

FCC Part 15B Compliance Test Report

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|---|---|-----------------------------------|---|
| Test Report no.: | FCC15B_RM-1104_19 | Date of Report: | 22-Sep-2015 |
| Number of pages: | 7 | Customer's Contact person: | Jari Rontu |
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| FCC listing no.: | 533467 | | |
| IC recognition no.: | 661V-1 | | |
| Tested devices/ accessories: | Phone RM-1104 / Battery (Samsung) BV-T5E / USB-Cable CA-232CD / Headset WH-308 / Laptop T61p | | |
| FCC ID: | PYASTT | IC: | 661X-STT |
| Supplement reports: | - | | |
| Testing has been carried out in accordance with: | CFR 47, FCC rules Part 15 Subpart B, ANSI C63.4 (2014), CISPR 22 and IC standards, RSS-GEN (Issue 4, November 2014), RSS-133 (Issue 6, January 2013). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit". | | |
| Documentation: | The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Microsoft. | | |
| Test Results: | The EUT complies with the requirements in respect of all parameters subject to the test. The test results relate only to devices specified in this document | | |
| Date and signature for the contents: | | | |

Hannu Söderholm, Engineer, EMC

1. Summary for FCC Part 15B Compliance Test Report

| | |
|-------------------------------|---|
| Date of receipt | 07-Jan-2015 |
| Testing completed | 03-Jul-2015 |
| The customer's contact person | Jari Rontu |
| Test Plan referred to | T:\Projects\RM-1104\TestPlan\RS_TestPlan_RM-1104_EMF_FCC.xlsm |
| Notes | - |
| Document name | T:\Projects\RM-1104\EMF\FCC15B_RM-1104_19.docx |

1.1. EUT and Accessory Information

The EUT is a mobile phone with following features:

GSM/WCDMA/WLAN/Bluetooth

The EUT is tested with maximum rated TX power.

Devices under tests

| Product | Type | SN | HW | MV | SW | DUT |
|-------------------|----------|-----------------------------|------|----|-------------------------|--------|
| Phone | RM-1104 | 004402742178605;059X034 | 2012 | S2 | 01066.00001.15257.14000 | 100205 |
| Battery (Samsung) | BV-T5E | 4181575182S10605022;0670775 | V6 | - | - | 100210 |
| USB-Cable | CA-232CD | 07306645245B2AA001136 | - | - | - | 100182 |
| Headset | WH-308 | 51251B1 | - | - | - | 100028 |
| Laptop | T61p | 4FIL44044 | - | - | - | 16517 |

1.2. Summary of Test Results

GSM 1900:

| Section in CFR 47 | Section in RSS-GEN | Name of the test | Result |
|-------------------|--------------------|----------------------------------|--------|
| 15.107, a | 8.8 | AC powerline conducted emissions | PASSED |
| 15.109, a | 6.1 | Radiated emissions | - |

PASSED

The EUT complies with the essential requirements in the standard.

FAILED

The EUT does not comply with the essential requirements in the standard.

NP

The test was not performed by the TCC Microsoft Laboratory.

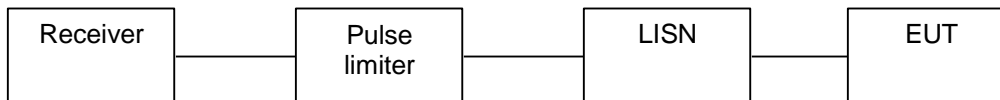
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2. AC powerline conducted emissions (FCC §15.107, a, RSS-GEN, section 8.8)

| | |
|--|--|
| EUT with DUT number | RM-1104, DUT 100205 |
| Accessories with DUT numbers | BV-T5E, DUT 100210 ; CA-232CD, DUT 100182 ; WH-308, DUT 100028 ; T61p, DUT 16517 |
| Operation Voltage [V] / [Hz] | Nominal |
| Results | PASSED |
| Remarks | - |
| Temp [°C] / Humidity [%RH] / Air Pressure [kPa] | 19.4 / 66.5 / 102.3 |
| Date of measurements | 03-Jul-2015 |
| Measured by | Tomi Lipponen |

2.1. Test Setup



2.2. Test method and limit

The measurement is made according to ANSI C63.4-2014 as follows:

The EUT is placed on a wooden table 80 cm above the reference groundplane.

