




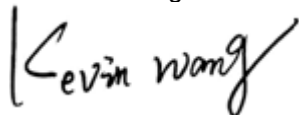
EMC REPORT

Applicant: DIGIVIEW TECHNOLOGY LIMITED
Address of Applicant: Room 509, 5/F, Tian Shu Block, Xinggang Tongchuanghui,
No.6099 Baoan District, Shenzhen, Guangdong, China
Manufacturer/Factory: DIGIVIEW TECHNOLOGY LIMITED
Address of Room 509, 5/F, Tian Shu Block, Xinggang Tongchuanghui,
Manufacturer/Factory: No.6099 Baoan District, Shenzhen, Guangdong, China
Equipment Under Test (EUT)
Product Name: POWER BANK
Brand Name: 
Model No.: DP50DQ-A
Applicable standards: ETSI EN 301 489-1 V2.2.3 (2019-11)
ETSI EN 301 489-3 V2.1.1 (2019-03)
Date of sample receipt: November 28, 2023
Date of Test: November 28, 2023 To December 8, 2023
Date of report issue: December 8, 2023
Test Result : Pass *

* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

Authorized Signature



Kevin Wang

Laboratory Manager





2 Version

| Version No. | Date | Description |
|-------------|------------------|-------------|
| 00 | December 8, 2023 | Original |
| | | |
| | | |
| | | |
| | | |

Prepared By:

Gang Wang

Date:

December 8, 2023

Project Engineer

Reviewed By:

Kevin Wang

Date:

December 8, 2023

Reviewer





3 Contents

| | Page |
|---|------|
| 1 COVER PAGE | 1 |
| 2 VERSION | 2 |
| 3 CONTENTS | 3 |
| 4 TEST SUMMARY | 4 |
| 5 GENERAL INFORMATION | 5 |
| 5.1 GENERAL DESCRIPTION OF EUT | 5 |
| 5.2 OPERATING MODES | 5 |
| 5.3 DESCRIPTION OF SUPPORT UNITS | 5 |
| 5.4 DEVIATION FROM STANDARDS | 5 |
| 5.5 ABNORMALITIES FROM STANDARD CONDITIONS | 5 |
| 6 TEST INSTRUMENTS LIST | 6 |
| 7 EMC REQUIREMENTS SPECIFICATION IN ETSI EN 301 489-3 | 9 |
| 7.1 EMI (EMISSION) | 9 |
| 7.1.1 Radiated Emission | 9 |
| 7.1.2 Conducted Emissions | 13 |
| 7.1.3 Harmonics Test Results | 16 |
| 7.1.4 Flicker Test Results | 16 |
| 7.2 IMMUNITY | 17 |
| 7.2.1 Electrostatic Discharge | 19 |
| 7.2.2 Radiated Immunity | 21 |
| 7.2.3 Radio frequency common mode | 23 |
| 7.2.4 Electrical Fast Transients | 24 |
| 7.2.5 Surge | 26 |
| 7.2.6 Voltage Dip and Voltage Interruptions | 28 |
| 8 EUT CONSTRUCTIONAL DETAILS | 29 |

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4 Test Summary

| EMI Test | | | | |
|---|-------------------|------------------|-------------|--------|
| Test Item | Test Requirement | Test Method | Application | Result |
| Radiated Emission | ETSI EN 301 489-3 | ETSI EN301 489-1 | Enclosure | Pass |
| Conducted Emission | ETSI EN 301 489-3 | ETSI EN301 489-1 | AC port | Pass |
| Harmonic Current Emissions | ETSI EN 301 489-3 | ETSI EN301 489-1 | AC port | N/A |
| Voltage Fluctuations and Flicker | ETSI EN 301 489-3 | ETSI EN301 489-1 | AC port | Pass |
| EMS Test | | | | |
| ESD (Electrostatic Discharge) | ETSI EN 301 489-3 | EN 61000-4-2 | Enclosure | Pass |
| Radio Frequency Electromagnetic Field (80 MHz to 6 000 MHz) | ETSI EN 301 489-3 | EN 61000-4-3 | Enclosure | Pass |
| EFT (Electrical Fast Transients) | ETSI EN 301 489-3 | EN 61000-4-4 | AC port | Pass |
| Surges | ETSI EN 301 489-3 | EN 61000-4-5 | AC port | Pass |
| Radio Frequency, Common Mode | ETSI EN 301 489-3 | EN 61000-4-6 | AC port | Pass |
| Voltage Dips and Interruptions | ETSI EN 301 489-3 | EN 61000-4-11 | AC port | Pass |

Pass: The EUT complies with the essential requirements in the standard.



5 General Information

5.1 General Description of EUT

| | |
|----------------------|---|
| Product Name: | POWER BANK |
| Model No.: | DP50DQ-A |
| Operation Frequency: | 100-300kHz |
| Modulation type: | ASK |
| Antenna Type: | Coil Antenna |
| Antenna Gain: | 0dBi |
| Power Supply: | USB-C Input: 5V $\overline{\text{---}}$ 2.4A Battery: 3.7V, 5000mAh, 18.5Wh USB-C Output: 5V --- 2.4A USB-A Output: 5V --- 2.4A USB-A & USB-C Output: 5V --- 2.4A Wireless output: 5W |

5.2 Operating Modes

| | |
|-----------|---|
| WPT mode: | Keep the EUT in Wireless charging mode. |
|-----------|---|

5.3 Description of Support Units

| |
|------|
| None |
|------|

5.4 Deviation from Standards

| |
|-------|
| None. |
|-------|

5.5 Abnormalities from Standard Conditions

| |
|-------|
| None. |
|-------|



6 Test Instruments list

| Radiated Emission: | | | | | | |
|--------------------|--|--------------------------------|-----------------------------|-------------------|------------------------|-------------------------------|
| Item | Test Equipment | Manufacturer | Model No. | Inventor y No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
| 1 | 3m Semi- Anechoic Chamber | ZhongYu Electron | 9.2(L)*6.2(W)* 6.4(H) | GTS250 | Jul. 2 2022 | Jul. 1 2025 |
| 2 | Control Room | ZhongYu Electron | 6.2(L)*2.5(W)* 2.4(H) | GTS251 | N/A | N/A |
| 3 | EMI Test Receiver | Rohde & Schwarz | ESU26 | GTS203 | Jun. 27 2023 | Jun. 26 2024 |
| 4 | BiConiLog Antenna | SCHWARZBECK MESS-ELEKTRONIK | VULB9163 | GTS214 | Jun. 27 2023 | Jun. 26 2024 |
| 5 | Double -ridged waveguide horn | SCHWARZBECK MESS-ELEKTRONIK | BBHA 9120 D | GTS208 | Jun. 27 2023 | Jun. 26 2024 |
| 6 | Horn Antenna | ETS-LINDGREN | 3160 | GTS217 | Jun. 27 2023 | Jun. 26 2024 |
| 7 | EMI Test Software | AUDIX | E3 | N/A | N/A | N/A |
| 8 | Coaxial Cable | GTS | N/A | GTS213 | Jun. 27 2023 | Jun. 26 2024 |
| 9 | Coaxial Cable | GTS | N/A | GTS211 | Jun. 27 2023 | Jun. 26 2024 |
| 10 | Coaxial cable | GTS | N/A | GTS210 | Jun. 27 2023 | Jun. 26 2024 |
| 11 | Coaxial Cable | GTS | N/A | GTS212 | Jun. 27 2023 | Jun. 26 2024 |
| 12 | Amplifier(100kHz- 3GHz) | HP | 8347A | GTS204 | Jun. 27 2023 | Jun. 26 2024 |
| 13 | Amplifier(2GHz- 20GHz) | HP | 84722A | GTS206 | Jun. 27 2023 | Jun. 26 2024 |
| 14 | Amplifier (18-26GHz) | Rohde & Schwarz | AFS33-18002 650-30-8P-44 | GTS218 | Jun. 27 2023 | Jun. 26 2024 |
| 15 | Band filter | Amindeon | 82346 | GTS219 | Jun. 27 2023 | Jun. 26 2024 |
| 16 | Power Meter | Anritsu | ML2495A | GTS540 | Jun. 27 2023 | Jun. 26 2024 |
| 17 | Power Sensor | Anritsu | MA2411B | GTS541 | Jun. 27 2023 | Jun. 26 2024 |
| 18 | Wideband Radio Communication Tester | Rohde & Schwarz | CMW500 | GTS575 | Jun. 27 2023 | Jun. 26 2024 |
| 19 | Splitter | Agilent | 11636B | GTS237 | Jun. 27 2023 | Jun. 26 2024 |
| 20 | Loop Antenna | ZHINAN | ZN30900A | GTS534 | Jun. 27 2023 | Jun. 26 2024 |
| 21 | Breitband hornantenne | SCHWARZBECK | BBHA 9170 | GTS579 | Jun. 27 2023 | Jun. 26 2024 |
| 22 | Amplifier | TDK | PA-02-02 | GTS574 | Jun. 27 2023 | Jun. 26 2024 |
| 23 | Amplifier | TDK | PA-02-03 | GTS576 | Jun. 27 2023 | Jun. 26 2024 |
| 24 | PSA Series Spectrum Analyzer | Rohde & Schwarz | FSP | GTS578 | Jun. 27 2023 | Jun. 26 2024 |

