

Produkte Products

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Test Report No.:

Page 1 of 19

Auftraggeber:

Baby Stars GmbH

Client:

Uferstr. 19 Leipzia

Germany 04105

Gegenstand der Prüfung:

WiFi speaker

Test Item:

Serien-Nr.:

Engineering sample

Bezeichnung: Identification:

snu:mee

Serial No.:

Wareneingangs-Nr.: Receipt No.:

A000140139-007 A000145302-001 Eingangsdatum: Date of Receipt:

05.12.2014 18.12.2014

Prüfort:

TÜV Rheinland Hong Kong Ltd.

Testing Location:

8/F, First Group Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong

Kong

Hong Kong Productivity Council

HKPC Building, 78 Tat Chee Avenue, Kowloon, Hong Kong

Zustand des Prüfgegenstandes bei Anlieferung:

Condition of test item at delivery:

Test samples are not damaged and suitable

for testing.

Prüfgrundlage:

FCC Part 15 Subpart C

Test Specification: ANSI C63.4-2009

Prüfergebnis: Test Results:

Das vorstehend beschriebene Gerät wurde geprüft und entspricht oben

genannter Prüfgrundlage.

The above mentioned product was tested and passed.

Prüflaboratorium:

TÜV Rheinland Hong Kong Ltd.

Testing Laboratory:

8 - 10/F., Goldin Financial Global Square, 7 Wang Tai Road, Kowloon Bay,

Kowloon, Hong Kong

geprüft/ tested by:

kontrolliert/ reviewed by:

23.06.2015

Joey Leung Project Engineer

Benny Lau

Senior Project Manager

Datum Date

Name/Stellung Name/Position

Unterschrift Signature

23.06.2015 Datum Date

Name/Stellung Name/Position

Unterschrift Signature

Sonstiges: Other Aspects

FCC ID: 2ADSR-SNUMEE-01

Abkürzungen:

P(ass) entspricht Prüfgrundlage Abbreviations:

passed P(ass)

F(ail)

failed

N/T

entspricht nicht Prüfgrundlage

N/A

not applicable

F(ail) N/A

nicht anwendbar nicht getestet

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.

This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.



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Product information

Manufacturers declarations

| | Transceiver |
|---|----------------------------|
| Operating frequency range | 2412 - 2462 MHz |
| Type of modulation | DSSS, OFDM, MCS0-7 |
| Number of channels | 11 |
| Channel separation | 5 MHz |
| Type of antenna | PCB Antenna |
| Antenna gain (dBi) | 2.0 dBi |
| Power level | fix |
| Type of equipment | WIFI speaker |
| Connection to public utility power line | No |
| Nominal voltage | 3.7 VDC (internal battery) |
| | 5.0 VDC (USB) |
| Independent Operation Modes | Transmitting mode |

Product function and intended use

The equipment under test (EUT) is a WIFI speaker. It is powered by 3.7VDC internal battery or 5VDC by USB charging cable. It is designed to amplify audio signals and to work as a baby monitor. It is intended for private use and is not fit for any commercial purposes.

It has a factory-made setting of 6 classic slumber tunes and is equipped with a further 7 relaxing sound tunes. Users can operate the EUT by using the integrated control buttons or through the App on smartphone or tablet computer when establishing a WiFi connection.

When the WiFi functionality is switched on, the EUT should be kept separation distance between the radiator and the user or by-stander at least 20cm.

FCC ID: 2ADSR-SNUMEE-01

| Models | Product description |
|---------|---------------------|
| snu:mee | WIFI speaker |

Submitted documents

Circuit Diagram Block Diagram Bill of material User manual Label

Independent Operation Modes

The basic operation mode is WIFI transmit mode.

For further information refer to User Manual

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Related Submittal(s) Grants

This is a single application for certification of the single transmitter.

Remark

The EUT uses 2 PCB antennas. The EUT automatically configure the antennas used in different modes of operation.