The EUT is connected via LISN to a test power supply.

The measurement results are obtained as described below:

$$U [dB\mu V] = U_{RX} + A_{TOT}$$

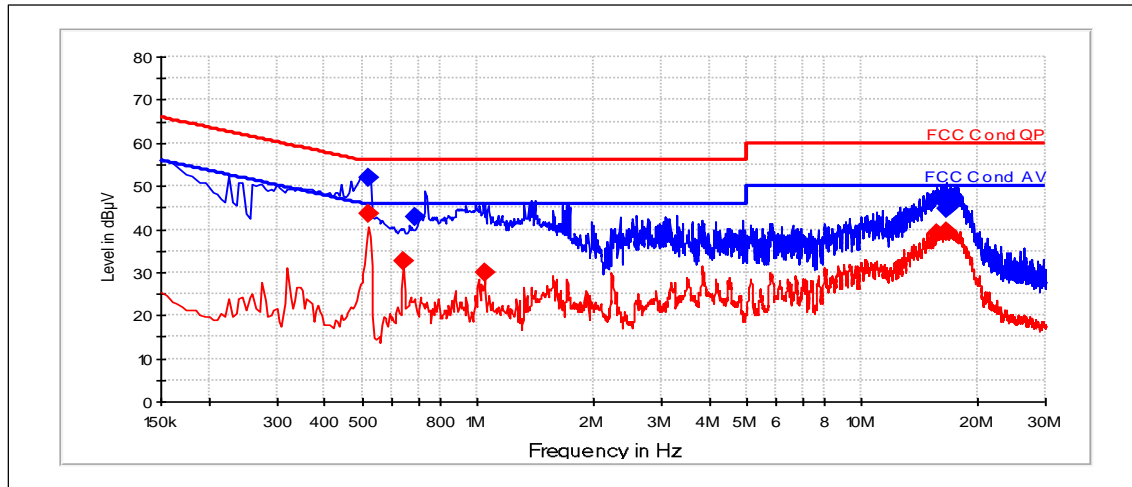
Where U_{RX} is receiver reading and A_{TOT} is total correction factor including cable and pulse limiter attenuations.

CISPR 22 Class B limits

| Frequency range [MHz] | Quasi peak limit [dBμV] | Average limit [dBμV] |
|-----------------------|-------------------------|----------------------|
| 0.15 - 0.5 | 66 - 56 | 56 - 46 |
| 0.5 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

2.3. GSM 1900 Test results

Channel 661 / 1880.0 MHz



QuasiPeak (RBW: 9 kHz)

| Frequency [MHz] | U [dBµV] | Line | Result |
|-----------------|----------|------|--------|
| 0.52 | 52.07 | N | PASSED |
| 0.685 | 42.66 | N | PASSED |
| 16.495 | 44.67 | L1 | PASSED |
| 16.63 | 45.95 | N | PASSED |
| 17.005 | 45.34 | N | PASSED |

Average (RBW: 9 kHz)

| Frequency [MHz] | U [dBµV] | Line | Result |
|-----------------|----------|------|--------|
| 0.52 | 43.52 | N | PASSED |
| 0.64 | 32.58 | N | PASSED |
| 1.045 | 30.14 | N | PASSED |
| 15.685 | 38.94 | N | PASSED |
| 16.6 | 39.61 | N | PASSED |
| 16.645 | 39.26 | N | PASSED |

