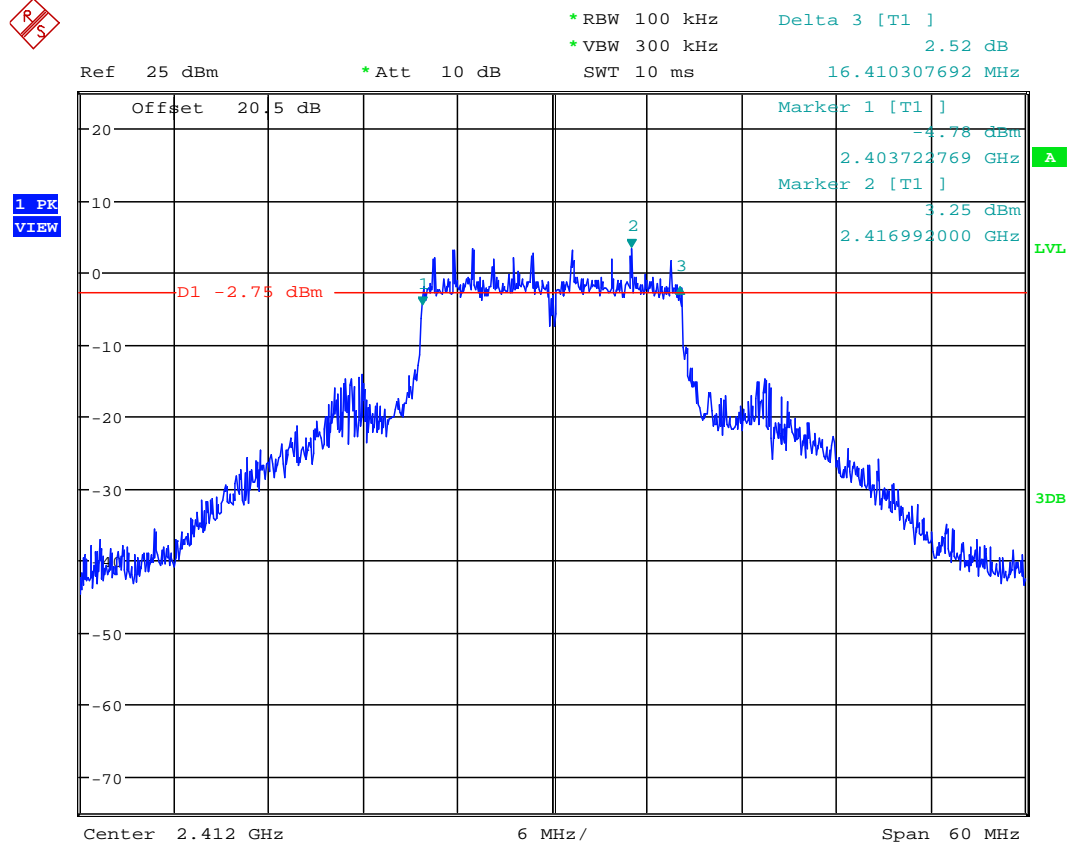
| Mode                 | CH or Frequency | 6dB bandwidth Result (MHz) | Mode                    | CH or Frequency | 6dB bandwidth Result (MHz) |
|----------------------|-----------------|----------------------------|-------------------------|-----------------|----------------------------|
| 11b                  | CH1             | 10.05                      | 11g                     | CH1             | 16.41                      |
|                      | CH6             | 10.00                      |                         | CH6             | 16.43                      |
|                      | CH11            | 10.19                      |                         | CH11            | 16.38                      |
| Limit: >500KHz       |                 |                            | Conclusion: PASS        |                 |                            |
| Test Date : 2015/4/7 |                 |                            | Test Engineer : Leo Liu |                 |                            |

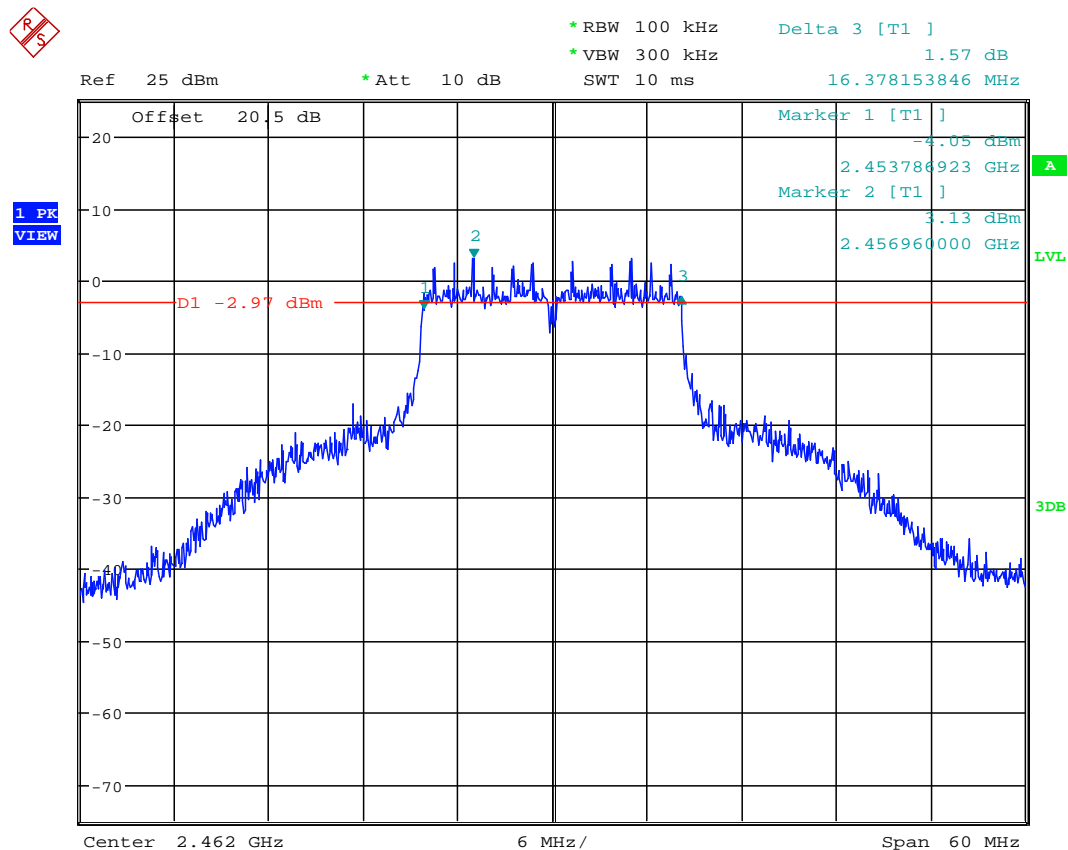
### 3.6. Original test data

11b (6dB bandwidth):





**11g (6dB bandwidth):**

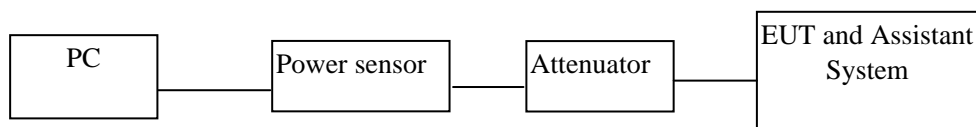


## 4. Maximum Peak Output Power

### 4.1. Test equipment

| Item | Equipment    | Manufacturer             | Model No.   | Serial No. | Last Cal.  | Cal. Interval |
|------|--------------|--------------------------|-------------|------------|------------|---------------|
| 1    | Power sensor | Agilent Technologies Inc | U2021XA     | 1457313    | 2014/10/25 | 1 Year        |
| 2    | Attenuator   | Mini-Circuits            | BW-S10W2    | 101109     | 2014/10/25 | 1 Year        |
| 3    | RF Cable     | Micable                  | C10-01-01-1 | 100309     | 2014/10/25 | 1 Year        |

### 4.2. Block diagram of test setup



### 4.3. Limits

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 4.4. Test Procedure

- (1) Configure EUT and assistant system according clause 2.3 and 4.2
- (2) Connect each EUT's antenna output to power sensor by RF cable and attenuator
- (3) Configure EUT work in test mode as stated in clause 2.3.
- (4) Measure out the Average and PK output power of each antenna port
- (5) Add each antenna port's results to get the total output power of EUT.

#### 4.5. Test Result

| Mode: 11b           |         |                         |
|---------------------|---------|-------------------------|
| CH                  | Type    | Result (dBm)            |
| CH1                 | PK      | 18.23                   |
|                     | Average | 15.23                   |
| CH6                 | PK      | 18.45                   |
|                     | Average | 15.24                   |
| CH11                | PK      | 18.53                   |
|                     | Average | 15.46                   |
| Mode: 11g           |         |                         |
| CH                  | Type    | Result (dBm)            |
| CH1                 | PK      | 14.39                   |
|                     | Average | 10.98                   |
| CH6                 | PK      | 14.32                   |
|                     | Average | 10.32                   |
| CH11                | PK      | 14.27                   |
|                     | Average | 10.29                   |
| Limit: 30dBm        |         | Conclusion: PASS        |
| Test Date :2015/4/7 |         | Test Engineer : Leo Liu |

## 5. Power Spectral Density

### 5.1. Test equipment

Same with 3.1

### 5.2. Block diagram of test setup

Same with 3.2

### 5.3. Limits

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

### 5.4. Test Procedure

- (1) Configure EUT and assistant system according clause 2.3 and 5.2
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable.
- (3) Configure EUT work in test mode as stated in clause 2.3.
- (4) Set the spectrum analyzer as follows:

|                  |  |
|------------------|--|
| Center frequency | DTS Channel center frequency                       |
| RBW:             | $3\text{ kHz} \leq \text{RBW} \leq 100\text{ kHz}$ |
| VBW:             | $\geq 3\text{RBW}$                                 |
| Span             | 1.5times the DTS bandwidth                         |
| Detector Mode:   | Peak   |
| Sweep time:      | auto   |
| Trace mode       | Max hold   |

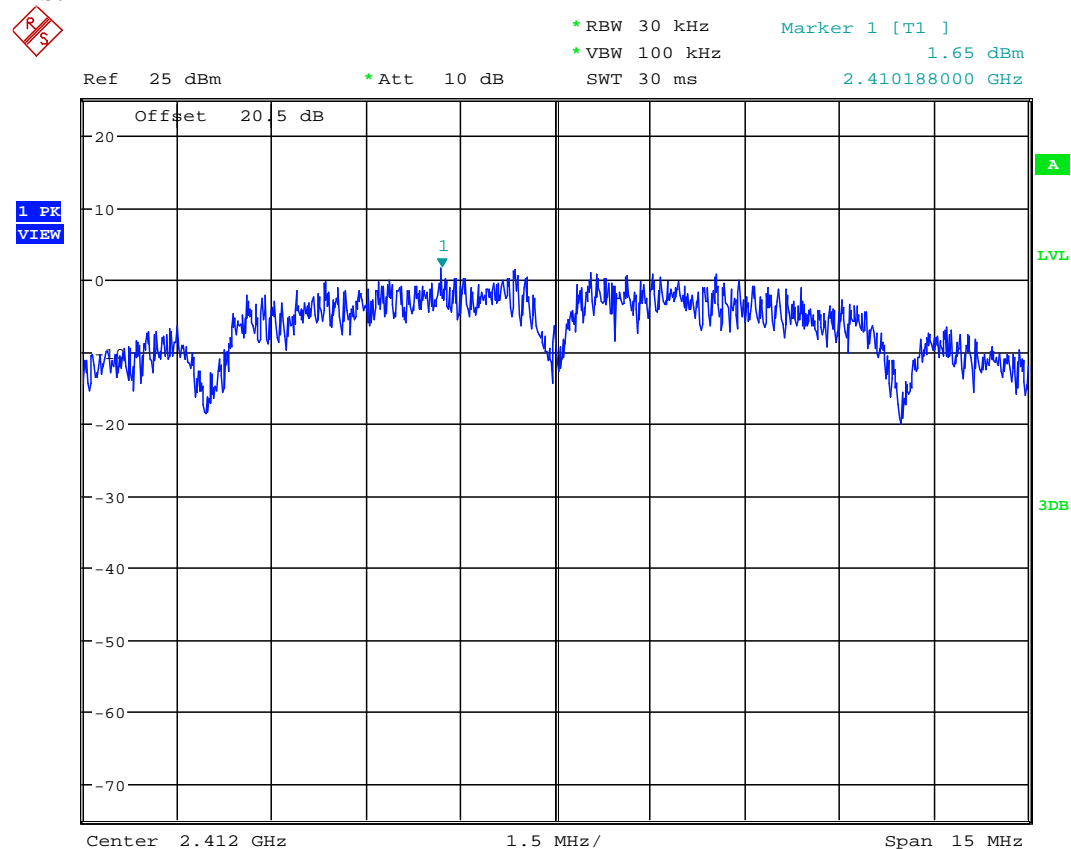
- (5) Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.
- (6) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

## 5.5. Test Result

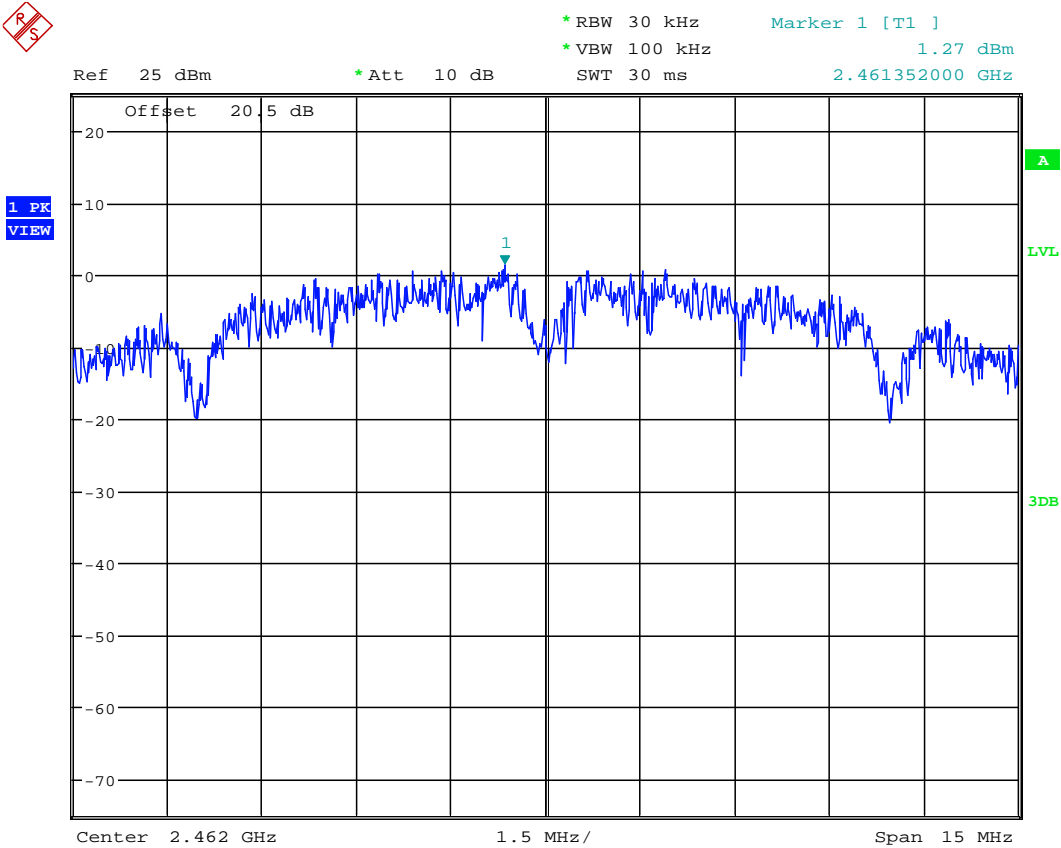
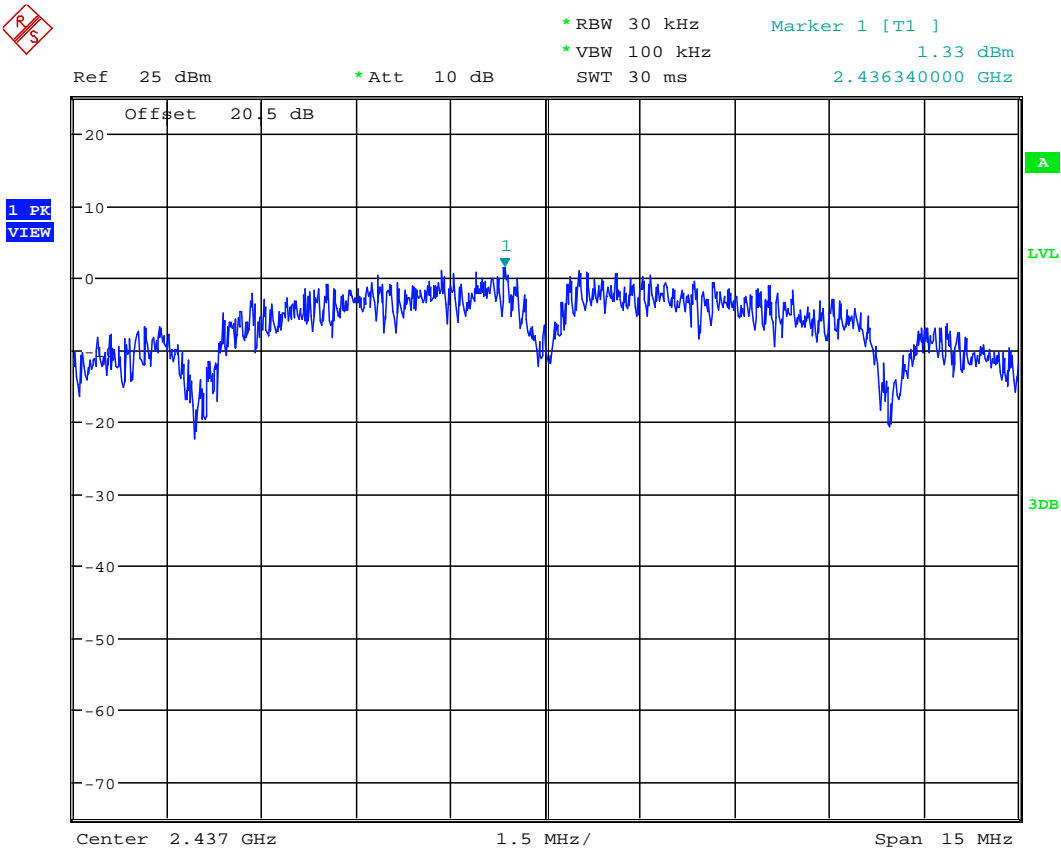
| Mode: 11b            |                       | Mode: 11g               |                       |
|----------------------|-----------------------|-------------------------|-----------------------|
| CH                   | Result<br>(dBm/30KHz) | CH                      | Result<br>(dBm/30KHz) |
| CH1                  | 1.65                  | CH1                     | -2.01                 |
| CH6                  | 1.33                  | CH6                     | -1.94                 |
| CH11                 | 1.27                  | CH11                    | -2.32                 |
| Limit: 8dBm/3KHz     |                       | Conclusion: PASS        |                       |
| Test Date : 2015/4/7 |                       | Test Engineer : Leo Liu |                       |

## 5.6. Original test data

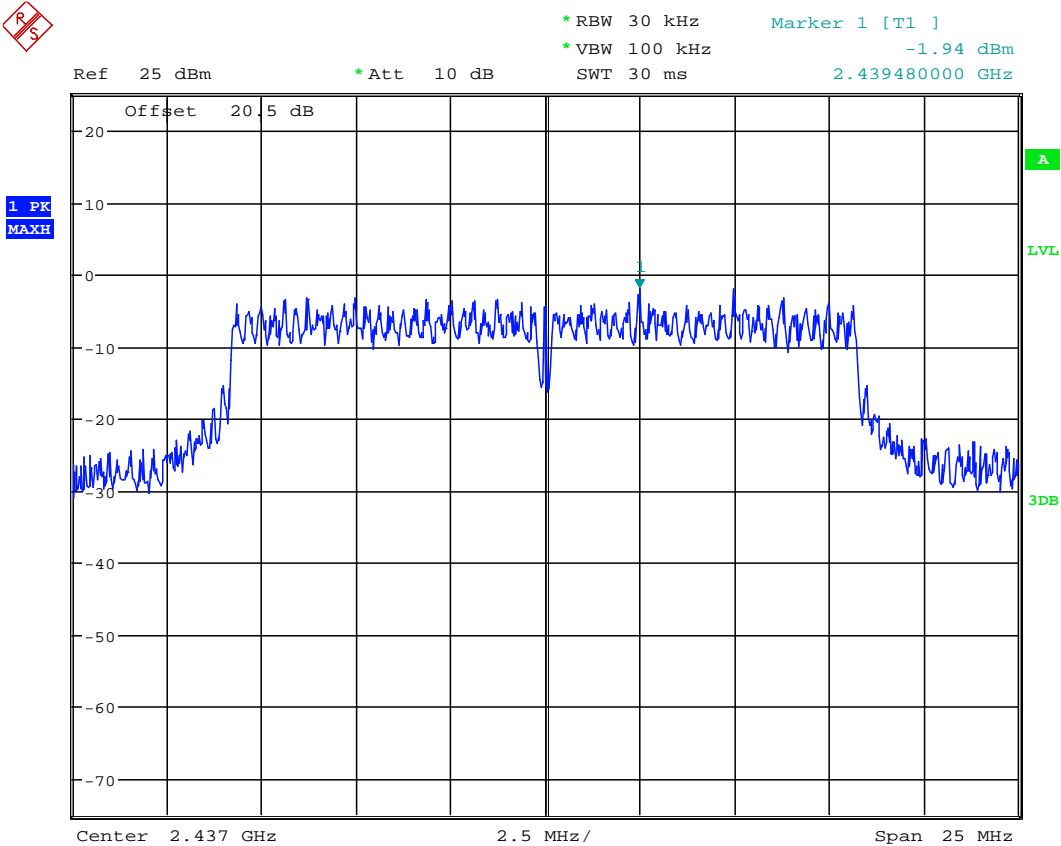
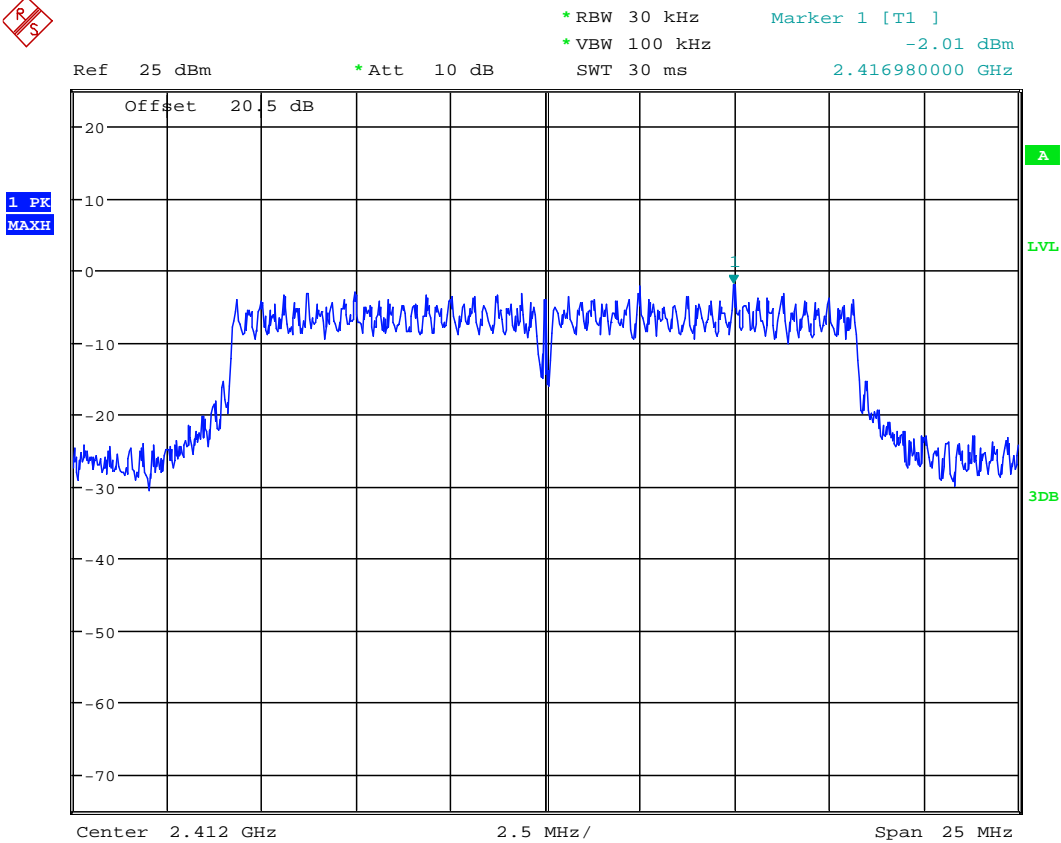
11b:

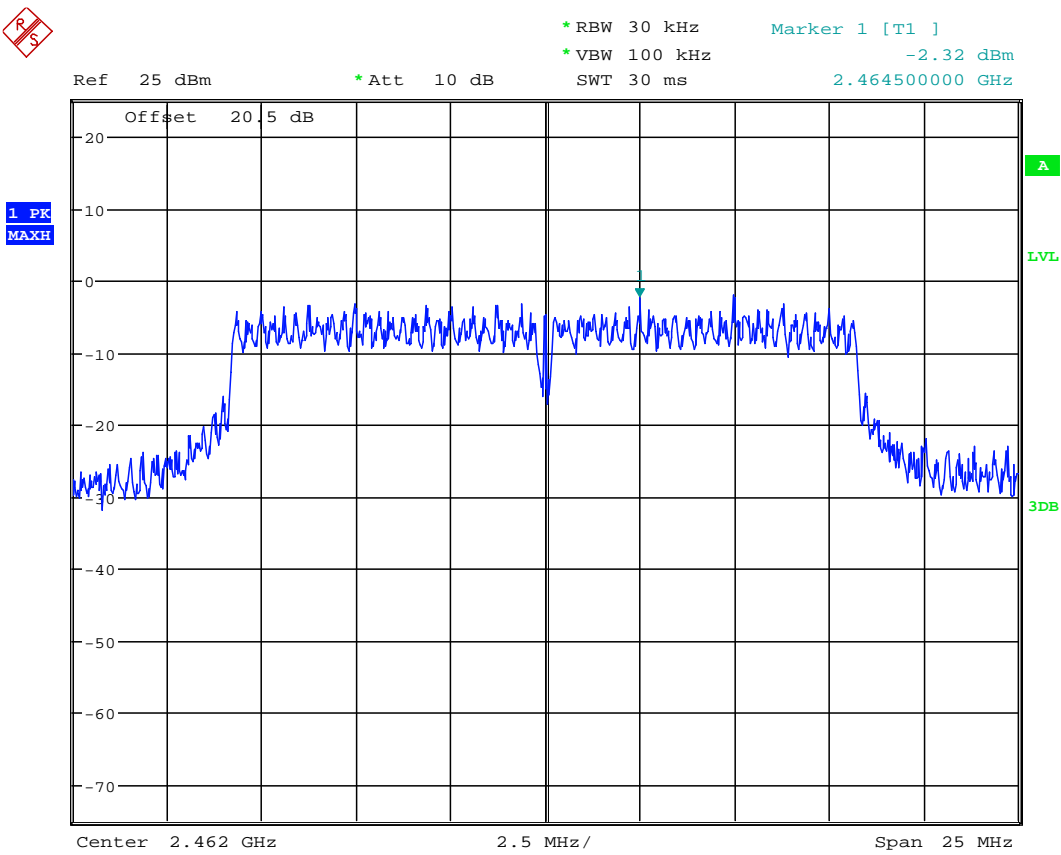






11g:





## 6. Emissions in non-restricted frequency bands

### 6.1. Test equipment

Same with 3.1

### 6.2. Block diagram of test setup

Same with 3.2

### 6.3. Limits

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

### 6.4. Test Procedure

- (1) Configure EUT and assistant system according clause 2.3 and 6.2
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable.
- (3) Configure EUT work in test mode as stated in clause 2.3.
- (4) Establish a reference level by using the following procedure:

|                  |                              |
|------------------|------------------------------|
| Center frequency | DTS Channel center frequency |
| RBW:             | 100KHz                       |
| VBW:             | 300KHz                       |
| Span             | 1.5times the DTS bandwidth   |
| Detector Mode:   | Peak                         |
| Sweep time:      | auto                         |
| Trace mode       | Max hold                     |

- (5) Allow the trace to stabilize, use the peak marker function to determine the maximum peak power level to establish the reference level.
- (6) Set the spectrum analyzer as follows:

|                              |  |
|------------------------------|--|
| RBW:                         | 100KHz                                   |
| VBW:                         | 300KHz                                   |
| Span                         | Encompass frequency range to be measured |
| Number of measurement points | $\geq \text{span/RBW}$                   |
| Detector Mode:               | Peak                                     |
| Sweep time:                  | auto                                     |
| Trace mode                   | Max hold                                 |