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| Conducted Emission | | | | | | |
|--------------------|---------------------------|-------------------------|----------------------|---------------|---------------------|-------------------------|
| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
| 1 | Shielding Room | ZhongYu Electron | 7.3(L)x3.1(W)x2.9(H) | GTS252 | Jul. 2 2022 | Jul. 1 2025 |
| 2 | EMI Test Receiver | R&S | ESCI 7 | GTS552 | Jun. 27 2023 | Jun. 26 2024 |
| 3 | Coaxial Switch | ANRITSU CORP | MP59B | GTS225 | Jun. 27 2023 | Jun. 26 2024 |
| 4 | ENV216 2-L-V-NETZNACHB.DE | ROHDE&SCHWARZ | ENV216 | GTS226 | Jun. 27 2023 | Jun. 26 2024 |
| 5 | Coaxial Cable | GTS | N/A | GTS227 | N/A | N/A |
| 6 | EMI Test Software | AUDIX | E3 | N/A | N/A | N/A |
| 7 | Thermo meter | KTJ | TA328 | GTS233 | Jun. 27 2023 | Jun. 26 2024 |
| 8 | Absorbing clamp | Elektronik-Feinmechanik | MDS21 | GTS229 | Jun. 27 2023 | Jun. 26 2024 |
| 9 | ISN | SCHWARZBECK | NTFM 8158 | GTD565 | Jun. 27 2023 | Jun. 26 2024 |

| ESD | | | | | | |
|------|----------------|--------------|-----------|---------------|---------------------|-------------------------|
| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
| 1 | ESD Simulator | KIKUSUI | KES4021A | GTS242 | Jun. 27 2023 | Jun. 26 2024 |
| 2 | Thermo meter | KTJ | TA328 | GTS243 | Jun. 27 2023 | Jun. 26 2024 |

| Conducted Immunity | | | | | | |
|--------------------|------------------|-----------------|----------------|---------------|---------------------|-------------------------|
| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
| 1 | Signal Generator | ROHDE & SCHWARZ | SMB 100A | GTS553 | Jun. 27 2023 | Jun. 26 2024 |
| 2 | CDN | LionCEL | CDN-M3-16 | GTS554 | Jun. 27 2023 | Jun. 26 2024 |
| 3 | CDN | CYBERTEK | EM 5070 | GTS559 | Jun. 27 2023 | Jun. 26 2024 |
| 4 | Power amplifier | rflight | NTWPA-00010475 | GTS555 | Jun. 27 2023 | Jun. 26 2024 |
| 5 | ATT | SUNWAVE | SJ-50-06DB | GTS556 | Jun. 27 2023 | Jun. 26 2024 |
| 6 | Clamp | SCHAFFNER | KEMZ 801 | GTS558 | Jun. 27 2023 | Jun. 26 2024 |

| Harmonic/ Flicker | | | | | | |
|-------------------|--------------------|--------------|-----------|---------------|---------------------|-------------------------|
| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
| 1 | Power Analyzer H/F | EMTEST | DPA500 | GTS235 | Jun. 27 2023 | Jun. 26 2024 |
| 2 | AC POWER SUPPLY | EMTEST | ACS500 | GTS236 | Jun. 27 2023 | Jun. 26 2024 |
| 3 | Thermo meter | KTJ | TA328 | GTS256 | Jun. 27 2023 | Jun. 26 2024 |

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**EFT, Surge, Voltage dips and Interruption**

| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
|------|----------------|--------------|-----------|---------------|---------------------|-------------------------|
| 1 | EMTEST system | EMTEST | UCS500N | GTS239 | Jun. 27 2023 | Jun. 26 2024 |
| 2 | Clamp | EMTEST | HFK | GTS557 | Jun. 27 2023 | Jun. 26 2024 |
| 3 | Thermo meter | KTJ | TA328 | GTS238 | Jun. 27 2023 | Jun. 26 2024 |

Radiated Immunity

| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
|------|---|-----------------------|----------------|---------------|---------------------|-------------------------|
| 1 | Fully-Anechoic Chamber 2 | Chang Zhou Zhong Shuo | 854 | SEM001-05 | Jun. 27 2023 | Jun. 26 2024 |
| 2 | Power Sensor | Rohde & Schwarz | NRP-Z91 | SEM009-09 | Jun. 27 2023 | Jun. 26 2024 |
| 3 | Stacked Log.-Per.-Broadband Antenna (70MHz-10GHz) | Schwarzbeck | STLP 9129 | SEM003-25 | N/A | N/A |
| 4 | Signal Generator (9kHz-6GHz) | Rohde & Schwarz | SMB100A | SEM006-11 | Jun. 27 2023 | Jun. 26 2024 |
| 5 | Broadband Amplifier (80MHz-1GHz) | Rohde & Schwarz | BBA150-BC250 | SEM005-12 | Jun. 27 2023 | Jun. 26 2024 |
| 6 | Broadband Amplifier(800MHz-3GHz) | Rohde & Schwarz | BBA150-D110 | SEM005-13 | Jun. 27 2023 | Jun. 26 2024 |
| 7 | Broadband Amplifier(2.5GHz-6GHz) | Rohde & Schwarz | BBA150-E60 | SEM005-16 | Jun. 27 2023 | Jun. 26 2024 |
| 8 | Measurement Software | Rohde & Schwarz | EMC32 V9.25.00 | N/A | N/A | N/A |

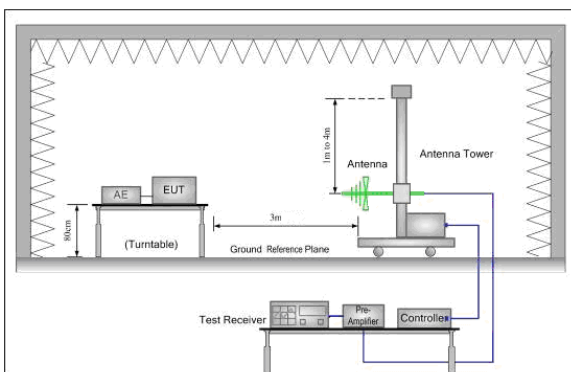
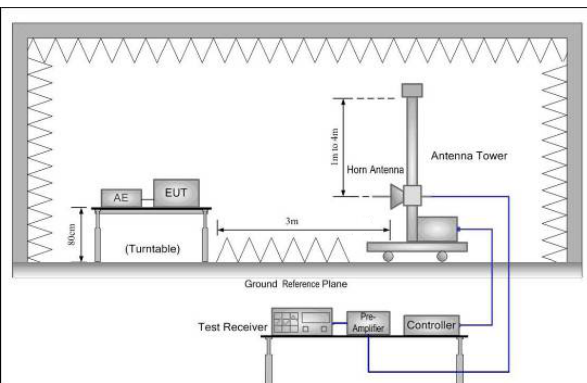
General used equipment:

| Item | Test Equipment | Manufacturer | Model No. | Inventory No. | Cal.Date (mm-dd-yy) | Cal.Due date (mm-dd-yy) |
|------|---------------------------------|--------------|-----------|---------------|---------------------|-------------------------|
| 1 | Humidity/ Temperature Indicator | KTJ | TA328 | GTS243 | Jun. 27 2023 | Jun. 26 2024 |
| 2 | Barometer | ChangChun | DYM3 | GTS255 | Jun. 27 2023 | Jun. 26 2024 |

7 EMC Requirements Specification in ETSI EN 301 489-3

7.1 EMI (Emission)

7.1.1 Radiated Emission

| | | | | | |
|-----------------------|--|------------|--------------------|---------------|------------------|
| Test Requirement: | ETSI EN 301 489-3 | | | | |
| Test Method: | ETSI EN 301 489-1 and EN 55032 | | | | |
| Test Frequency Range: | 30MHz to 1GHz | | | | |
| Test site: | Measurement Distance: 3m | | | | |
| Receiver setup: | Frequency | Detector | RBW | VBW | Remark |
| | 30MHz-1GHz | Quasi-peak | 120kHz | 300kHz | Quasi-peak Value |
| | Above 1GHz | Peak | 1MHz | 3MHz | Peak Value |
| AV | | 1MHz | 3MHz | Average Value | |
| Limit: | Frequency | | Limit (dBuV/m @3m) | | Remark |
| | 30MHz-230MHz | | 40.00 | | Quasi-peak Value |
| | 230MHz-1GHz | | 47.00 | | Quasi-peak Value |
| | 1GHz-3GHz | | 50.00 | | Average Value |
| | | | 70.00 | | Peak Value |
| | 3GHz-6GHz | | 54.00 | | Average Value |
| 74.00 | | | Peak Value | | |
| Test setup: | Below 1GHz | | | | |
| |  | | | | |
| | Above 1GHz | | | | |
| |  | | | | |

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| | | | | | | |
|---------------------|---|-------|---------|-----|---------|-----------|
| Test Procedure: | <p>■ From 30MHz to 1GHz:</p> <ol style="list-style-type: none">1. The radiated emissions test was conducted in a semi-anechoic chamber.2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT.4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization. <p>■ Above 1GHz:</p> <ol style="list-style-type: none">1. The radiated emissions test was conducted in a fully-anechoic chamber.2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.3. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum plots of the EUT.4. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization. | | | | | |
| Test environment: | Temp.: | 25 °C | Humid.: | 50% | Press.: | 1 010mbar |
| Measurement Record: | Uncertainty: 3.8039dB (30MHz-200MHz) 3.9679dB (200MHz-1GHz) | | | | | |

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Shenzhen EBO Testing Center

Tel: +86-755-33126608

Email :ebo@ebotest.com Web :www.ebotest.com

Report No.: EBO2312008-E017

Report Version: 1.0

Page 11 of 32

| | |
|-------------------|----------------------------------|
| | 4.29dB (1GHz-18GHz) |
| Test Instruments: | Refer to section 6.0 for details |
| Test mode: | Refer to section 5.2 for details |
| Test results: | Pass |

Remark:

1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

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**Measurement Data
Below 1GHz**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarity |
|-----------------|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|------------|
| 49.19 | 54.33 | 13.03 | 0.76 | 36.14 | 31.98 | 40.00 | -8.02 | Vertical |
| 55.03 | 55.58 | 12.55 | 0.82 | 36.25 | 32.70 | 40.00 | -7.30 | Vertical |
| 61.13 | 54.56 | 12.12 | 0.87 | 36.34 | 31.21 | 40.00 | -8.79 | Vertical |
| 69.85 | 54.62 | 10.63 | 0.94 | 36.44 | 29.75 | 40.00 | -10.25 | Vertical |
| 142.82 | 49.89 | 12.24 | 1.52 | 37.03 | 26.62 | 40.00 | -13.38 | Vertical |
| 607.79 | 35.40 | 19.38 | 3.75 | 37.55 | 20.98 | 47.00 | -26.02 | Vertical |
| 54.45 | 43.26 | 12.60 | 0.81 | 36.25 | 20.42 | 40.00 | -19.58 | Horizontal |
| 60.70 | 42.95 | 12.19 | 0.87 | 36.33 | 19.68 | 40.00 | -20.32 | Horizontal |
| 154.28 | 46.93 | 12.79 | 1.59 | 37.10 | 24.21 | 40.00 | -15.79 | Horizontal |
| 166.65 | 46.88 | 12.55 | 1.67 | 37.17 | 23.93 | 40.00 | -16.07 | Horizontal |
| 192.42 | 46.36 | 9.68 | 1.80 | 37.30 | 20.54 | 40.00 | -19.46 | Horizontal |
| 595.13 | 37.40 | 19.11 | 3.70 | 37.54 | 22.67 | 47.00 | -24.33 | Horizontal |

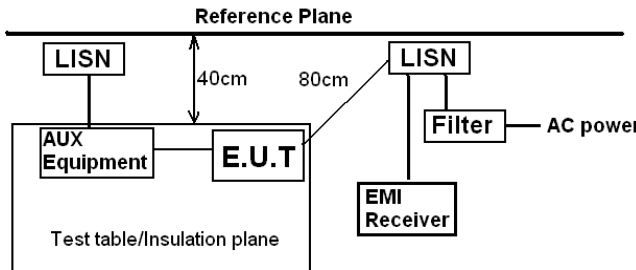
Above 1GHz**Peak measurement**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarity |
|-----------------|-------------------|-----------------------|-----------------|--------------------|----------------|---------------------|-----------------|------------|
| 1315.00 | 37.47 | 25.01 | 2.20 | 36.02 | 28.66 | 70.00 | -41.34 | Vertical |
| 1985.00 | 36.31 | 26.08 | 2.53 | 36.49 | 28.43 | 70.00 | -41.57 | Vertical |
| 2620.00 | 35.44 | 27.88 | 3.12 | 37.03 | 29.41 | 70.00 | -40.59 | Vertical |
| 3305.00 | 36.59 | 28.40 | 3.63 | 37.33 | 31.29 | 74.00 | -42.71 | Vertical |
| 4140.00 | 33.18 | 30.07 | 3.99 | 37.46 | 29.78 | 74.00 | -44.22 | Vertical |
| 4750.00 | 30.68 | 31.11 | 4.59 | 37.71 | 28.67 | 74.00 | -45.33 | Vertical |
| 1240.00 | 37.30 | 24.88 | 2.16 | 35.95 | 28.39 | 70.00 | -41.61 | Horizontal |
| 1775.00 | 36.54 | 25.77 | 2.47 | 36.36 | 28.42 | 70.00 | -41.58 | Horizontal |
| 2635.00 | 35.44 | 27.90 | 3.13 | 37.04 | 29.43 | 70.00 | -40.57 | Horizontal |
| 3265.00 | 35.77 | 28.40 | 3.62 | 37.33 | 30.46 | 74.00 | -43.54 | Horizontal |
| 4065.00 | 31.64 | 29.91 | 3.94 | 37.43 | 28.06 | 74.00 | -45.94 | Horizontal |
| 4685.00 | 30.24 | 31.00 | 4.55 | 37.68 | 28.11 | 74.00 | -45.89 | Horizontal |

Remark:

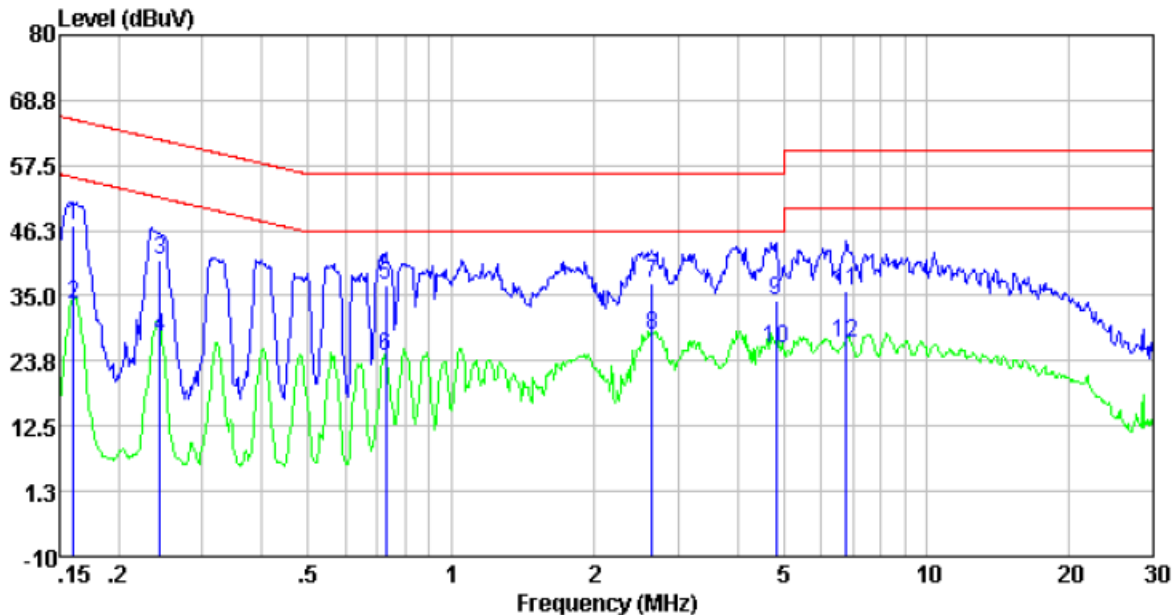
1. The EUT was test at 3m in field chamber.
2. If the average limit is met when using a Peak detector, the EUT shall be deemed to meet both peak and average limits. And measurement with the average detector is unnecessary.

7.1.2 Conducted Emissions

| | | | |
|--|---|--------------|-------------------|
| Test Requirement: | ETSI EN 301489-3 | | |
| Test Method: | ETSI EN 301 489-1 and EN55032 | | |
| Test Frequency Range: | 150kHz to 30MHz | | |
| Class / Severity: | Class B | | |
| Receiver setup: | RBW=9kHz, VBW=30kHz | | |
| Limit: | Frequency range (MHz) | Limit (dBuV) | |
| | | Quasi-peak | Average |
| | 0.15-0.5 | 66 to 56* | 56 to 46* |
| | 0.5-5 | 56 | 46 |
| | 5-30 | 60 | 50 |
| * Decreases with the logarithm of the frequency. | | | |
| Test setup: |  <p>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p> | | |
| Test procedure | <ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to EN55032 Class B on conducted measurement. | | |
| Test Instruments: | Temp.: 24 °C | Humid.: 51% | Press.: 1 010mbar |
| Measurement Record: | Uncertainty: 3.44dB | | |
| Test Instruments: | Refer to section 6.0 for details | | |
| Test mode: | Refer to section 5.2 for details | | |
| Test results: | Pass | | |

**Measurement Data**

Line:

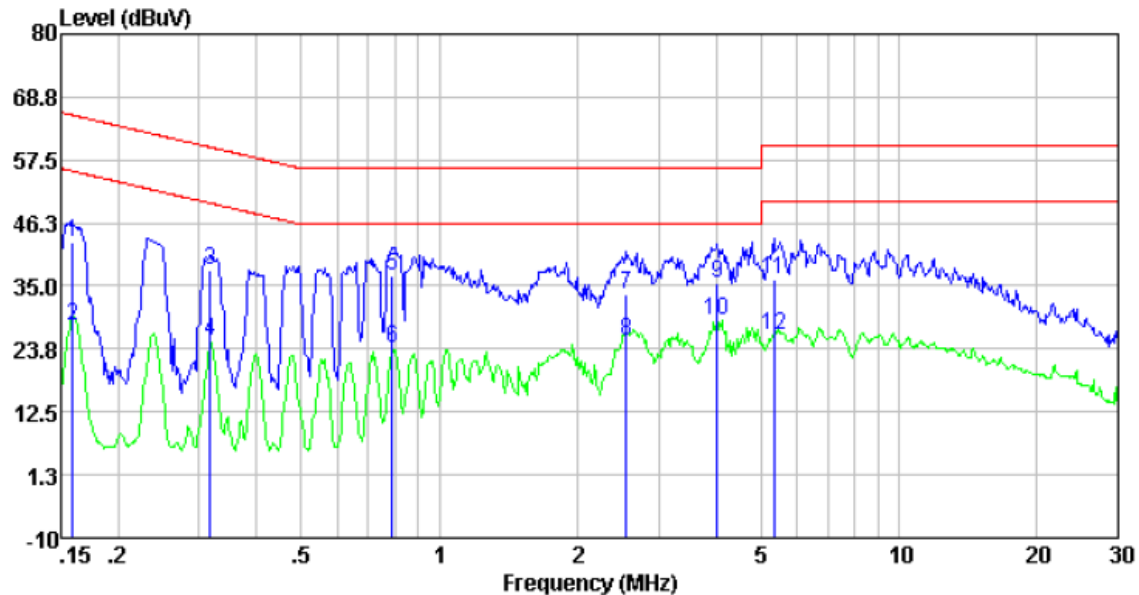


| Freq | Reading | LISN/ISN | Cable | Level | Limit | Over | Remark |
|------|---------|----------|-------|-------|-------|--------|---------|
| MHz | dBuV | factor | loss | dBuV | dBuV | dB | |
| 0.16 | 37.57 | 9.55 | 0.01 | 47.13 | 65.43 | -18.30 | QP |
| 0.16 | 23.94 | 9.55 | 0.01 | 33.50 | 55.43 | -21.93 | Average |
| 0.24 | 31.55 | 9.51 | 0.01 | 41.07 | 61.95 | -20.88 | QP |
| 0.24 | 18.34 | 9.51 | 0.01 | 27.86 | 51.95 | -24.09 | Average |
| 0.73 | 27.20 | 9.50 | 0.02 | 36.72 | 56.00 | -19.28 | QP |
| 0.73 | 15.01 | 9.50 | 0.02 | 24.53 | 46.00 | -21.47 | Average |
| 2.65 | 27.53 | 9.55 | 0.05 | 37.13 | 56.00 | -18.87 | QP |
| 2.65 | 18.67 | 9.55 | 0.05 | 28.27 | 46.00 | -17.73 | Average |
| 4.82 | 24.57 | 9.49 | 0.06 | 34.12 | 56.00 | -21.88 | QP |
| 4.82 | 16.28 | 9.49 | 0.06 | 25.83 | 46.00 | -20.17 | Average |
| 6.77 | 26.52 | 9.33 | 0.08 | 35.93 | 60.00 | -24.07 | QP |
| 6.77 | 17.57 | 9.33 | 0.08 | 26.98 | 50.00 | -23.02 | Average |

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Neutral:



| Freq | Reading | LISN/ISN | Cable | Level | Limit | Over | Remark |
|------|---------|----------|-------|-------|-------|--------|---------|
| MHz | dBuV | dB | dB | dBuV | dBuV | dB | |
| 0.16 | 33.16 | 9.55 | 0.01 | 42.72 | 65.52 | -22.80 | QP |
| 0.16 | 18.16 | 9.55 | 0.01 | 27.72 | 55.52 | -27.80 | Average |
| 0.32 | 28.10 | 9.56 | 0.01 | 37.67 | 59.80 | -22.13 | QP |
| 0.32 | 15.55 | 9.56 | 0.01 | 25.12 | 49.80 | -24.68 | Average |
| 0.79 | 27.28 | 9.56 | 0.02 | 36.86 | 56.00 | -19.14 | QP |
| 0.79 | 14.40 | 9.56 | 0.02 | 23.98 | 46.00 | -22.02 | Average |
| 2.55 | 23.90 | 9.56 | 0.05 | 33.51 | 56.00 | -22.49 | QP |
| 2.55 | 15.47 | 9.56 | 0.05 | 25.08 | 46.00 | -20.92 | Average |
| 4.03 | 26.02 | 9.56 | 0.06 | 35.64 | 56.00 | -20.36 | QP |
| 4.03 | 19.09 | 9.56 | 0.06 | 28.71 | 46.00 | -17.29 | Average |
| 5.33 | 26.47 | 9.55 | 0.07 | 36.09 | 60.00 | -23.91 | QP |
| 5.33 | 16.58 | 9.55 | 0.07 | 26.20 | 50.00 | -23.80 | Average |

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7.1.3 Harmonics Test Results

| | |
|-------------------|---|
| Test Requirement: | ETSI EN 301489-3, EN IEC 61000-3-2 |
| Test Method: | N/A (See Remark) |
| Remark: | <p>There is no need for Harmonics test to be performed on this product (rated power is less than 75W) in accordance with EN 61000-3-2.</p> <p>For further details, please refer to Clause 7, Note 1 of EN 61000-3-2 which states:</p> <p>“For the following categories of equipment limits are not specified in this edition of the standard.</p> <p>Note 1: Equipment with a rated power of 75W or less, other than lighting equipment.”</p> |

7.1.4 Flicker Test Results

| | | | | | |
|-------------------|-----------------------------------|-------|---------|-----|-------------------|
| Test Requirement: | ETSI EN 301489-3; EN 61000-3-3 | | | | |
| Test Method: | EN 61000-3-3 | | | | |
| Class/Severity: | Clause 5 of EN 61000-3-3 | | | | |
| Measurement Time: | 10 min | | | | |
| Detector: | As per EN 61000-3-3 | | | | |
| Test Instruments: | Temp.: | 24 °C | Humid.: | 51% | Press.: 1 010mbar |
| Test Instruments: | Refer to section 6.0 for details | | | | |
| Test mode: | Refer to section 5.2 for details. | | | | |
| Test results: | Pass | | | | |

Measurement Data

| | EUT values | Limit | Result |
|----------|------------|-------|--------|
| Pst | 0.033 | 1.00 | PASS |
| Plt | 0.039 | 0.65 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.068 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

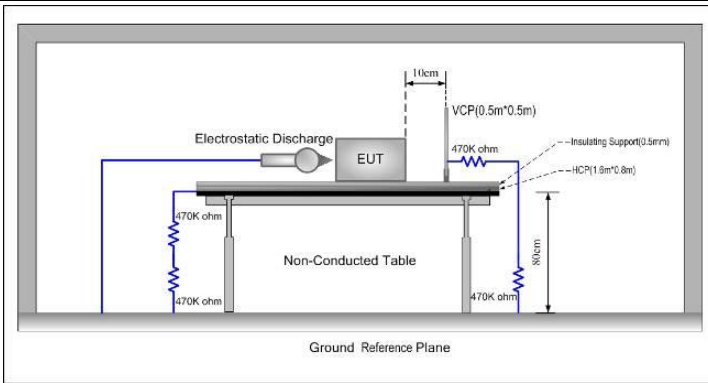
7.2 Immunity

| Performance Criteria of ETSI EN 301 489-1, clause 6 | |
|--|--|
| 6.0 Introduction | <p>The performance criteria are used to take a decision on whether a radio equipment passes or fails immunity tests.</p> <p>For the purpose of the present document two categories of performance criteria apply:</p> <ul style="list-style-type: none"> • Performance criteria for continuous phenomena. • Performance criteria for transient phenomena. <p>NOTE: Normally, the performance criteria depends upon the type of radio equipment and/or its intended application. Thus, the present document only contains general performance criteria commonly used for the assessment of radio equipment.</p> |
| 6.1 Performance criteria for continuous phenomena | <p>During the test, the equipment shall:</p> <ul style="list-style-type: none"> • continue to operate as intended; • not unintentionally transmit; • not unintentionally change its operating state; • not unintentionally change critical stored data. |
| 6.2 Performance criteria for transient phenomena | <p>For all ports and transient phenomena with the exception described below, the following applies:</p> <ul style="list-style-type: none"> • The application of the transient phenomena shall not result in a change of the mode of operation (e.g. unintended transmission) or the loss of critical stored data. • After application of the transient phenomena, the equipment shall operate as intended. <p>For surges applied to symmetrically operated wired network ports intended to be connected directly to outdoor lines the following criteria applies:</p> <ul style="list-style-type: none"> • For products with only one symmetrical port intended for connection to outdoor lines, loss of function is allowed, provided the function is self-recoverable, or can be otherwise restored. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost. • For products with more than one symmetrical port intended for connection to outdoor lines, loss of function on the port under test is allowed, provided the function is self-recoverable. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost. |



| Performance Criteria of ETSI EN 301 489-3, clause 6 | | |
|---|--|---|
| Criteria | During Test | After Test |
| A | Operate as intended No loss of function No unintentional responses | Operate as intended No loss of function No degradation of performance No loss of stored data or user programmable functions |
| B | May show loss of function No unintentional responses | Operate as intended Lost function(s) shall be self-recoverable No degradation of performance No loss of stored data or user programmable functions |

7.2.1 Electrostatic Discharge

| | |
|----------------------|---|
| Test Requirement: | ETSI EN 301489-3 |
| Test Method: | EN 61000-4-2 |
| Discharge Voltage: | Contact Discharge: $\pm 4\text{kV}$ Air Discharge: $\pm 2\text{kV}$, $\pm 4\text{kV}$, $\pm 8\text{kV}$ HCP/VCP: $\pm 4\text{kV}$ |
| Polarity: | Positive & Negative |
| Number of Discharge: | Contact Discharge: Minimum 10 times at each test point, Air Discharge: Minimum 10 times at each test point. |
| Discharge Mode: | Single Discharge |
| Discharge Period: | 1 second minimum |
| Limit: | Criteria B |
| Test setup: |  |
| Test Procedure: | <p>Air discharge:</p> <ol style="list-style-type: none"> 1. The test was applied on non-conductive surfaces of EUT. 2. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. 3. After each discharge, the discharge electrode was removed from the EUT. 4. The generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. 5. This procedure was repeated until all the air discharge completed <p>Contact Discharge:</p> <ol style="list-style-type: none"> 1. The test was applied on conductive surfaces of EUT. 2. the generator was re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. 3. the tip of the discharge electrode was touch the EUT before the discharge switch was operated. <p>Indirect discharge for horizontal coupling plane</p> <ol style="list-style-type: none"> 1. At least 10 single discharges shall be applied at the front edge of each HCP opposite the centre point of each unit of the EUT and 0.1m from the front of the EUT. |



| | | | | | | |
|-------------------|---|-------|---------|-----|---------|-----------|
| | <p>2. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.</p> <p>3. Consideration should be given to exposing all sides of the EUT.</p> <p>Indirect discharge for vertical coupling plane</p> <p>1. At least 10 single discharges were applied to the center of one vertical edge of the coupling plane.</p> <p>2. The coupling plane, of dimensions 0.5m X 0.5m, was placed parallel to, and positioned at a distance of 0.1m from the EUT.</p> <p>3. Discharges were applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.</p> | | | | | |
| Test environment: | Temp.: | 24 °C | Humid.: | 51% | Press.: | 1 010mbar |
| Test Instruments: | Refer to section 6.0 for details | | | | | |
| Test mode: | Refer to section 5.2 for details | | | | | |
| Test results: | Pass | | | | | |

Measurement Record:

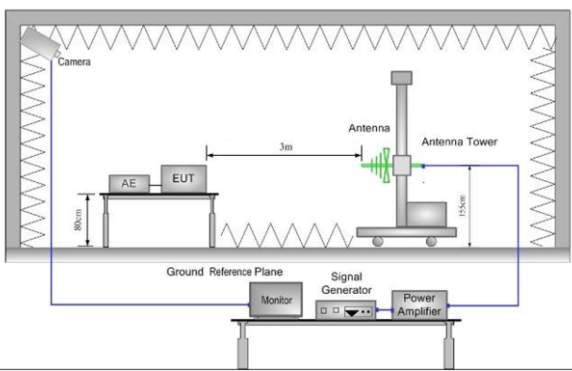
Measurement Record:

| | | | | |
|------------------------|--|-------------------|--------------------------|--------|
| Test points: | I: Metal | | | |
| | II: Seams, Indicator light, Switch | | | |
| Direct discharge | | | | |
| Discharge Voltage (KV) | Type of discharge | Test points | Observations Performance | Result |
| ± 4 | Contact | I | A | Pass |
| ± 2, ± 4, ± 8 | Air | II | A | Pass |
| Indirect discharge | | | | |
| Discharge Voltage (KV) | Type of discharge | Test points | Observation Performance | Result |
| ± 4 | HCP-Bottom/Top/ Front/Back/Left/Right | Edge of the HCP | A | Pass |
| ± 4 | VCP-Front/Back /Left/Right | Center of the VCP | A | Pass |

Remark:

A: Normal performance within the specification limits.

7.2.2 Radiated Immunity

| | |
|------------------------|--|
| Test Requirement: | ETSI EN 301489-3 |
| Test Method: | EN 61000-4-3 |
| Frequency range: | 80MHz to 6GHz |
| Test Level: | 3V/m |
| Modulation: | 80%, 1kHz Amplitude Modulation |
| Performance Criterion: | Criteria A |
| Test setup: |  |
| Test Procedure: | <ol style="list-style-type: none"> 1. For table-top equipment, the EUT was placed in the chamber on a non-conductive table 0.8m high. For arrangement of floor-standing equipment, the EUT was mounted on a non-conductive support 0.1m above the supporting plane. For human body-mounted equipment, the EUT may be tested in the same manner as table top items. 2. If possible, a minimum of 1 m of cable is exposed to the electromagnetic field. Excess length of cables interconnecting units of the EUT shall be bundled low-inductively in the approximate center of the cable to form a bundle 30 cm to 40 cm in length. 3. The EUT was initially placed with one face coincident with the calibration plane. The EUT face being illuminated was contained within the UFA (Uniform Field Area). 4. The frequency ranges to be considered were swept with the signal modulated and pausing to adjust the RF signal level or to switch oscillators and antennas as necessary. Where the frequency range was swept incrementally, the step size was not exceed 1 % of the preceding frequency value. 5. The dwell time of the amplitude modulated carrier at each frequency was not be less than the time necessary for the EUT to be exercised and to respond, and was not less than 0,5 s. 6. The test normally was performed with the generating antenna facing each side of the EUT. 7. The polarization of the field generated by each antenna necessitates testing each selected side twice, once with the antenna positioned vertically and again with the antenna positioned horizontally. 8. The EUT was performed in a configuration to actual installation conditions, a video camera and/or a audio monitor were used to |

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| | | | | | | |
|-------------------|--|-------|---------|-----|---------|-----------|
| | monitor the performance of the EUT. | | | | | |
| Test monitor: | Traffic mode: 1. The test system shall simulate a Base Station (BS) with Broadcast Control Channel/Common Control Channel (BCCH/CCCH) on one carrier. 2. The EUT shall be synchronized to the BCCH, listening to the CCCH and able to respond to paging messages. | | | | | |
| | Idle mode: 1. The test system shall simulate a Base Station (BS) with Broadcast Control Channel/Common Control Channel (BCCH/CCCH) on one carrier. 2. The EUT shall be synchronized to the BCCH, listening to the CCCH and able to respond to paging messages. | | | | | |
| Test environment: | Temp.: | 25 °C | Humid.: | 52% | Press.: | 1 010mbar |
| Test Instruments: | Refer to section 6.0 for details | | | | | |
| Test results: | Pass | | | | | |

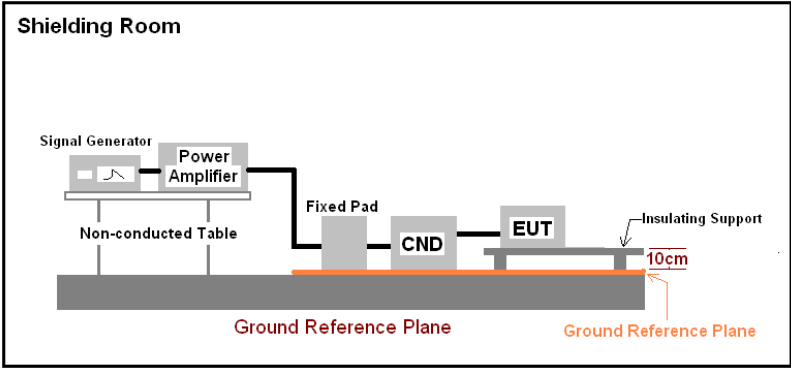
Measurement Record

| Frequency | Level | Modulation | Antenna Polarization | EUT Face | Observations (Performance Criterion) |
|--------------|-------|---|----------------------|----------|---|
| 80 MHz-6 GHz | 3 V/m | 1 kHz, 80 % Amp. Mod, 1 % increment | V | Front | A |
| | | | H | | A |
| | | | V | Rear | A |
| | | | H | | A |
| | | | V | Left | A |
| | | | H | | A |
| | | | V | Right | A |
| | | | H | | A |
| | | | V | Top | A |
| | | | H | | A |
| | | | V | Bottom | A |
| | | | H | | A |

Remark:

A: normal performance within the specification limits.

7.2.3 Radio frequency common mode

| | |
|------------------------|--|
| Test Requirement: | ETSI EN 301489-3 |
| Test Method: | EN 61000-4-6 |
| Frequency range: | 0.15MHz to 80MHz |
| Test Level: | 3V rms on AC Ports (unmodulated emf into 150 Ω) |
| Modulation: | 80%, 1kHz Amplitude Modulation |
| Performance Criterion: | Criteria A |
| Test setup: |  |
| Test Procedure: | <ol style="list-style-type: none"> Let the EUT work in test mode and test it. The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible). The disturbance signal described below is injected to EUT through CDN. The EUT operates within its operational mode(s) under intended climatic conditions after power on. The frequency range is swept from 0.150MHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave. The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally; the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion. |
| Test environment: | Temp.: 24 °C Humid.: 51% Press.: 1 010mbar |
| Test Instruments: | Refer to section 6.0 for details |
| Test results: | Pass |

Measurement Record:

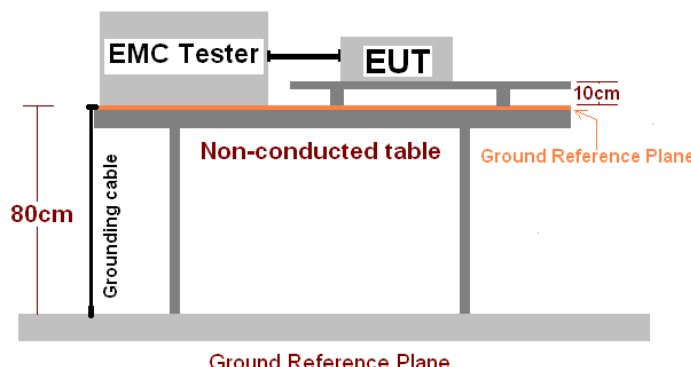
| Frequency | Injected Position | Test Level | Modulation | Step Size | Dwell Time | Observations (Performance Criterion) |
|-----------------|-------------------|------------|---------------------|-----------|------------|--------------------------------------|
| 150kHz to 80MHz | AC Main | 3Vrms | 80%, 1kHz Amp. Mod. | 1% | 2s | A |

Remark:

A: Normal performance within the specification limits.

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7.2.4 Electrical Fast Transients

| | | | | | | |
|------------------------|---|-------|---------|-----|---------|-----------|
| Test Requirement: | ETSI EN 301489-3 | | | | | |
| Test Method: | EN 61000-4-4 | | | | | |
| Test Level: | 1.0kV on AC port, 2.0kV on Earth | | | | | |
| Polarity: | Positive & Negative | | | | | |
| Repetition Frequency: | 5kHz | | | | | |
| Burst Duration: | 15ms | | | | | |
| Burst Period: | 300ms | | | | | |
| Test Duration: | 2 minute per level & polarity | | | | | |
| Performance Criterion: | B | | | | | |
| Test setup: |  | | | | | |
| Test Procedure: | <div>1. The EUT and its simulators were placed on the ground reference plane and were insulated from it by a wood support 0.1m + 0.01m thick. The ground reference plane was 1m*1m metallic sheet with 0.65mm minimum thickness.</div> <div>2. This reference ground plane was project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane was more than 0.5m.</div> <div>3. All cables to the EUT was placed on the wood support, cables not subject to EFT/B was routed as far as possible from the cable under test to minimize the coupling between the cables.</div> <div>4. The length of the signal and power lines between the coupling device and the EUT is 0.5m</div> <div>Test on Signal Ports, Telecommunication Ports and Control Ports: The EFT interference signal is through a coupling clamp device couples to the signal and control lines of the EUT with burst noise for 2 minutes.</div> <div>Test on power supply ports: 1. The EUT is connected to the power mains through a coupling device that directly couples the EFT/B interference signal. 2. Each of the Line and Neutral conductors is impressed with burst noise for 2 minutes.</div> | | | | | |
| Test environment: | Temp.: | 26 °C | Humid.: | 54% | Press.: | 1 010mbar |



| | |
|-------------------|----------------------------------|
| Test Instruments: | Refer to section 6.0 for details |
| Test mode: | Refer to section 5.2 for details |
| Test results: | Pass |

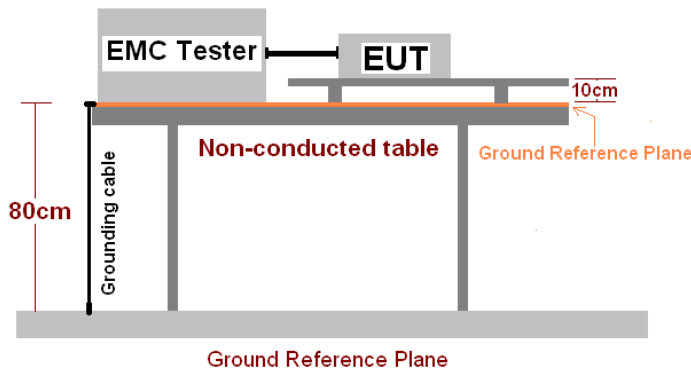
Measurement Record:

| Lead under Test | Level (\pm kV) | Coupling Direct/Clamp | Observations (Performance Criterion) | Result |
|-----------------|-------------------|--------------------------|---|--------|
| L | ± 1.0 | Direct | A | Pass |
| N | ± 1.0 | Direct | A | Pass |
| L-N | ± 1.0 | Direct | A | Pass |

Remark:

A: Normal performance within the specification limits

7.2.5 Surge

| | |
|------------------------|--|
| Test Requirement: | ETSI EN 301489-3 |
| Test Method: | ETSI EN 61000-4-5 |
| Test Level: | 1kV line to line: Differential mode 2kV line to earth: Common mode |
| Polarity: | Positive & Negative |
| Test Interval: | 60s between each surge |
| No. of surges: | 5 positive, 5 negative at 0°, 90°, 180°, 270°. |
| Performance Criterion: | B |
| Test setup: |  <p>The diagram illustrates the test setup. An EMC Tester and an EUT (Equipment Under Test) are connected by a cable. They are placed on a non-conducted table. A grounding cable is connected to the table, which is at a height of 80cm from the ground reference plane. The EUT is positioned 10cm above the table surface.</p> |
| Test Procedure: | <ol style="list-style-type: none"> 1. For line-to-line coupling mode, provide a 1kV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points, and for active line / neutral lines to ground are same except test level is 2kV. 2. At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are applied during test. 3. Different phase angles are done individually. 4. Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test. |
| Test environment: | Temp.: 26 °C Humid.: 53% Press.: 1 010mbar |
| Test Instruments: | Refer to section 6.0 for details |
| Test mode: | Refer to section 5.2 for details |
| Test results: | Pass |

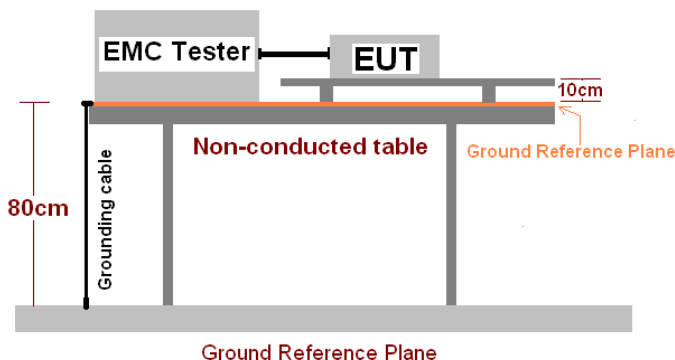
**Measurement Record:**

| Location | Level(kV) | Pulse No | Surge Interval | Phase(deg) | Observations (Performance Criterion) |
|----------|-----------|----------|----------------|------------|---|
| L-N | ± 1 | 5 | 60s | 0° | A |
| | | | | 90° | A |
| | | | | 180° | A |
| | | | | 270° | A |

Remark:

A. Normal performance within the specification limits

7.2.6 Voltage Dip and Voltage Interruptions

| | |
|------------------------------|---|
| Test Requirement: | ETSI EN 301489-3 |
| Test Method: | EN 61000-4-11 |
| Test Level: | 0% of VT(Supply Voltage) for 0.5 period 0% of VT(Supply Voltage) for 1.0 period 70% of VT(Supply Voltage) for 25 period 0% of VT(Supply Voltage) for 250 period |
| No. of Dips / Interruptions: | 3 per Level |
| Performance Criterion: | 0% VD, 0.5 period----Performance criterion: B 0% VD, 1 period----Performance criterion: B 70% VD, 25 period----Performance criterion: C 0% VI, 250 period----Performance criterion: C |
| Test setup: |  |
| Test Procedure: | 1>.The EUT and test generator were setup as shown on above setup photo. 2>.The interruptions are introduced at selected phase angles with specified duration. 3>.Record any degradation of performance. |
| Test environment: | Temp.: 26 °C Humid.: 53% Press.: 1 010mbar |
| Test Instruments: | Refer to section 6.0 for details |
| Test mode: | Refer to section 5.2 for details |
| Test results: | Pass |

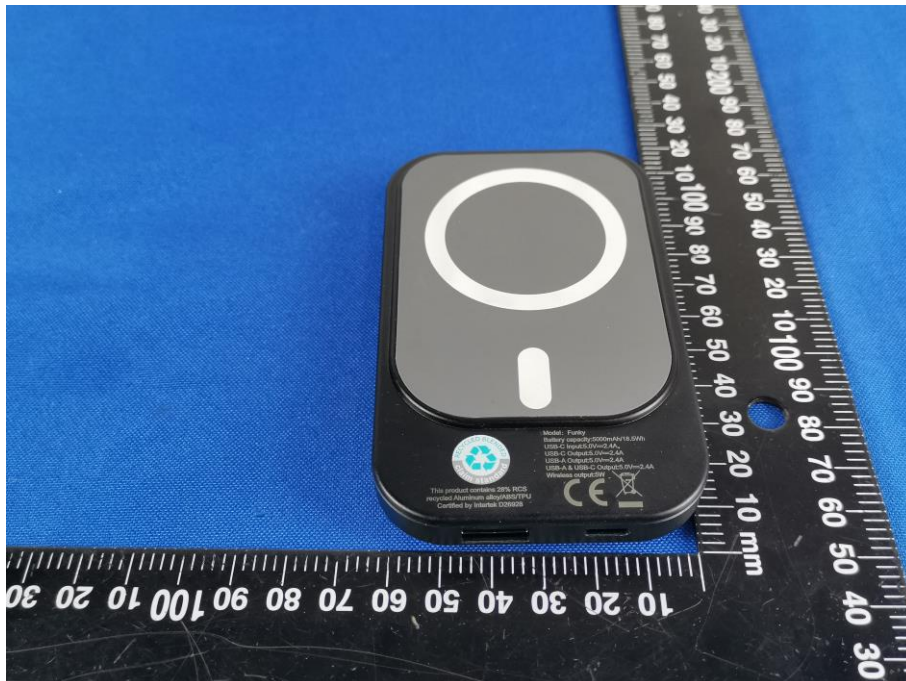
Measurement Record:

| Test Level U_T | Duration (Periods) | Phase angle | No of dropout | Time between dropout | Observations (Performance Criterion) |
|---------------------|-----------------------|---------------------|------------------|-------------------------|--|
| 0% | 0.5 | 0°, 90°, 180°, 270° | 3 | 10s | A |
| 0% | 1.0 | 0°, 90°, 180°, 270° | 3 | 10s | A |
| 70% | 25 | 0°, 90°, 180°, 270° | 3 | 10s | A |
| 0% | 250 | 0°, 90°, 180°, 270° | 3 | 10s | C |

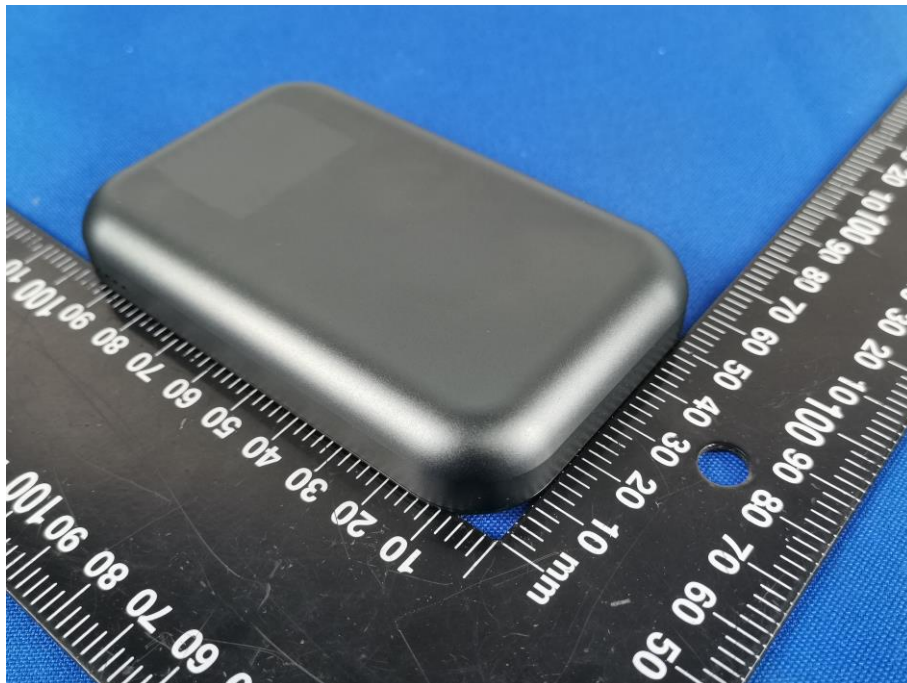
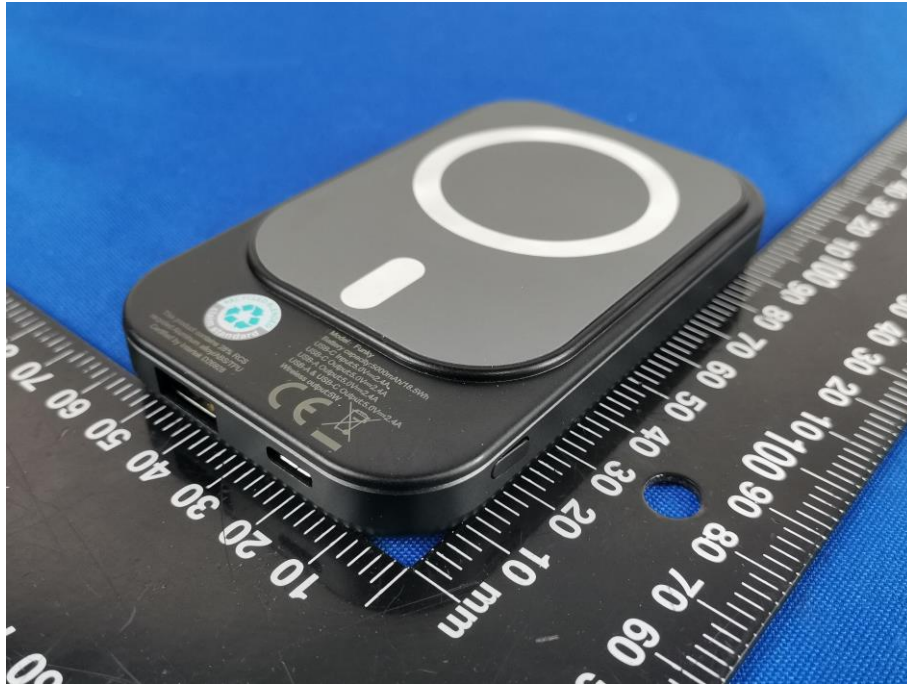
Remark:A: No loss of function was observed.

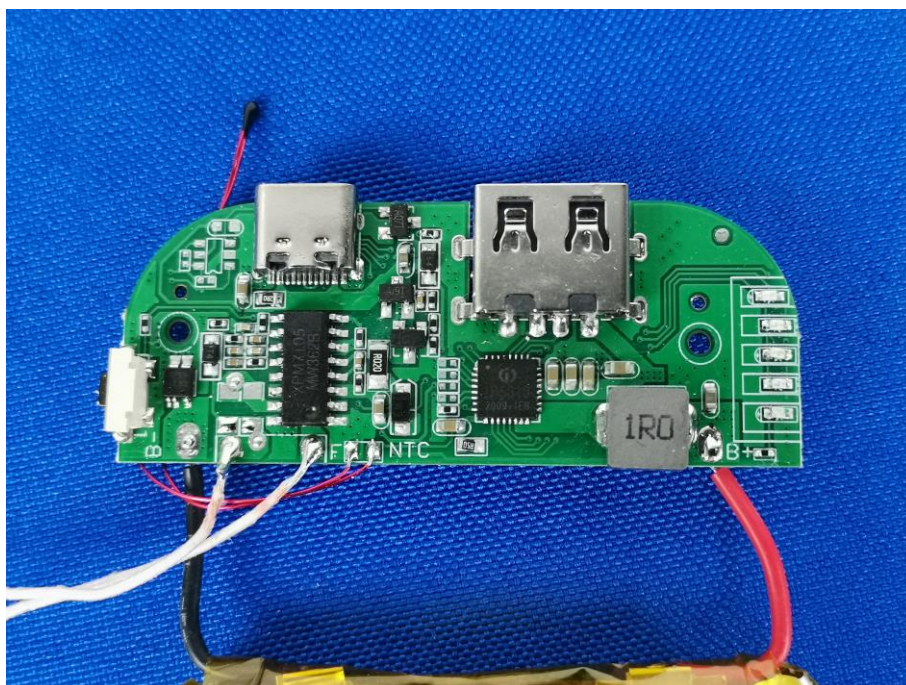
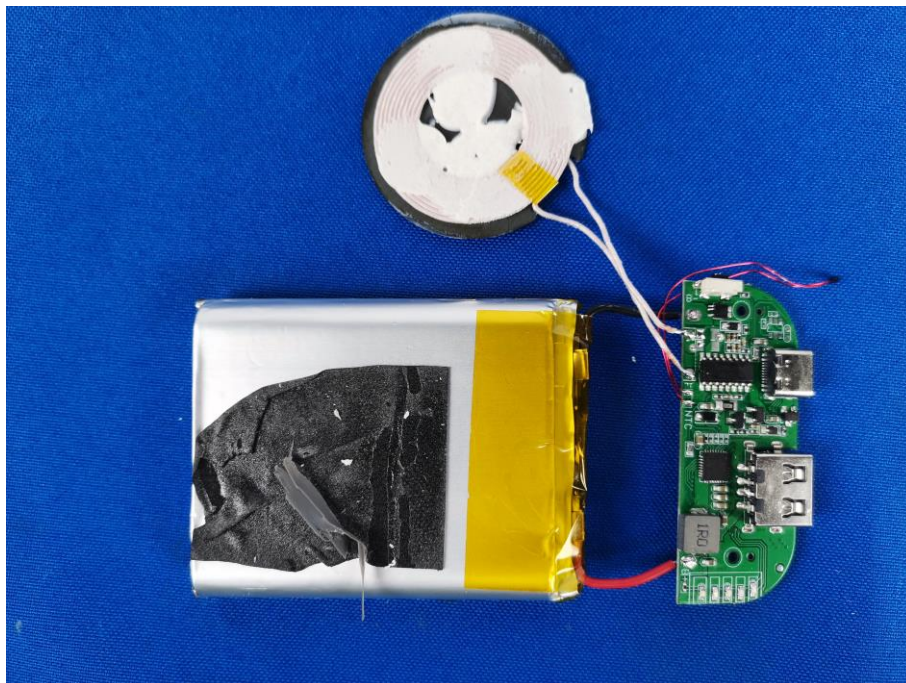
C: During the test, the EUT stops work, but after the test, it can be recovered by user.

8 EUT Constructional Details

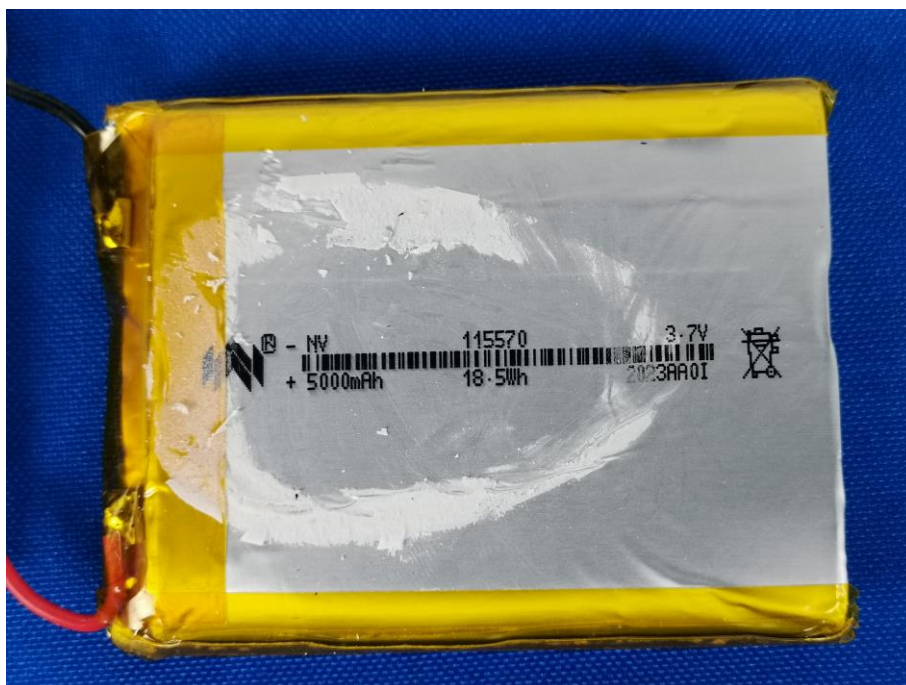
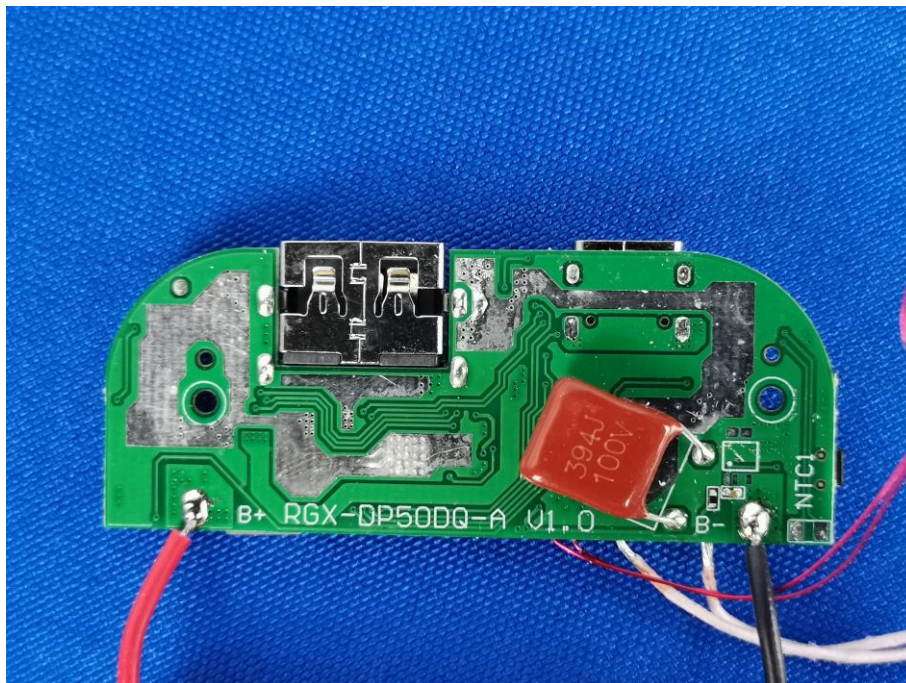


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