3. Test Equipment

3.1. Conducted measurements

| Eq. No | Equipment | Type | Manufacturer | Used in |
|--------|---------------------------------|---------------|---------------|--------------------|
| 6039 | USB Interface | 5541765 | Testo | 22/24/27, 15C, 15B |
| 6044 | V-network | ESH3-Z6 | R&S | - |
| 2059 | V-network | ESH3-Z6 | R&S | - |
| 1759 | LISN 50 µH | ESH3-Z5 | R&S | 22/24/27, 15C, 15B |
| 2097 | Pulse Limiter | ESH3-Z2 | R&S | 22/24/27, 15C, 15B |
| 1999 | Receiver | ESIB26 | R&S | 22/24/27, 15C, 15B |
| 2180 | Communication Tester | CMU200 | R&S | 22/24/27, 15C, 15B |
| 2390 | Directional Coupler | DC2600 | AR | - |
| - | RF immunity / Emission Software | EMC32 | R&S | 22/24/27, 15C, 15B |
| 2060 | LISN 50 µH | ESH3-Z5 | R&S | 15C, 15B |
| 1759 | LISN 50 µH | ESH3-Z5 | R&S | 15C, 15B |
| 2039 | Power Supply | PL330QMD | Thurlby | 15C, 15B |
| 6036 | Data Logger | 175-H2 | Testo | 22/24/27, 15C, 15B |
| 2359 | Temperature Test Chamber | VT4002 | Vötsch | 22/24/27 |
| 2352 | Spectrum Analyzer | FSP-30 | R&S | 22/24/27, 15C |
| 6109 | Communication Tester | CMU200 | R&S | 22/24/27, 15C |
| 6246 | Power Supply | 66332A | HP | 22/24/27, 15C |
| 1992 | Signal Generator | 83630B | Agilent | 15C, 15B |
| 6098 | Signal Generator | 8648C | Agilent | - |
| 6046 | Attenuator 10dB | 8493C | Agilent | 22/24/27, 15C |
| 6047 | Attenuator 20dB | 8493C | Agilent | 22/24/27, 15C |
| 6045 | Power splitter | 11667B | Agilent | 22/24/27, 15C |
| 6247 | Communication Tester | CBT | R&S | 22/24/27, 15C 15B |
| 6052 | Communication Tester | CMU200 | R&S | 22/24/27, 15C 15B |
| 6248 | Power Supply | 6632B | - | 22/24/27, 15C 15B |
| 6106 | Spectrum Analyzer | FSP-30 | R&S | 22/24/27, 15C 15B |
| 6113 | Signal Generator | SMF100A | R&S | 22/24/27, 15C 15B |
| 6202 | Temperature Test Chamber | VT4002 | Vötsch | 22/24/27, 15C 15B |
| 6122 | Power Splitter | 11667B | Agilent | 22/24/27, 15C 15B |
| 6134 | Attenuator 10dB | BW-S10-2W263+ | Mini-Circuits | 22/24/27, 15C |
| 6136 | Attenuator 20dB | BW-S20-2W263+ | Mini-Circuits | 22/24/27, 15C |
| 6103 | Bluetooth tester | CBT | R&S | 22/24/27, 15C 15B |
| 6250 | Power Supply | 6651A | Agilent | 22/24/27, 15C 15B |
| 6108 | Communication Tester | CMU200 | R&S | 22/24/27, 15C 15B |
| 6105 | Spectrum Analyzer | FSV-30 | R&S | 22/24/27, 15C 15B |
| 6251 | Temperature Test Chamber | VT4002 | Vötsch | 22/24/27, 15C 15B |
| 6243 | Power Splitter | 1167B | Agilent | 22/24/27, 15C 15B |
| 6245 | Attenuator 10dB | BW-S10-2W263+ | Mini-Circuits | 22/24/27, 15C 15B |
| 6244 | Attenuator 20dB | BW-S20-2W263+ | Mini-Circuits | 22/24/27, 15C 15B |

3.2. Radiated measurements

| Eq. No | Equipment | Type | Manufacturer | Used in |
|--------|------------------------------|-----------|--------------|--------------------|
| 2388 | Bluetooth Tester | CBT | R&S | 15B |
| 10479 | Communication Tester | CMW500 | R&S | 22/24/27, 15C, 15B |
| 2347 | Communication Tester | CMU200 | R&S | 22/24/27, 15C, 15B |
| 2009 | Signal Generator | SMP 22 | R&S | 22/24/27, 15C, 15B |
| 2348 | Controller | G-1000DXC | Yaesu | 22/24/27, 15C, 15B |
| 2349 | Computer Controller | g-1000DXC | Yaesu | 22/24/27, 15C, 15B |
| 2116 | Controller | EMCO 2090 | ETS | 22/24/27, 15C, 15B |
| 2109 | Power Supply | PL330QMD | Thurlby | 22/24/27, 15C, 15B |
| 2353 | Receiver | ESIB26 | R&S | 22/24/27, 15C, 15B |
| 6115 | Open switch and control unit | OSP 130 | R&S | 22/24/27, 15C 15B |
| 6116 | Open switch and control unit | OSP 150 | R&S | 22/24/27, 15C 15B |

| Eq. No | Equipment | Type | Manufacturer | Used in |
|--------|---------------------------------|--|--------------|--------------------|
| 6117 | Open switch and control unit | OSP 150 | R&S | 22/24/27, 15C, 15B |
| 6131 | Notch Filter | WRCT902.4-0.4/40-8SS | Wainwright | 22/24/27, 15C, 15B |
| 6130 | Notch Filter | WRCD1880-1.1.25/50-10SS | Wainwright | 22/24/27 |
| 6159 | Band Reject Filter | WRCD1747.8-0.4/40-5SS | Wainwright | 22/24/27, 15C, 15B |
| 6158 | Band Reject Filter | WRCT836.6-0.4/40-8SS | Wainwright | 22/24/27, 15C, 15B |
| 6197 | Band Reject Filter | WRCJV2531/2539-2523/2547-60/12SS | Wainwright | 22/24/27, 15C, 15B |
| 2231 | Band Reject Filter | WRCG1947/1953-1940/1960-40/6SS | Wainwright | 22/24/27, 15C, 15B |
| 2391 | Band Reject Filter | WRCG1729.4/1735.4-1722.4/1742.4-40/6SS | Wainwright | 27 |
| 2386 | Band Reject Filter | WRCG1764.4/1770.4-1760.4/1774.4-40/6SS | Wainwright | 22/24/27, 15C, 15B |
| 2385 | Band Reject Filter | WRCG1744.4/1750.4-1740.4/1754.4-40/6SS | Wainwright | 22/24/27, 15C, 15B |
| 2357 | Band Reject Filter | WRCG2400/2483-2390/2493-35/10SS | Wainwright | 15C |
| 2188 | Preamplifier | AFS4-00100300-20-23P-6 | Miteq | 22/24/27, 15C, 15B |
| 6195 | High Pass Filter | - | Wainwright | 22/24/27, 15C, 15B |
| 2364 | Band Reject Filter | WRCG1877/1883 - 1870/1890-40/6SS | Wainwright | 24 |
| 2361 | Anechoic Chamber | 3 m Semi / Full Anechoic Chamber | Euroshield | 22/24/27, 15C, 15B |
| 6212 | Antenna Array system | - | TCC | 22/24/27, 15C, 15B |
| - | RF immunity / Emission Software | EMC32 | R&S | 22/24/27, 15C, 15B |
| 6089 | Antenna | HFH2-Z2 | R&S | 15C, 15B |
| 2027 | CDN | M2 (modified) DC1 | MEB | 22/24/27, 15C, 15B |
| 2028 | CDN | M3 (modified) DC2 | MEB | 22/24/27, 15C, 15B |
| 2176 | CDN | CDN 801-M3 | Lüthi | 22/24/27, 15C, 15B |
| 2135 | CDN | CDN 801-M3 | Lüthi | 22/24/27, 15C, 15B |
| 2029 | Power Supply | PL330 | Thurlby | 22/24/27, 15C |
| 6038 | Data Logger | Testo 580 | Testo | 22/24/27, 15C, 15B |
| 6037 | Data Logger | 175-H2 | Testo | 22/24/27, 15C, 15B |
| 6039 | USB Interface | 5541765 | Testo | 22/24/27, 15C, 15B |