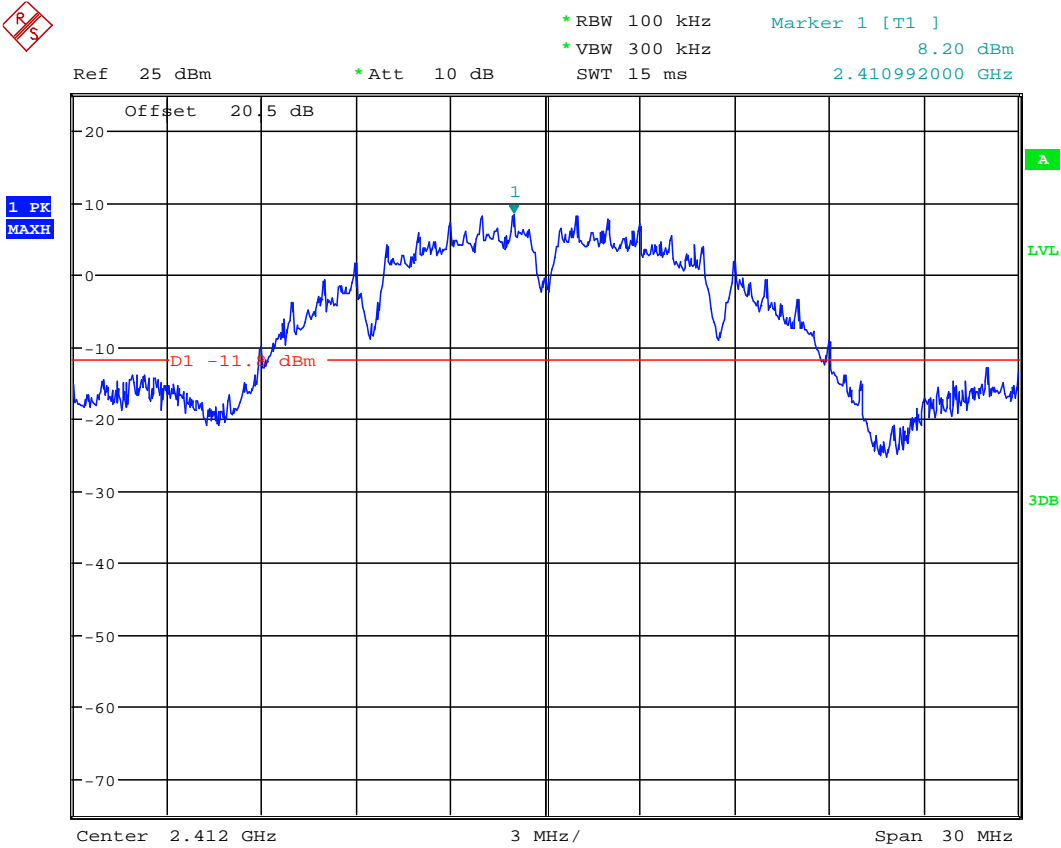
- (7) Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude of all unwanted emissions outside of the authorized frequency band

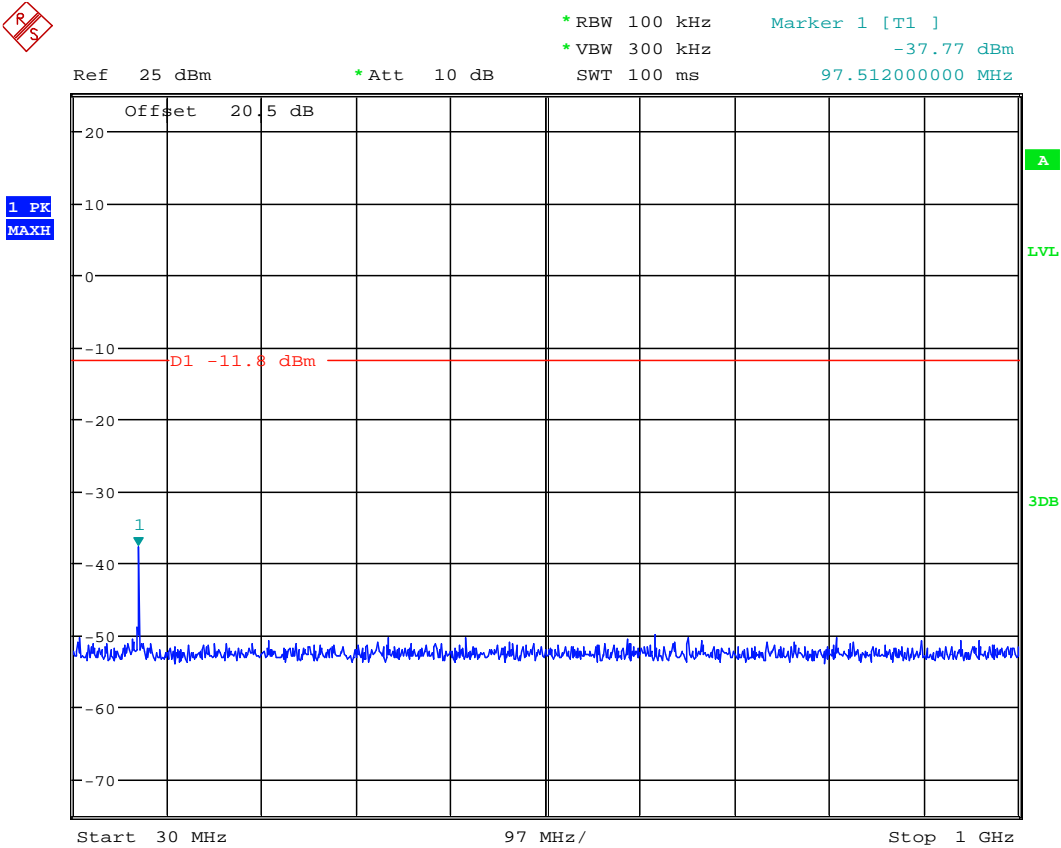
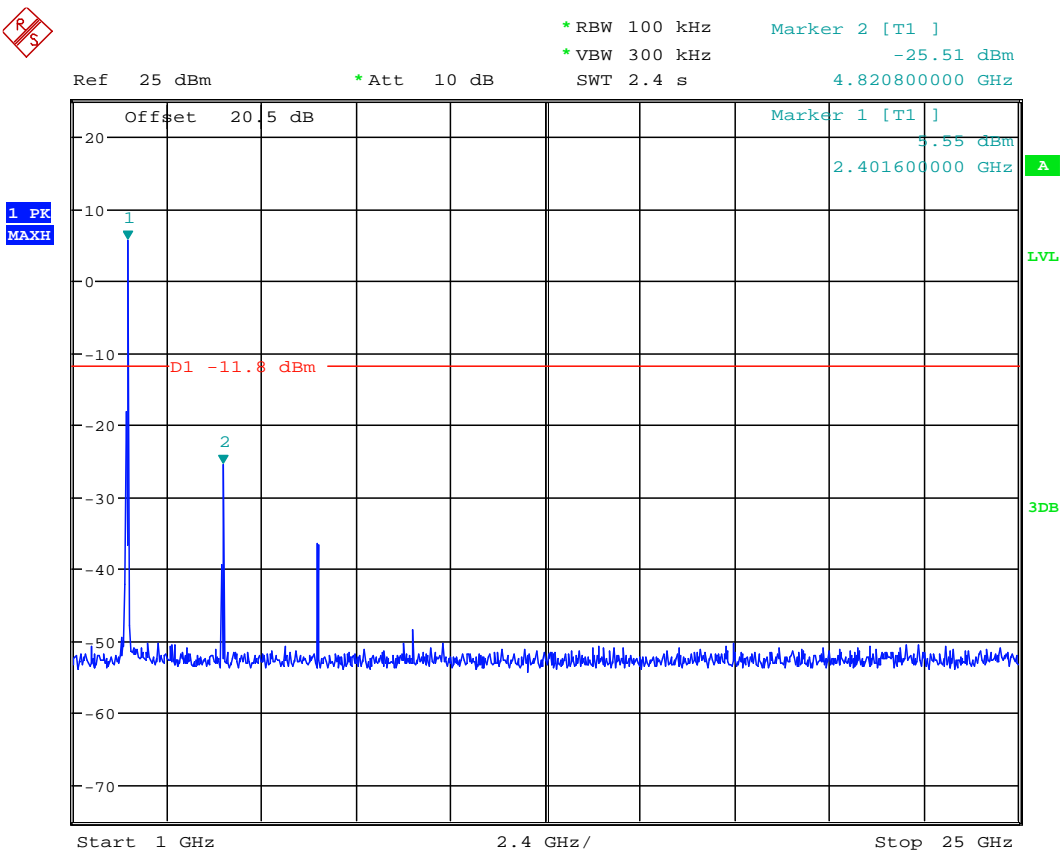
6.5. Test Result

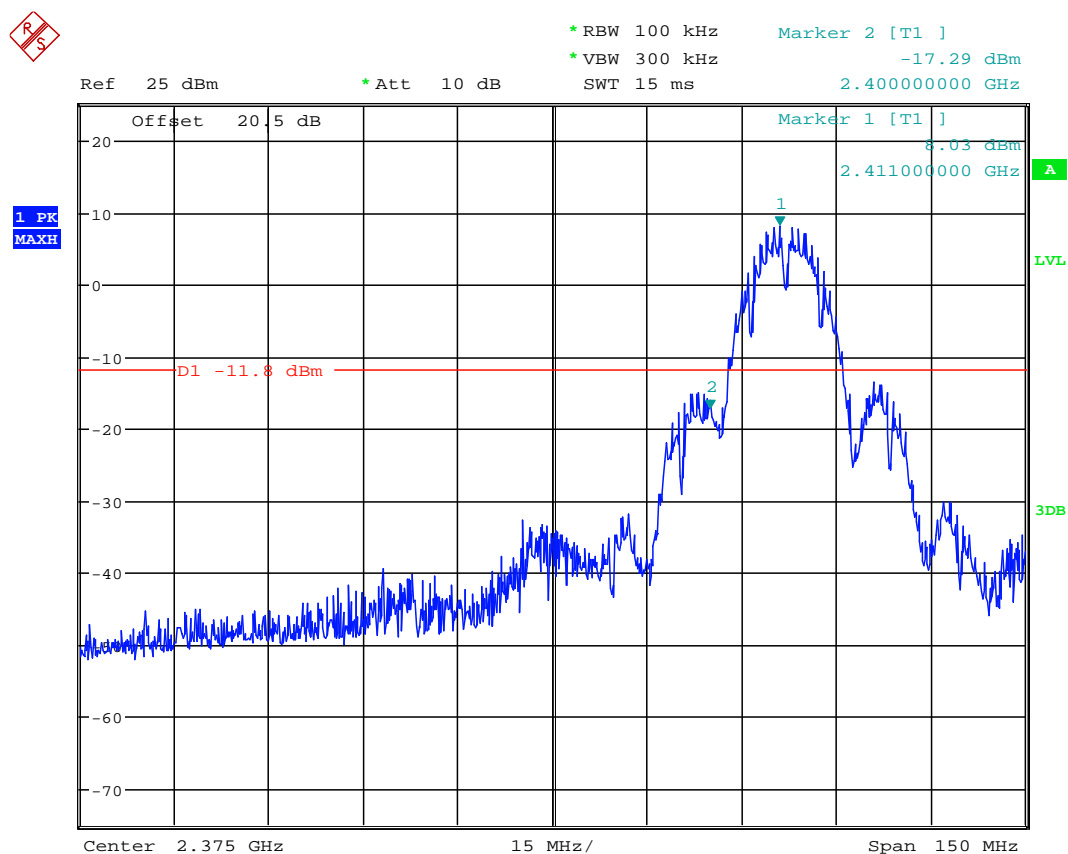
| EUT Set Mode | CH or Frequency | Measured Range       | Result (dBm) | EUT Set Mode | CH or Frequency | Measured Range      | Result (dBm) |
|--------------|-----------------|----------------------|--------------|--------------|-----------------|---------------------|--------------|
| 11b          | CH1             | 30MHz-1GHz           | PASS         | 11g          | CH1             | 30MHz-1GHz          | PASS         |
|              |                 | 1GHz-25GHz           | PASS         |              |                 | 1GHz-25GHz          | PASS         |
|              |                 | 2.3GHz-2.43GHz       | PASS         |              |                 | 2.3GHz-2.43GHz      | PASS         |
|              | CH6             | 30MHz-1GHz           | PASS         |              | CH6             | 30MHz-1GHz          | PASS         |
|              |                 | 1GHz-25GHz           | PASS         |              |                 | 1GHz-25GHz          | PASS         |
|              | CH11            | 30MHz-1GHz           | PASS         |              | CH11            | 30MHz-1GHz          | PASS         |
|              |                 | 1GHz-25GHz           | PASS         |              |                 | 1GHz-25GHz          | PASS         |
|              |                 | 2.45GHz-2.6GHz       | PASS         |              |                 | 2.45GHz-2.6GHz      | PASS         |
|              |                 | Test Date : 2015/4/7 |              |              |                 | Test Engineer : Leo |              |

6.6. Original test data

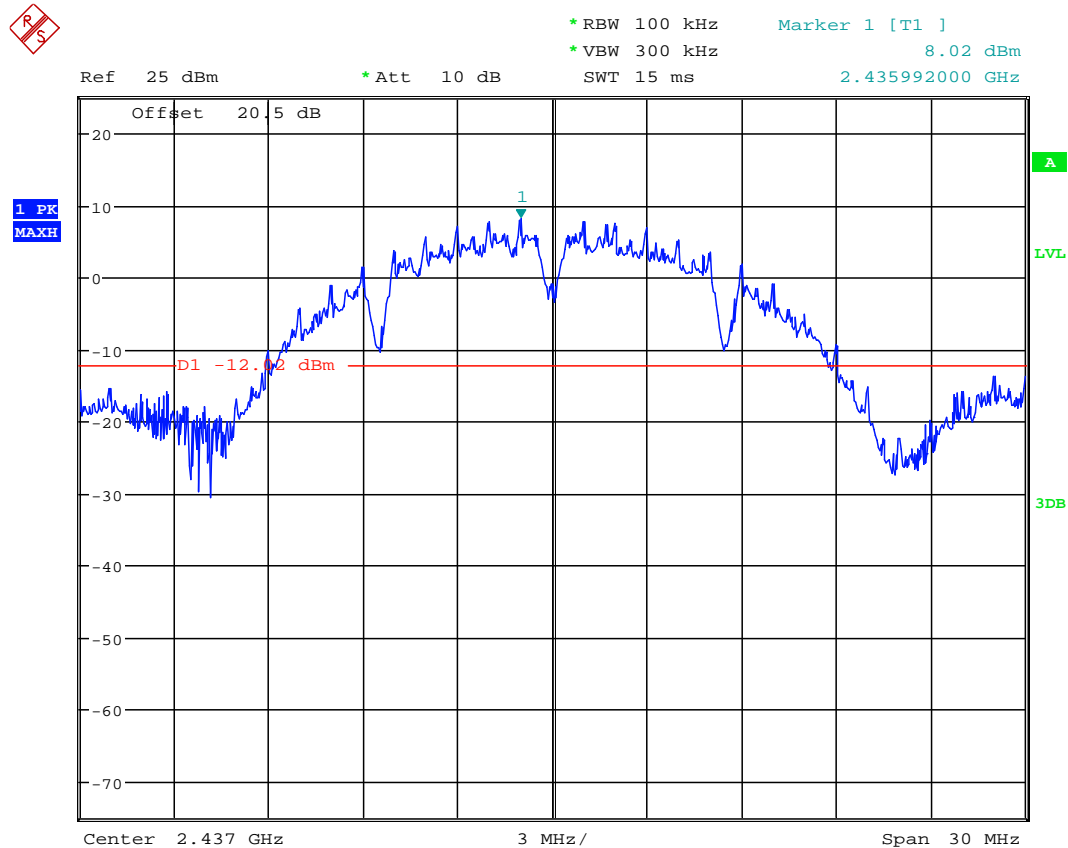
11b CH1:

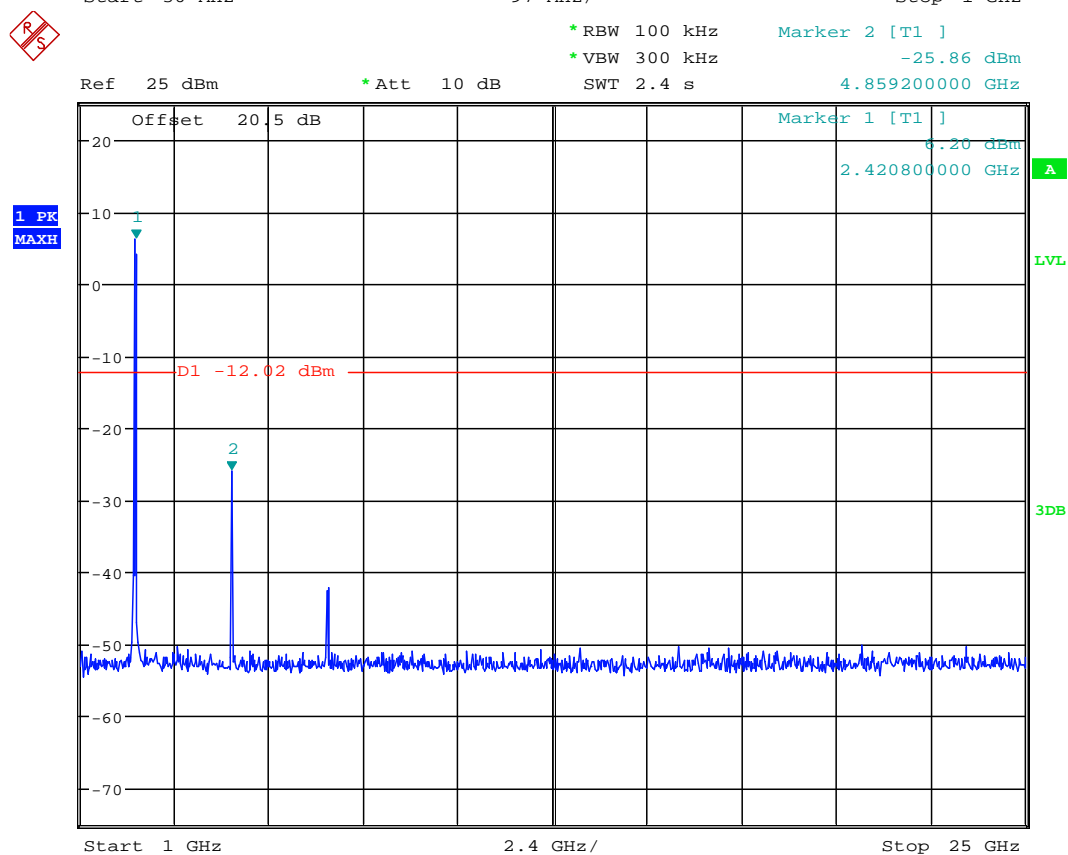






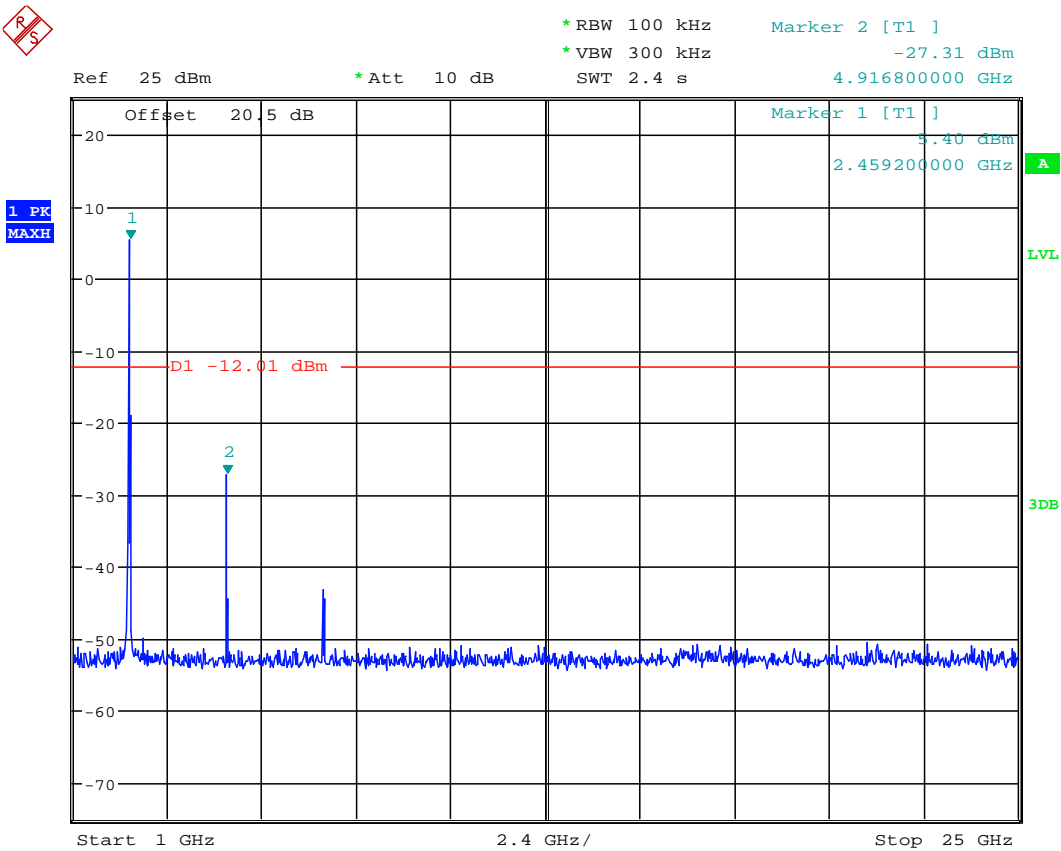
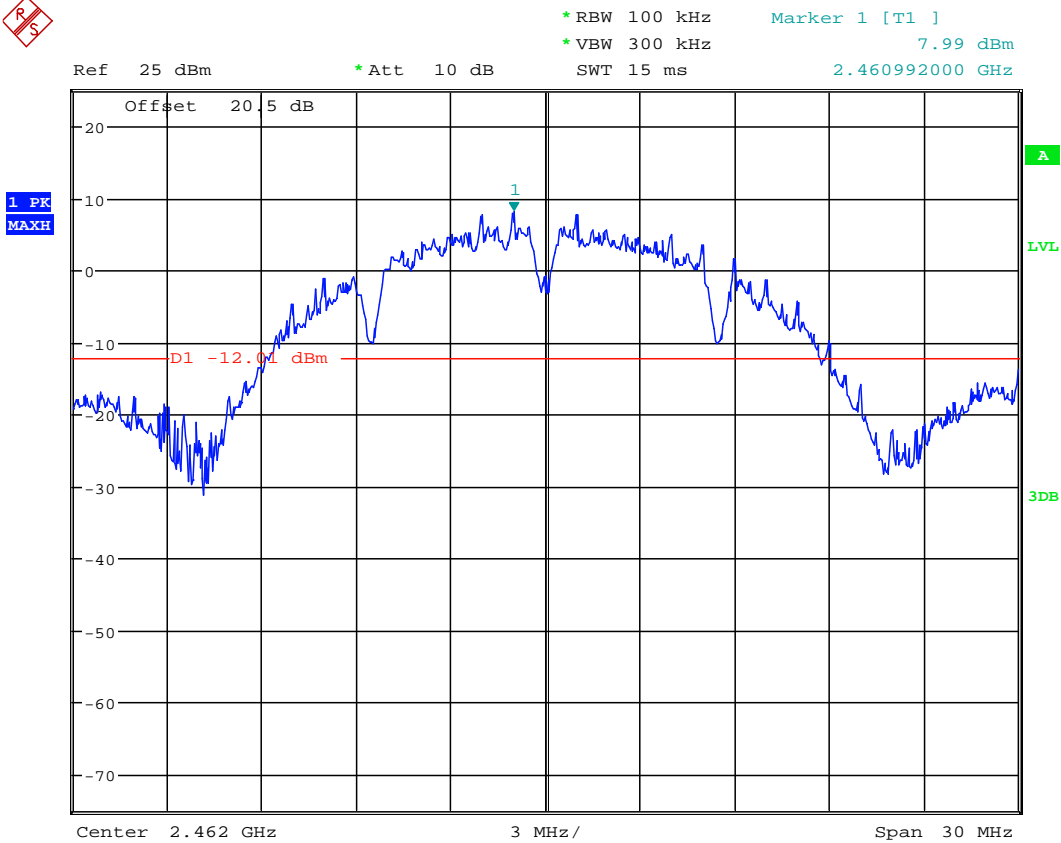
### 11b CH6:

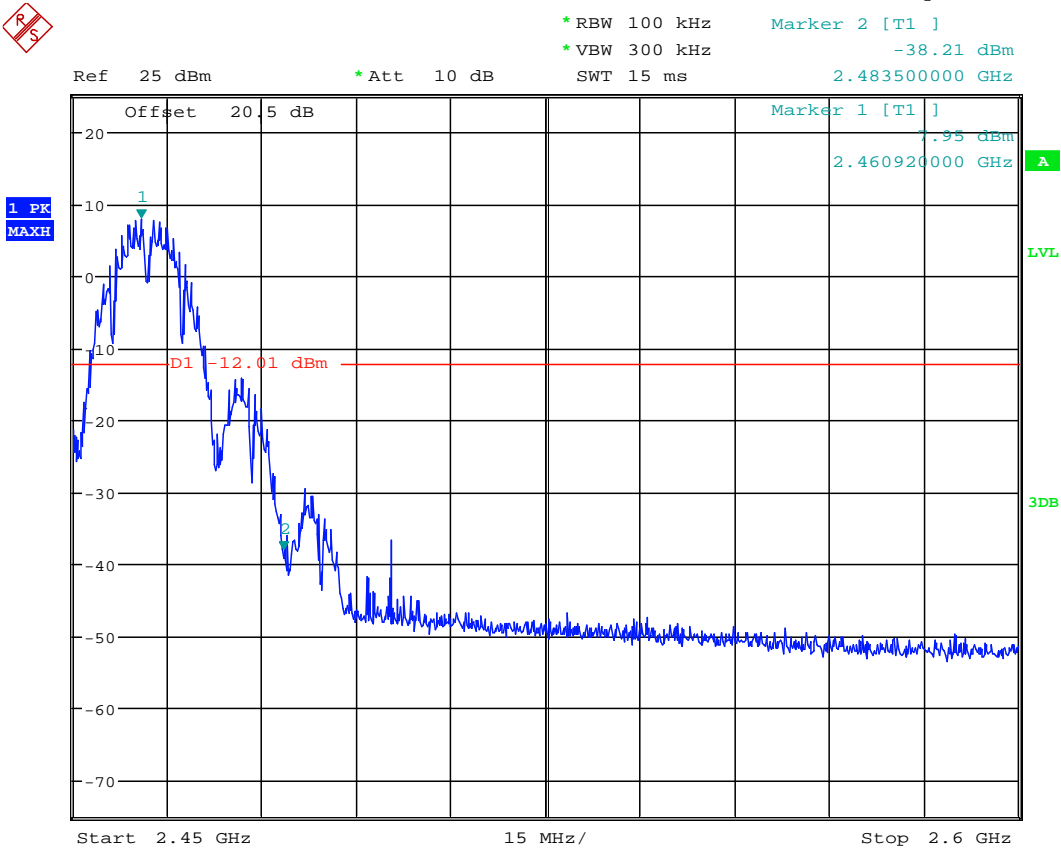
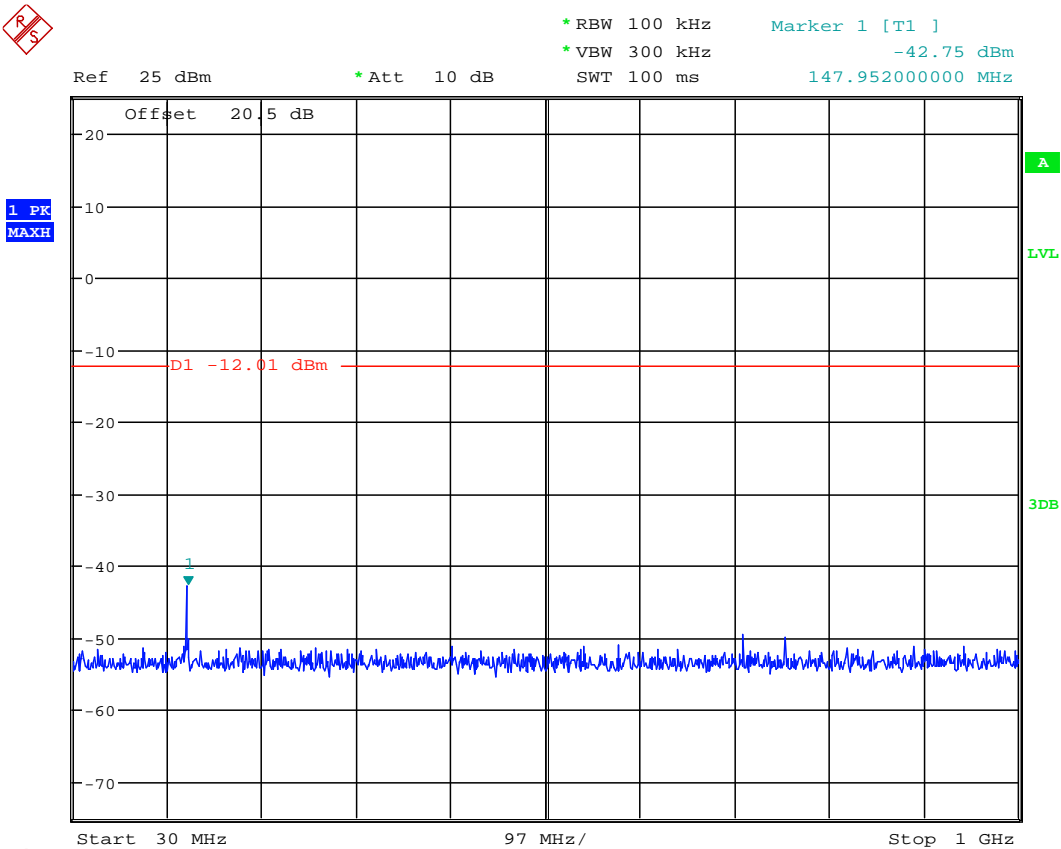




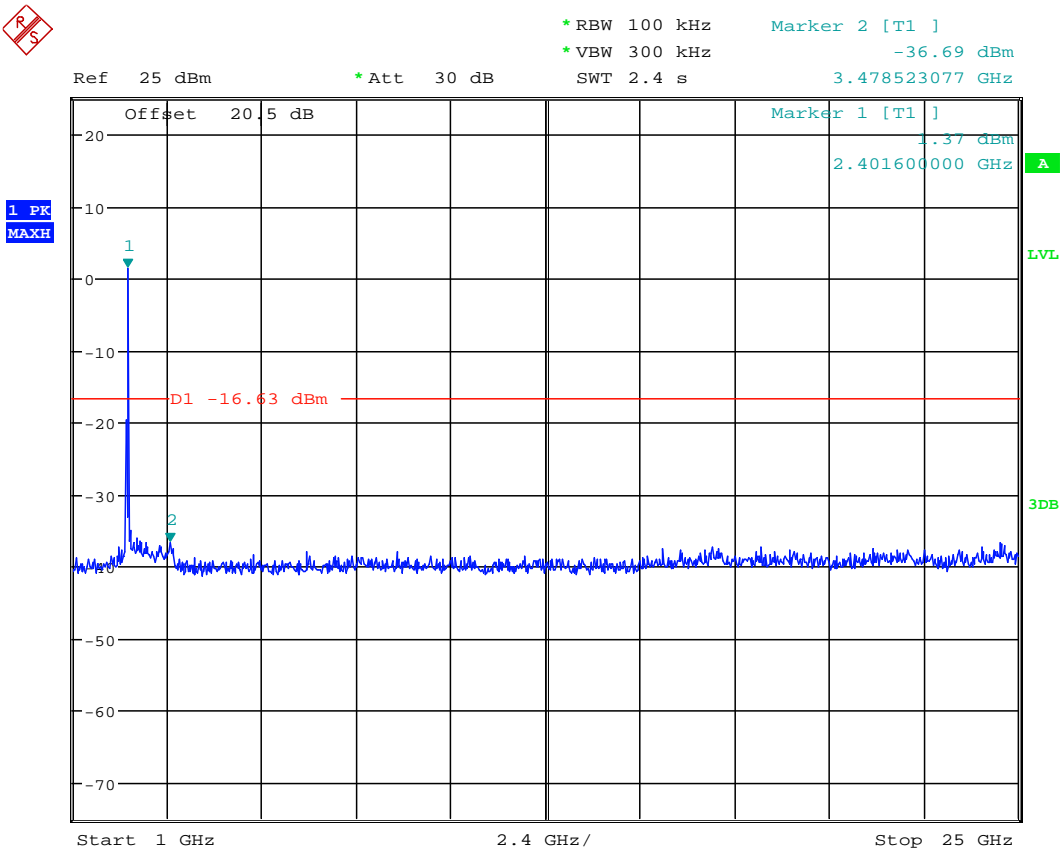
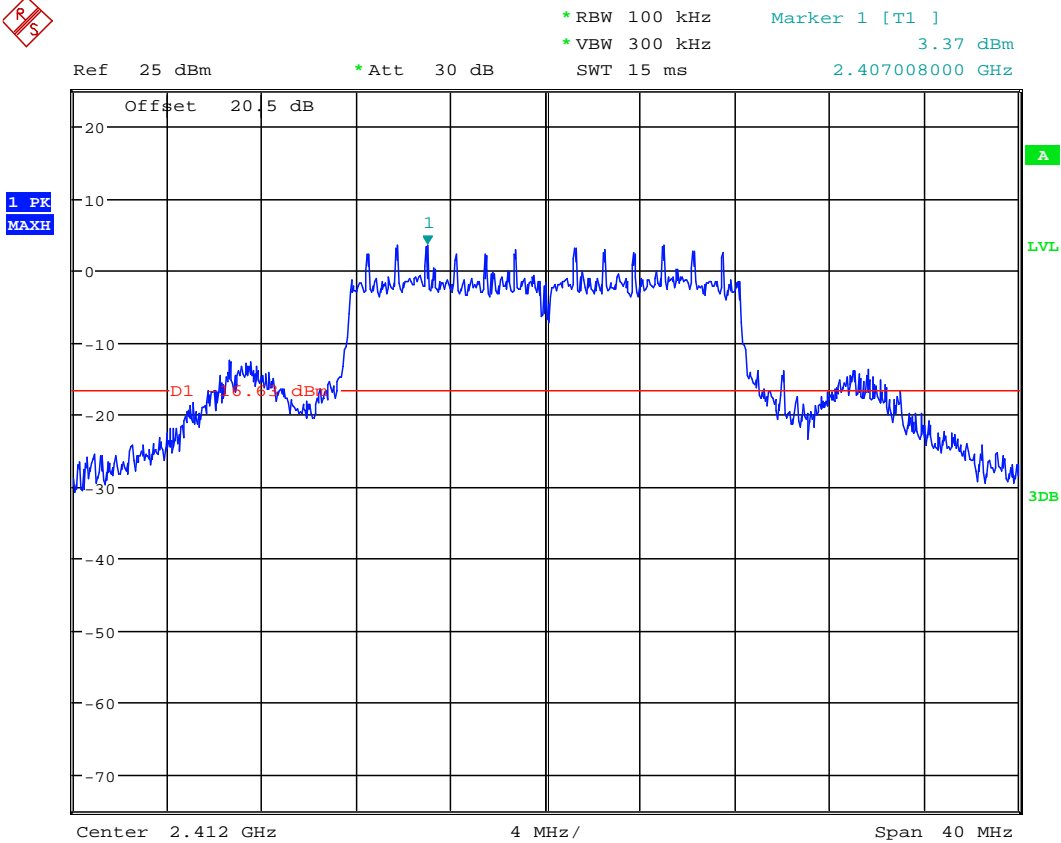


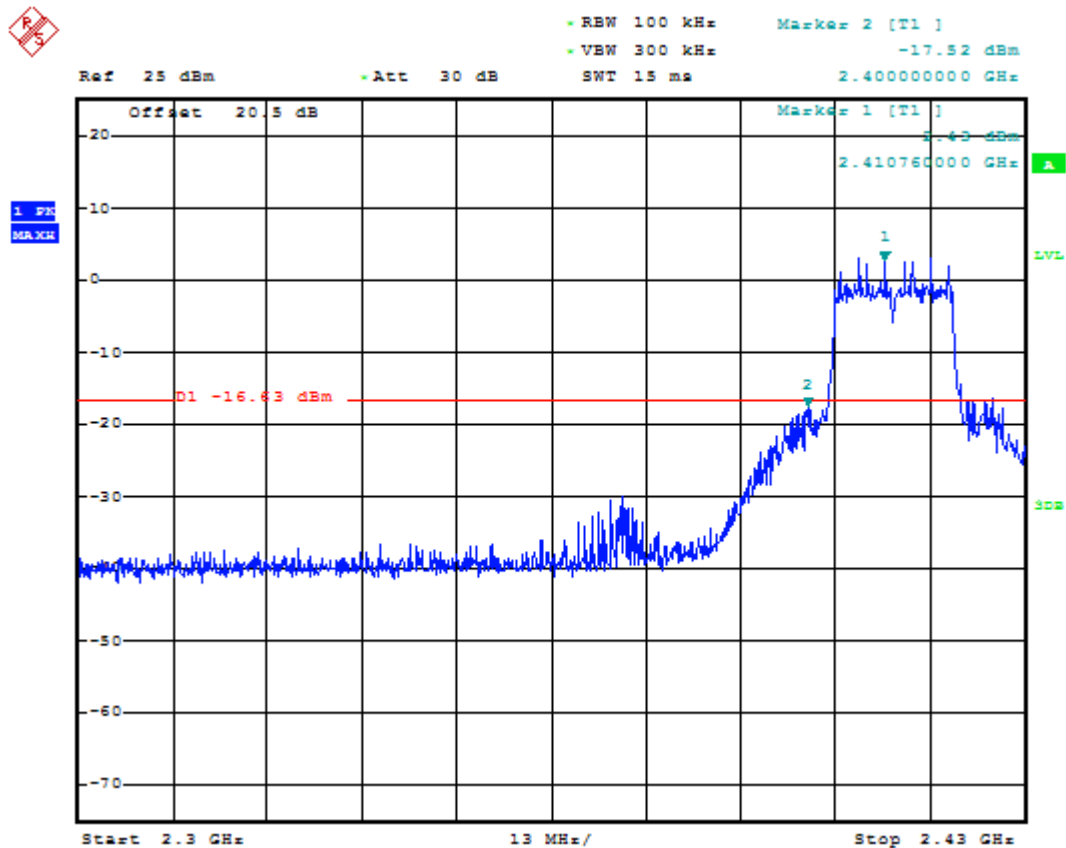
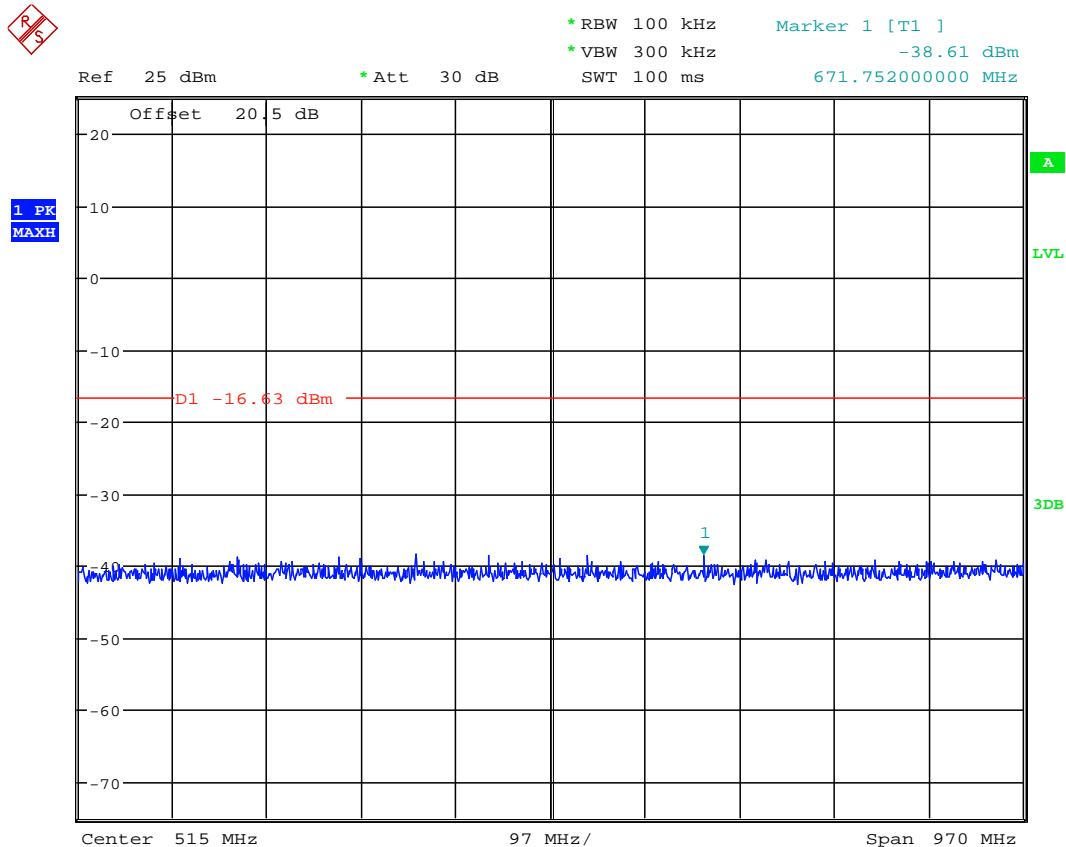
11b CH11:



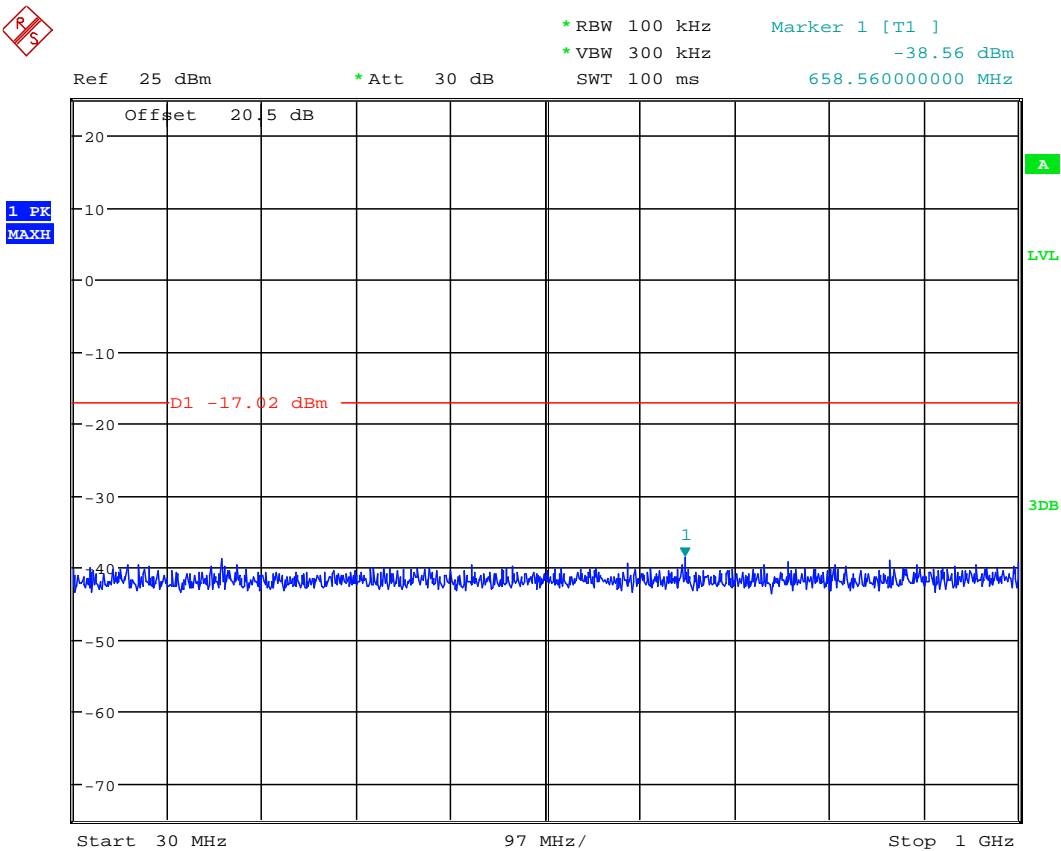
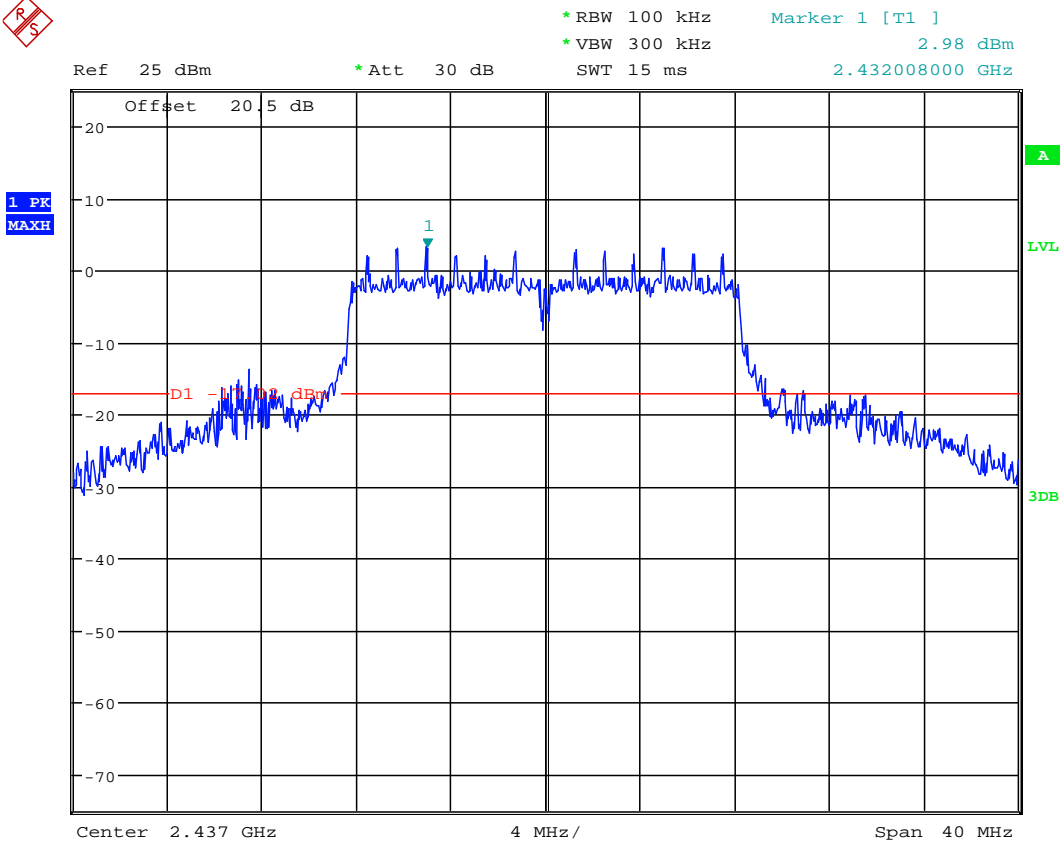


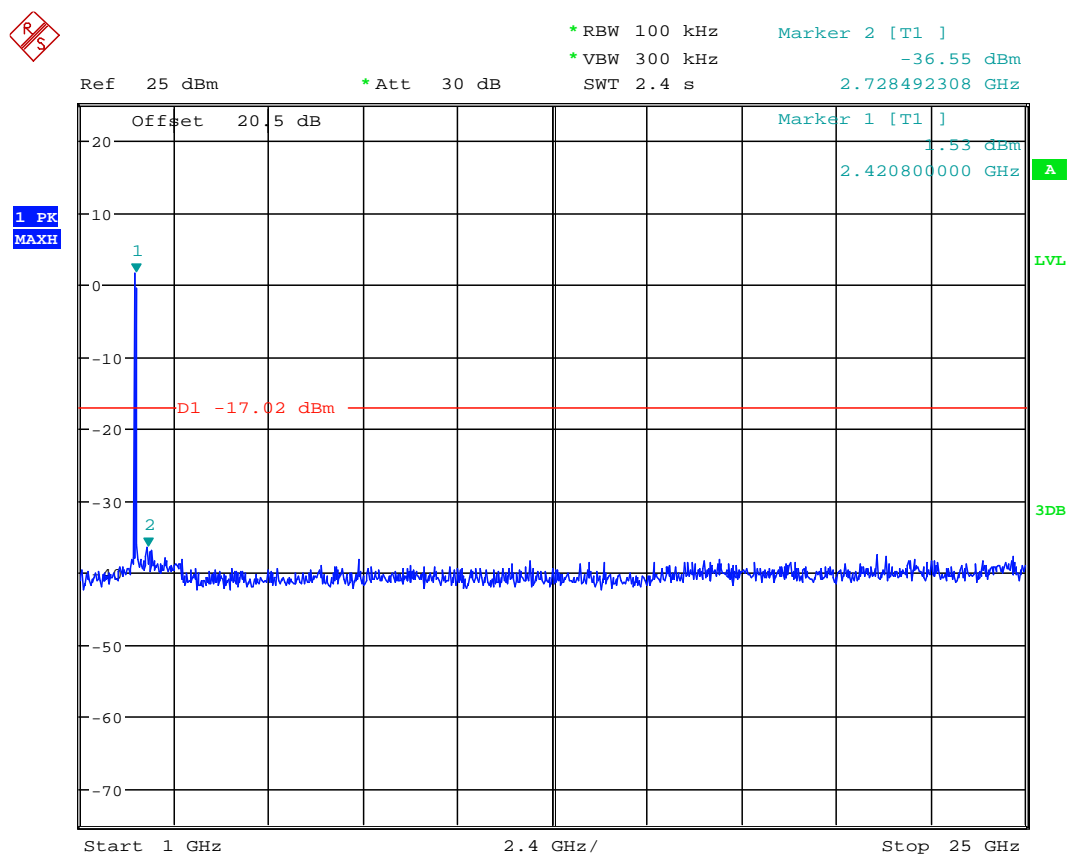
11g CH1:



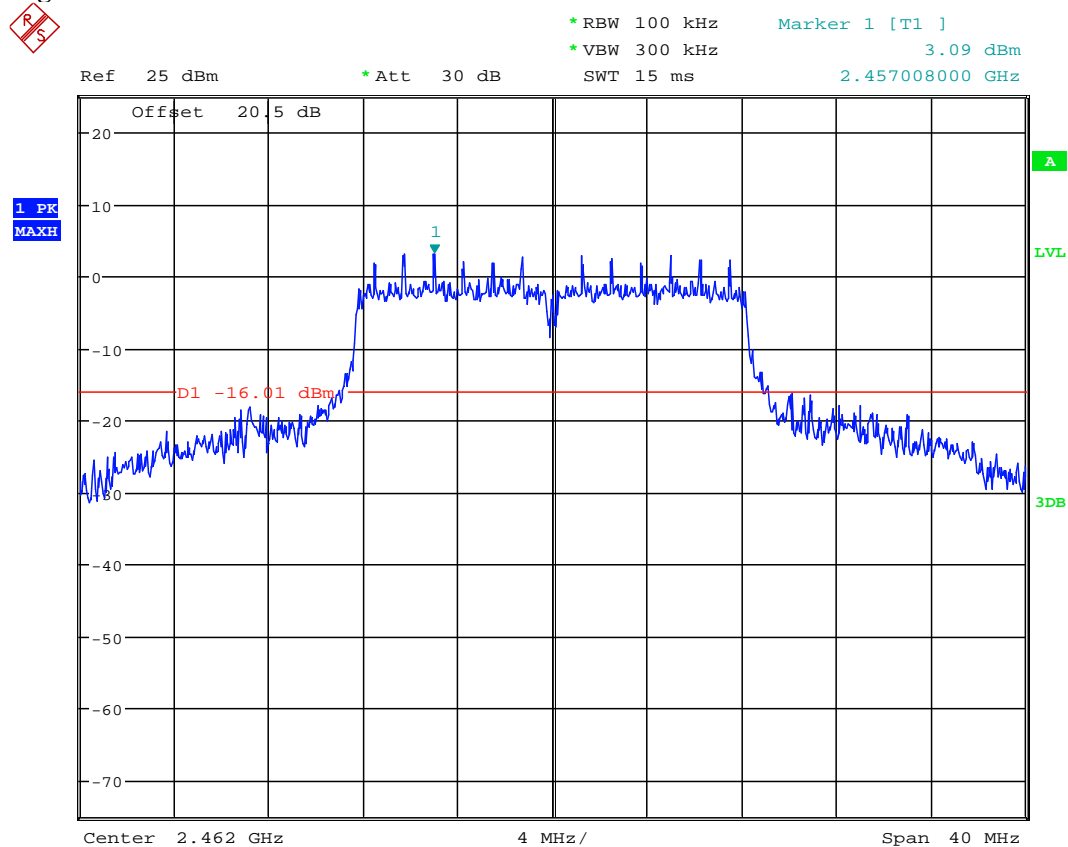


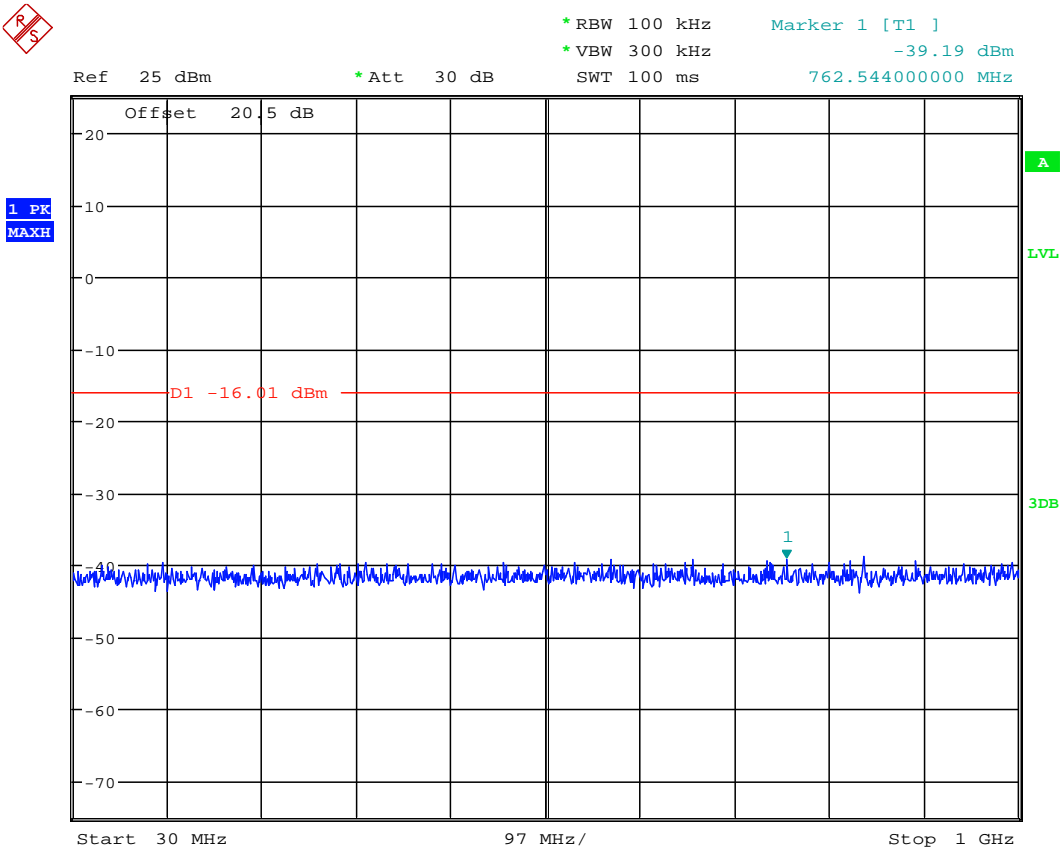
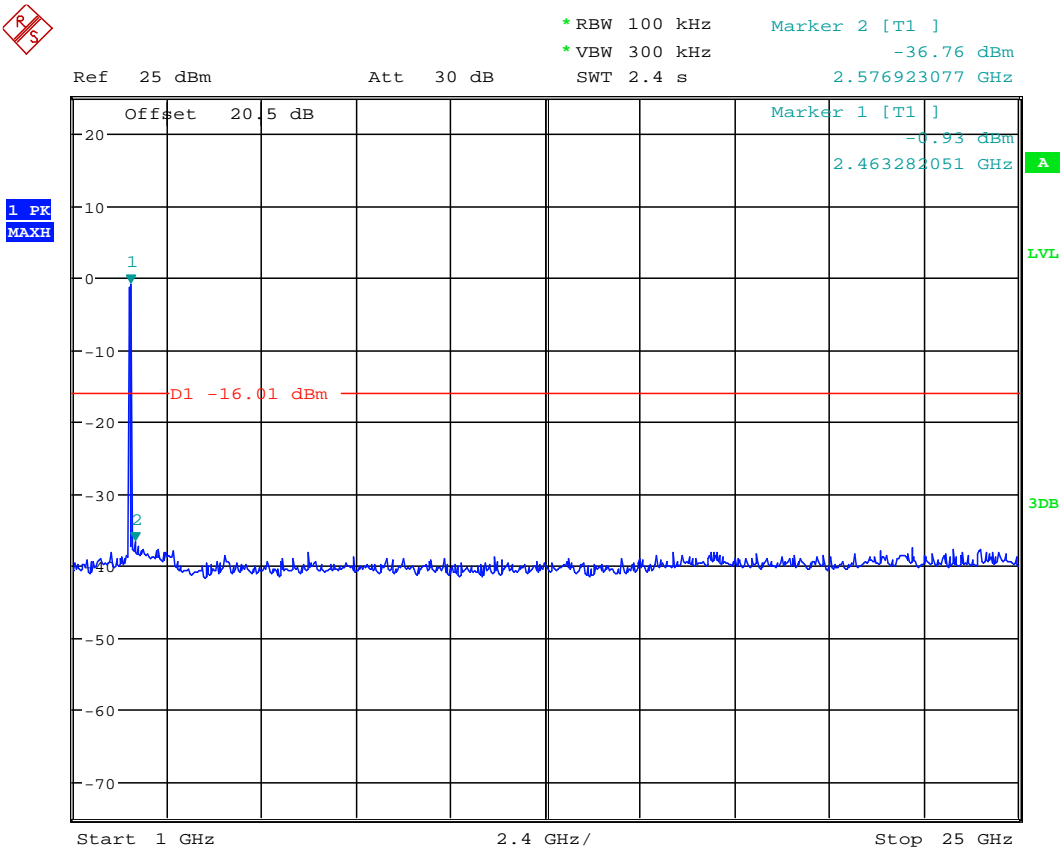
11g CH6:

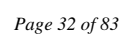




**11g CH11:**









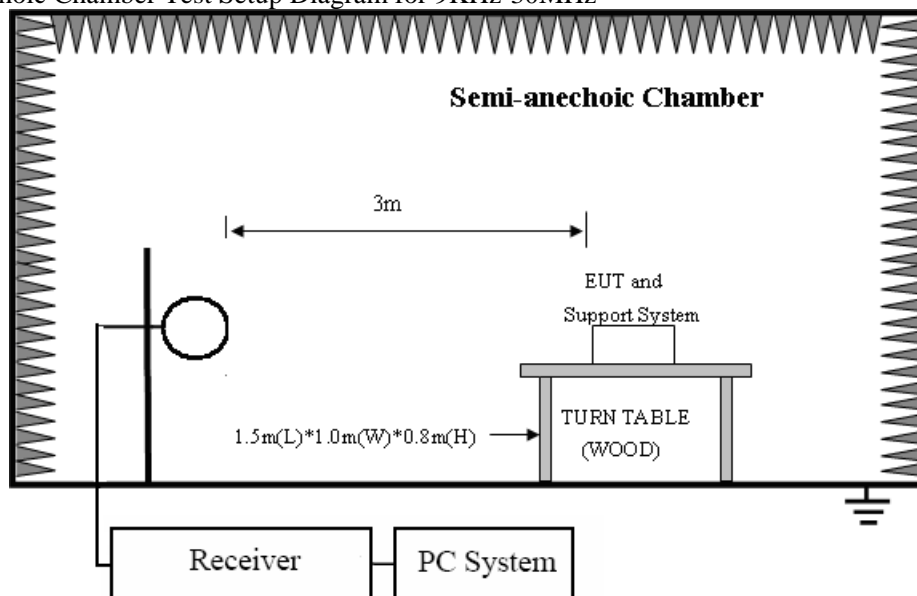
## 7. Emissions in restricted frequency bands

### 7.1. Test equipment

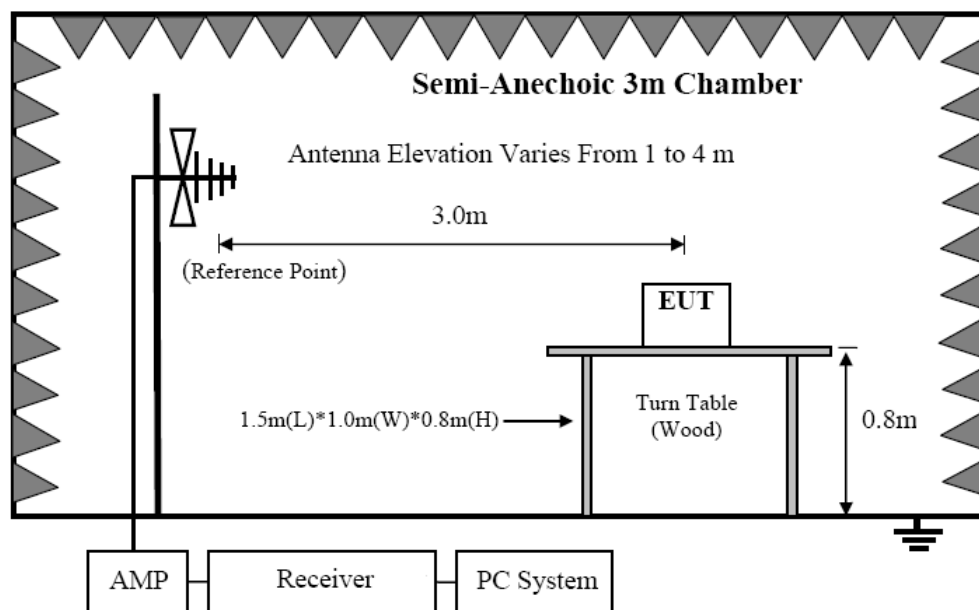
| Item | Equipment                  | Manufacturer | Model No.  | Serial No.   | Last Cal.  | Cal. Interval |
|------|----------------------------|--------------|------------|--------------|------------|---------------|
| 1    | EMI Test Receiver          | R&S          | ESU8       | 100316       | 2014/10/25 | 1 Year        |
| 2    | Spectrum analyzer          | R&S          | FSU        | 1166.1660.26 | 2014/10/25 | 1 Year        |
| 3    | Active Loop antenna        | Schwarzbeck  | FMZB 1519  | 1519-038     | 2014/04/12 | 1 Year        |
| 4    | Trilog Broadband Antenna   | Schwarzbeck  | VULB9163   | 9163-462     | 2014/04/12 | 1 Year        |
| 5    | Double Ridged Horn Antenna | R&S          | HF907      | 100276       | 2014/04/12 | 1 Year        |
| 6    | Horn Antenna               | EMCO         | 3116       | 00060095     | 2014/04/12 | 1 Year        |
| 7    | Pre-amplifier              | A.H.         | PAM-1840VH | 562          | 2014/10/25 | 1 Year        |
| 8    | RF Cable                   | R&S          | R01        | 10403        | 2014/10/25 | 1 Year        |
| 9    | RF Cable                   | R&S          | R02        | 10512        | 2014/10/25 | 1 Year        |
| 10   | Testing software           | Audix        | E3         | 6.111111     | /          | /             |

### 7.2. Block diagram of test setup

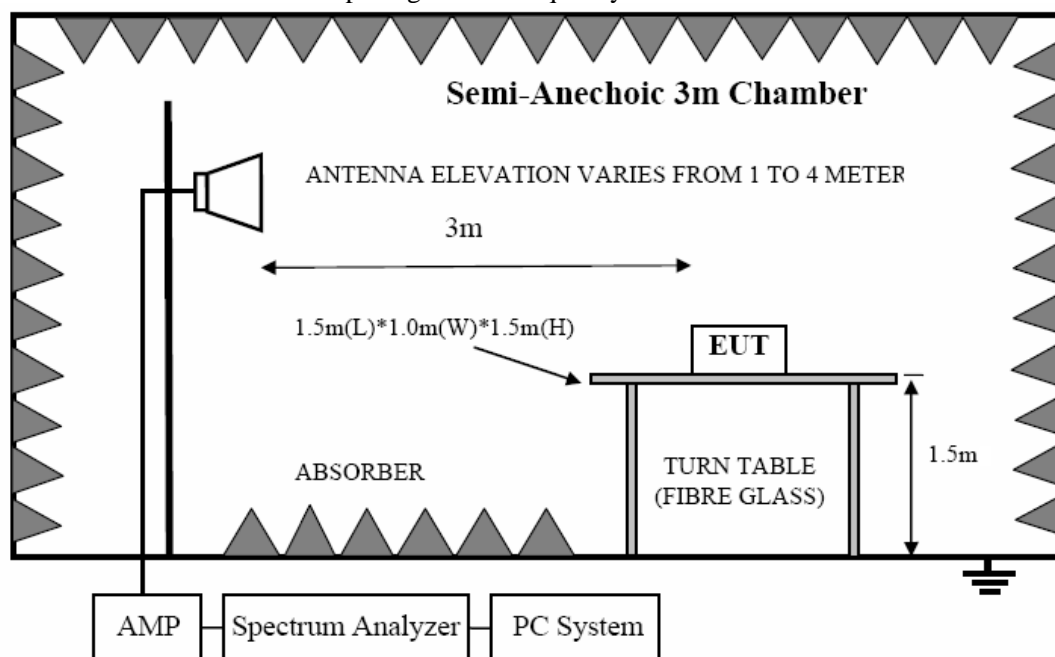
In 3m Anechoic Chamber Test Setup Diagram for 9KHz-30MHz



In 3m Anechoic Chamber Test Setup Diagram for 30MHz-1GHz



In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz



Note: For harmonic emissions test a appropriate high pass filter was inserted in the input port of AMP.

### 7.3. Limit

#### 8.3.1 FCC 15.205 Restricted frequency band

| MHz                        | MHz                   | MHz             | GHz              |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423        | 399.9 - 410     | 4.5 - 5.15       |
| <sup>1</sup> 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     | ( <sup>2</sup> ) |

#### 8.3.2 FCC 15.209 Limit.

| FREQUENCY<br>MHz | DISTANCE<br>Meters | FIELD STRENGTHS LIMIT                           |               |
|------------------|--------------------|---|---------------|
|                  |                    | μV/m  | dB(μV)/m      |
| 0.009 ~ 0.490    | 300                | 2400/F(KHz)                                     | 67.6-20log(F) |
| 0.490 ~ 1.705    | 30                 | 24000/F(KHz)                                    | 87.6-20log(F) |
| 1.705 ~ 30.0     | 30                 | 30  | 29.54         |
| 30 ~ 88          | 3                  | 100   | 40.0          |
| 88 ~ 216         | 3                  | 150   | 43.5          |
| 216 ~ 960        | 3                  | 200   | 46.0          |
| 960 ~ 1000       | 3                  | 500   | 54.0          |
| Above 1000       | 3                  | 74.0 dB(μV)/m (Peak)<br>54.0 dB(μV)/m (Average) |               |

Note: (1)The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9-90KHz, 110-490KHz and above 1000MHz.Radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30MHz, measurement may be performed at a distance closer then that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$\text{Limit}_{3m}(\text{dB}\mu\text{V}/\text{m}) = \text{Limit}_{30m}(\text{dB}\mu\text{V}/\text{m}) + 40\text{Log}(30m/3m)$$

#### 8.3.3 Limit for this EUT

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

## 7.4. Test Procedure

- (1) EUT height should be 0.8m for below 1GHz at a semi - anechoic chamber while EUT height should be 1.5m for above 1GHz at full chamber or semi - anechoic chamber ground with absorbers.
- (2) Setup EUT and assistant system according clause 2.3 and 7.2
- (3) The antenna used as below table.

| Test frequency range | Test antenna used                      | Measuring distance |
|----------------------|--|--------------------|
| 9KHz-30MHz           | Active Loop antenna                    | 3 m                |
| 30MHz-1GHz           | Trilog Broadband Antenna               | 3 m                |
| 1GHz-18GHz           | Double Ridged Horn Antenna(1GHz-18GHz) | 3 m                |
| 18GHz-40GHz          | Horn Antenna(18GHz-40GHz)              | 1 m                |

According ANSI C63.10:2013 clause 6.4.4.2 and 6.5.3, for measurements below 30 MHz, the loop antenna was positioned with its plane vertical from the EUT and rotated about its vertical axis for maximum response at each azimuth position around the EUT. And the loop antenna also be positioned with its plane horizontal at the specified distance from the EUT. The center of the loop is 1 m above the ground. for measurement above 30MHz, the Trilog Broadband Antenna or Horn Antenna was located 3m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

- (4) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9KHz to 25GHz:

- (a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1m to 4m(Except loop antenna, it's fixed 1m above ground.)

- (b) Change work frequency or channel of device if practicable.

- (c) Change modulation type of device if practicable.

- (d) Change power supply range from 85% to 115% of the rated supply voltage

- (e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions.

Spectrum frequency from 9KHz to 25GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9KHz to 30MHz and 18GHz to 25GHz, so below final test was performed with frequency range from 30MHz to 18GHz.

- (5) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10 2013 on Radiated Emission test.

- (6) The emissions from 9KHz to 1GHz were measured based on CISPR QP detector except for the frequency bands 9-90KHz, 110-490KHz, for emissions from 9KHz-90KHz, 110KHz-490KHz and above 1GHz were measured based on average detector, for emissions above 1GHz, peak emissions also be measured and need comply with Peak limit.
- (7) The emissions from 9KHz to 1GHz, QP or average values were measured with EMI receiver with below RBW

| Frequency band | RBW    |
|----------------|--------|
| 9KHz-150KHz    | 200Hz  |
| 150KHz-30MHz   | 9KHz   |
| 30MHz-1GHz     | 120KHz |

- (8) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RBW is set at 1MHz, VBW is set at 10Hz for Average measure (according ANSI C63.10:2013 clause 4.2.3.2.3 procedure for average measure). Peak detector is used for Peak and AV measurement both.

## 7.5. Test result

### **PASS. (See below detailed test result)**

All the emissions except fundamental emission from 9KHz to 25GHz were comply with 15.209 limit.

Note1: According exploratory test no any obvious emission were detected from 9KHz to 30MHz and 18GHz to 25GHz, so the final test was performed with frequency range from 30MHz to 18GHz and recorded in below.

Note2: For emissions below 1GHz, according exploratory explorer test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1GHz, the final test was only performed with EUT working in 11b, Tx CH6 mode.

Note3: For below test data, when the limit tabular marked “/” means this frequency point is the fundamental emission and no need comply with this limit.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber

E:\2015 Report Data\15Q0306-2\WIFI .EM6

**Test Date** : 2015-04-08

**Tested By** : Leo

**EUT** : WIFI module

**Model Number** : Robstepwifi

**Power Supply** : DC 3.3V

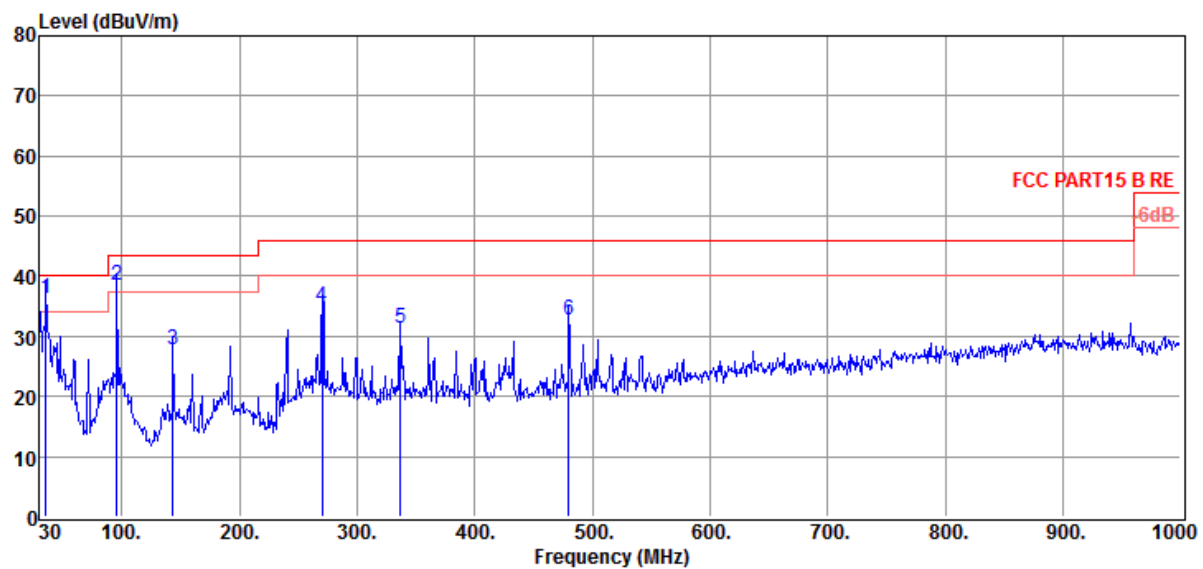
**Test Mode** : Tx mode

**Condition** : Temp:24.5'C,Humi:55%,  
Press:100.1kPa

**Antenna/Distance** : 2014 VULB 9163/3m/VERTICAL

**Memo** :

Data: 70



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 35.82         | 23.13                   | 12.30                       | 0.00                | 0.95                | 36.38                       | 40.00                     | -3.62                 | QP       | VERTICAL     |
| 2              | 95.96         | 24.91                   | 12.00                       | 0.00                | 1.47                | 38.38                       | 43.50                     | -5.12                 | QP       | VERTICAL     |
| 3              | 143.49        | 17.29                   | 8.83                        | 0.00                | 1.72                | 27.84                       | 43.50                     | -15.66                | QP       | VERTICAL     |
| 4              | 270.56        | 18.82                   | 13.40                       | 0.00                | 2.60                | 34.82                       | 46.00                     | -11.18                | QP       | VERTICAL     |
| 5              | 336.52        | 14.40                   | 14.14                       | 0.00                | 2.84                | 31.38                       | 46.00                     | -14.62                | QP       | VERTICAL     |
| 6              | 480.08        | 13.22                   | 15.98                       | 0.00                | 3.62                | 32.82                       | 46.00                     | -13.18                | QP       | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

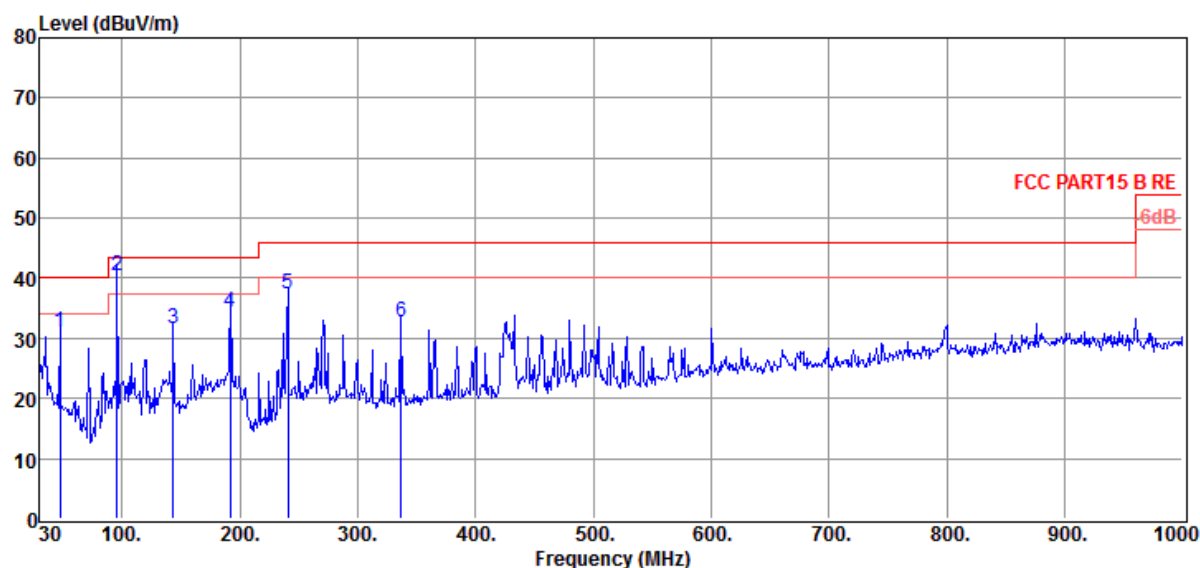
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI .EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : Tx mode  
**Condition** : Temp:24.5'C,Humi:55%,  
**Antenna/Distance** : 2014 VULB 9163/3m/HORIZONTAL  
**Memo** :

Data: 71



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 47.46         | 15.31                   | 14.70                       | 0.00                | 1.05                | 31.06                       | 40.00                     | -8.94                 | QP       | HORIZONTAL   |
| 2              | 95.96         | 26.85                   | 12.00                       | 0.00                | 1.47                | 40.32                       | 43.50                     | -3.18                 | QP       | HORIZONTAL   |
| 3              | 143.49        | 20.96                   | 8.83                        | 0.00                | 1.72                | 31.51                       | 43.50                     | -11.99                | QP       | HORIZONTAL   |
| 4              | 191.99        | 21.85                   | 10.53                       | 0.00                | 2.12                | 34.50                       | 43.50                     | -9.00                 | QP       | HORIZONTAL   |
| 5              | 240.49        | 23.29                   | 11.70                       | 0.00                | 2.32                | 37.31                       | 46.00                     | -8.69                 | QP       | HORIZONTAL   |
| 6              | 336.52        | 15.60                   | 14.14                       | 0.00                | 2.84                | 32.58                       | 46.00                     | -13.42                | QP       | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

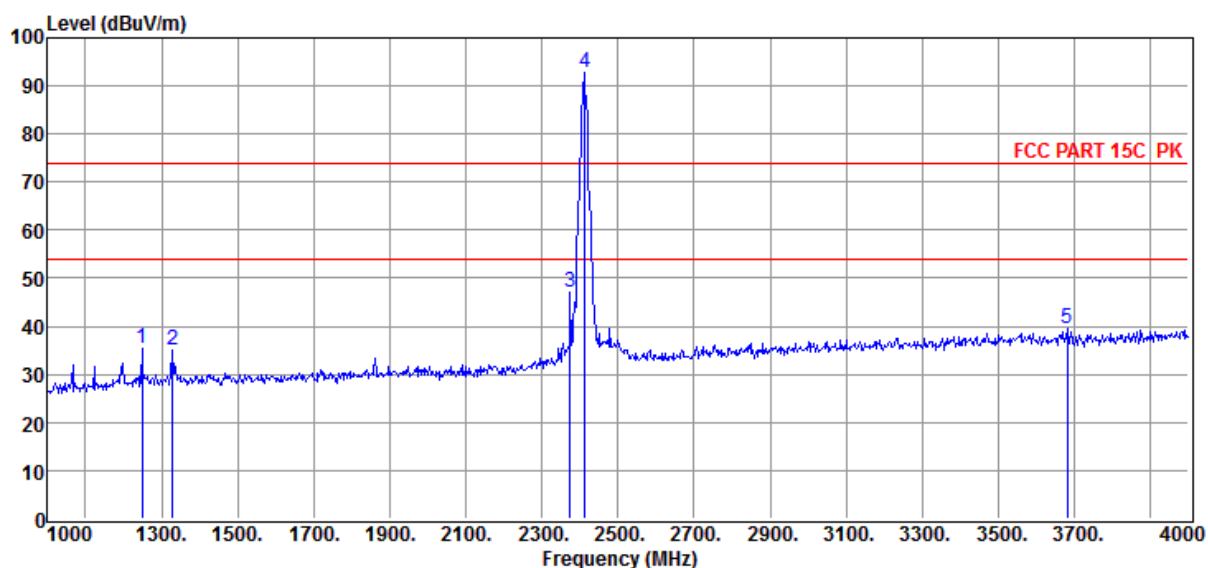
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH1  
**Condition** : Temp:24.5'C,Humi:55%,  
**Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Press:**100.1kPa  
**Memo** :

Data: 1



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 1249.00       | 33.98                   | 25.48                       | 27.65               | 3.53                | 35.34                       | 74.00                     | -38.66                | Peak     | HORIZONTAL   |
| 2              | 1330.00       | 33.64                   | 25.71                       | 27.87               | 3.64                | 35.12                       | 74.00                     | -38.88                | Peak     | HORIZONTAL   |
| 3              | 2374.00       | 42.17                   | 29.94                       | 30.19               | 5.11                | 47.03                       | 74.00                     | -26.97                | Peak     | HORIZONTAL   |
| 4              | 2412.00       | 87.88                   | 30.04                       | 30.21               | 5.17                | 92.88                       | /                         | /                     | Peak     | HORIZONTAL   |
| 5              | 3682.00       | 29.37                   | 32.87                       | 29.87               | 7.10                | 39.47                       | 74.00                     | -34.53                | Peak     | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

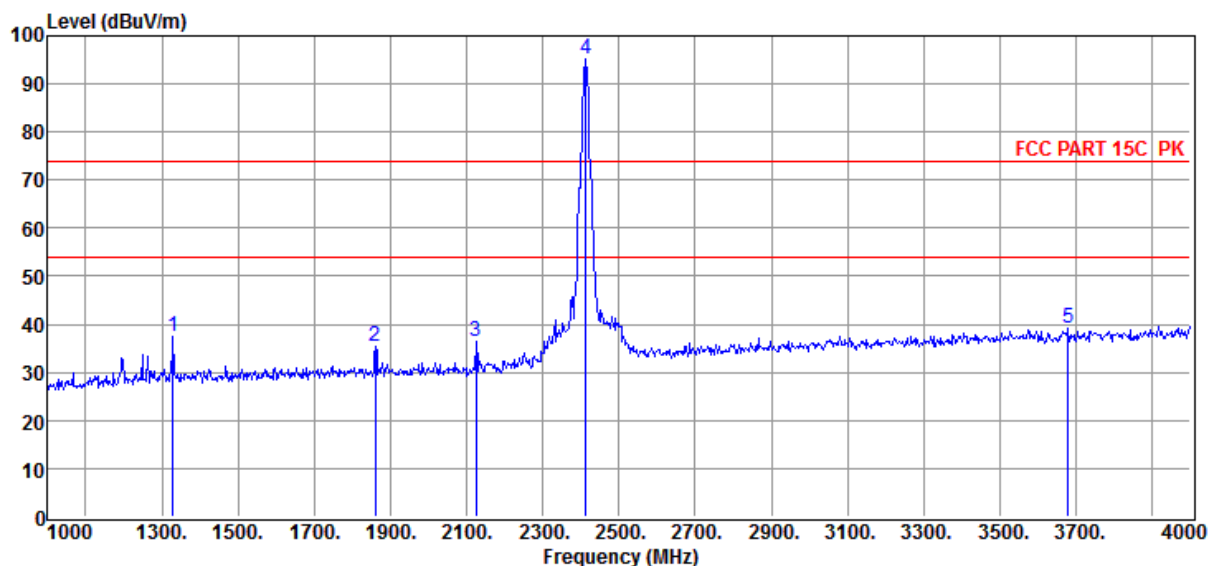


## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber  
**Test Date** : 2015-04-08  
**EUT** : WIFI module  
**Power Supply** : DC 3.3V  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa  
**Memo** :

**E:\2015 Report Data\15Q0306-2\WIFI.EM6**  
**Tested By** : Leo  
**Model Number** : Robstepwifi  
**Test Mode** : 11b CH1  
**Antenna/Distance** : 2014 HF907/3m/VERTICAL

Data: 2



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 1330.00       | 35.89                   | 25.71                       | 27.87               | 3.64                | 37.37                       | 74.00                     | -36.63                | Peak     | VERTICAL     |
| 2              | 1861.00       | 32.45                   | 28.13                       | 29.70               | 4.54                | 35.42                       | 74.00                     | -38.58                | Peak     | VERTICAL     |
| 3              | 2125.00       | 32.54                   | 29.16                       | 30.11               | 4.83                | 36.42                       | 74.00                     | -37.58                | Peak     | VERTICAL     |
| 4              | 2412.00       | 90.32                   | 30.04                       | 30.21               | 5.17                | 95.32                       | /                         | /                     | Peak     | VERTICAL     |
| 5              | 3679.00       | 29.23                   | 32.87                       | 29.90               | 7.04                | 39.24                       | 74.00                     | -34.76                | Peak     | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

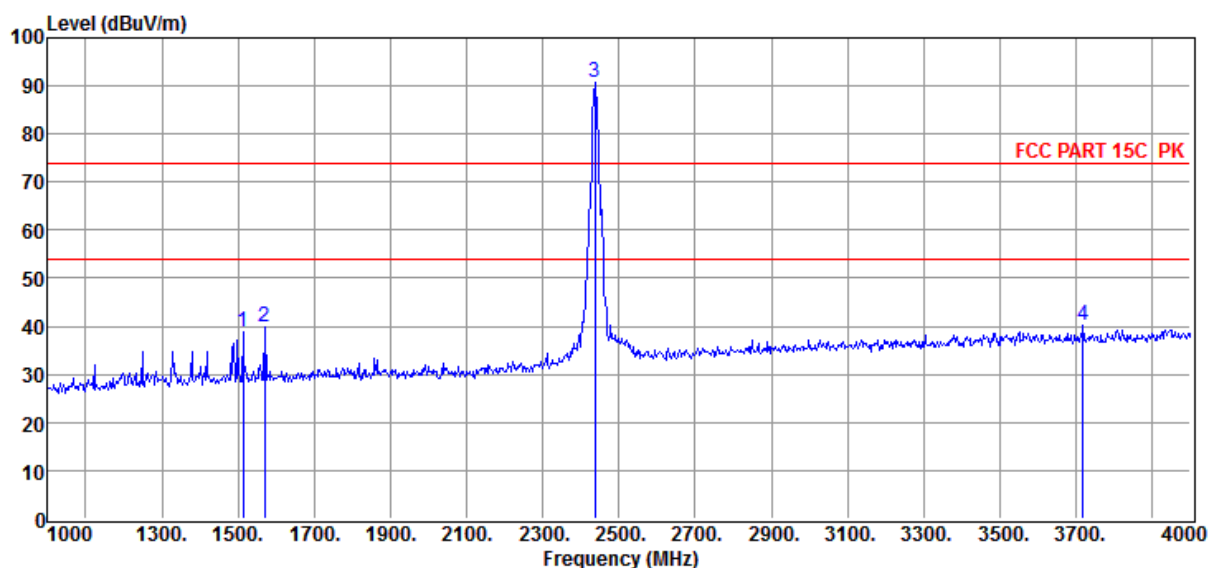
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH6  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Memo** :

Data: 5



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 1513.00       | 36.90                   | 26.38                       | 28.60               | 3.99                | 38.67                       | 74.00                     | -35.33                | Peak     | HORIZONTAL   |
| 2              | 1570.00       | 37.99                   | 26.72                       | 28.77               | 4.08                | 40.02                       | 74.00                     | -33.98                | Peak     | HORIZONTAL   |
| 3              | 2437.00       | 85.59                   | 30.14                       | 30.23               | 5.24                | 90.74                       | /                         | /                     | Peak     | HORIZONTAL   |
| 4              | 3718.00       | 30.00                   | 32.91                       | 29.87               | 7.10                | 40.14                       | 74.00                     | -33.86                | Peak     | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

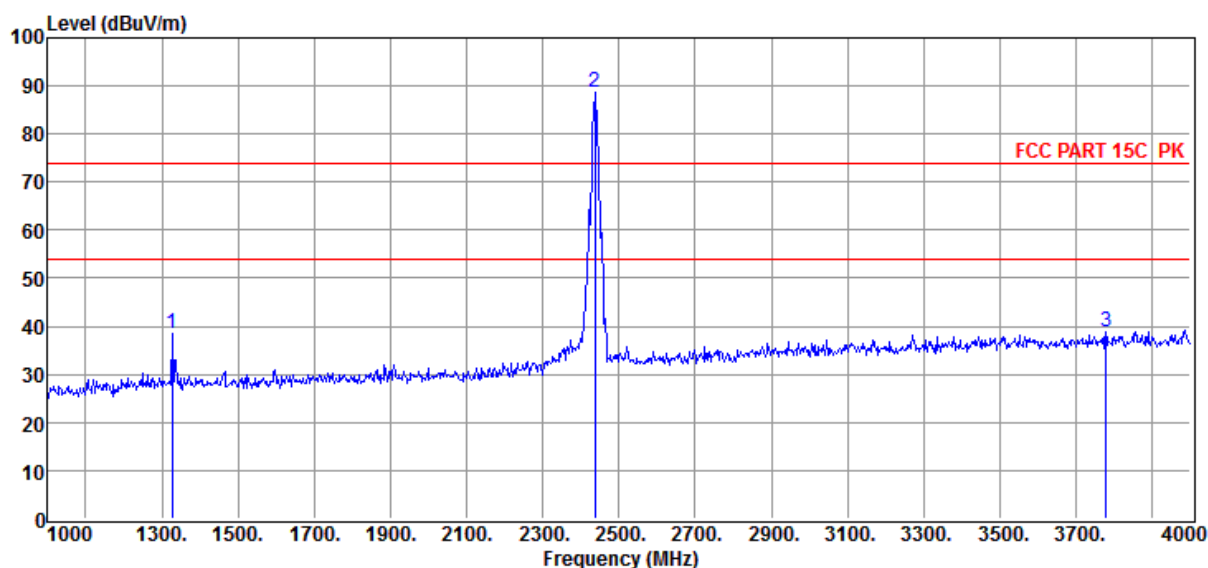
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber  
**Test Date** : 2015-04-08  
**EUT** : WIFI module  
**Power Supply** : DC 3.3V  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa  
**Memo** :

**E:\2015 Report Data\15Q0306-2\WIFI.EM6**  
**Tested By** : Leo  
**Model Number** : Robstepwifi  
**Test Mode** : 11b CH6  
**Antenna/Distance** : 2014 HF907/3m/VERTICAL

Data: 6



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 1327.00       | 36.98                   | 25.71                       | 27.87               | 3.64                | 38.46                       | 74.00                     | -35.54                | Peak     | VERTICAL     |
| 2              | 2437.00       | 83.48                   | 30.14                       | 30.23               | 5.24                | 88.63                       | /                         | /                     | Peak     | VERTICAL     |
| 3              | 3778.00       | 28.35                   | 32.99                       | 29.81               | 7.23                | 38.76                       | 74.00                     | -35.24                | Peak     | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

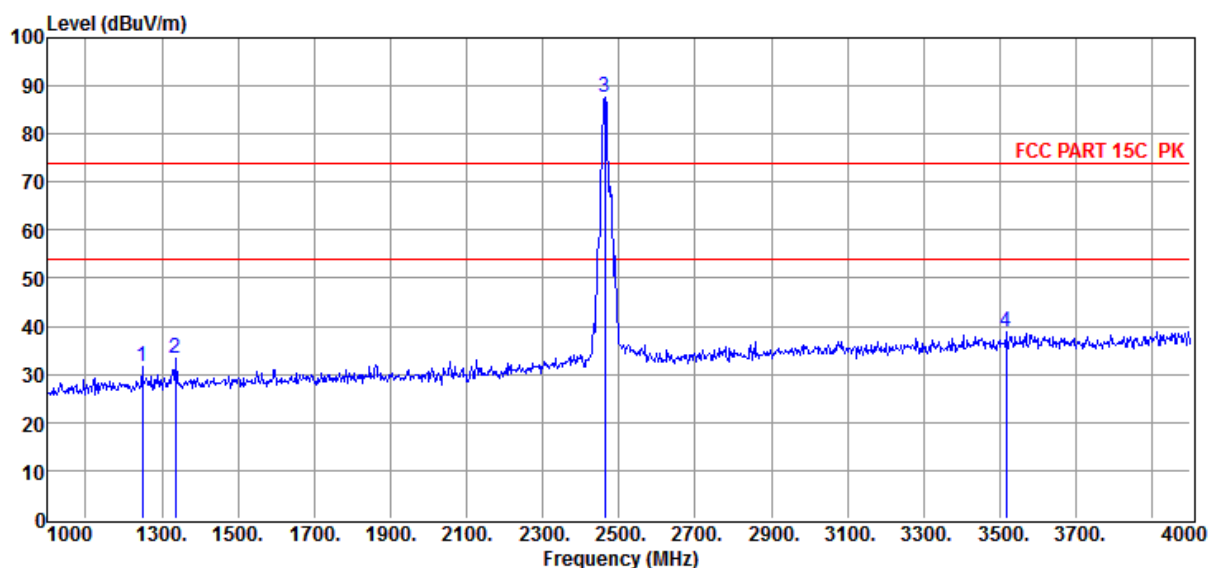
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH11  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/VERTICAL  
**Memo** :

Data: 7



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 1249.00       | 30.40                   | 25.48                       | 27.65               | 3.53                | 31.76                       | 74.00                     | -42.24                | Peak     | VERTICAL     |
| 2              | 1336.00       | 31.63                   | 25.77                       | 27.87               | 3.64                | 33.17                       | 74.00                     | -40.83                | Peak     | VERTICAL     |
| 3              | 2462.00       | 82.47                   | 30.20                       | 30.25               | 5.31                | 87.73                       | /                         | /                     | Peak     | VERTICAL     |
| 4              | 3517.00       | 29.41                   | 32.62                       | 30.05               | 6.71                | 38.69                       | 74.00                     | -35.31                | Peak     | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

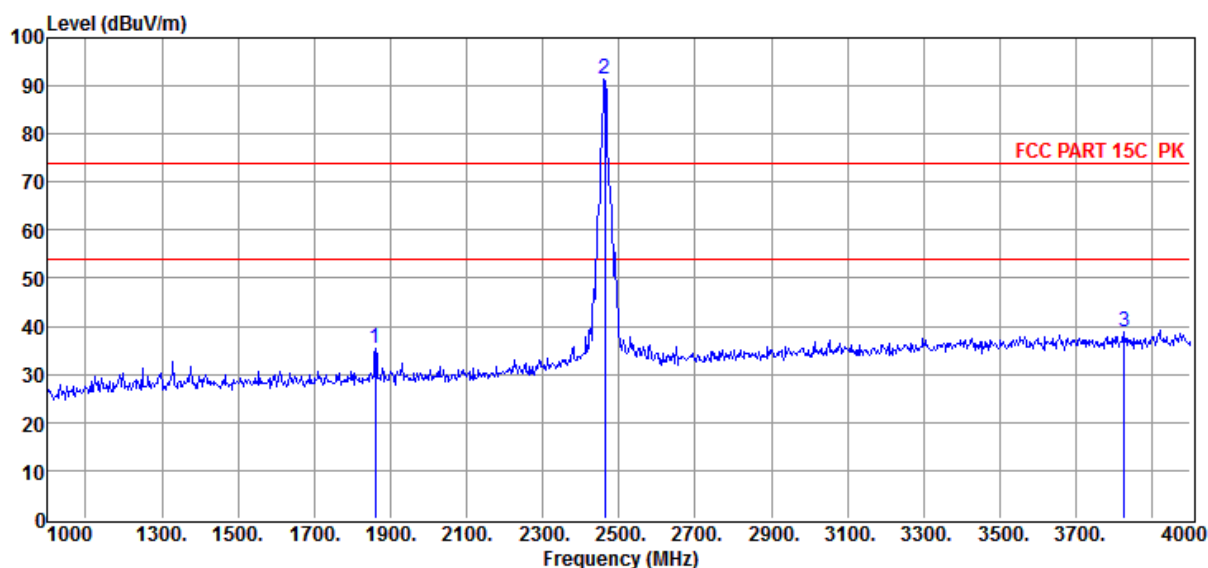
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH11  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Memo** :

Data: 8



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 1861.00       | 32.34                   | 28.13                       | 29.70               | 4.54                | 35.31                       | 74.00                     | -38.69                | Peak     | HORIZONTAL   |
| 2              | 2462.00       | 85.99                   | 30.20                       | 30.25               | 5.31                | 91.25                       | /                         | /                     | Peak     | HORIZONTAL   |
| 3              | 3826.00       | 28.21                   | 33.06                       | 29.79               | 7.28                | 38.76                       | 74.00                     | -35.24                | Peak     | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

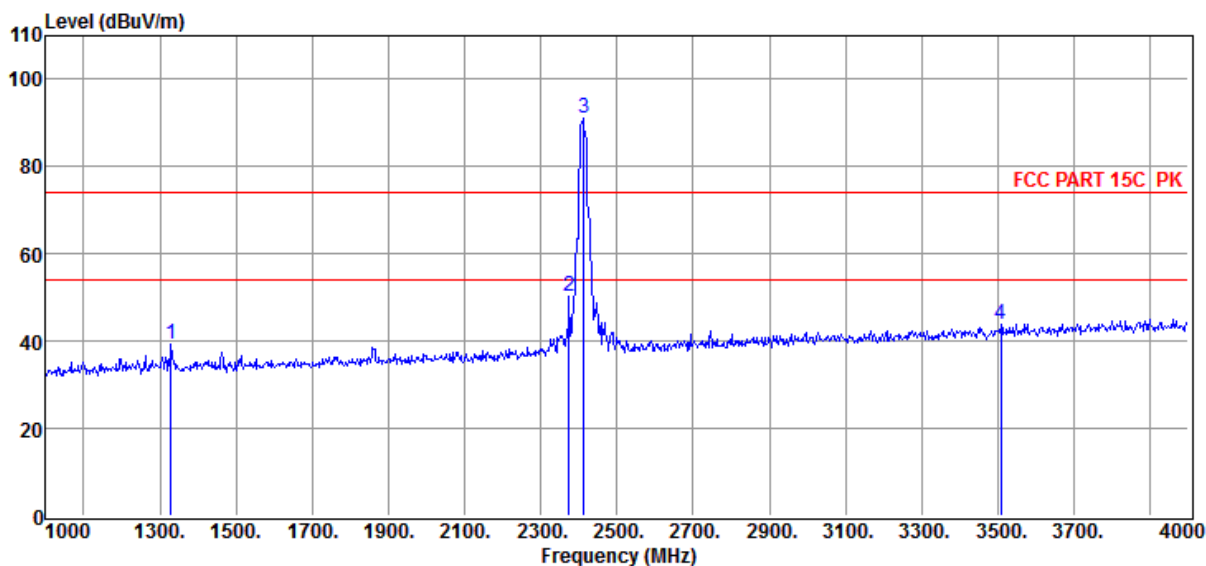
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:\2015 Report Data\15Q0306-2\WIFI.EM6**  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11g CH1  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/VERTICAL  
**Memo** :

Data: 11



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 1330.00       | 37.74                   | 25.71                       | 27.87               | 3.64                | 39.22                       | 74.00                     | -34.78                | Peak     | VERTICAL     |
| 2              | 2374.00       | 45.46                   | 29.94                       | 30.19               | 5.11                | 50.32                       | 74.00                     | -23.68                | Peak     | VERTICAL     |
| 3              | 2412.00       | 86.14                   | 30.04                       | 30.21               | 5.17                | 91.14                       | /                         | /                     | Peak     | VERTICAL     |
| 4              | 3508.00       | 34.74                   | 32.62                       | 30.05               | 6.71                | 44.02                       | 74.00                     | -29.98                | Peak     | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

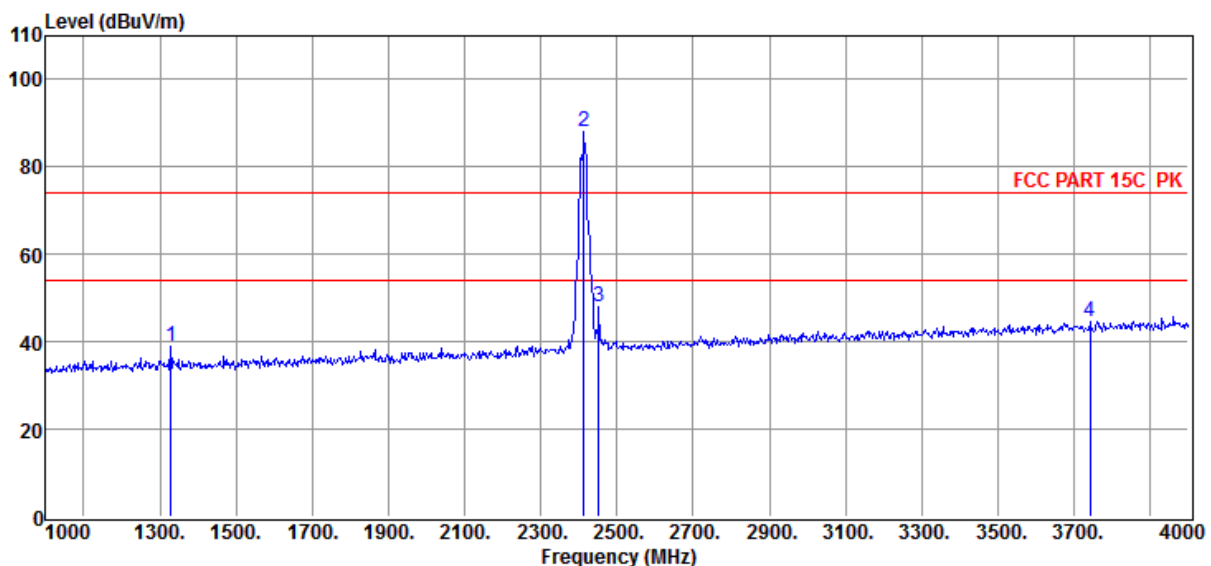
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber  
**Test Date** : 2015-04-08  
**EUT** : WIFI module  
**Power Supply** : DC 3.3V  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa  
**Memo** :

**E:\2015 Report Data\15Q0306-2\WIFI.EM6**  
**Tested By** : Leo  
**Model Number** : Robstepwifi  
**Test Mode** : 11g CH1  
**Antenna/Distance** : 2014 HF907/3m/HORIZONTAL

Data: 12



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 1330.00       | 37.64                   | 25.71                       | 27.87               | 3.64                | 39.12                       | 74.00                     | -34.88                | Peak     | HORIZONTAL   |
| 2              | 2412.00       | 82.94                   | 30.04                       | 30.21               | 5.17                | 87.94                       | /                         | /                     | Peak     | HORIZONTAL   |
| 3              | 2452.00       | 42.74                   | 30.14                       | 30.23               | 5.24                | 47.89                       | 74.00                     | -26.11                | Peak     | HORIZONTAL   |
| 4              | 3742.00       | 34.49                   | 32.94                       | 29.84               | 7.17                | 44.76                       | 74.00                     | -29.24                | Peak     | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

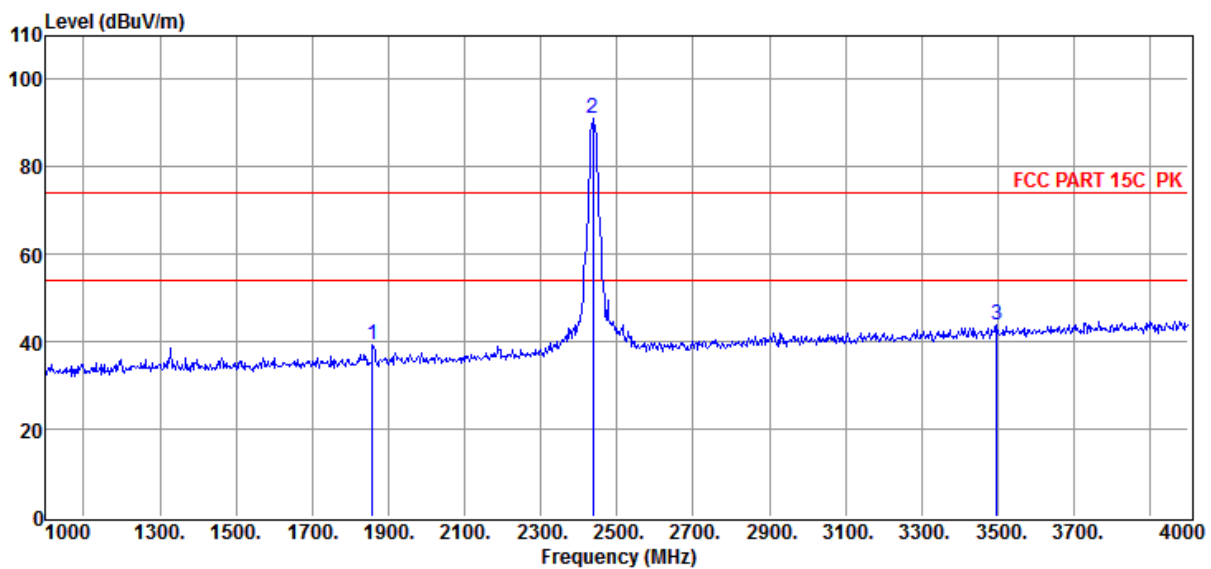
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber  
**Test Date** : 2015-04-08  
**EUT** : WIFI module  
**Power Supply** : DC 3.3V  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa  
**Memo** :

**E:\2015 Report Data\15Q0306-2\WIFI.EM6**  
**Tested By** : Leo  
**Model Number** : Robstepwifi  
**Test Mode** : 11g CH6  
**Antenna/Distance** : 2014 HF907/3m/VERTICAL

Data: 15



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 1858.00       | 36.33                   | 28.05                       | 29.70               | 4.54                | 39.22                       | 74.00                     | -34.78                | Peak     | VERTICAL     |
| 2              | 2437.00       | 85.78                   | 30.14                       | 30.23               | 5.24                | 90.93                       | /                         | /                     | Peak     | VERTICAL     |
| 3              | 3496.00       | 34.61                   | 32.60                       | 30.05               | 6.71                | 43.87                       | 74.00                     | -30.13                | Peak     | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

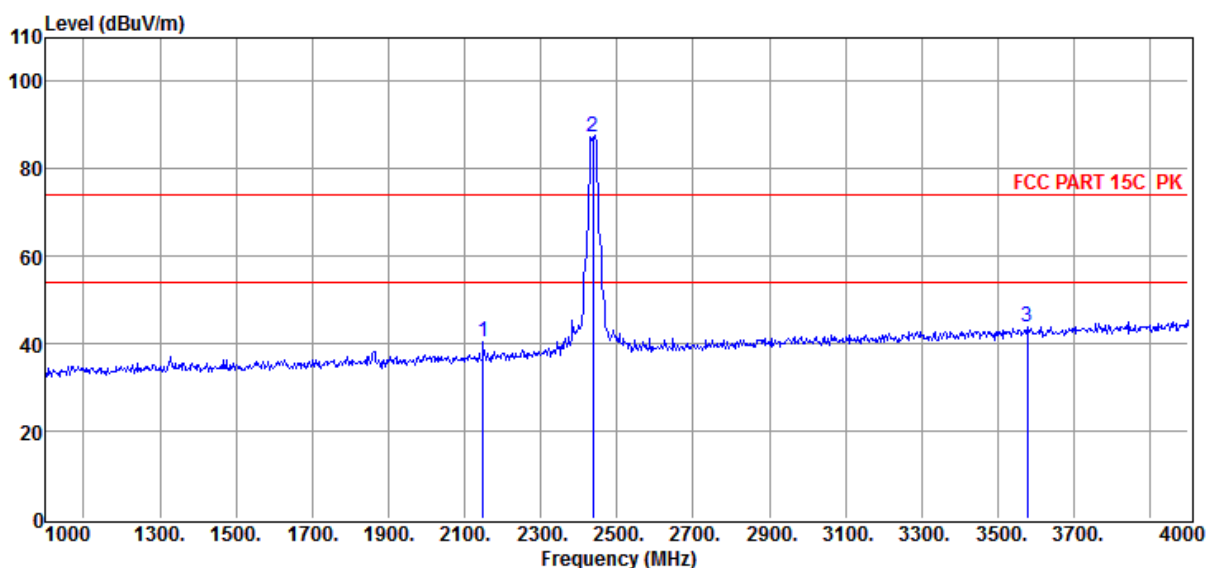
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.



## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11g CH6  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Memo** :

Data: 16



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 2149.00       | 36.32                   | 29.27                       | 30.12               | 4.87                | 40.34                       | 74.00                     | -33.66                | Peak     | HORIZONTAL   |
| 2              | 2437.00       | 81.99                   | 30.14                       | 30.23               | 5.24                | 87.14                       | /                         | /                     | Peak     | HORIZONTAL   |
| 3              | 3577.00       | 34.27                   | 32.72                       | 29.97               | 6.89                | 43.91                       | 74.00                     | -30.09                | Peak     | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

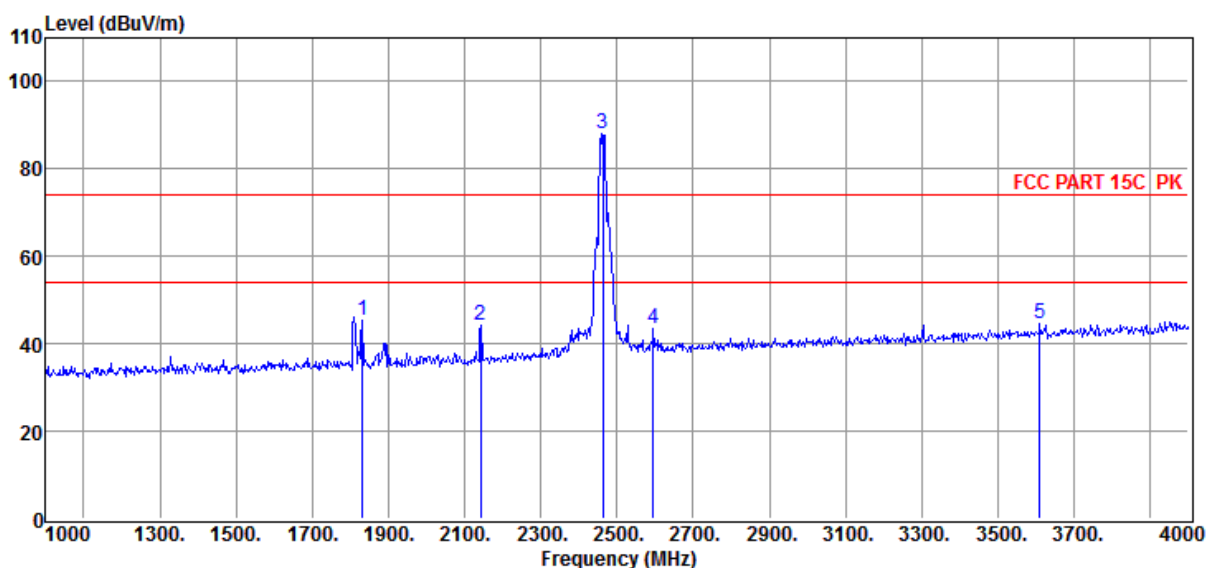
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11g CH11  
**Condition** : Temp:24.5'C,Humi:55%,  
**Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Memo** :

Data: 17



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 1831.00       | 42.62                   | 27.97                       | 29.70               | 4.54                | 45.43                       | 74.00                     | -28.57                | Peak     | HORIZONTAL   |
| 2              | 2143.00       | 40.16                   | 29.21                       | 30.12               | 4.87                | 44.12                       | 74.00                     | -29.88                | Peak     | HORIZONTAL   |
| 3              | 2462.00       | 82.86                   | 30.20                       | 30.25               | 5.31                | 88.12                       | /                         | /                     | Peak     | HORIZONTAL   |
| 4              | 2596.00       | 37.48                   | 30.64                       | 30.30               | 5.50                | 43.32                       | 74.00                     | -30.68                | Peak     | HORIZONTAL   |
| 5              | 3610.00       | 34.82                   | 32.77                       | 29.93               | 6.97                | 44.63                       | 74.00                     | -29.37                | Peak     | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

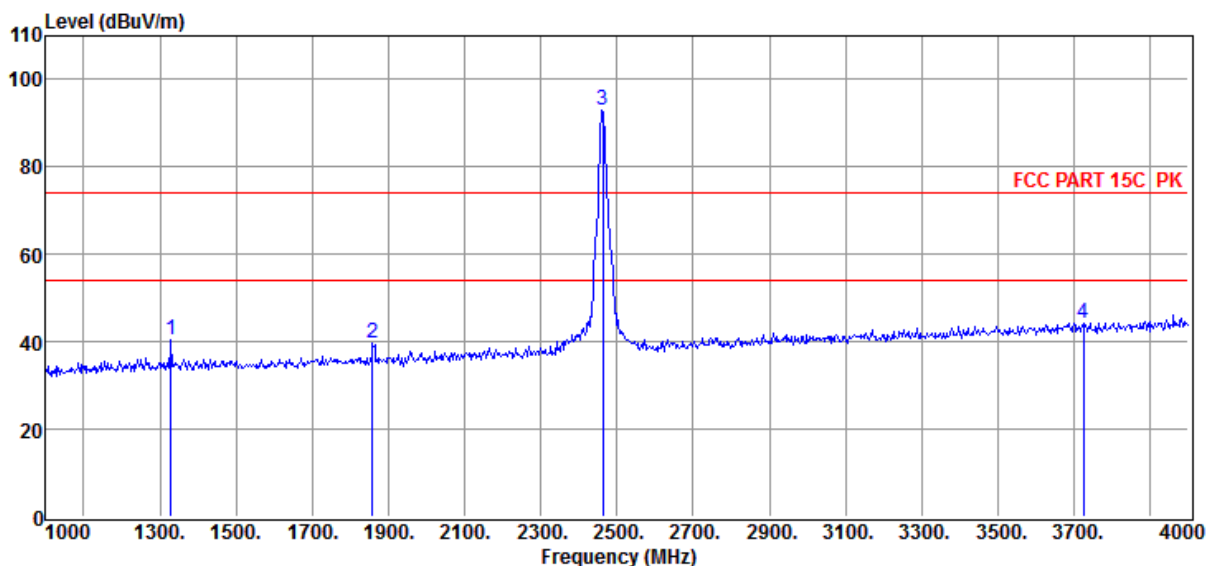
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11g CH11  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/VERTICAL  
**Memo** :

Data: 18



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 1330.00       | 39.02                   | 25.71                       | 27.87               | 3.64                | 40.50                       | 74.00                     | -33.50                | Peak     | VERTICAL     |
| 2              | 1858.00       | 36.61                   | 28.05                       | 29.70               | 4.54                | 39.50                       | 74.00                     | -34.50                | Peak     | VERTICAL     |
| 3              | 2462.00       | 87.87                   | 30.20                       | 30.25               | 5.31                | 93.13                       | /                         | /                     | Peak     | VERTICAL     |
| 4              | 3724.00       | 34.14                   | 32.91                       | 29.84               | 7.17                | 44.38                       | 74.00                     | -29.62                | Peak     | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

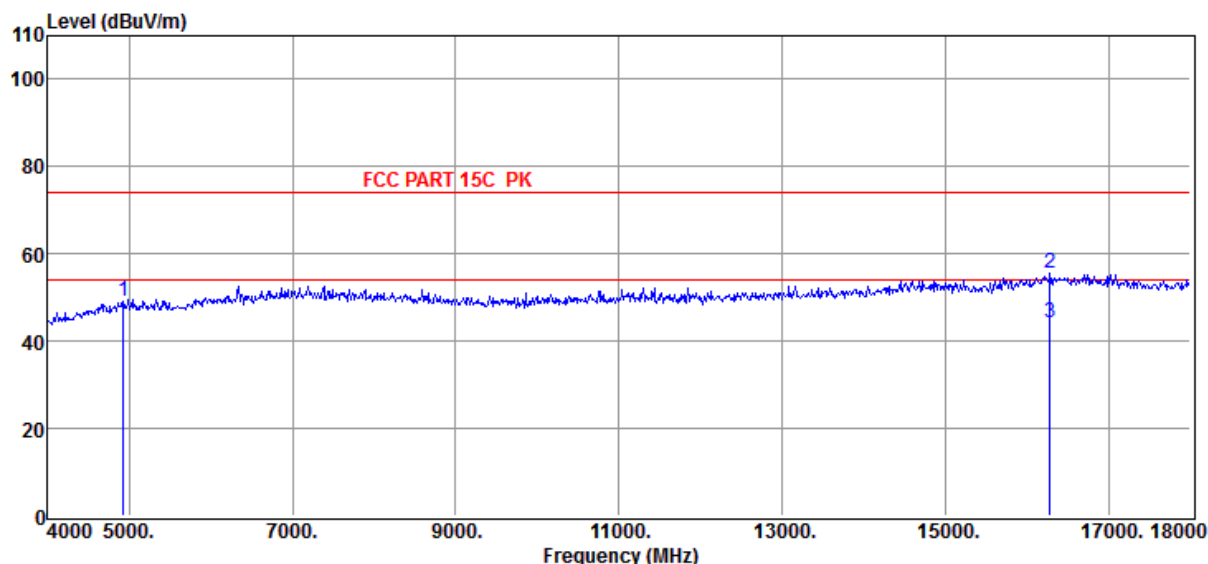
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:\2015 Report Data\15Q0306-2\WIFI.EM6**  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11g CH11  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Memo** :

Data: 21



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 4924.00       | 34.34                   | 35.59                       | 29.06               | 8.16                | 49.03                       | 74.00                     | -24.97                | Peak     | HORIZONTAL   |
| 2              | 16278.00      | 35.09                   | 43.44                       | 36.55               | 13.73               | 55.71                       | 74.00                     | -18.29                | Peak     | HORIZONTAL   |
| 3              | 16278.00      | 23.60                   | 43.44                       | 36.55               | 13.73               | 44.22                       | 54.00                     | -9.78                 | Average  | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

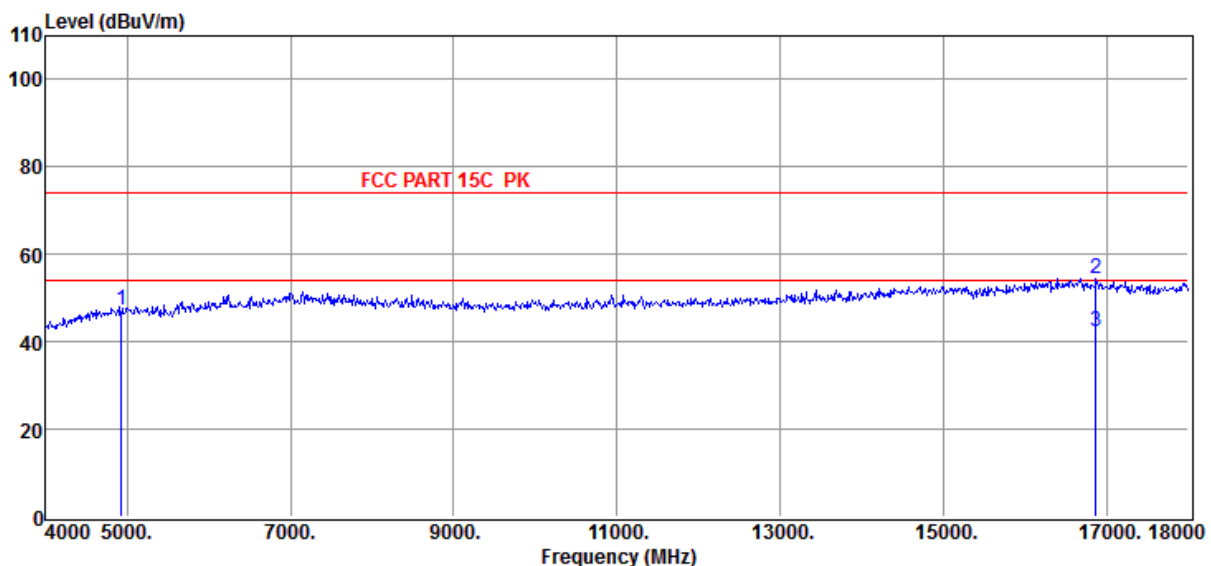
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11g CH11  
**Condition** : Temp:24.5'C,Humi:55%,  
                   Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/VERTICAL  
**Memo** :

Data: 22



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 4924.00       | 32.74                   | 35.59                       | 29.06               | 8.16                | 47.43                       | 74.00                     | -26.57                | Peak     | VERTICAL     |
| 2              | 16866.00      | 33.85                   | 43.63                       | 36.88               | 13.85               | 54.45                       | 74.00                     | -19.55                | Peak     | VERTICAL     |
| 3              | 16866.00      | 21.60                   | 43.63                       | 36.88               | 13.85               | 42.20                       | 54.00                     | -11.80                | Average  | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

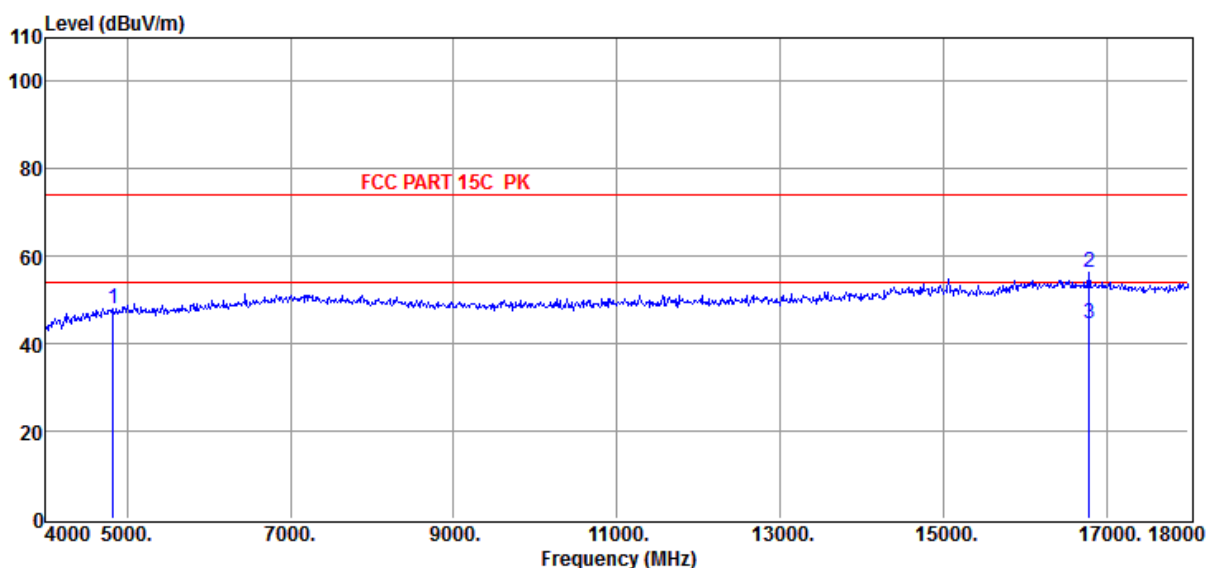
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11g CH1  
**Condition** : Temp:24.5'C,Humi:55%,  
                   Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/VERTICAL  
**Memo** :

Data: 23



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 4824.00       | 33.53                   | 35.42                       | 29.13               | 8.09                | 47.91                       | 74.00                     | -26.09                | Peak     | VERTICAL     |
| 2              | 16782.00      | 35.60                   | 43.64                       | 36.82               | 13.83               | 56.25                       | 74.00                     | -17.75                | Peak     | VERTICAL     |
| 3              | 16782.00      | 24.10                   | 43.64                       | 36.82               | 13.83               | 44.75                       | 54.00                     | -9.25                 | Average  | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

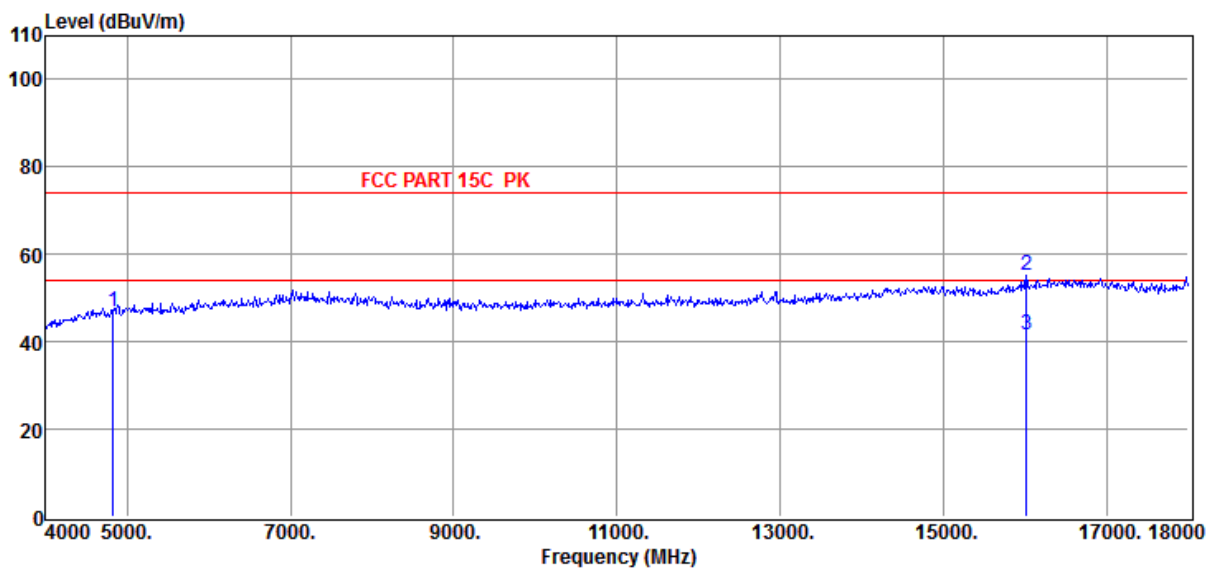
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11g CH1  
**Condition** : Temp:24.5'C,Humi:55%,  
                   Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Memo** :

Data: 24



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 4824.00       | 32.65                   | 35.42                       | 29.13               | 8.09                | 47.03                       | 74.00                     | -26.97                | Peak     | HORIZONTAL   |
| 2              | 16012.00      | 34.93                   | 43.12                       | 36.46               | 13.69               | 55.28                       | 74.00                     | -18.72                | Peak     | HORIZONTAL   |
| 3              | 16012.00      | 21.06                   | 43.12                       | 36.46               | 13.69               | 41.41                       | 54.00                     | -12.59                | Average  | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

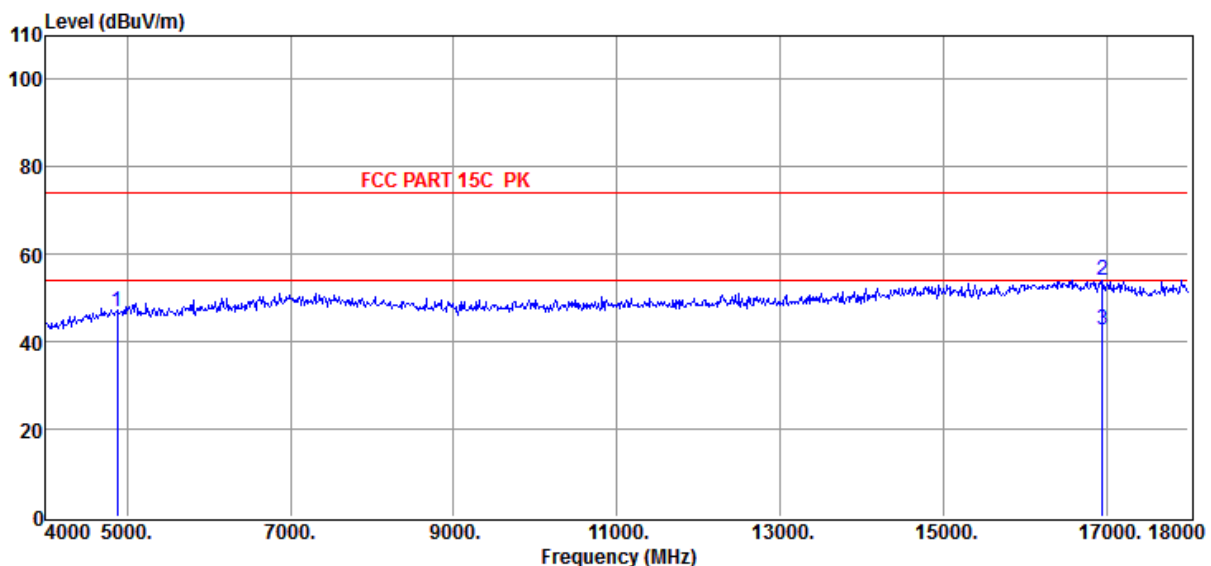
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11g CH6  
**Condition** : Temp:24.5'C,Humi:55%,  
                   Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/VERTICAL  
**Memo** :

Data: 25



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 4874.00       | 32.24                   | 35.51                       | 29.08               | 8.14                | 46.81                       | 74.00                     | -27.19                | Peak     | VERTICAL     |
| 2              | 16950.00      | 33.66                   | 43.61                       | 36.95               | 13.87               | 54.19                       | 74.00                     | -19.81                | Peak     | VERTICAL     |
| 3              | 16950.00      | 22.03                   | 43.61                       | 36.95               | 13.87               | 42.56                       | 54.00                     | -11.44                | Average  | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

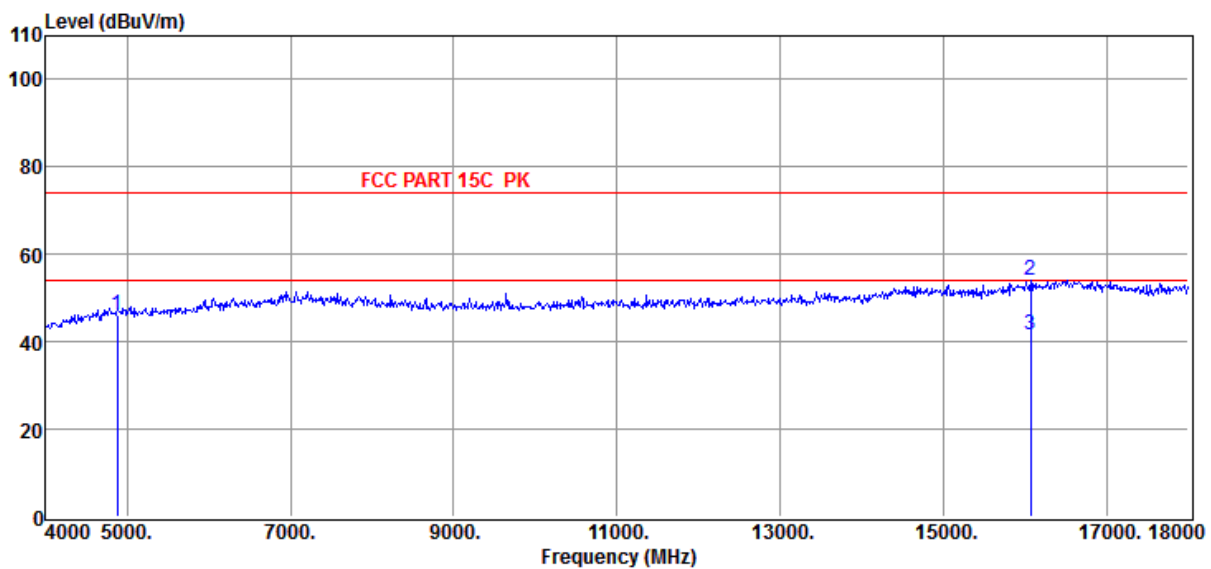
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.



## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11g CH6  
**Condition** : Temp:24.5'C,Humi:55%,  
                   Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Memo** :

Data: 26



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 4874.00       | 31.71                   | 35.51                       | 29.08               | 8.14                | 46.28                       | 74.00                     | -27.72                | Peak     | HORIZONTAL   |
| 2              | 16068.00      | 33.57                   | 43.18                       | 36.48               | 13.70               | 53.97                       | 74.00                     | -20.03                | Peak     | HORIZONTAL   |
| 3              | 16068.00      | 21.30                   | 43.18                       | 36.48               | 13.70               | 41.70                       | 54.00                     | -12.30                | Average  | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

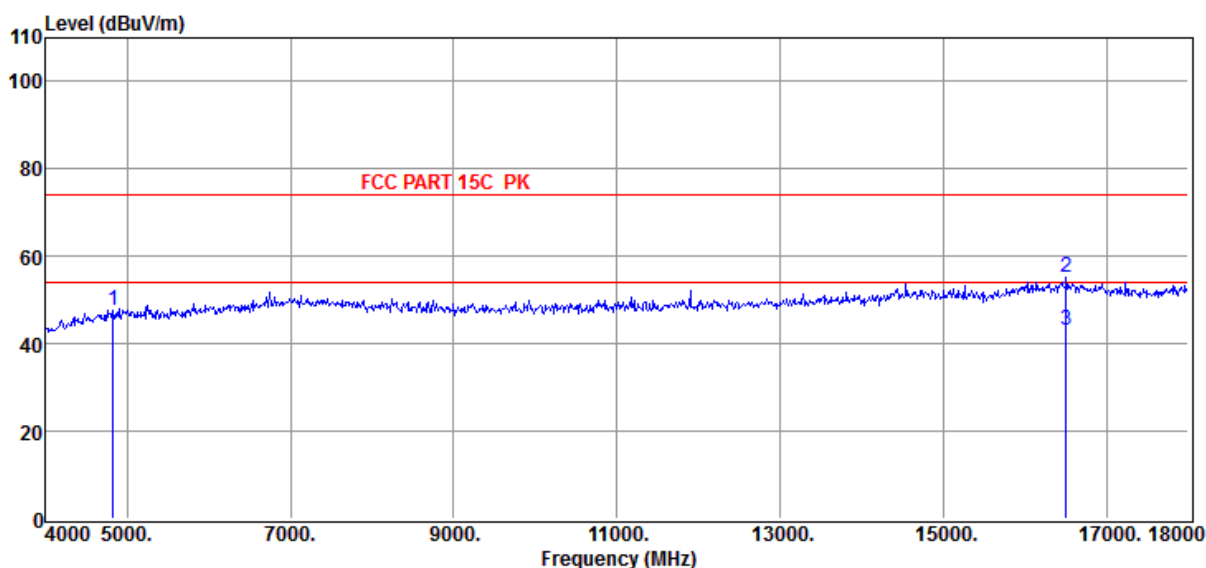
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH1  
**Condition** : Temp:24.5'C,Humi:55%,  
                   Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Memo** :

Data: 27



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 4824.00       | 33.32                   | 35.42                       | 29.13               | 8.09                | 47.70                       | 74.00                     | -26.30                | Peak     | HORIZONTAL   |
| 2              | 16502.00      | 34.19                   | 43.70                       | 36.65               | 13.77               | 55.01                       | 74.00                     | -18.99                | Peak     | HORIZONTAL   |
| 3              | 16502.00      | 22.39                   | 43.70                       | 36.65               | 13.77               | 43.21                       | 54.00                     | -10.79                | Average  | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

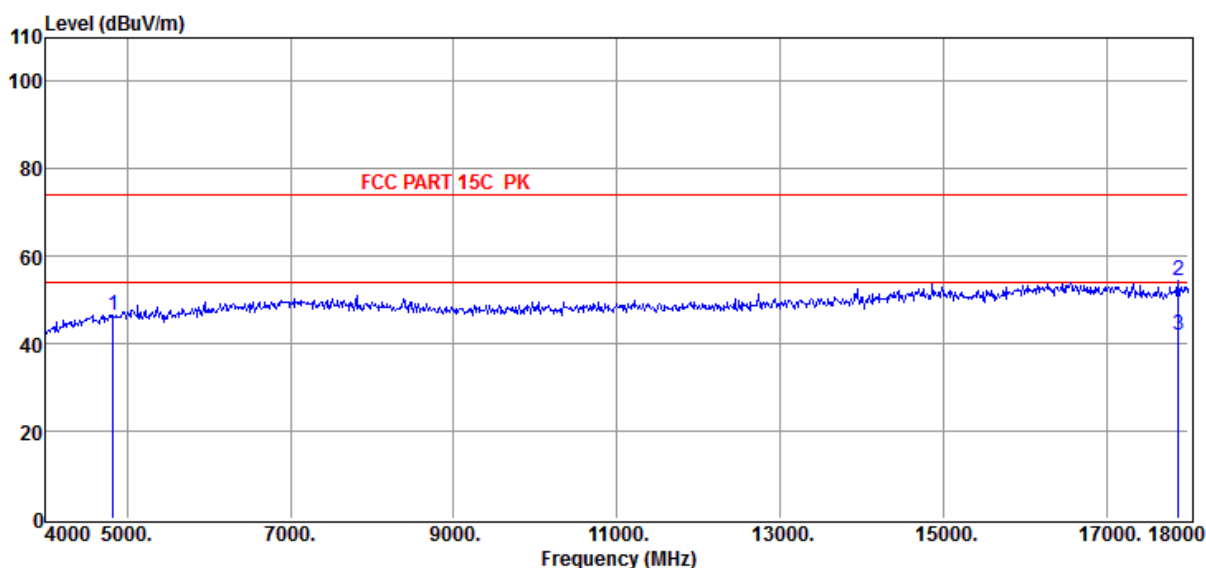
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH1  
**Condition** : Temp:24.5'C,Humi:55%,  
                   Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/VERTICAL  
**Memo** :

Data: 28



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 4824.00       | 32.02                   | 35.42                       | 29.13               | 8.09                | 46.40                       | 74.00                     | -27.60                | Peak     | VERTICAL     |
| 2              | 17874.00      | 34.61                   | 43.48                       | 37.57               | 14.10               | 54.62                       | 74.00                     | -19.38                | Peak     | VERTICAL     |
| 3              | 17874.00      | 21.91                   | 43.48                       | 37.57               | 14.10               | 41.92                       | 54.00                     | -12.08                | Average  | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

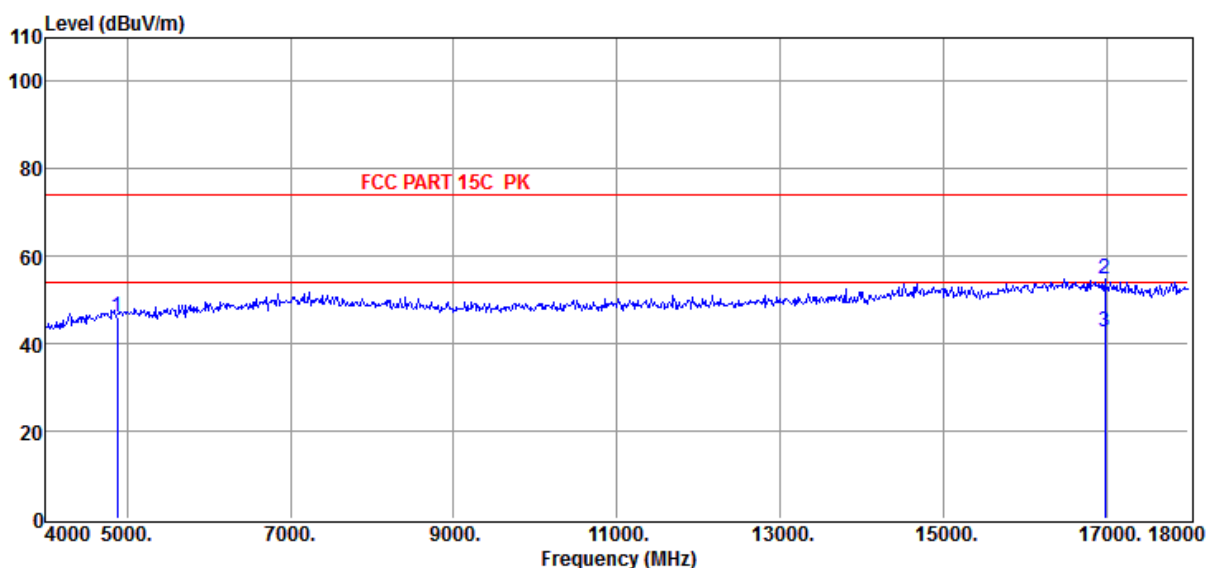
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH6  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/VERTICAL  
**Memo** :

Data: 29



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 4874.00       | 31.49                   | 35.51                       | 29.08               | 8.14                | 46.06                       | 74.00                     | -27.94                | Peak     | VERTICAL     |
| 2              | 16978.00      | 34.44                   | 43.60                       | 36.99               | 13.89               | 54.94                       | 74.00                     | -19.06                | Peak     | VERTICAL     |
| 3              | 16978.00      | 22.37                   | 43.60                       | 36.99               | 13.89               | 42.87                       | 54.00                     | -11.13                | Average  | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

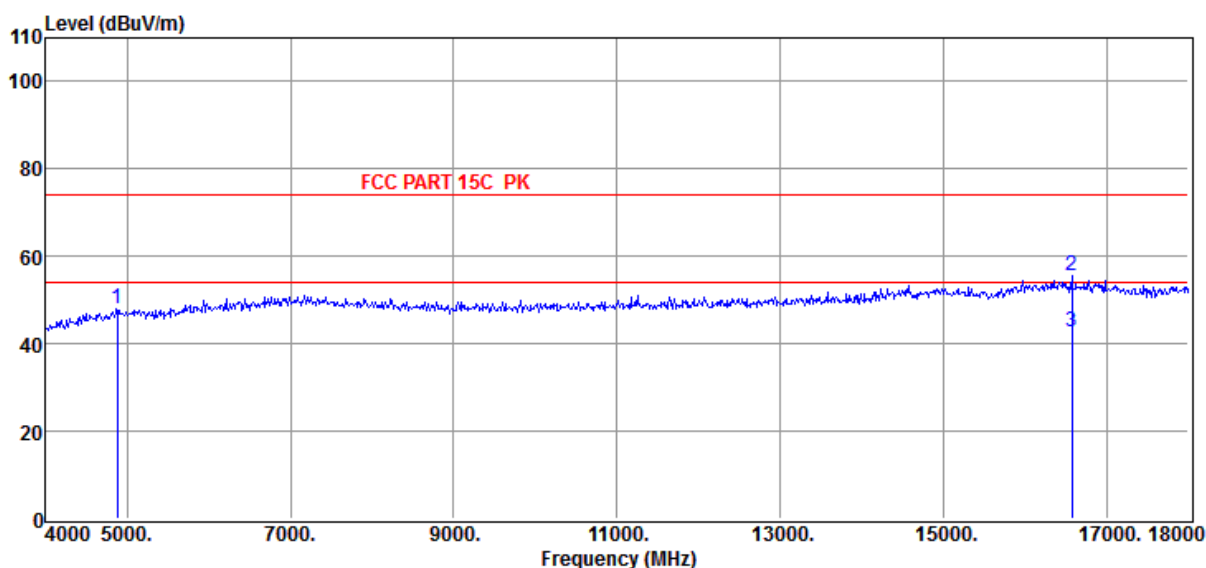
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH6  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Memo** :

Data: 30



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 4874.00       | 33.39                   | 35.51                       | 29.08               | 8.14                | 47.96                       | 74.00                     | -26.04                | Peak     | HORIZONTAL   |
| 2              | 16572.00      | 34.61                   | 43.69                       | 36.69               | 13.78               | 55.39                       | 74.00                     | -18.61                | Peak     | HORIZONTAL   |
| 3              | 16572.00      | 22.09                   | 43.69                       | 36.69               | 13.78               | 42.87                       | 54.00                     | -11.13                | Average  | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

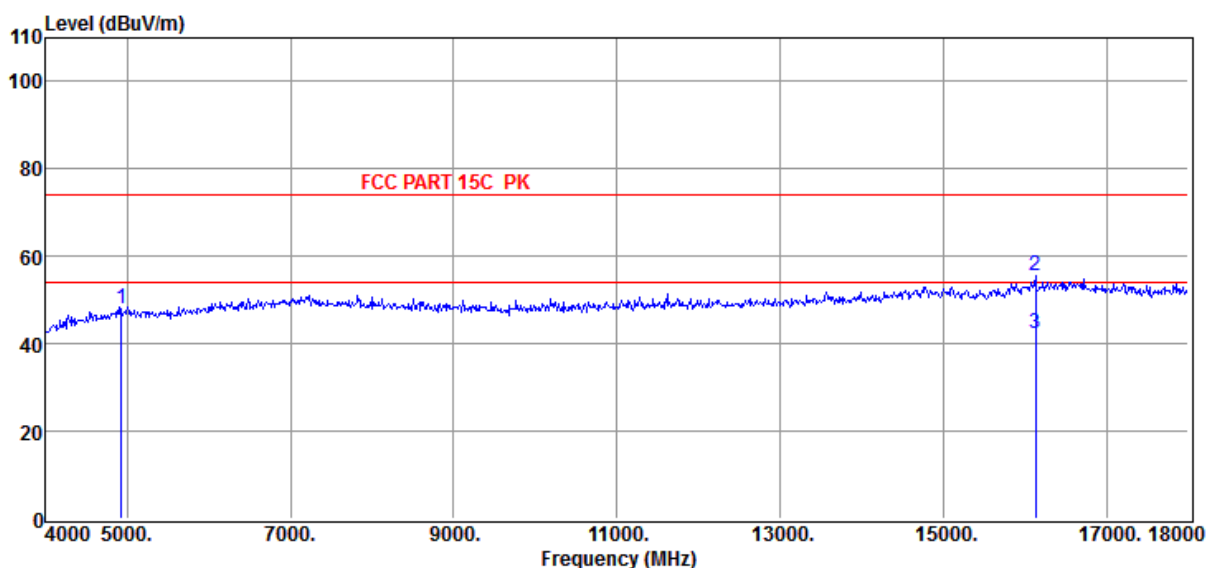
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH11  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Memo** :

Data: 31



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 4924.00       | 33.25                   | 35.59                       | 29.06               | 8.16                | 47.94                       | 74.00                     | -26.06                | Peak     | HORIZONTAL   |
| 2              | 16124.00      | 34.94                   | 43.26                       | 36.50               | 13.71               | 55.41                       | 74.00                     | -18.59                | Peak     | HORIZONTAL   |
| 3              | 16124.00      | 21.80                   | 43.26                       | 36.50               | 13.71               | 42.27                       | 54.00                     | -11.73                | Average  | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

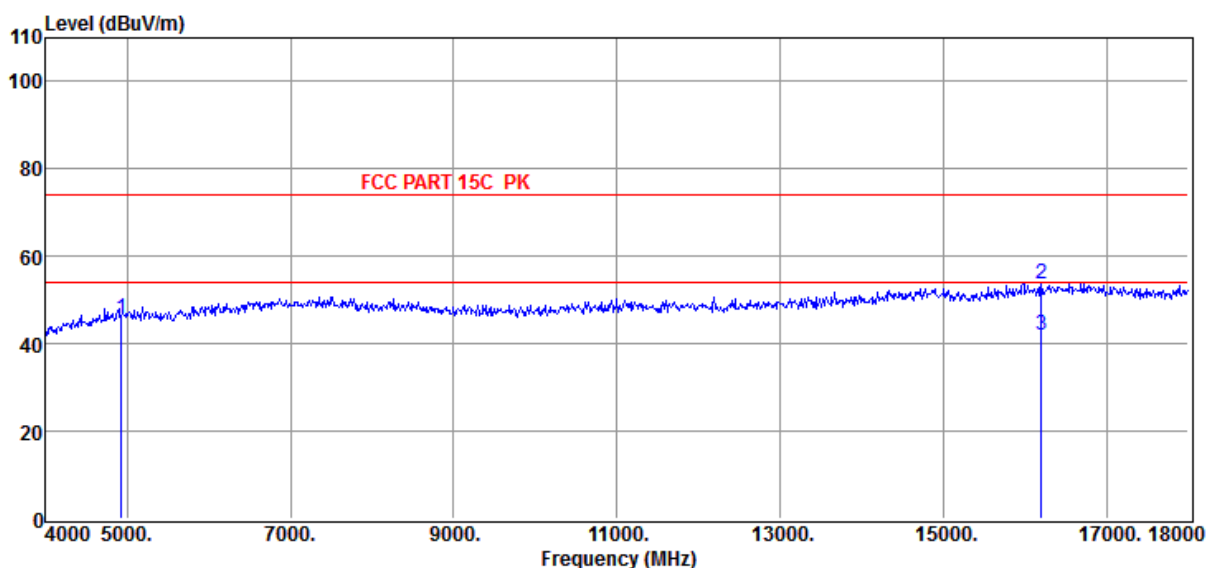
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH11  
**Condition** : Temp:24.5'C,Humi:55%,  
                   Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/VERTICAL  
**Memo** :

Data: 32



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 4924.00       | 31.05                   | 35.59                       | 29.06               | 8.16                | 45.74                       | 74.00                     | -28.26                | Peak     | VERTICAL     |
| 2              | 16194.00      | 33.24                   | 43.34                       | 36.52               | 13.72               | 53.78                       | 74.00                     | -20.22                | Peak     | VERTICAL     |
| 3              | 16194.00      | 21.60                   | 43.34                       | 36.52               | 13.72               | 42.14                       | 54.00                     | -11.86                | Average  | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

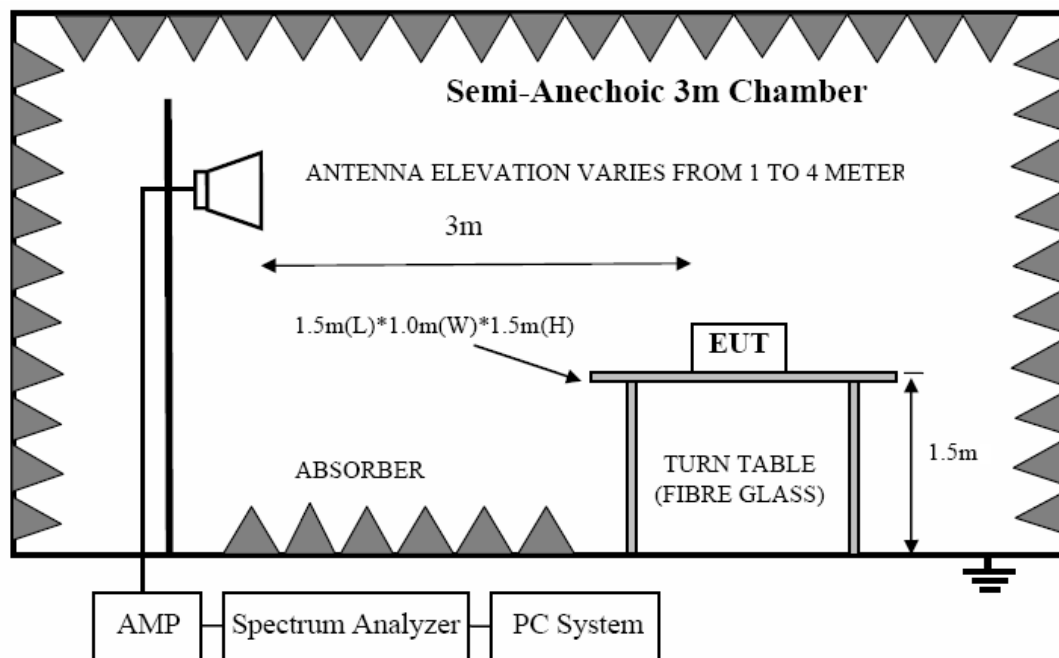
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## 8. Band Edge Compliance

### 8.1. Test equipment

| Item | Equipment                  | Manufacturer | Model No. | Serial No.   | Last Cal.  | Cal. Interval |
|------|----------------------------|--------------|-----------|--------------|------------|---------------|
| 1    | EMI Test Receiver          | R&S          | ESU8      | 100316       | 2014/10/25 | 1 Year        |
| 2    | Spectrum analyzer          | R&S          | FSU       | 1166.1660.26 | 2014/10/25 | 1 Year        |
| 3    | Trilog Broadband Antenna   | Schwarzbeck  | VULB9163  | 9163-462     | 2014/04/12 | 1 Year        |
| 4    | Double Ridged Horn Antenna | R&S          | HF907     | 100276       | 2014/04/12 | 1 Year        |
| 5    | Pre-amplifier              | A.H.         | PAM0-0118 | 360          | 2014/10/25 | 1 Year        |
| 6    | RF Cable                   | R&S          | R01       | 10403        | 2014/10/25 | 1 Year        |
| 7    | RF Cable                   | R&S          | R02       | 10512        | 2014/10/25 | 1 Year        |
| 8    | Testing software           | Audix        | E3        | 6.111111     | /          | /             |

### 8.2. Block diagram of test setup



### 8.3. Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.



#### **8.4. Test Procedure**

Same with clause 8.4 except change investigated frequency range from 2100MHz to 2450MHz and 2450MHz to 2500MHz.

Remark: All restriction band have been tested, and only the worse case is shown in report.

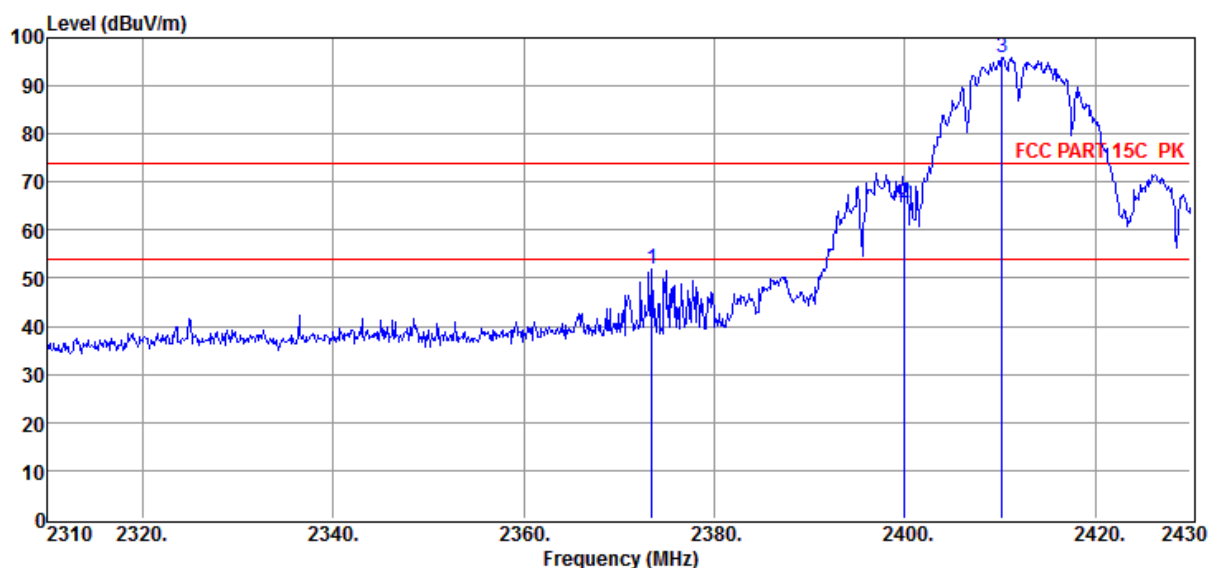
#### **8.5. Test result**

**PASS. (See below detailed test result)**

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH1  
**Condition** : Temp:24.5'C,Humi:55%,  
                   Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/VERTICAL  
**Memo** :

Data: 3



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 2373.48       | 46.93                   | 29.94                       | 30.19               | 5.11                | 51.79                       | 74.00                     | -22.21                | Peak     | VERTICAL     |
| 2              | 2400.00       | 60.71                   | 29.99                       | 30.21               | 5.17                | 65.66                       | 74.00                     | -8.34                 | Peak     | VERTICAL     |
| 3              | 2410.20       | 90.80                   | 30.04                       | 30.21               | 5.17                | 95.80                       | 74.00                     | 21.80                 | Peak     | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

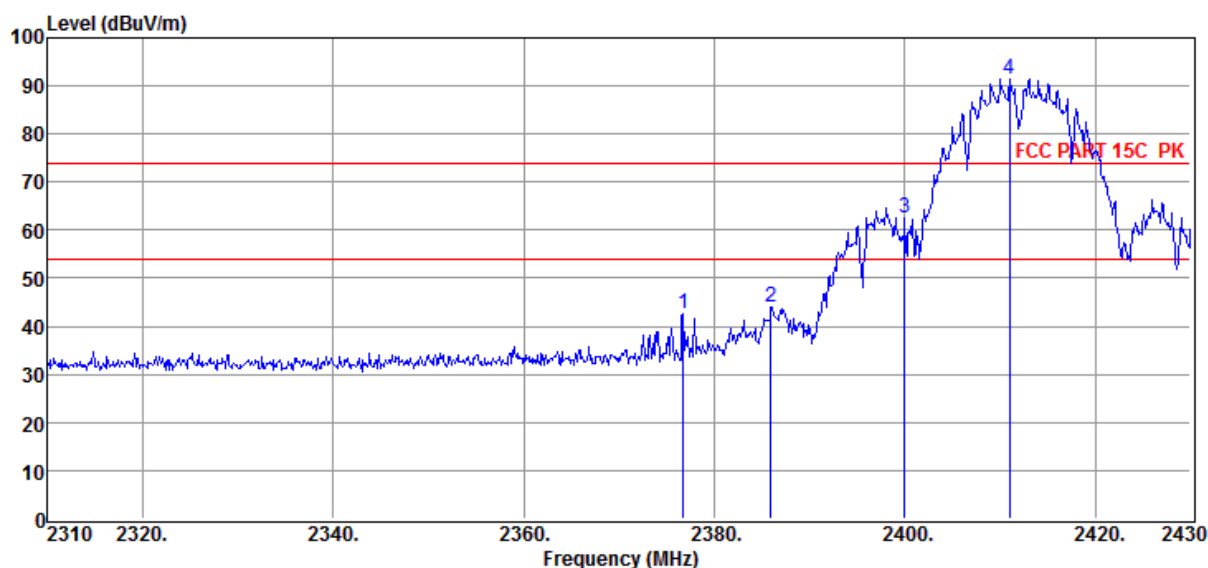
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH1  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Memo** :

Data: 4



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 2376.72       | 37.64                   | 29.94                       | 30.21               | 5.17                | 42.54                       | 74.00                     | -31.46                | Peak     | HORIZONTAL   |
| 2              | 2385.96       | 39.07                   | 29.99                       | 30.21               | 5.17                | 44.02                       | 74.00                     | -29.98                | Peak     | HORIZONTAL   |
| 3              | 2400.00       | 57.61                   | 29.99                       | 30.21               | 5.17                | 62.56                       | 74.00                     | -11.44                | Peak     | HORIZONTAL   |
| 4              | 2411.04       | 86.56                   | 30.04                       | 30.21               | 5.17                | 91.56                       | 74.00                     | 17.56                 | Peak     | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

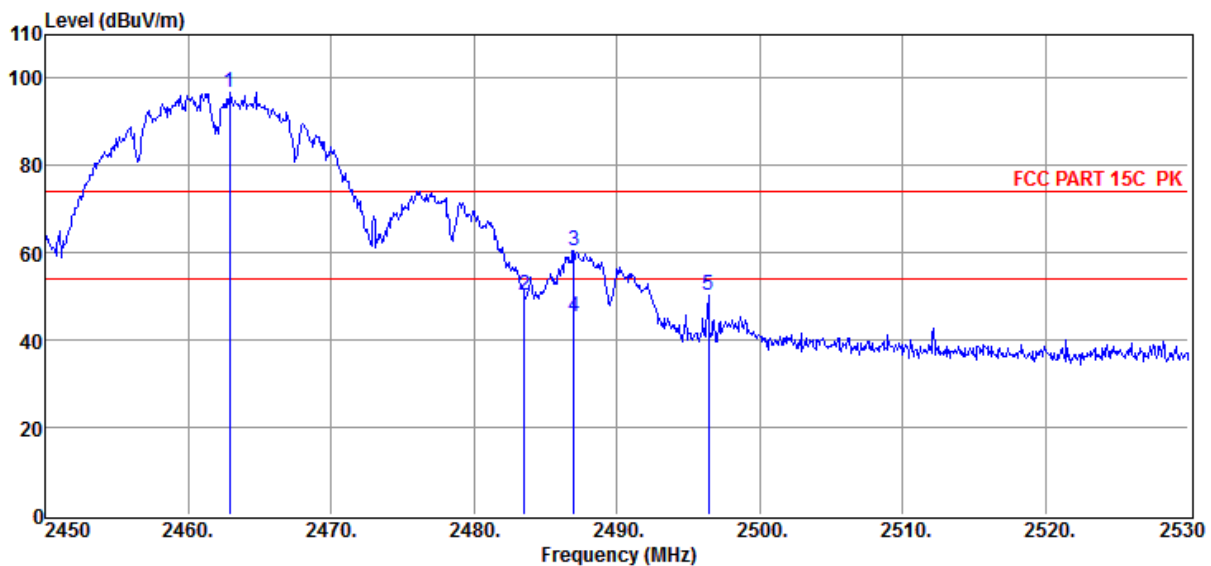
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH11  
**Condition** : Temp:24.5'C,Humi:55%,  
                   Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Memo** :

Data: 9



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 2462.88       | 91.60                   | 30.20                       | 30.25               | 5.31                | 96.86                       | 74.00                     | 22.86                 | Peak     | HORIZONTAL   |
| 2              | 2483.50       | 45.07                   | 30.25                       | 30.25               | 5.31                | 50.38                       | 74.00                     | -23.62                | Peak     | HORIZONTAL   |
| 3              | 2486.96       | 55.23                   | 30.25                       | 30.25               | 5.31                | 60.54                       | 74.00                     | -13.46                | Peak     | HORIZONTAL   |
| 4              | 2486.96       | 40.20                   | 30.25                       | 30.25               | 5.31                | 45.51                       | 54.00                     | -8.49                 | Average  | HORIZONTAL   |
| 5              | 2496.40       | 44.73                   | 30.30                       | 30.27               | 5.38                | 50.14                       | 74.00                     | -23.86                | Peak     | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

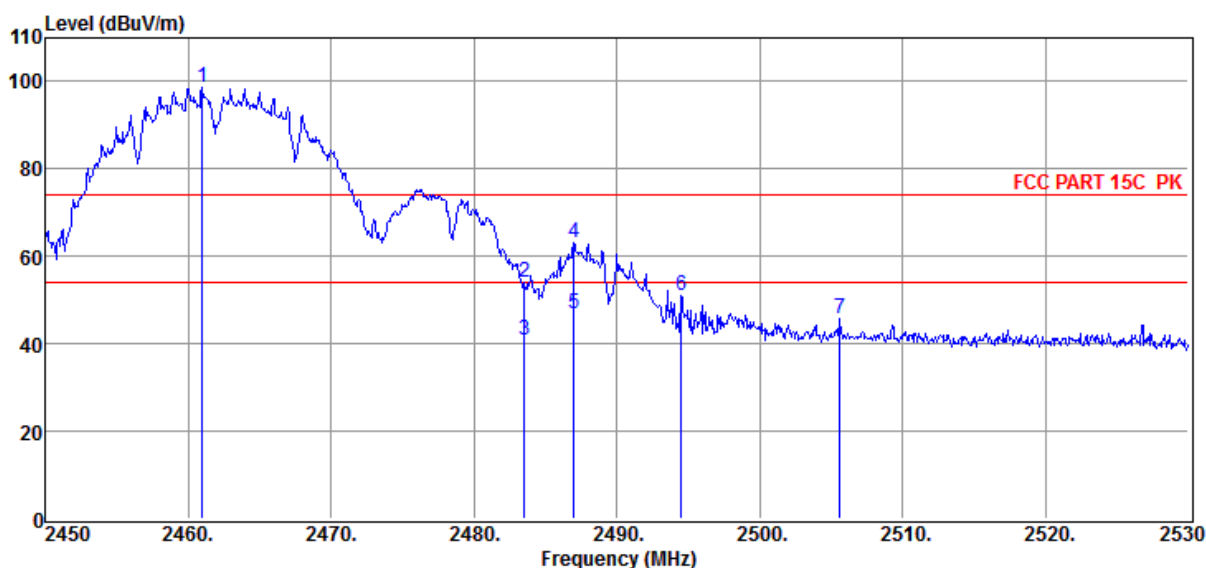
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11b CH11  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/VERTICAL  
**Memo** :

Data: 10



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 2460.96       | 93.37                   | 30.20                       | 30.25               | 5.31                | 98.63                       | 74.00                     | 24.63                 | Peak     | VERTICAL     |
| 2              | 2483.50       | 48.79                   | 30.25                       | 30.25               | 5.31                | 54.10                       | 74.00                     | -19.90                | Peak     | VERTICAL     |
| 3              | 2483.50       | 35.60                   | 30.25                       | 30.25               | 5.31                | 40.91                       | 54.00                     | -13.09                | Average  | VERTICAL     |
| 4              | 2486.96       | 57.69                   | 30.25                       | 30.25               | 5.31                | 63.00                       | 74.00                     | -11.00                | Peak     | VERTICAL     |
| 5              | 2486.96       | 41.60                   | 30.25                       | 30.25               | 5.31                | 46.91                       | 54.00                     | -7.09                 | Average  | VERTICAL     |
| 6              | 2494.48       | 45.76                   | 30.30                       | 30.25               | 5.31                | 51.12                       | 74.00                     | -22.88                | Peak     | VERTICAL     |
| 7              | 2505.60       | 40.15                   | 30.36                       | 30.27               | 5.38                | 45.62                       | 74.00                     | -28.38                | Peak     | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

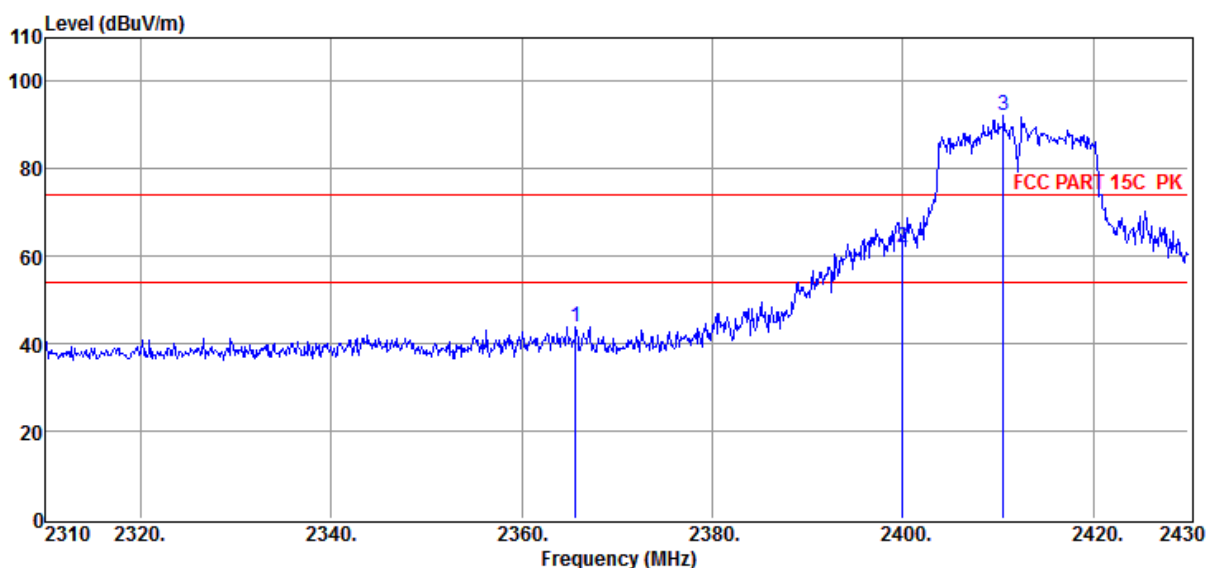
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11g CH1  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/HORIZONTAL  
**Memo** :

Data: 13



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 2365.68       | 39.08                   | 29.89                       | 30.19               | 5.11                | 43.89                       | 74.00                     | -30.11                | Peak     | HORIZONTAL   |
| 2              | 2400.00       | 57.18                   | 29.99                       | 30.21               | 5.17                | 62.13                       | 74.00                     | -11.87                | Peak     | HORIZONTAL   |
| 3              | 2410.56       | 87.08                   | 30.04                       | 30.21               | 5.17                | 92.08                       | 74.00                     | 18.08                 | Peak     | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

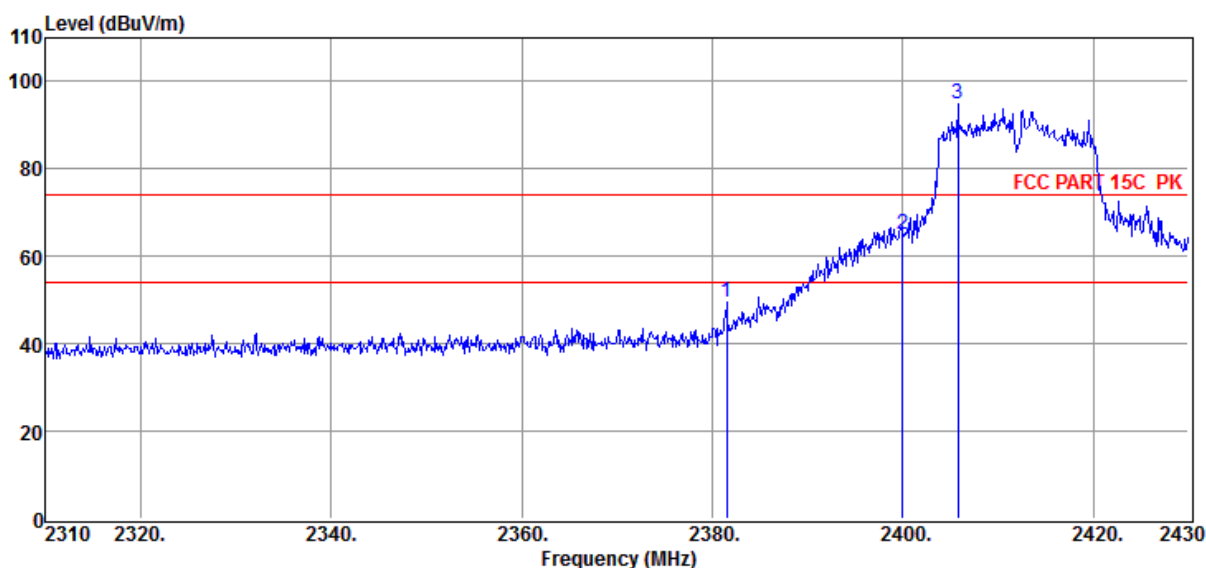
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber **E:** \2015 Report Data\15Q0306-2\WIFI.EM6  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : 11g CH1  
**Condition** : Temp:24.5'C,Humi:55%,  
                   Press:100.1kPa **Antenna/Distance** : 2014 HF907/3m/VERTICAL  
**Memo** :

Data: 14



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 2381.52       | 44.75                   | 29.94                       | 30.21               | 5.17                | 49.65                       | 74.00                     | -24.35                | Peak     | VERTICAL     |
| 2              | 2400.00       | 59.99                   | 29.99                       | 30.21               | 5.17                | 64.94                       | 74.00                     | -9.06                 | Peak     | VERTICAL     |
| 3              | 2405.76       | 90.00                   | 30.04                       | 30.21               | 5.17                | 95.00                       | 74.00                     | 21.00                 | Peak     | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

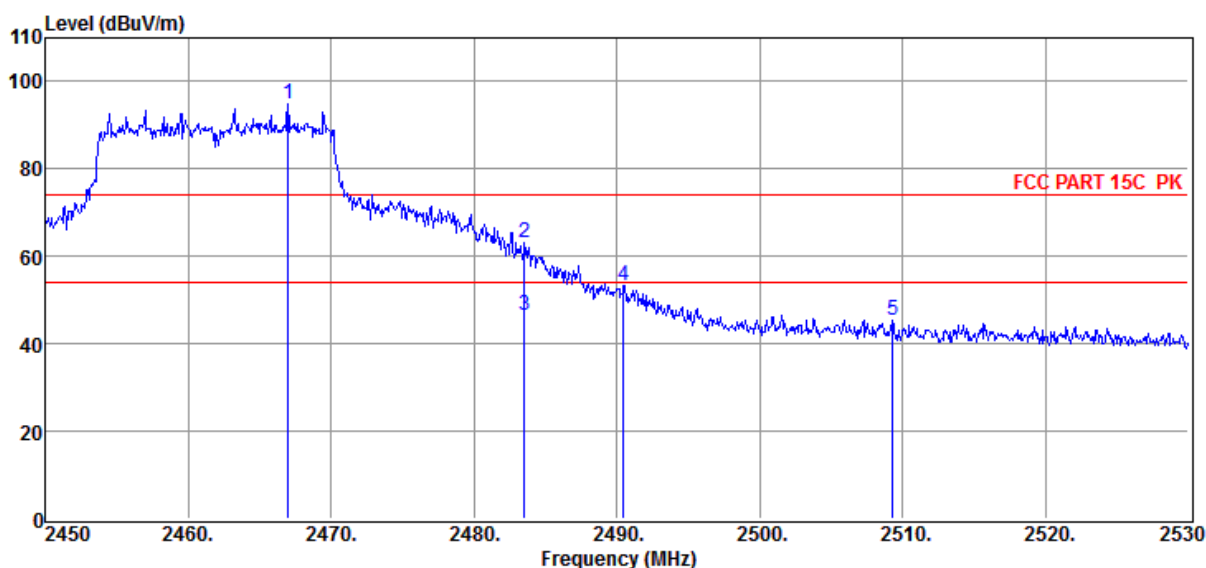
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber  
**Test Date** : 2015-04-08  
**EUT** : WIFI module  
**Power Supply** : DC 3.3V  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa  
**Memo** :

**E:\2015 Report Data\15Q0306-2\WIFI.EM6**  
**Tested By** : Leo  
**Model Number** : Robstepwifi  
**Test Mode** : 11g CH11  
**Antenna/Distance** : 2014 HF907/3m/VERTICAL

Data: 19



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 2466.96       | 89.69                   | 30.20                       | 30.25               | 5.31                | 94.95                       | 74.00                     | 20.95                 | Peak     | VERTICAL     |
| 2              | 2483.50       | 57.71                   | 30.25                       | 30.25               | 5.31                | 63.02                       | 74.00                     | -10.98                | Peak     | VERTICAL     |
| 3              | 2483.50       | 41.10                   | 30.25                       | 30.25               | 5.31                | 46.41                       | 54.00                     | -7.59                 | Average  | VERTICAL     |
| 4              | 2490.48       | 48.08                   | 30.30                       | 30.25               | 5.31                | 53.44                       | 74.00                     | -20.56                | Peak     | VERTICAL     |
| 5              | 2509.28       | 39.88                   | 30.36                       | 30.27               | 5.38                | 45.35                       | 74.00                     | -28.65                | Peak     | VERTICAL     |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.



## TR-4-E-009 Radiated Emission Test Result

**Test Site** : DDT 3m Chamber

E:\2015 Report Data\15Q0306-2\WIFI.EM6

**Test Date** : 2015-04-08

**Tested By** : Leo

**EUT** : WIFI module

**Model Number** : Robstepwifi

**Power Supply** : DC 3.3V

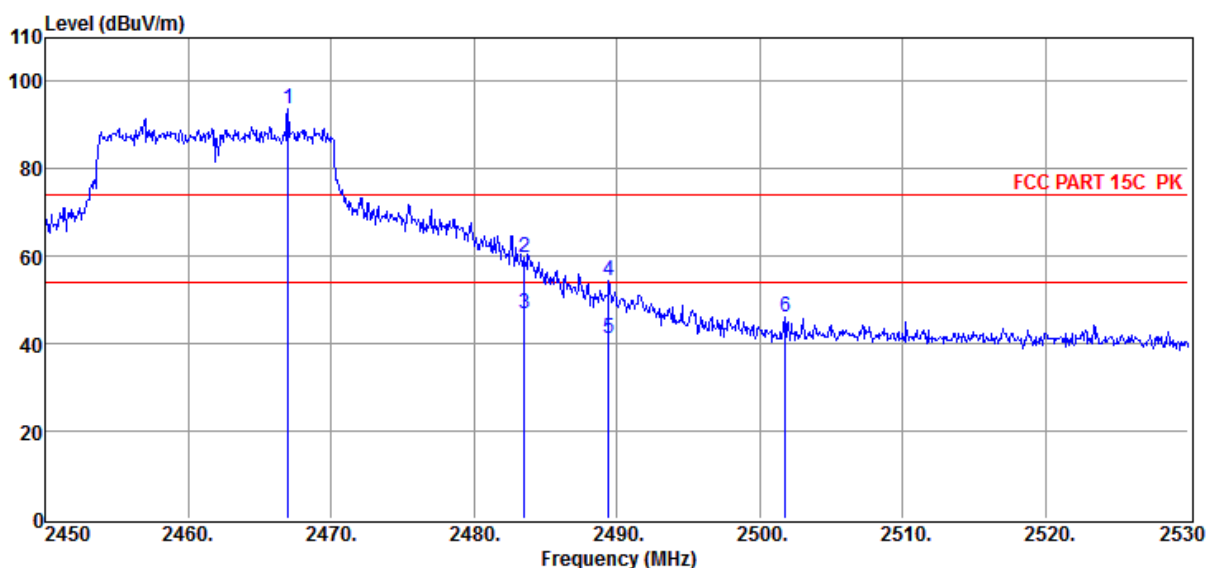
**Test Mode** : 11g CH11

**Condition** : Temp:24.5'C,Humi:55%,  
Press:100.1kPa

**Antenna/Distance** : 2014 HF907/3m/HORIZONTAL

**Memo** :

Data: 20



| Item<br>(Mark) | Freq<br>(MHz) | Read<br>Level<br>(dBμV) | Antenna<br>Factor<br>(dB/m) | PRM<br>Factor<br>dB | Cable<br>Loss<br>dB | Result<br>Level<br>(dBμV/m) | Limit<br>Line<br>(dBμV/m) | Over<br>Limit<br>(dB) | Detector | Polarization |
|----------------|---------------|-------------------------|-----------------------------|---------------------|---------------------|-----------------------------|---------------------------|-----------------------|----------|--------------|
| 1              | 2466.96       | 88.32                   | 30.20                       | 30.25               | 5.31                | 93.58                       | 74.00                     | 19.58                 | Peak     | HORIZONTAL   |
| 2              | 2483.50       | 54.46                   | 30.25                       | 30.25               | 5.31                | 59.77                       | 74.00                     | -14.23                | Peak     | HORIZONTAL   |
| 3              | 2483.50       | 41.60                   | 30.25                       | 30.25               | 5.31                | 46.91                       | 54.00                     | -7.09                 | Average  | HORIZONTAL   |
| 4              | 2489.44       | 49.05                   | 30.30                       | 30.25               | 5.31                | 54.41                       | 74.00                     | -19.59                | Peak     | HORIZONTAL   |
| 5              | 2489.44       | 35.90                   | 30.30                       | 30.25               | 5.31                | 41.26                       | 54.00                     | -12.74                | Average  | HORIZONTAL   |
| 6              | 2501.76       | 40.84                   | 30.30                       | 30.27               | 5.38                | 46.25                       | 74.00                     | -27.75                | Peak     | HORIZONTAL   |

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

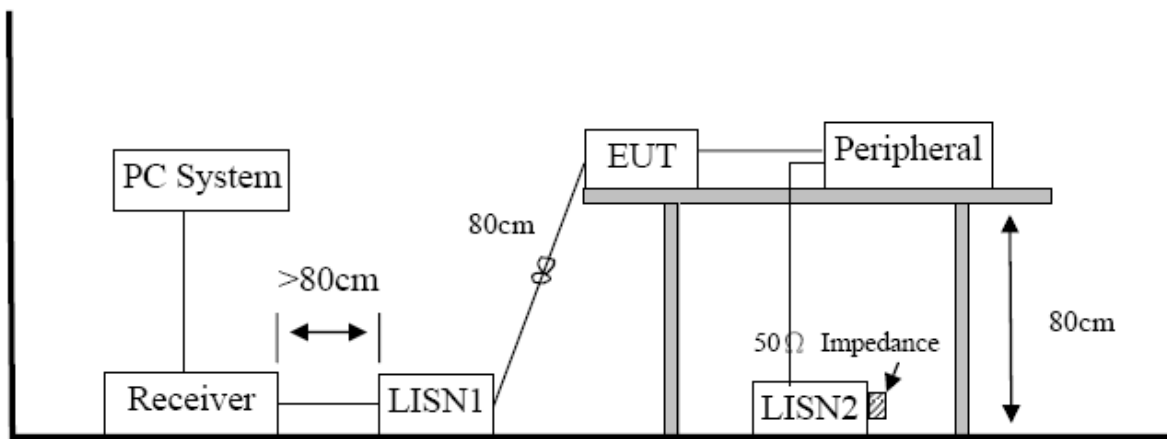


## 9. Power Line Conducted Emission

### 9.1. Test equipment

| Item | Equipment     | Manufacturer | Model No. | Serial No. | Last Cal.  | Cal. Interval |
|------|---------------|--------------|-----------|------------|------------|---------------|
| 1    | Test Receiver | R&S          | ESU8      | 100316     | 2014/10/25 | 1 Year        |
| 2    | LISN 1        | R&S          | ENV216    | 101109     | 2014/10/25 | 1 Year        |
| 3    | LISN 2        | R&S          | ESH2-Z5   | 100309     | 2014/10/25 | 1 Year        |
| 4    | Pulse Limiter | R&S          | ESH3-Z2   | 101242     | 2014/10/25 | 1 Year        |

### 9.2. Block diagram of test setup



### 9.3. Power Line Conducted Emission Limits(Class B)

| Frequency       | Quasi-Peak Level<br>dB(μV) | Average Level<br>dB(μV) |
|-----------------|----------------------------|-------------------------|
| 150kHz ~ 500kHz | 66 ~ 56*                   | 56 ~ 46*                |
| 500kHz ~ 5MHz   | 56                         | 46                      |
| 5MHz ~ 30MHz    | 60                         | 50                      |

Note 1: \* Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

### 9.4. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.3 and test equipment as described in clause 10.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.3 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 KHz.

## 9.5. Test Result

**PASS. (See below detailed test result)**

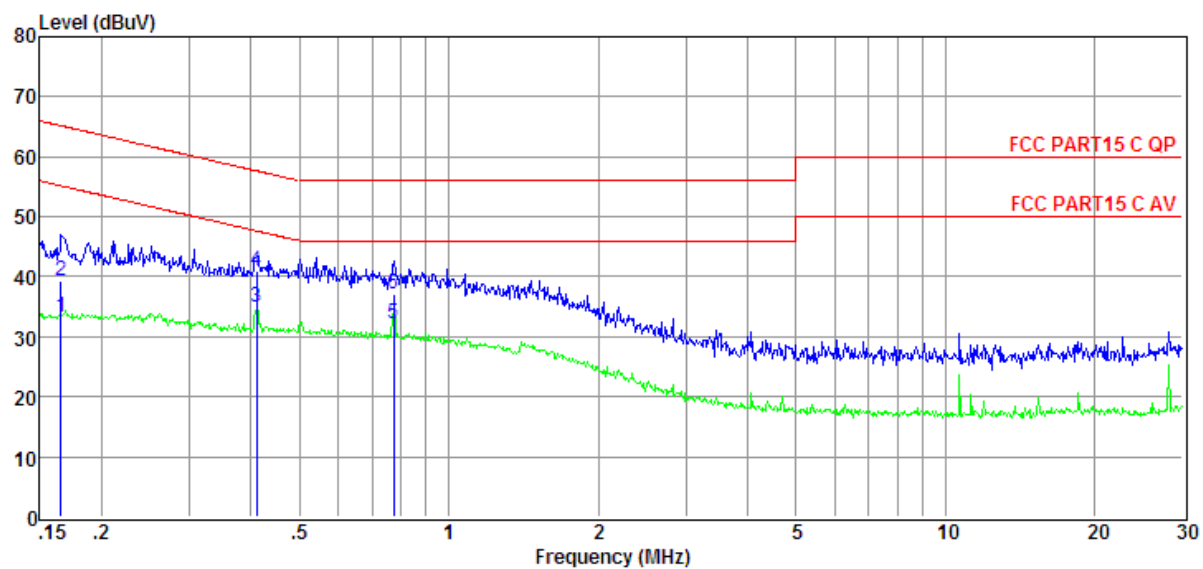
Note1: All emissions not reported below are too low against the prescribed limits.

Note2: “-----” means average detection; “-----” mans peak detection

## TR-4-E-010 Conducted Emission Test Result

**Test Site** : DDT 1# Shield Room **E:\2015 Report Data\15Q0306-2\WIFICE .EM6**  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : Tx mode  
**Condition** : Temp:24.5'C,Humi:55%,  
Press:100.1kPa **LISN** : 2014 ENV216/NEUTRAL  
**Memo** :

Data: 34



| Item   | Freq  | Read Level | LISN Factor | Cable Loss | Pulse Limiter Factor | Result Level | Limit Line | Over Limit | Detector | Phase   |
|--------|-------|------------|-------------|------------|----------------------|--------------|------------|------------|----------|---------|
| (Mark) | (MHz) | (dBμV)     | (dB)        | (dB)       | (dB)                 | (dBμV)       | (dBμV)     | (dB)       |          |         |
| 1      | 0.17  | 13.90      | 9.60        | 0.01       | 9.84                 | 33.35        | 55.16      | -21.81     | Average  | NEUTRAL |
| 2      | 0.17  | 19.84      | 9.60        | 0.01       | 9.84                 | 39.29        | 65.16      | -25.87     | QP       | NEUTRAL |
| 3      | 0.41  | 15.47      | 9.61        | 0.03       | 9.86                 | 34.97        | 47.64      | -12.67     | Average  | NEUTRAL |
| 4      | 0.41  | 21.45      | 9.61        | 0.03       | 9.86                 | 40.95        | 57.64      | -16.69     | QP       | NEUTRAL |
| 5      | 0.78  | 12.50      | 9.61        | 0.08       | 9.86                 | 32.05        | 46.00      | -13.95     | Average  | NEUTRAL |
| 6      | 0.78  | 17.53      | 9.61        | 0.08       | 9.86                 | 37.08        | 56.00      | -18.92     | QP       | NEUTRAL |

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

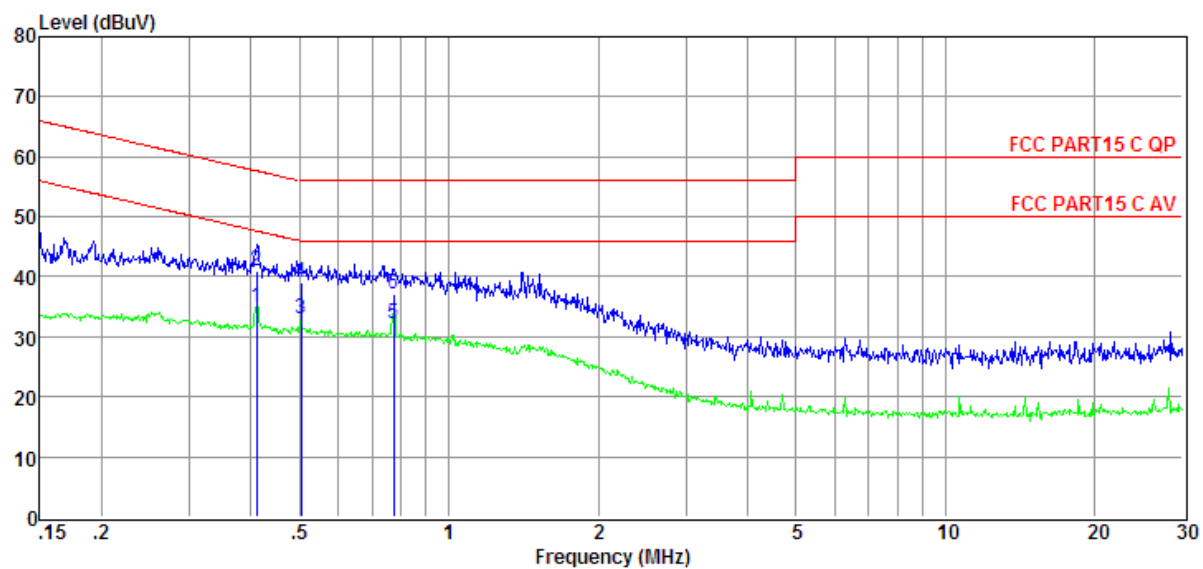
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz), Step size: 4 kHz, Scan time: auto.

## TR-4-E-010 Conducted Emission Test Result

**Test Site** : DDT 1# Shield Room **E:\2015 Report Data\15Q0306-2\WIFICE .EM6**  
**Test Date** : 2015-04-08 **Tested By** : Leo  
**EUT** : WIFI module **Model Number** : Robstepwifi  
**Power Supply** : DC 3.3V **Test Mode** : Tx mode  
**Condition** : Temp:24.5'C,Humi:55%,  
 Press:100.1kPa **LISN** : 2014 ENV216/LINE  
**Memo** :

Data: 36



| Item   | Freq  | Read Level | LISN Factor | Cable Loss | Pulse Limiter Factor | Result Level | Limit Line | Over Limit | Detector | Phase |
|--------|-------|------------|-------------|------------|----------------------|--------------|------------|------------|----------|-------|
| (Mark) | (MHz) | (dBμV)     | (dB)        | (dB)       | (dB)                 | (dBμV)       | (dBμV)     | (dB)       |          |       |
| 1      | 0.41  | 15.33      | 9.63        | 0.03       | 9.86                 | 34.85        | 47.64      | -12.79     | Average  | LINE  |
| 2      | 0.41  | 21.33      | 9.63        | 0.03       | 9.86                 | 40.85        | 57.64      | -16.79     | QP       | LINE  |
| 3      | 0.50  | 13.46      | 9.63        | 0.03       | 9.87                 | 32.99        | 46.00      | -13.01     | Average  | LINE  |
| 4      | 0.50  | 19.41      | 9.63        | 0.03       | 9.87                 | 38.94        | 56.00      | -17.06     | QP       | LINE  |
| 5      | 0.78  | 12.57      | 9.62        | 0.08       | 9.86                 | 32.13        | 46.00      | -13.87     | Average  | LINE  |
| 6      | 0.78  | 17.63      | 9.62        | 0.08       | 9.86                 | 37.19        | 56.00      | -18.81     | QP       | LINE  |

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz), Step size: 4 kHz, Scan time: auto.

## 10. Antenna Requirements

### 10.1. Test equipment

Same with 7.1

### 10.2. Block diagram of test setup

Same with 7.2

### 10.3. Test Procedure

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For normal WLAN devices, the DSSS mode is used.

Measurement parameters:

| Measurement parameter |          |
|-----------------------|----------|
| Detector:             | Peak     |
| Sweep time:           | Auto     |
| Resolution bandwidth: | 3 MHz    |
| Video bandwidth:      | 3 MHz    |
| Trace-Mode:           | Max hold |

### 10.4. Limit

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

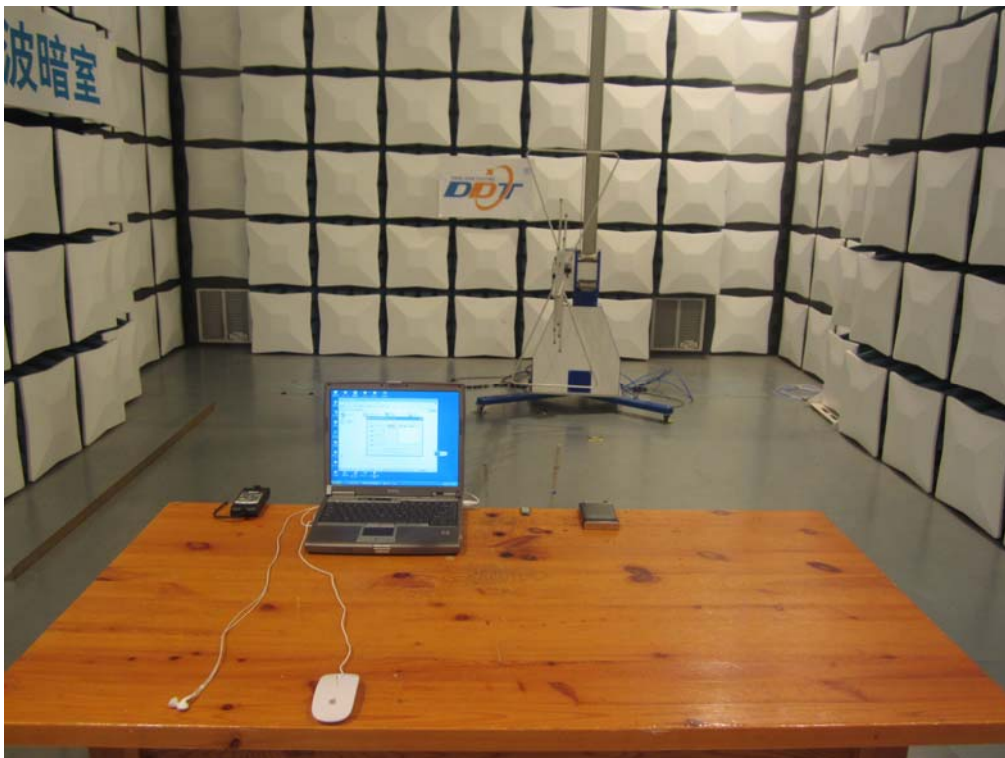
### 10.5. Result

|  | channel 2412 MHz                            | channel 2437 MHz | channel 2462 MHz |
|--|---|------------------|------------------|
| Conducted power [dBm]<br>Measured with DSSS modulation | 18.23                                       | 18.45            | 18.53            |
| Radiated power [dBm]<br>Measured with DSSS modulation  | 18.23                                       | 17.54            | 18.00            |
| Gain [dBi] Calculated                                  | 0   | -0.91            | -0.53            |
| Measurement uncertainty                                | $\pm 0.6$ dB (cond.) / $\pm 2.56$ dB (rad.) |                  |                  |

Result: Pass.

Maximum PK gain: 0dBi.

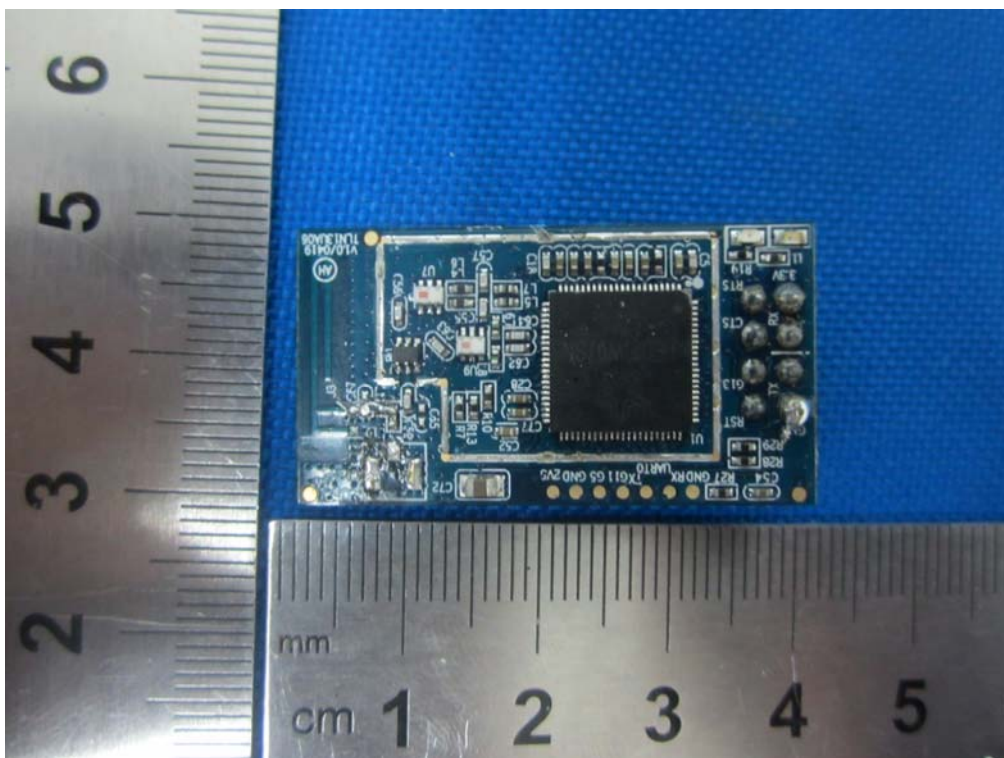
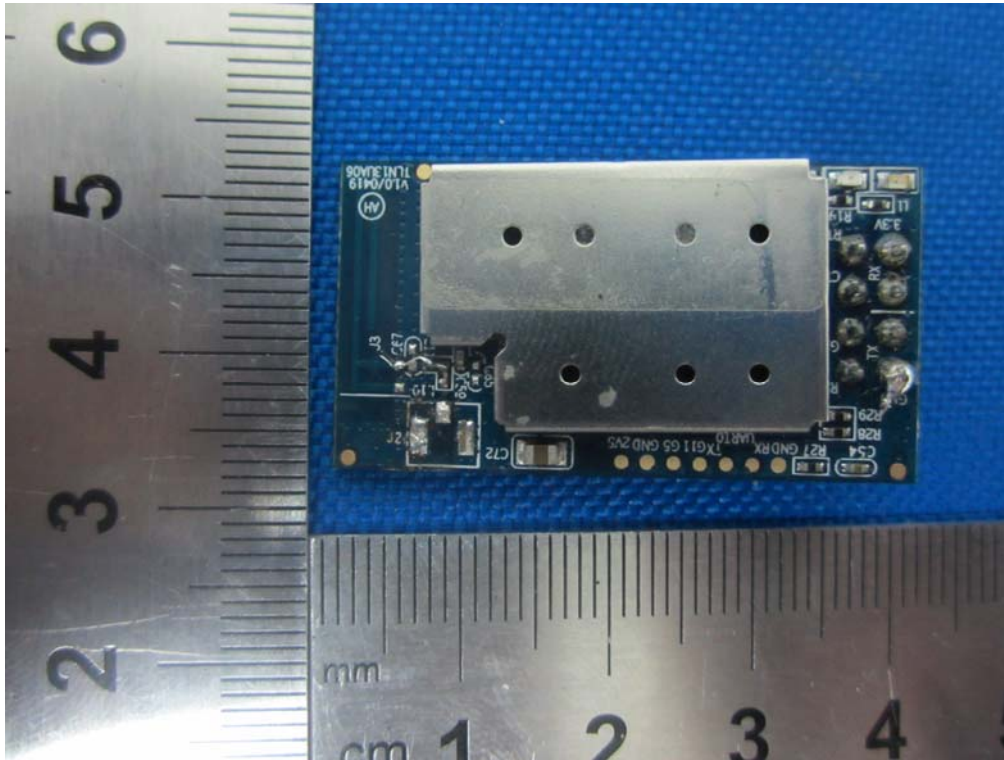
## 11. Test setup photograph

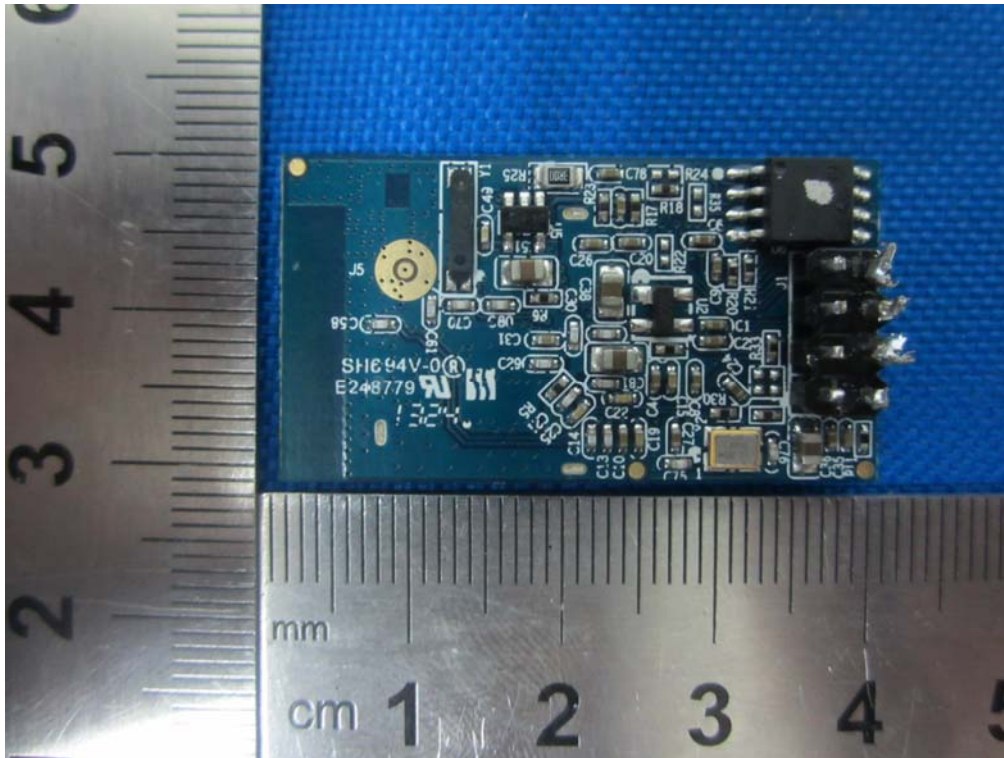






## 12. Photos of the EUT





**END OF REPORT**