In 802.11-B or 802.11-G mode, only one antenna (namely DAC0) will be used.

In 802.11-N mode, both antennas (namely DAC0 and DAC1) will be used.

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Test Set-up and Operation Mode

Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation

level. The test modes were adapted accordingly in reference to the instructions for use.

Test Operation and Test Software

Test operation should refer to test methodology.

- Special software is provided by the grantee to set the device to operate in a fixed frequency channel and maximum RF output power level declared by manufacturer.
- Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and data rate.

Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

- none

Countermeasures to achieve EMC Compliance

- none

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Test Methodology

Radiated Emission

The radiated emission measurements were performed according to the procedures in ANSI C63.4-2009.

The equipment under test (EUT) was placed at the middle of the 80 cm height turntable, and the turntable is 3 meters far from the measuring antenna. During the testing, the EUT was operated standalone and arranged for maximum emissions. The EUT was tested in three orthogonal planes.

The investigation is performed with the EUT rotated 360°, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained.

All radiated tests were performed at an antenna to EUT with 3 meters distance, unless stated otherwise in particular parts of this test report.

Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

FS = R + AF + CF + FA - PA

Where FS = Field Strength in dBuV/m at 3 meters.

R = Reading of Spectrum Analyzer in dBuV.

AF = Antenna Factor in dB.

CF = Cable Attenuation Factor in dB.

FA = Filter Attenuation Factor in dB.

PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

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List of Test and Measurement Instruments

Hong Kong Productivity Council (Registration number: 90656)

Radiated Emission

| Equipment | Manufacturer | Туре | S/N | Due Date |
|---|--------------|-------------|--------------|-------------|
| Semi-anechoic Chamber | EMC209 | Frankonia | Nil | 14 Apr 2016 |
| Cable | EMC 604 | Hubersuhner | SUCOFLEX 104 | 31 Mar 2016 |
| Test Receiver | EMC567 | R&S | ESU26 | 12 Feb 2016 |
| Bi-conical Antenna | EMC577 | R&S | HK116 | 22 Aug 2015 |
| Coaxial cable | EMC624 | Harbour | LL335 | 10 Jun 2016 |
| Microwave amplifer 0.5- 26.5GHz, 25dB gain | EMC557 | HP | 83017A | 17 Jul 2016 |
| High Pass Filter (cutoff freq. =1000MHz) | EMC572 | Trilithic | 23042 | 28 Oct 2015 |
| Horn Antenna | EMC 185 | EMCO | 3115 | 07 Aug 2015 |

TÜV Rheinland Hong Kong Ltd

Radio Test

| Equipment | Manufacturer | Туре | S/N | Due Date |
|-------------------|------------------------------------|----------|---------------|-------------|
| Spectrum Analyzer | R&S | FSP30 | 100007 | 12 Jan 2017 |
| Power meter | Dijkstra Advice, Research & EMC | RPR3006W | 13I00030SN079 | 26 Jul 2015 |
| | Instruments B.V. | | | |

AC Mains Conducted Emission

| 10 11141110 0011440104 =1111001011 | | | | |
|------------------------------------|--------------|--------|--------|-------------|
| Equipment | Manufacturer | Туре | S/N | Due Date |
| Test Receiver | R&S | ESR3 | 101833 | 12 Sep 2015 |
| LISN | R&S | ENV216 | 100273 | 05 Feb 2016 |
| EMC32 | R&S | v9.12 | N/A | N/A |

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Results FCC Part 15 – Subpart C

FCC 15.203 - Antenna Requirement 1

Pass

FCC Requirement: No antenna other than that furnished by the responsible party shall be used with the

device

Results: a) Antenna type: PCB antenna

b) Manufacturer and model no: N/A c) Peak Gain: 2.0 dBi

Verdict: Pass

FCC 15.204 - Antenna Requirement 2

N/A

FCC Requirement: Provide information for every antenna proposed for the use with the EUT

Results: The EUT uses printed circuit board antenna only.

Verdict: N/A

FCC 15.207 - Conducted Emission on AC Mains

Pass

Test Specification: ANSI C63.4 - 2009

Mode of operation: Charging + music playing with WiFi connected mode

Port of testing : AC Mains input port of power supply

Detector : Quasi-peak and Average

RBW : 9 kHz

Supply voltage : 120Vac 60Hz

Temperature : 23°C Humidity : 50%

Requirement: 15.207(a)

Results: Pass

Live measurement

| Frequency range (MHz) | Frequency (MHz) | Quasi-peak dBμV | Average dBμV | Limit QP (dBµV) | Limit AV (dBµV) | Verdict |
|-----------------------------|--------------------|--------------------|-----------------|--------------------|--------------------|---------|
| 0,15 - 0,5 | 0.150 | 51.0 | 33.9 | 66 - 56 | 56 - 46 | Pass |
| > 0,5 - 5 | No peak found | | | 56 | 46 | Pass |
| > 5 - 30 | No peak found | | | 60 | 50 | Pass |

Neutral measurement

| Frequency range (MHz) | Frequency (MHz) | Quasi-peak dB _µ V | Average dBμV | Limit QP (dBµV) | Limit AV (dBµV) | Verdict |
|-----------------------------|--------------------|---------------------------------|-----------------|--------------------|--------------------|---------|
| 0,15 - 0,5 | No peak found | | | 66 - 56 | 56 - 46 | Pass |
| > 0,5 - 5 | No peak found | | | 56 | 46 | Pass |
| > 5 - 30 | No peak found | | | 60 | 50 | Pass |

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Results: Pre-scan has been conducted to determine the worst-case mode from all possible

combinations between available modulations and data rate.

The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150kHz to 30MHz does not exceed the limits.

For test Results plots refer to Appendix 1, page 2-3.

FCC 15.247 (a)(2) - 6dB Bandwidth Measurement

Pass

FCC Requirement: Systems using digital modulation techniques may operate in the 902 – 928 MHz, 2400 –

2483.5 MHz, and 5725 – 5850 MHz bands. The minimum 6dB bandwidth shall be at

least 500kHz.

Test Specification: KDB 558074 D01 DTS Measurement Guidance v03r02 section 8.1 Option 1

Mode of operation: TX mode

Port of testing : Temporary antenna port

Detector : Peak

RBW/VBW : 100KHz/ 300KHz

Supply voltage : 3.3VDC from DC power supply

Temperature : 23°C Humidity : 50%

Results: For test protocols please refer to Appendix 1, page 4-9.

802.11b

| Channel frequency (MHz) | 6 dB left (MHz) | 6 dB right (MHz) | 6dB bandwidth (MHz) |
|----------------------------|--------------------|---------------------|------------------------|
| 2412 | 2406.960 | 2417.040 | 10.08 |
| 2437 | 2431.920 | 2442.120 | 10.20 |
| 2462 | 2456.960 | 2467.080 | 10.12 |

802.11g

| Channel frequency (MHz) | 6 dB left (MHz) | 6 dB right (MHz) | 6dB bandwidth (MHz) |
|----------------------------|--------------------|---------------------|------------------------|
| 2412 | 2403.800 | 2420.240 | 16.44 |
| 2437 | 2428.800 | 2445.240 | 16.44 |
| 2462 | 2453.800 | 2470.240 | 16.44 |

802.11n (20MHz)

| Channel frequency (MHz) | 6 dB left (MHz) | 6 dB right (MHz) | 6dB bandwidth (MHz) |
|----------------------------|--------------------|---------------------|------------------------|
| 2412 | 2403.240 | 2420.760 | 17.52 |
| 2437 | 2428.240 | 2445.800 | 17.56 |
| 2462 | 2453.280 | 2470.600 | 17.32 |

802.11n (40MHz)

| Channel frequency | 6 dB left | 6 dB right | 6dB bandwidth |
|-------------------|-----------|------------|---------------|
| (MHz) | (MHz) | (MHz) | (MHz) |
| 2422 | 2403.840 | 2439.920 | 36.08 |

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| 2437 | 2418.840 | 2455.160 | 36.32 |
|------|----------|----------|-------|
| 2452 | 2433.760 | 2470.160 | 36.40 |

FCC 15.247(b)(3) - Maximum Peak Conducted Output Power

Pass

FCC Requirement: For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-

5850MHz bands: 1 Watt (30dBm)

Test Specification: KDB 558074 D01 DTS Measurement Guidance v03r02 section 9.2

Mode of operation: TX mode

Port of testing : Temporary antenna port

Detector : Peak

Supply voltage : 3.3VDC from DC power supply

Temperature : 23°C Humidity : 50%

Results: For test protocols please refer to Appendix 1, page 10-18.

802.11b

| Channel frequency (MHz) | Maximum peak output power (dBm) | Cable attenuation (dB) | Output power (dBm) | Limit (W/dBm) | Verdict |
|-------------------------------|--|------------------------------|--------------------|------------------|---------|
| 2412 | 14.61 | 0.0 | 14.61 | 1 / 30.0 | Pass |
| 2437 | 14.42 | 0.0 | 14.42 | 1 / 30.0 | Pass |
| 2462 | 14.16 | 0.0 | 14.16 | 1 / 30.0 | Pass |

802.11g

| Channel frequency (MHz) | Maximum peak output power (dBm) | Cable attenuation (dB) | Output power (dBm) | Limit (W/dBm) | Verdict |
|-------------------------------|--|------------------------------|-----------------------|------------------|---------|
| 2412 | 4.88 | 0.0 | 4.88 | 1 / 30.0 | Pass |
| 2437 | 4.33 | 0.0 | 4.33 | 1 / 30.0 | Pass |
| 2462 | 3.86 | 0.0 | 3.86 | 1 / 30.0 | Pass |

802.11n (20MHz)

| Channel frequency (MHz) | Maximum peak output power at DAC0 (dBm) | Maximum peak output power at DAC1 (dBm) | Cable attenuation (dB) | Resultant Output power (dBm) | Limit (W/dBm) | Verdict |
|-------------------------------|--|--|------------------------------|---------------------------------------|------------------|---------|
| 2412 | 3.85 | 3.32 | 0.0 | 6.60 | 1 / 30.0 | Pass |
| 2437 | 3.25 | 2.62 | 0.0 | 5.96 | 1 / 30.0 | Pass |
| 2462 | 2.92 | 1.90 | 0.0 | 5.45 | 1 / 30.0 | Pass |

802.11n (40MHz)

| Channel frequency (MHz) | Maximum peak output power at DAC0 (dBm) | Maximum peak output power at DAC1 (dBm) | Cable attenuation (dB) | Resultant Output power (dBm) | Limit (W/dBm) | Verdict |
|-------------------------------|--|--|------------------------------|---------------------------------------|------------------|---------|
| 2422 | -1.84 | -2.08 | 0.0 | 1.05 | 1 / 30.0 | Pass |
| 2437 | -2.00 | -2.47 | 0.0 | 0.78 | 1 / 30.0 | Pass |
| 2452 | -2.08 | -2.76 | 0.0 | 0.60 | 1 / 30.0 | Pass |

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FCC 15.247(e) - Power Spectral Density

Pass

FCC Requirement: For digitally modulated systems, the power spectral density conducted from the

intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band

during any time interval of continuous transmission.

Test Specification: KDB 558074 D01 DTS Measurement Guidance v03r02 section 10.2

Mode of operation: TX mode

Port of testing : Temporary antenna port

Detector : Peak

RBW/VBW : $\geq 100 \text{ KHz} / \geq 3x \text{RBW}$ span : $\geq 1.5 \text{ x DTS BW}$

Supply voltage : 3.3VDC from DC power supply

Temperature : 23°C Humidity : 50%

Results: For test protocols please refer to Appendix 1, page 19-27.

802.11b

| Channel frequency Power density (MHz) (dBm/100kHz) | | Limit (dBm/3kHz) | Verdict | |
|--|-------|---------------------|---------|--|
| 2412 | -3.27 | 8.0 | Pass | |
| 2437 | -3.46 | 8.0 | Pass | |
| 2462 | -3.90 | 8.0 | Pass | |

802.11g

| Channel frequency (MHz) | Power density (dBm/100kHz) | Limit (dBm/3kHz) | Verdict |
|----------------------------|-------------------------------|---------------------|---------|
| 2412 | -14.19 | 8.0 | Pass |
| 2437 | -14.59 | 8.0 | Pass |
| 2462 | -14.86 | 8.0 | Pass |

802.11n (20MHz)

| Channel frequency (MHz) | Power density at DAC0 (dBm/100kHz) | Power density at DAC1 (dBm/100kHz) | Resultant power density (dBm/100kHz) | Limit (dBm/3kHz) | Verdict |
|-------------------------------|------------------------------------|------------------------------------|--------------------------------------|---------------------|---------|
| 2412 | -16.44 | -17.31 | -13.84 | 8.0 | Pass |
| 2437 | -16.45 | -17.51 | -13.94 | 8.0 | Pass |
| 2462 | -17.34 | -18.23 | -14.75 | 8.0 | Pass |

802.11n (40MHz)

| 002.1111 (1 0111112) | , | | | | |
|----------------------------------|------------------------------------|--|--|---------------------|---------|
| Channel frequency (MHz) | Power density at DAC0 (dBm/100kHz) | Power density at DAC1 (dBm/100kHz) | Resultant power density (dBm/100kHz) | Limit (dBm/3kHz) | Verdict |
| 2422 | -16.96 | -17.86 | -14.38 | 8.0 | Pass |
| 2437 | -22.04 | -22.41 | -19.21 | 8.0 | Pass |
| 2452 | -24.04 | -24.90 | -21.44 | 8.0 | Pass |

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FCC 15.247(d) - Spurious Conducted Emissions

Pass

Test Specification: KDB 558074 D01 DTS Measurement Guidance v03r02 section 11.1

Mode of operation: TX mode

Port of testing : Temporary antenna port

Detector : Peak

RBW/VBW : 100 kHz / 300 kHz

Supply voltage : 3.3VDC from DC power supply

Temperature : 23 °C Humidity : 50 %

FCC Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or

digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based

on either an RF conducted or a radiated measurement.

Results: Pre-scan has been conducted to determine the worst-case mode from all possible

combinations between available modulations and data rate.

Only the worst cases is shown below. For test protocols refer to Appendix 1, page 28-

63.

802.11b

| Channel frequency (MHz) | Spurious frequency (MHz) | Spurious Level (dBm) | Reference value (dBm) | Delta (dB) | Verdict |
|-------------------------------|--------------------------------|-------------------------|-----------------------|---------------|---------|
| 2412 | 4833.006 | -36.84 | 5.97 | -42.81 | Pass |
| 2437 | 4860.006 | -36.40 | 5.62 | -42.02 | Pass |
| 2462 | 4914.006 | -37.96 | 5.60 | -43.56 | Pass |

802.11g

| Channel frequency (MHz) | Spurious frequency (MHz) | Spurious Level (dBm) | Reference value (dBm) | Delta (dB) | Verdict |
|-------------------------------|--------------------------------|-------------------------|-----------------------|---------------|---------|
| 2412 | 4806.006 | -44.96 | 4.53 | -49.49 | Pass |
| 2437 | 4860.006 | -44.84 | 4.07 | -48.91 | Pass |
| 2462 | 4914.006 | -45.75 | 3.58 | -49.33 | Pass |

802.11n (20MHz, DAC0)

| Channel frequency (MHz) | Spurious frequency (MHz) | Spurious Level (dBm) | Reference value (dBm) | Delta (dB) | Verdict |
|-------------------------------|--------------------------------|-------------------------|--------------------------|---------------|---------|
| 2412 | 4806.006 | -41.20 | 2.30 | -43.50 | Pass |
| 2437 | 4860.006 | -42.80 | 1.80 | -44.60 | Pass |
| 2462 | 4914.006 | -43.79 | 1.20 | -44.99 | Pass |

802.11n (20MHz, DAC1)

| Channel frequency (MHz) | Spurious frequency (MHz) | Spurious Level (dBm) | Reference value (dBm) | Delta (dB) | Verdict |
|-------------------------------|--------------------------------|-------------------------|-----------------------|---------------|---------|
| 2412 | 3213.007 | -44.16 | 1.50 | -45.66 | Pass |
| 2437 | 7371.004 | -44.32 | 1.05 | -45.37 | Pass |
| 2462 | 3267.007 | -43.99 | 0.30 | -44.29 | Pass |

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| Channel frequency (MHz) | Spurious frequency (MHz) | Spurious Level (dBm) | Reference value (dBm) | Delta (dB) | Verdict |
|-------------------------------|--------------------------------|-------------------------|-----------------------|---------------|--------------|
| 2422 | 4833.006 | -45.58 | -0.80 | -44.78 | Pass |
| 2437 | 7560.004 | -46.10 | -1.20 | -44.90 | Pass |
| 2452 | 4266.006 | -45.44 | 0.30 | -45.74 | Pass |
| 302.11n (40MHz, | DAC1) | | | | |
| Channel | Spurious | Spurious Level | Reference value | Delta | Verdict |
| | • | ' ' ' | (dDms) | (AD) | |
| frequency | frequency | (dBm) | (dBm) | (ub) | |
| frequency (MHz) | frequency (MHz) | (dBm) | (авт) | (dB) | |
| | | -44.00 | -1.30 | -42.70 | Pass |
| (MHz) | (MHz) | ` , | , , | | Pass Pass |



FCC 15.247 (d) - Band edge compliance of conducted emissions

Pass

Test Specification: KDB 558074 D01 DTS Measurement Guidance v03r02

Mode of operation: Tx mode

Port of testing : Temporary antenna port

Detector : Peak

RBW/VBW : 100 kHz / 300 kHz

Supply voltage : 3.3VDC from DC power supply

Temperature : 23°C Humidity : 50%

FCC Requirement: In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or

digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based

on either an RF conducted or a radiated measurement.

Results: Pre-scan has been conducted to determine the worst-case mode from all possible

combinations between available modulations and data rate.

For test protocols refer to Appendix 1, page 64-69.

802.11b

| Channel frequency (MHz) | Spurious frequency (MHz) | Spurious Level (dBm) | Reference value (dBm) | Delta (dB) | Verdict |
|-------------------------------|--------------------------------|-------------------------|-----------------------|---------------|---------|
| 2412 | 2400.000 | -37.06 | 2.89 | -39.95 | Pass |
| 2462 | 2483.500 | -38.91 | 2.25 | -41.16 | Pass |

802.11g

| Channel frequency (MHz) | Spurious frequency (MHz) | Spurious Level (dBm) | Reference value (dBm) | Delta (dB) | Verdict |
|-------------------------------|--------------------------------|-------------------------|-----------------------|---------------|---------|
| 2412 | 2400.000 | -35.34 | 1.20 | -36.54 | Pass |
| 2462 | 2483.500 | -35.31 | 0.79 | -36.10 | Pass |

802.11n (20MHz) ANTO

| Channel frequency (MHz) | Spurious frequency (MHz) | Spurious Level (dBm) | Reference value (dBm) | Delta (dB) | Verdict |
|-------------------------------|--------------------------------|-------------------------|-----------------------|---------------|---------|
| 2412 | 2400.000 | -37.35 | -0.65 | -36.70 | Pass |
| 2462 | 2483.500 | -39.35 | -1.52 | -37.83 | Pass |

802.11n (20MHz) ANT1

| Channel frequency (MHz) | Spurious frequency (MHz) | Spurious Level (dBm) | Reference value (dBm) | Delta (dB) | Verdict |
|-------------------------------|--------------------------------|-------------------------|-----------------------|---------------|---------|
| 2412 | 2400.000 | -36.72 | -1.28 | -35.44 | Pass |
| 2462 | 2483.500 | -39.94 | -2.98 | -36.96 | Pass |

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| Channel frequency (MHz) | Spurious frequency (MHz) | Spurious Level (dBm) | Reference value (dBm) | Delta (dB) | Verdict |
|-------------------------------|--------------------------------|-------------------------|--------------------------|---------------|---------|
| 2422 | 2400.000 | -36.57 | -4.23 | -32.34 | Pass |
| 2452 | 2483.500 | -39.95 | -1.52 | -38.43 | Pass |
| 000 11m //0M/U=\ | ANT4 | | | | |
| Channel frequency | Spurious | Spurious Level | Reference value | Delta | Verdict |
| , | | Spurious Level (dBm) | Reference value (dBm) | Delta (dB) | Verdict |
| Channel frequency | Spurious frequency | • | | | Verdict |

| FCC 15.247(d) or 1 | 5.205 – Radiate | d Emissions in Restricted Frequ | ency Bands Pass | |
|-----------------------------|--|--|---|--|
| Test Specification | | 2009 | | |
| Mode of operation | | | | |
| Port of testing | | | | |
| Detector Frequency range | : Peak | | | |
| | | Hz for f < 1 GHz | | |
| TIDVV/ VDVV | 1 MHz / 3 MHz | | | |
| Supply voltage | 3.7V fully charged internal battery | | | |
| | : 23°C | | | |
| Humidity | 50% | | | |
| FCC Requirement | t: In any 100kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in section15.205(a), must also comply with the radiated emission limits specified in section 15.205(c). | | | |
| Results: | | een conducted to determine the wetween available modulations and | | |
| | | nit frequency modes comply with the no spurious found below 30MHz. | ne field strength within the restricted | |
| Mode: 802.11b 241 | 2MHz TX | Vertical Polarization | | |
| Freq | | Level | Limit/ Detector | |
| MHz | | dBuV/m | dBuV/m | |
| 2390.0 | | 60.68 | 74.0 / PK | |
| 2390.0 | 00 | 40.03 | 54.0 / AV | |
| Mode: 802.11b 241 | 2MHz TX | Horizontal Polarization | | |
| Freq | | Level | Limit/ Detector | |
| MHz | | dBuV/m | dBuV/m | |
| 2389.6 | | 64.42 | 74.0 / PK | |
| 2390.0 | 00 | 41.10 | 54.0 / AV | |

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| Freq | Level | Limit/ Detector |
|--------------------------------|------------------------------|-----------------|
| MHz | dBuV/m | dBuV/m |
| 4873.936 | 57.52 | 74.0 / PK |
| 4873.952 | 51.22 | 54.0 / AV |
| Mode: 802.11b 2437MHz TX | Horizontal Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| 4873.904 | 57.11 | 74.0 / PK |
| 4873.952 | 48.36 | 54.0 / AV |
| Mode: 802.11b 2462MHz TX | Vertical Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| 2483.606 | 58.36 | 74.0 / PK |
| 2483.500 | 40.43 | 54.0 / AV |
| 4923.960 | 56.93 | 74.0 / PK |
| 4923.976 | 49.70 | 54.0 / AV |
| Mode: 802.11b 2462MHz TX | Horizontal Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| 2483.553 | 59.32 | 74.0 / PK |
| 2483.500 | 40.59 | 54.0 / AV |
| 4923.744 | 56.30 | 74.0 / PK |
| 4923.984 | 47.95 | 54.0 / AV |
| Mode: 802.11g 2412MHz TX | Vertical Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| 2389.487 | 58.85 | 74.0 / PK |
| 2390.000 | 40.59 | 54.0 / AV |
| Mode: 802.11g 2412MHz TX | Horizontal Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| 2390.000 | 65.25 | 74.0 / PK |
| 2390.000 | 44.51 | 54.0 / AV |
| Mode: 802.11g 2437MHz TX | Vertical Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| No peak found | | 74.0 / PK |
| No peak found | | 54.0 / AV |
| Mode: 802.11g 2437MHz TX | Horizontal Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| No peak found | | 74.0 / PK |
| No peak found | | 54.0 / AV |
| Mode: 802.11g 2462MHz TX | Vertical Polarization | |
| Mode: 802.11g 2462MHz TX Freq | Vertical Polarization Level | Limit/ Detect |

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| MHz | dBuV/m | dBuV/m |
|----------------------------------|-------------------------|-----------------|
| 2484.637 | 57.54 | 74.0 / PK |
| 2483.500 | 38.31 | 54.0 / AV |
| Mode: 802.11g 2462MHz TX | Horizontal Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| 2483.923 | 59.58 | 74.0 / PK |
| 2483.500 | 39.60 | 54.0 / AV |
| Mode: 802.11n (20MHz) 2412MHz TX | Vertical Polarization | 0077. |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| 2388.718 | 62.91 | 74.0 / PK |
| 2390.000 | 42.57 | 54.0 / AV |
| 4824.359 | 54.85 | |
| | | 74.0 / PK |
| 4826.314 | 40.47 | 54.0 / AV |
| Mode: 802.11n (20MHz) 2412MHz TX | Horizontal Polarization | 1: :/B |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| 2388.590 | 65.39 | 74.0 / PK |
| 2390.000 | 44.56 | 54.0 / AV |
| Mode: 802.11n (20MHz) 2437MHz TX | Vertical Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| No peak found | | 74.0 / PK |
| No peak found | | 54.0 / AV |
| Mode: 802.11n (20MHz) 2437MHz TX | Horizontal Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| No peak found | | 74.0 / PK |
| No peak found | | 54.0 / AV |
| Mode: 802.11n (20MHz) 2462MHz TX | Vertical Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| 2485.087 | 59.35 | 74.0 / PK |
| 2484.425 | 38.37 | 54.0 / AV |
| Mode: 802.11n (20MHz) 2462MHz TX | Horizontal Polarization | J4.0 / AV |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| 2484.188 | 61.20 | 74.0 / PK |
| 2483.685 | 39.83 | 54.0 / AV |
| Mode: 802.11n (40MHz) 2422MHz TX | Vertical Polarization | 34.07 AV |
| · , | | Limit/ Datastar |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| 2386.667 | 65.45 | 74.0 / PK |
| 2389.872 | 44.14 | 54.0 / AV |
| Mode: 802.11n (40MHz) 2422MHz TX | Horizontal Polarization | |

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| Freq | Level | Limit/ Detector |
|---------------------------------|---------------------------|-----------------|
| MHz | dBuV/m | dBuV/m |
| 2386.538 | 70.56 | 74.0 / PK |
| 2390.000 | 48.31 | 54.0 / AV |
| Mode: 802.11n (40MHz) 2437MHz 1 | X Vertical Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| No peak found | | 74.0 / PK |
| No peak found | | 54.0 / AV |
| Mode: 802.11n (40MHz) 2437MHz 1 | X Horizontal Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| No peak found | | 74.0 / PK |
| No peak found | | 54.0 / AV |
| Mode: 802.11n (40MHz) 2452MHz 1 | X Vertical Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| 2484.584 | 60.86 | 74.0 / PK |
| 2483.500 | 42.22 | 54.0 / AV |
| Mode: 802.11n (40MHz) 2452MHz 7 | X Horizontal Polarization | |
| Freq | Level | Limit/ Detector |
| MHz | dBuV/m | dBuV/m |
| 2484.055 | 59.04 | 74.0 / PK |
| 2483.632 | 40.78 | 54.0 / AV |

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