



Test Report


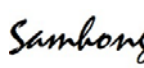
Report No.: GTE13112601

Product: Call Center Headset / Communication Headset /
Telephone Headset

Client: Xiamen Mairdi Electronic Technology Co., Ltd

Standard: EN 55024:2010,
EN 55022:2010/AC:2011,
EN 61000-3-2:2006+A1:2009+A2:2009,
EN 61000-3-3:2008

Greatek Testing and Certification Co., Ltd.

| | |
|---|---|
| TEST REPORT | |
| EN 55024 | |
| Information technology equipment - Immunity characteristics - Limits and methods of measurement | |
| EN 55022 | |
| Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement | |
| EN 61000-3-2 | |
| Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions | |
| EN 61000-3-3 | |
| Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems | |
| 1. Report | |
| Report Reference No. : | GTE13112601 |
| Complied by | Abel Hu  |
| Approved by | Sam Hong  |
| Date of issue | 2013-11-26 |
| Contents | 20 pages |
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| 5. Test specification: | |
| Standard | EN 55024:2010, EN 55022:2010/AC:2011, EN 61000-3-2:2006+A1:2009+A2:2009, EN 61000-3-3:2008 |

6. Test item description

Product : Call Center Headset/Communication Headset/Telephone Headset

Trade mark : Mairdi

Model/Type reference : MRD-308S, MRD-308DS, MRD-509S, MRD-509DS, MRD-510S, MRD-510DS, MRD-512S, MRD-512DS, MRD-609, MRD-609D, MRD-612, MRD-612D, MRD-805, MRD-805D, MRD-806, MRD-806D

Ratings(Class) : 5VDC, Max. 30mA

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1. TEST RESULT SUMMARY

| EMISSION (EN 55022: 2010/AC:2011,EN 61000-3-2: :2006+A1:2009+A2:2009 &EN 61000-3-3:2008) | | | |
|--|-----------------------------------|---------------|-------------------------------|
| Standard | Item | Result | Remarks |
| EN 55022 2010/AC:2011 | Conducted Emission | N | Note 1 |
| | Radiated Emission | P | Meets the Class B requirement |
| EN 61000-3-2: :2006+A1:20 09+A2:2009 | Harmonics Current | N | Note 1 |
| EN 61000-3-3:2008 | Voltage Fluctuation and Flicks | N | Note 1 |

| IMMUNITY (EN 55024: 2010) | | | |
|-----------------------------------|---------------------------------------|---------------|--|
| Standard | Item | Result | Remarks |
| IEC 61000-4-2 | ESD | P | Meets the requirements of Performance Criterion A |
| IEC 61000-4-3 | RS | P | Meets the requirements of Performance Criterion A |
| IEC 61000-4-4 | EFT | N | Note 1 |
| IEC 61000-4-5 | Surge | N | Note 1 |
| IEC 61000-4-6 | CS | N | Note 1 |
| IEC 61000-4-11 | Voltage Dips & Short Interruptions | N | Note 1 |

Note 1: Owing to DC 5V operating supplied by PC, the EUT was not directly connected to the AC mains; these tests were not applicable for EUT.

2. EMISSION TEST

2.1 RADIATED EMISSION MEASUREMENT

2.1.1 LIMITS

| Frequency (MHz) | Quasi-peak(dB μ V/m) |
|-----------------|--------------------------|
| 30~230 | 40 |
| 230~1000 | 47 |

NOTE: (1) The lower limit shall apply at the transition frequencies.

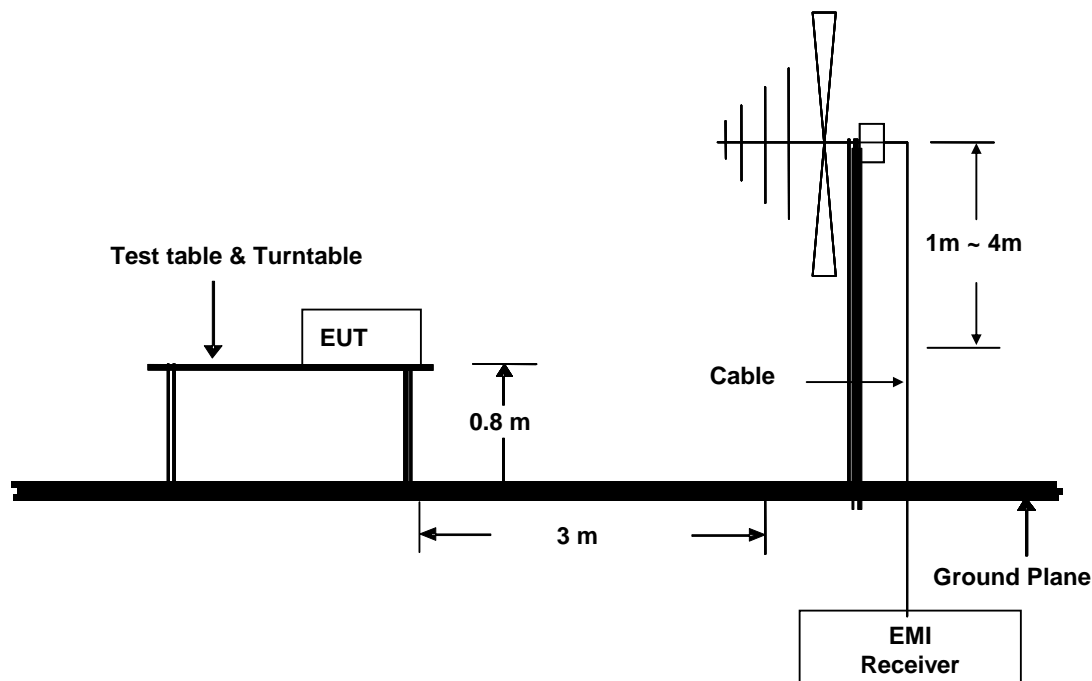
(2) The limit above is the 3m method. However, the limit of the standard is the 10m method, for 3m, an inverse proportionality factor of 20 dB per decade should be used to normalize the measured data to the specified distance for determining compliance.

2.1.2 TEST INSTRUMENTS

| Name of equipment | Manufacturer | Model | Serial number | Calibration due |
|--------------------------------|--------------|-------|---------------|-----------------|
| Biconical log-periodic antenna | ETS.LINDGREN | 3142C | 00075971 | 2014-07-30 |
| Receiver | R&S | ESU40 | 100106 | 2014-05-25 |

NOTE: The calibration interval of the above test instruments is 12 months.

2.1.3 TEST SETUP AND PROCEDURES

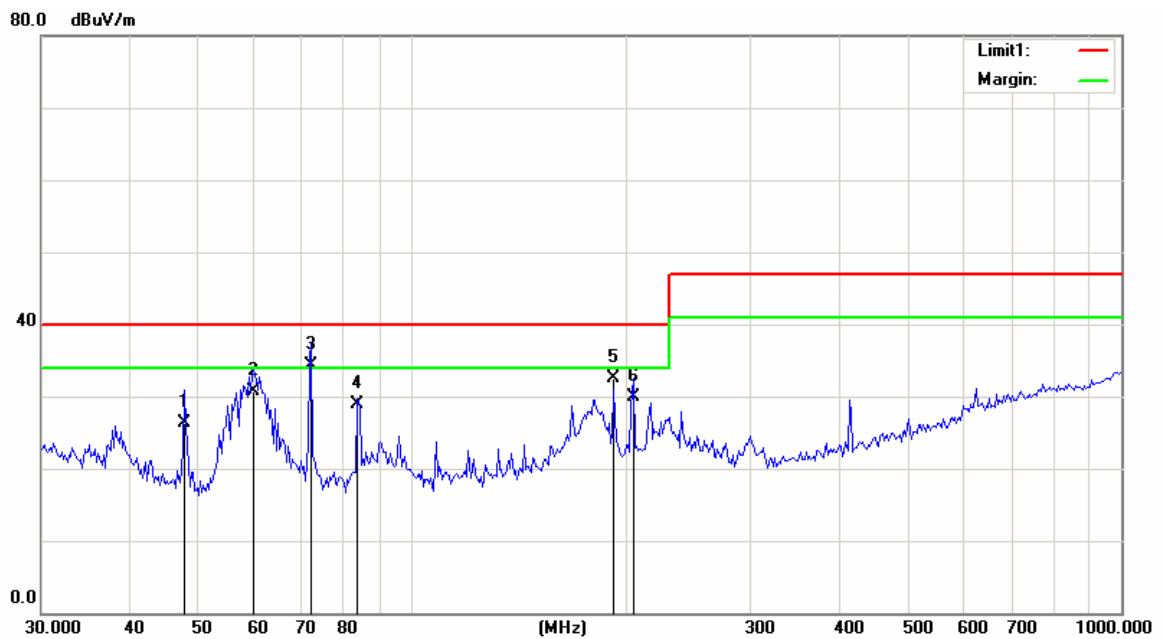


The EUT was placed on a wooden turntable which could rotate from 0° to 360°, 0.8m high above the ground, the distance between the EUT and the antenna is 3m.

When the test was carried out, the EUT should be rotate from 0° to 360°, and the antenna should be moved from 1m to 4m for maximum meter reading at each test frequency.

2.1.4 TEST RESULTS

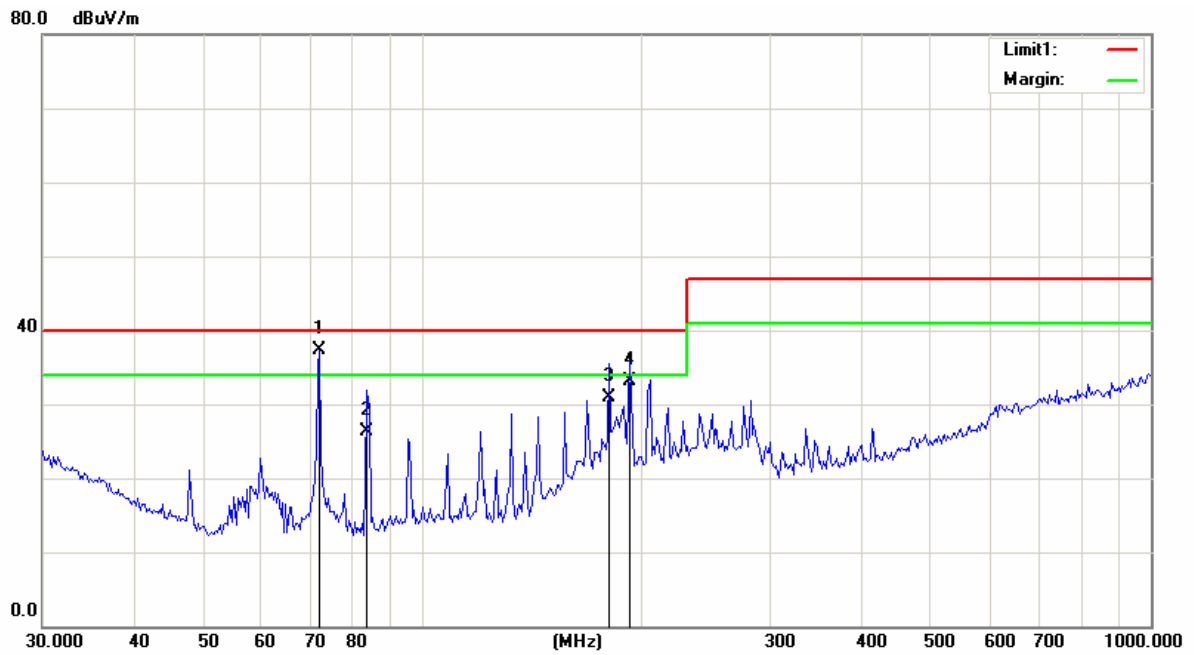
| | | | |
|---------------------------------|-------------------|-------------------------|--------------------------------|
| Model No. | MRD-308S | Test Mode | Working mode connected with PC |
| Environmental Conditions | 22°C 55%RH 101kPa | Antenna Distance | 3m |
| Antenna Pole | Vertical | Tested by | Ben Lan |



Detected Peaks:

| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-------------|--------|
| 1 | 47.8800 | 15.90 | 10.50 | 26.40 | 40.00 | -13.60 | QP |
| 2 | 60.1000 | 22.78 | 8.02 | 30.80 | 40.00 | -9.20 | QP |
| 3 | 72.0000 | 26.48 | 7.82 | 34.30 | 40.00 | -5.70 | QP |
| 4 | 84.1679 | 19.89 | 9.01 | 28.90 | 40.00 | -11.10 | QP |
| 5 | 192.3110 | 21.16 | 11.44 | 32.60 | 40.00 | -7.40 | QP |
| 6 | 204.3750 | 18.37 | 11.63 | 30.00 | 40.00 | -10.00 | QP |

| | | | |
|---------------------------------|-------------------|-------------------------|--------------------------------|
| Model No. | MRD-308S | Test Mode | Working mode connected with PC |
| Environmental Conditions | 22°C 55%RH 101kPa | Antenna Distance | 3m |
| Antenna Pole | Horizontal | Tested by | Ben Lan |



Detected Peaks:

| No. | Frequency (MHz) | Reading (dBuV/m) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------------|-----------------|----------------|-------------|--------|
| 1 | 72.0000 | 29.48 | 7.82 | 37.30 | 40.00 | -2.70 | QP |
| 2 | 84.1630 | 17.30 | 9.00 | 26.30 | 40.00 | -13.70 | QP |
| 3 | 180.3350 | 19.92 | 11.08 | 31.00 | 40.00 | -9.00 | QP |
| 4 | 192.3420 | 21.76 | 11.44 | 33.20 | 40.00 | -6.80 | QP |

2.1.5 PHOTOGRAPH OF THE TEST CONFIGURATION



3. IMMUNITY TEST

3.1 GENERAL DESCRIPTION

| Product Standard | EN 55024: 2010 | |
|------------------|----------------|--|
| | Test set-up | Test specification |
| EN 55024: 2010 | IEC 61000-4-2 | Electrostatic Discharge – ESD: 8kV air discharge, 4kV Contact discharge Performance Criterion B |
| | IEC 61000-4-3 | Radio-Frequency Electromagnetic Field Susceptibility Test – RS: 80 ~1000 MHz, 3V/m, 80% AM(1kHz), Performance Criterion A |

3.2 GENERAL PERFORMANCE CRITERIA DESCRIPTION

| | |
|--------------------------|---|
| <p>Criteria A</p> | <p>The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.</p> |
| <p>Criteria B</p> | <p>The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however, no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.</p> |
| <p>Criteria C</p> | <p>Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use. Not all functions of the apparatus need to be tested. The selection, the specification of functions, and the permissible degradation is left to the responsibility of the manufacturer.</p> |

3.3 ELECTROSTATIC DISCHARGE (ESD)

3.3.1 TEST SPECIFICATION

| | |
|----------------------------|--|
| Basic Standard | IEC 61000-4-2 |
| Discharge Impedance | 330 ohm / 150 pF |
| Discharge Voltage | Air Discharge : 8 kV; Contact Discharge: 4 kV |
| Polarity | Positive & Negative |
| Number of Discharge | Minimum 10 times at each test point |
| Discharge Mode | Single Discharge 1 second minimum |

3.3.2 TEST INSTRUMENT

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|--------------|-----------|---------------|-----------------|
| ESD Tester | EMPEK | ESD-2030A | 0230916N | 2014-08-08 |

NOTE: The calibration interval of the above test instruments is 12 months.

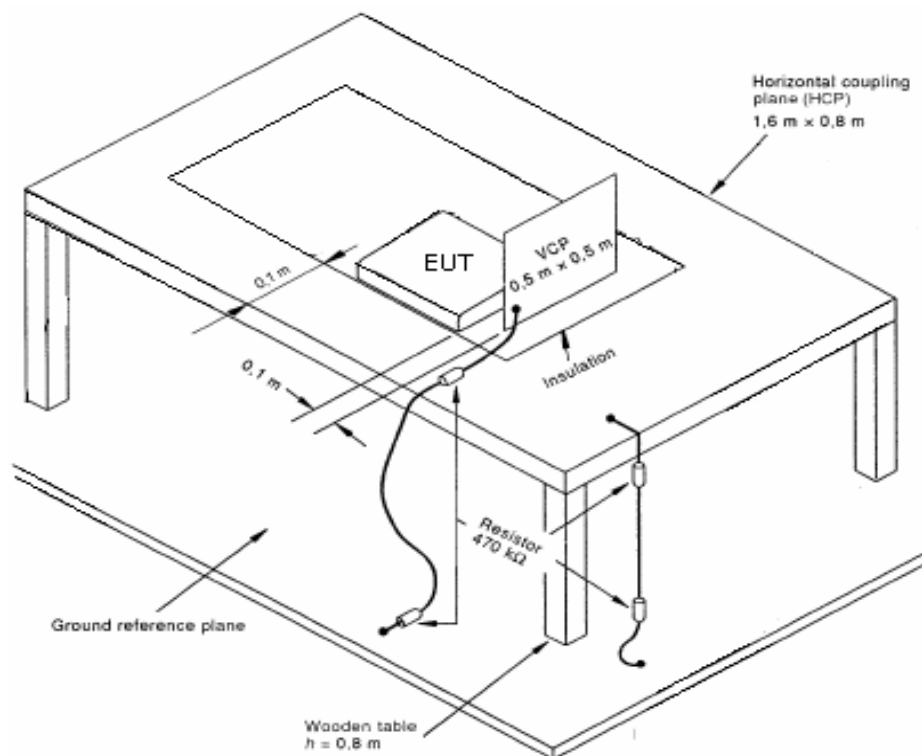
3.3.3 TEST PROCEDURE

The basic test procedure was in accordance with IEC 61000-4-2:

- The EUT was located 0.1 m minimum from all side of the **HCP** (dimensions 1.6m * 0.8m).
- The support units were located another table 30 cm away from the EUT, but direct support unit was/were located at same location as EUT on the **HCP** and keep at a distance of 10 cm with EUT.
- The time interval between two successive single discharges was at least 1 second.
- Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
- Air discharges were applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator was removed from the EUT and re-triggered for a new single discharge. The test was repeated until all discharges were complete.
- At least ten single discharges (in the most sensitive polarity) were applied at the front edge of each **HCP** opposite the center point of each unit of the EUT and 0.1 meters from the front of the EUT. The long axis of the discharge electrode was in the plane of the **HCP** and perpendicular to its front edge during the discharge.

g) At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane (VCP) in sufficiently different positions that the four faces of the EUT were completely illuminated. The VCP (dimensions 0.5m * 0.5m) was placed vertically to and 0.1 meters from the EUT.

3.3.4 TEST SET-UP



3.3.5 TEST RESULTS

| | | | |
|--------------------|------------|------------------|--------------------------------|
| Model No. | MRD-308S | Test Mode | Working mode connected with PC |
| Temperature | 23°C | Humidity | 50% RH |
| Pressure | 101kPa | Tested By | Ben Lan |
| Test Date | 2013-11-21 | | |

| Discharge point | Discharge voltage | C-Conduct A-Air | Required Passing Performance | Actual performance | Result |
|-----------------------------|--------------------------|------------------------|-------------------------------------|---------------------------|---------------|
| Nonmetallic exposed surface | ±8 kV | A | Criterion B | Criterion A* | PASS |
| Vertical coupling plane | ±4 kV | C | Criterion B | Criterion A * | PASS |
| Horizontal coupling plane | ±4 kV | C | Criterion B | Criterion A * | PASS |

*: There was no change compared with the initial operation during the test.

3.3.6 PHOTOGRAPH OF THE TEST CONFIGURATION



3.4 RADIATED, RADIO-FREQUENCY, ELECTROMAGNETIC FIELD (RS)

3.4.1 TEST SPECIFICATION

| | |
|----------------------------|------------------------------------|
| Basic Standard | IEC 61000-4-3 |
| Frequency Range | 80 MHz ~1000 MHz |
| Field Strength | 3 V/m |
| Modulation | 1kHz Sine Wave, 80%, AM Modulation |
| Frequency Step | 1 % of preceding frequency value |
| Polarity of Antenna | Horizontal and Vertical |
| Test Distance | 3 m |
| Antenna Height | 1.5m |

3.4.2 TEST INSTRUMENT

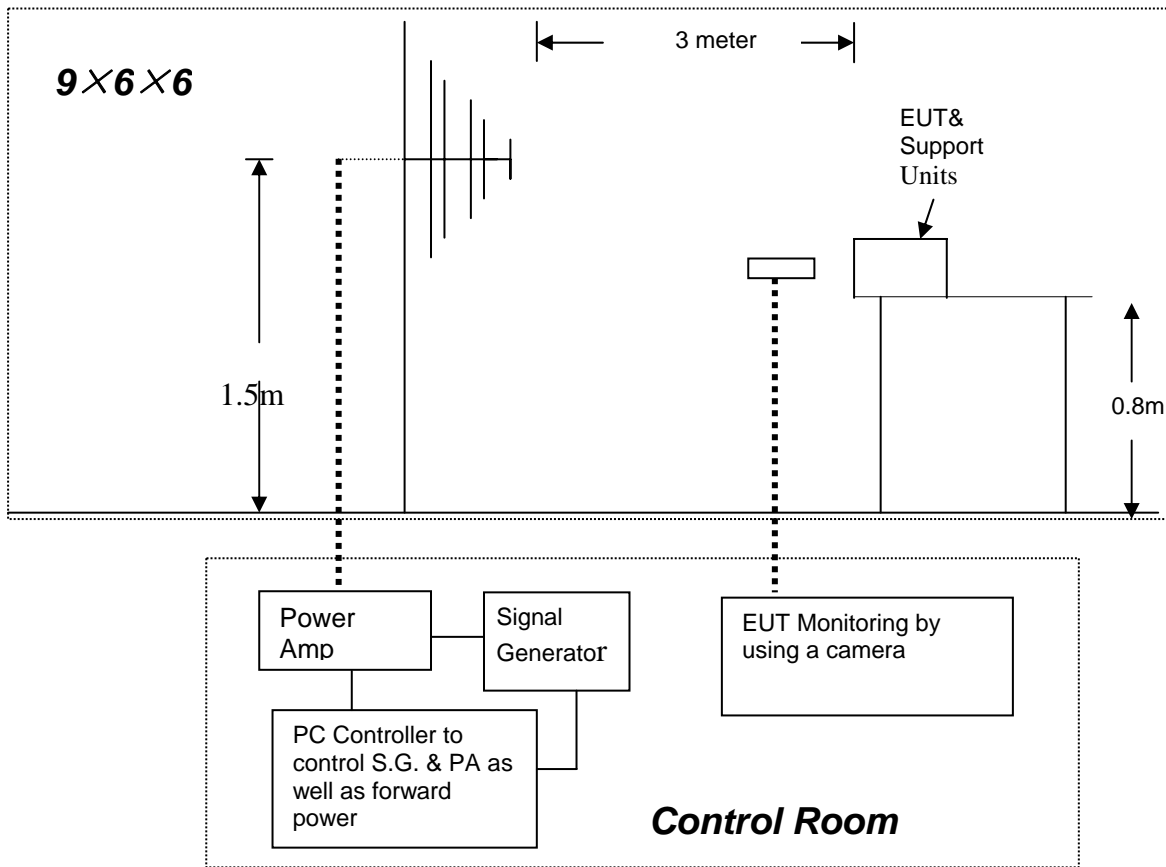
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|--------------|-------------|---------------|-----------------|
| Signal generator | R&S | SML03 | 103002 | 2014-06-06 |
| Antenna | SCHWARZBECK | STLP 9128 E | 9128E-029 | 2014-08-02 |
| Power amplifier | PRANA R&D | AP32 DT214 | 0611-768 | 2014-07-01 |
| Power meter | BOOTON | 4232A | 10543 | 2014-09-02 |

NOTE: The calibration interval of the above test instruments is 12 months.

3.4.3 TEST PROCEDURE

- a) The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
- b) The frequency range is swept from 80 MHz to 1000 MHz, with the signal 80% amplitude modulated with a 1 kHz sine-wave. The rate of sweep did not exceed 1.5×10^{-3} decade/s, where the frequency range is swept incrementally; the step size was 1% of preceding frequency value.
- c) The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- e) The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

3.4.4 TEST SET-UP



3.4.5 TEST RESULTS

| | | | |
|---------------------------------|---------------------|------------------|--------------------------------|
| Model No. | MRD-308S | Test Mode | Working mode connected with PC |
| Environmental Conditions | 23°C 50%RH 101.5kPa | Tested by | Ben Lan |
| Dwell Time | 2s | Test date | 2013-11-21 |

| Frequency (MHz) | Polarity | Azimuth | Field Strength (V/m) | Required Passing Performance | Actual performance | Result |
|-----------------|----------|---------|----------------------|------------------------------|--------------------|--------|
| 80 ~ 1000 | V&H | Front | 3 | Criterion A | