



FCC Test Report

Equipment : Low Power 2x2 802.11a/b/g/n +BT
SDIO-WLAN/UART-BT Card

Brand Name : Qualcomm Atheros

Model No. : QCSNFA282

FCC ID : PPD-QCSNFA282

Standard : 47 CFR FCC Part 15.247

Operating Band : 2400 MHz – 2483.5 MHz

Equipment Class : DTS

Applicant : Dell Inc.

Manufacturer : One Dell Way, Round Rock, Texas 78682, USA

The product sample received on Sep. 24, 2013 and completely tested on Oct. 11, 2013. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:


Wayne Hsu / Assistant Manager





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Summary of Test Result

| Conformance Test Specifications | | | | | |
|---------------------------------|------------------|--|---|---|----------|
| Report Clause | Ref. Std. Clause | Description | Measured | Limit | Result |
| 1.1.1 | 15.203 | Antenna Requirement | Antenna connector mechanism complied | FCC 15.203 | Complied |
| 3.1 | 15.247(b) | RF Output Power (Maximum Conducted (Average) Output Power) | Power [dBm] LE: 9.63 | Power [dBm] LE:30 | Complied |
| 3.2 | 15.247(c) | Transmitter Radiated Unwanted Emissions | Restricted Bands [dBuV/m at 3m]: 32.910MHz 37.26 (Margin 2.74dB) - PK | Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209 | Complied |

This report was verified the worst case that was according the module report of QCSNFA282.

1 General Description

1.1 Information

1.1.1 RF General Information

| RF General Information | | | | |
|---|-------------------|---------------------|----------------|-----------------------|
| Frequency Range (MHz) | Bluetooth Version | Ch. Frequency (MHz) | Channel Number | RF Output Power (dBm) |
| 2400-2483.5 | v4.0 LE | 2402-2480 | 0-39 [40] | 9.63 |
| Note 1: Bluetooth LE (Low Energy) using GFSK modulation for DTS digital modulation. Note 2: RF output power specifies that Maximum Conducted (Average) Output Power. | | | | |

1.1.2 Antenna Information

| Antenna Category | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | Integral antenna (antenna permanently attached) |
| <input type="checkbox"/> | Temporary RF connector provided |
| <input checked="" type="checkbox"/> | No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path. |

| Antenna General Information | | | |
|-----------------------------|-----------|-----------|------------|
| No. | Ant. Cat. | Ant. Type | Gain (dBi) |
| 1 | Integral | PIFA | -3.60 |

1.1.3 Type of EUT

| | | | |
|-------------------|--|---|---|
| Supply Voltage | <input checked="" type="checkbox"/> AC mains | <input checked="" type="checkbox"/> DC | |
| Type of DC Source | <input type="checkbox"/> Internal DC supply | <input checked="" type="checkbox"/> External DC adapter | <input checked="" type="checkbox"/> Li-on Battery |

1.2 Support Equipment

| Support Equipment- Radiated Emission Test | | | |
|---|---|------------|---|
| No. | Equipment | Brand Name | Model Name |
| 1 | Tablet PC (Built in Qualcomm Atheros module) | DELL | T06G / T06G.. (The dots "." in the model name can be 0-9, A-Z, a-z, "/", - or blank, for marketing purpose only) |

1.3 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2009
- ♦ FCC KDB 558074 v03r01

1.4 Testing Location Information

| Testing Location | | | |
|-------------------------------------|---------------|--|----------------------|
| <input checked="" type="checkbox"/> | HWA YA | ADD : No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. | |
| | | TEL : 886-3-327-3456 | FAX : 886-3-327-0973 |
| Test Condition | Test Site No. | Test Engineer | Test Environment |
| Radiated Emission | 03CH02-HY | Hsiao | 23.1°C / 61% |




1.5 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

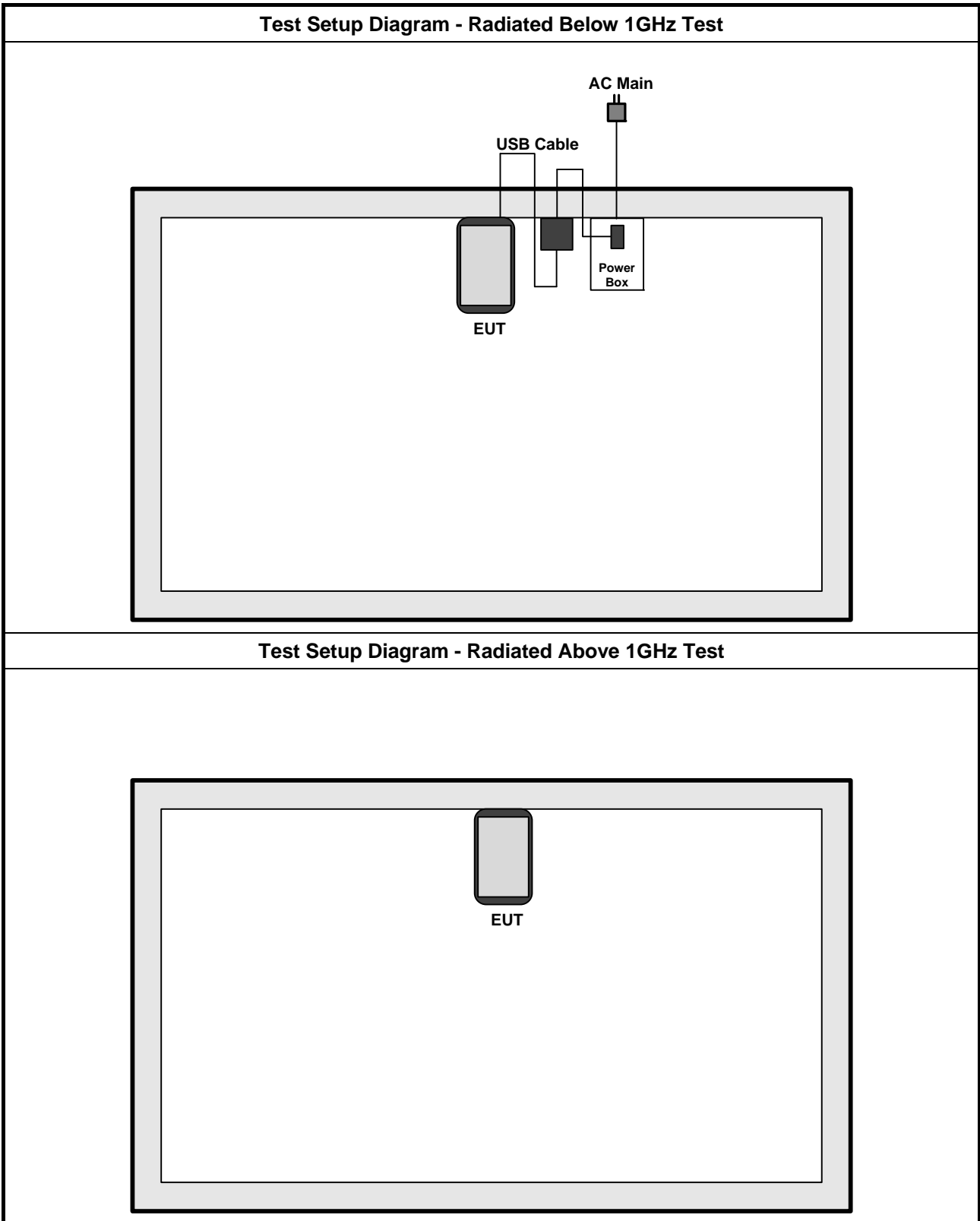
| Measurement Uncertainty | | | |
|-------------------------|---------------|-------------|-------|
| Test Item | | Uncertainty | Limit |
| All emissions, radiated | 30 – 1000 MHz | ±2.56 dB | N/A |
| | 1 – 18 GHz | ±3.59 dB | N/A |
| | 18 – 40 GHz | ±3.82 dB | N/A |
| | 40 – 200 GHz | N/A | N/A |
| Duty Cycle | | ±1.42 % | N/A |

2 Test Configuration of EUT

2.1 The Worst Case Measurement Configuration

| The Worst Case Mode for Following Conformance Tests | | | |
|---|--|---|---|
| Tests Item | Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions | | |
| Test Condition | Radiated measurement | | |
| User Position | <input type="checkbox"/> EUT will be placed in fixed position. | | |
| | <input checked="" type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. EUT shall be performed three orthogonal planes. The worst planes is X. | | |
| | <input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed two or three orthogonal planes. | | |
| Operating Mode | <input checked="" type="checkbox"/> 1. EUT with AC Power test | | |
| Modulation Mode | LE-1Mbps | | |
| Orthogonal Planes of EUT | X Plane | Y Plane | Z Plane |
| |  |  |  |

2.2 Test Setup Diagram



3 Transmitter Test Result

3.1 RF Output Power

3.1.1 RF Output Power Limit

| RF Output Power Limit for Digital Modulation Systems | |
|--|--|
| Maximum Peak Conducted Output Power or Maximum Conducted Output Power Limit | |
| <input checked="" type="checkbox"/> | 2400-2483.5 MHz Band: |
| <input checked="" type="checkbox"/> | If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W) |
| <input type="checkbox"/> | Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm |
| e.i.r.p. Power Limit: | |
| <input checked="" type="checkbox"/> | 2400-2483.5 MHz Band |
| <input checked="" type="checkbox"/> | Point-to-multipoint systems (P2M): $P_{eirp} \leq 36$ dBm (4 W) |
| P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi. P_{eirp} = e.i.r.p. Power in dBm. | |

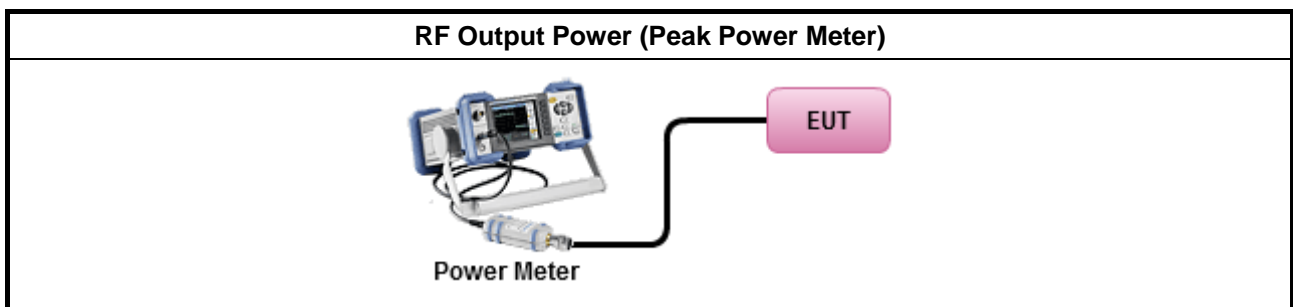
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

| Test Method | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | Maximum Peak Conducted Output Power |
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.10.2.1 a) for peak power meter. |
| <input type="checkbox"/> | Refer as ANSI C63.10, clause 6.10.2.1 a) for spectrum analyzer - (RBW \geq EBW). |
| <input checked="" type="checkbox"/> | For conducted measurement. |
| <input checked="" type="checkbox"/> | The EUT supports single transmit chain and measurements performed on this transmit chain. |
| <input type="checkbox"/> | The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case. |

3.1.4 Test Setup





3.1.5 Test Result of Maximum Average Conducted Output Power

| Maximum Average Conducted Output Power Result | | | | | | |
|---|-------------|-----------------------|------------------|-----------------|--------------------|------------|
| Condition | | RF Output Power (dBm) | | | | |
| Modulation Mode | Freq. (MHz) | Average Power | Duty Factor (dB) | RF Output Power | Antenna Gain (dBi) | EIRP Power |
| LE-1Mbps | 2402 | 7.73 | 1.11 | 8.84 | -3.60 | 5.24 |
| LE-1Mbps | 2440 | 8.52 | 1.11 | 9.63 | -3.60 | 6.03 |
| LE-1Mbps | 2480 | 7.99 | 1.11 | 9.10 | -3.60 | 5.50 |
| Result | | Complied | | | | |

3.2 Transmitter Radiated Unwanted Emissions

3.2.1 Transmitter Radiated Unwanted Emissions Limit

| Restricted Band Emissions Limit | | | |
|---------------------------------|-----------------------|-------------------------|----------------------|
| Frequency Range (MHz) | Field Strength (uV/m) | Field Strength (dBuV/m) | Measure Distance (m) |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

| Un-restricted Band Emissions Limit | |
|------------------------------------|------------|
| RF output power procedure | Limit (dB) |
| Peak output power procedure | 20 |
| Average output power procedure | 30 |

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

3.2.2 Measuring Instruments

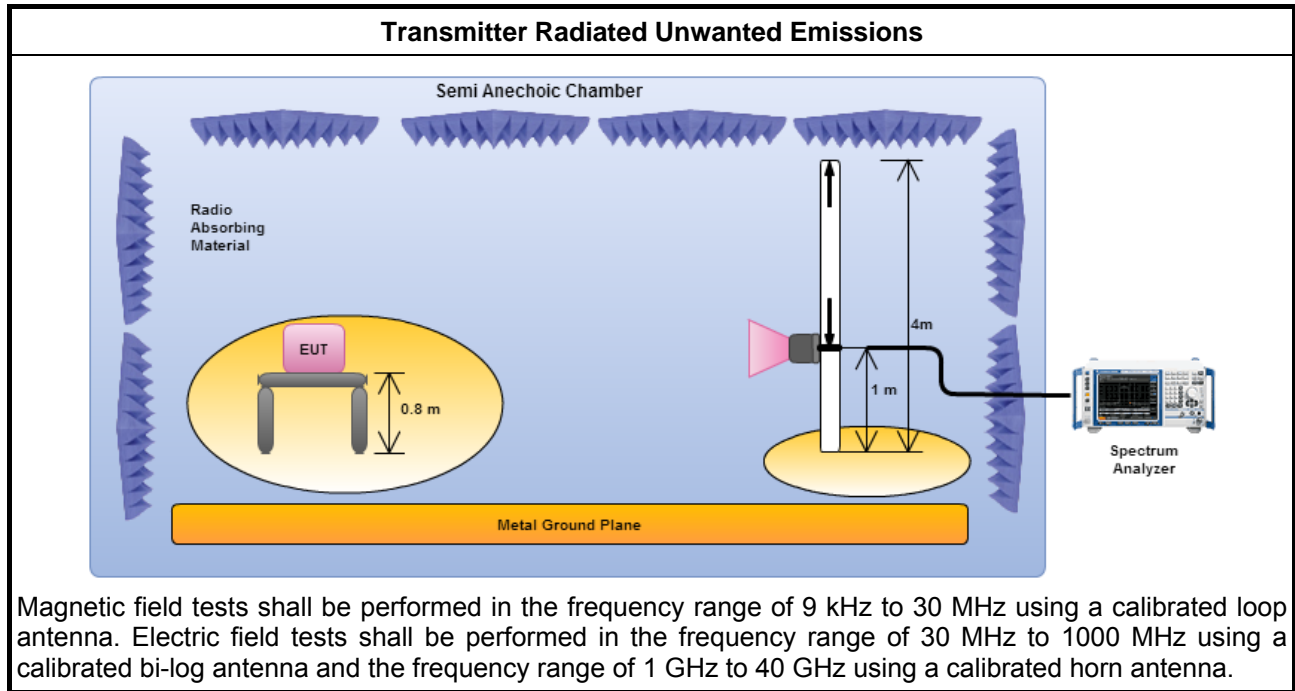
Refer a test equipment and calibration data table in this test report.



3.2.3 Test Procedures

| Test Method | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements). |
| <input checked="" type="checkbox"/> | Measurements in the frequency range 10 GHz - 18GHz are typically made at a closer distance 1m, because the instrumentation noise floor is typically close to the radiated emission limit. |
| <input checked="" type="checkbox"/> | Measurements in the frequency range above 18 GHz - 25GHz are typically made at a closer distance 0.5m, because the instrumentation noise floor is typically close to the radiated emission limit. |
| <input checked="" type="checkbox"/> | The average emission levels shall be measured in [duty cycle \geq 98 or duty factor]. |
| <input checked="" type="checkbox"/> | For the transmitter unwanted emissions shall be measured using following options below: |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands. |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands. |
| <input type="checkbox"/> | Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle \geq 98%) |
| <input type="checkbox"/> | Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor). |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW \geq 1/T). |
| <input type="checkbox"/> | Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW \geq 1/T, where T is pulse time. |
| <input type="checkbox"/> | Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions. |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 11.3 and 12.2.4 measurement procedure peak limit. |
| <input checked="" type="checkbox"/> | Refer as FCC KDB 558074, clause 12.2.3 measurement procedure Quasi-Peak limit. |
| <input checked="" type="checkbox"/> | For radiated measurement, refer as FCC KDB 558074, clause 12.2.7. |
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz. |
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz. |
| <input checked="" type="checkbox"/> | Refer as ANSI C63.10, clause 6.6 for radiated emissions from above 1 GHz. |
| <input type="checkbox"/> | For conducted and cabinet radiation measurement, refer as FCC KDB 558074, clause 12.2.2. |

3.2.4 Test Setup



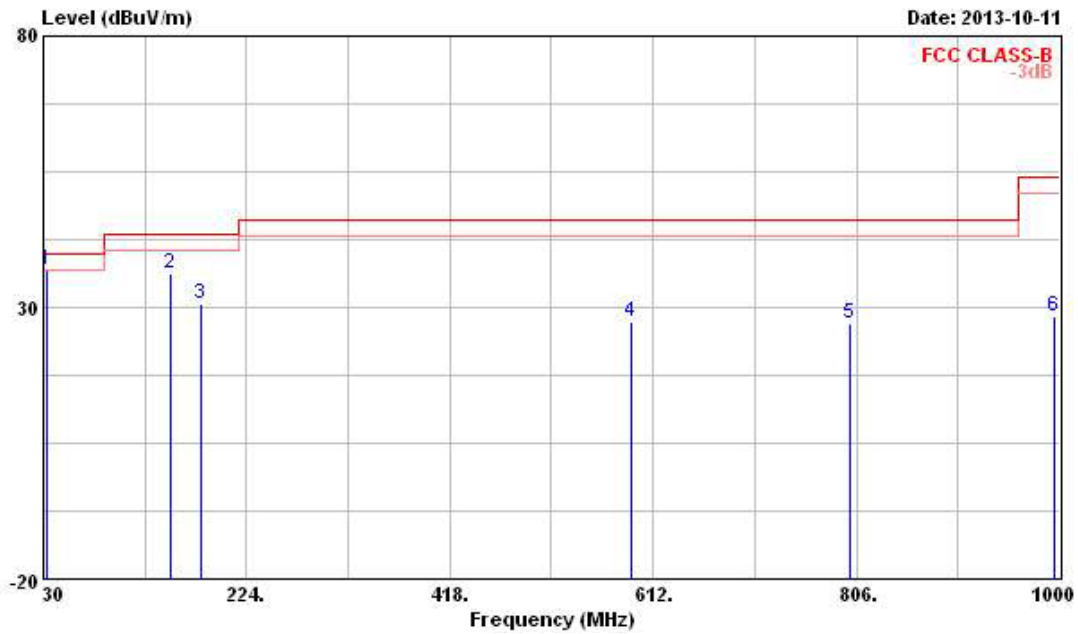
3.2.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.



3.2.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

| Transmitter Radiated Unwanted Emissions (Below 1GHz) | | | |
|--|------------------------|--------------|---|
| Operating Mode | 1 | Polarization | V |
| Operating Function | EUT with AC Power test | | |



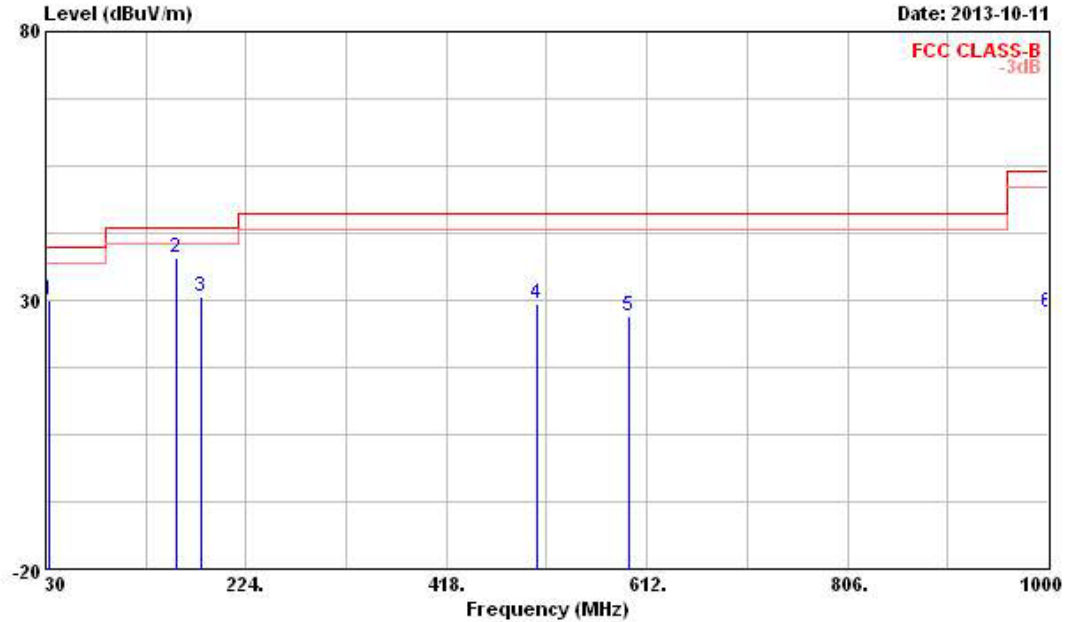
| Line | Freq MHz | Level dBuV/m | Over Limit dB | Limit Line dBuV/m | ReadAntenna Level dBuV | Antenna Factor dB/m | Cable Loss dB | Preamp Factor dB | Remark | Ant Pos cm | Table Pos deg |
|------|-------------|-----------------|---------------------|-------------------------|------------------------------|---------------------------|---------------------|------------------------|--------|------------------|---------------------|
| 1 | 32.910 | 36.86 | -3.14 | 40.00 | 48.71 | 15.11 | 0.79 | 27.75 | QP | --- | --- |
| 2 | 152.220 | 36.40 | -7.10 | 43.50 | 51.50 | 10.73 | 1.75 | 27.58 | Peak | --- | --- |
| 3 | 180.350 | 30.59 | -12.91 | 43.50 | 46.22 | 9.90 | 1.96 | 27.49 | Peak | --- | --- |
| 4 | 591.630 | 27.44 | -18.56 | 46.00 | 32.35 | 19.93 | 3.66 | 28.50 | Peak | --- | --- |
| 5 | 800.180 | 27.01 | -18.99 | 46.00 | 30.39 | 20.27 | 4.42 | 28.07 | Peak | --- | --- |
| 6 | 994.180 | 28.32 | -25.68 | 54.00 | 28.66 | 22.36 | 4.95 | 27.65 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



Transmitter Radiated Unwanted Emissions (Below 1GHz)

| | | | |
|--------------------|------------------------|--------------|---|
| Operating Mode | 1 | Polarization | H |
| Operating Function | EUT with AC Power test | | |



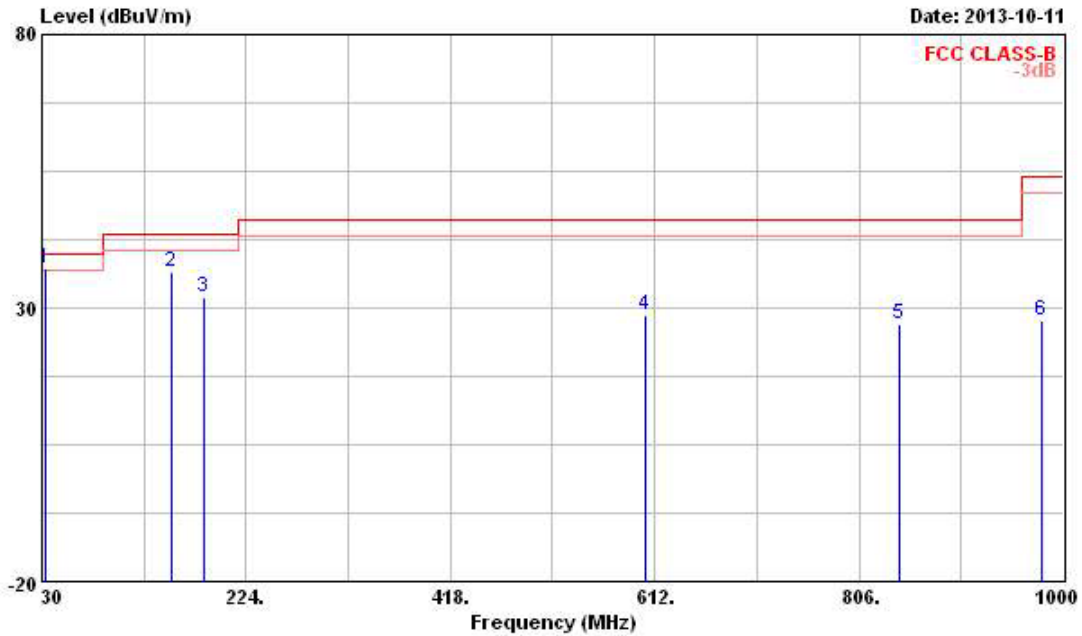
| | Freq | Level | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | Ant Pos | Table Pos |
|---|----------|--------|------------|------------|-------------------|----------------|------------|---------------|--------|---------|-----------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 32.910 | 30.13 | -9.87 | 40.00 | 41.98 | 15.11 | 0.79 | 27.75 | Peak | --- | --- |
| 2 | 156.100 | 37.74 | -5.76 | 43.50 | 52.90 | 10.64 | 1.77 | 27.57 | Peak | --- | --- |
| 3 | 180.350 | 30.72 | -12.78 | 43.50 | 46.35 | 9.90 | 1.96 | 27.49 | Peak | --- | --- |
| 4 | 506.270 | 29.21 | -16.79 | 46.00 | 36.73 | 17.48 | 3.44 | 28.44 | Peak | --- | --- |
| 5 | 594.540 | 27.10 | -18.90 | 46.00 | 31.92 | 20.01 | 3.67 | 28.50 | Peak | --- | --- |
| 6 | 1000.000 | 27.82 | -46.18 | 74.00 | 28.00 | 22.50 | 4.96 | 27.64 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



3.2.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)

| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|--|----------|-----------------|------|
| Modulation Mode | LE-1Mbps | Test Freq. (FX) | 2440 |
| Operating Function | Transmit | Polarization | V |



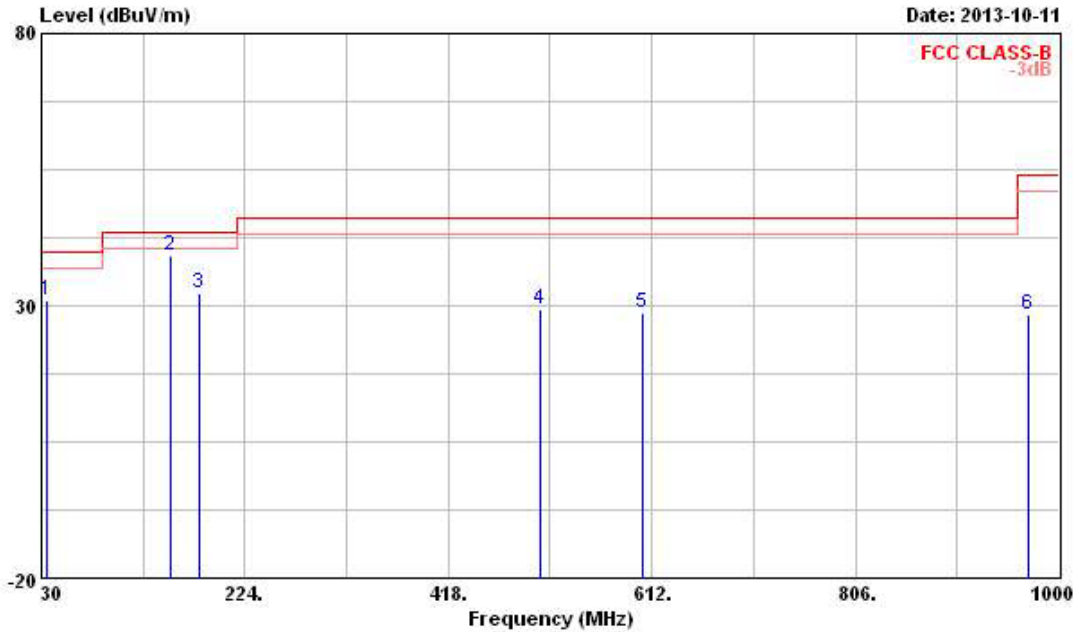
| | Freq | Level | Over Limit | Limit Line | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | Ant Pos | Table Pos |
|-----|---------|--------|------------|------------|-------------------|----------------|------------|---------------|--------|---------|-----------|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 ! | 32.910 | 37.26 | -2.74 | 40.00 | 49.11 | 15.11 | 0.79 | 27.75 | QP | --- | --- |
| 2 | 153.190 | 36.70 | | | 51.83 | 10.70 | 1.75 | 27.58 | Peak | --- | --- |
| 3 | 183.260 | 32.00 | | | 47.38 | 10.12 | 1.98 | 27.48 | Peak | --- | --- |
| 4 | 603.270 | 28.65 | | | 33.30 | 20.14 | 3.70 | 28.49 | Peak | --- | --- |
| 5 | 843.830 | 27.20 | | | 30.47 | 20.16 | 4.51 | 27.94 | Peak | --- | --- |
| 6 | 978.660 | 27.83 | -26.17 | 54.00 | 28.63 | 21.97 | 4.90 | 27.67 | Peak | --- | --- |

- Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
- Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
- Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
- Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.
- Note 5: Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., LE VBW≥1/625us, VBW=3kHz.
- Note 6: The tested was performed by using RF filter to remove the fundamental frequency emission.



Transmitter Radiated Unwanted Emissions (Above 1GHz)

| | | | |
|--------------------|----------|-----------------|------|
| Modulation Mode | LE-1Mbps | Test Freq. (FX) | 2440 |
| Operating Function | Transmit | Polarization | H |



| | Over | Limit | Read | Antenna | Cable | Preamp | | Ant | Table |
|------|---------|-------|--------|---------|-------|--------|--------|-------|-------|
| Freq | Level | Limit | Level | Factor | Loss | Factor | Remark | Pos | Pos |
| MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | cm | deg |
| 1 | 35.820 | 30.89 | | 43.64 | 14.15 | 0.82 | 27.72 | Peak | --- |
| 2 | 153.190 | 39.06 | | 54.19 | 10.70 | 1.75 | 27.58 | Peak | --- |
| 3 | 180.350 | 32.14 | | 47.77 | 9.90 | 1.96 | 27.49 | Peak | --- |
| 4 | 506.270 | 29.26 | | 36.78 | 17.48 | 3.44 | 28.44 | Peak | --- |
| 5 | 602.300 | 28.52 | | 33.17 | 20.15 | 3.69 | 28.49 | Peak | --- |
| 6 | 970.900 | 28.50 | -25.50 | 54.00 | 29.52 | 21.78 | 4.88 | 27.68 | Peak |

- Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
- Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
- Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
- Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.
- Note 5: Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is "Pulse On Time", e.g., LE VBW≥1/625us, VBW=3kHz.
- Note 6: The tested was performed by using RF filter to remove the fundamental frequency emission.



4 Test Equipment and Calibration Data

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|--------------------------|----------------------|-------------|-------------|--------------------|------------------|-----------------------|
| Spectrum Analyzer | R&S | FSP40 | 100593 | 9kHz ~ 40GHz | Oct. 03, 2013 | Radiation (03CH02-HY) |
| 3m Semi Anechoic Chamber | SIDT FRANKONIA | SAC-3M | 03CH02-HY | 30MHz ~ 1GHz 3m | May 11, 2013 | Radiation (03CH02-HY) |
| Amplifier | Agilent | 8447D | 2944A11146 | 100kHz ~ 1.3GHz | Jul. 17, 2013 | Radiation (03CH02-HY) |
| Amplifier | Agilent | 8449B | 3008A02373 | 1GHz ~ 26.5GHz | Aug. 28, 2013 | Radiation (03CH02-HY) |
| Horn Antenna | ETS-LINDGREN | 3117 | 00091920 | 1GHz ~ 18GHz | Nov. 16, 2012 | Radiation (03CH02-HY) |
| Horn Antenna | SCHWARZBECK | BBHA9170 | BBHA9170154 | 15GHz ~ 40GHz | Jan. 08, 2013 | Radiation (03CH02-HY) |
| RF Cable-R03m | Jye Bao | RG142 | CB021 | 9kHz ~ 1GHz | Nov. 10, 2012 | Radiation (03CH02-HY) |
| RF Cable-high | SUHNER | SUCOFLEX106 | 03CH02-HY | 1GHz ~ 40GHz | Mar. 05, 2013 | Radiation (03CH02-HY) |
| Bilog Antenna | SCHAFFNER | CBL61128 | 2723 | 30MHz ~ 2GHz | Oct. 22, 2012 | Radiation (03CH02-HY) |
| Turn Table | Chaintek Instruments | 3000 | MF7802058 | 0~ 360 degree | N/A | Radiation (03CH02-HY) |
| Antenna Mast | MF | MF7802 | MF780208205 | 1 ~ 4 m | N/A | Radiation (03CH02-HY) |

Note: Calibration Interval of instruments listed above is one year.

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|--------------|--------------|-----------|------------|-----------------|------------------|-----------------------|
| Loop Antenna | TESEQ | HLA 6120 | 31244 | 9 kHz - 30 MHz | Dec. 02, 2012 | Radiation (03CH02-HY) |

Note: Calibration Interval of instruments listed above is two year.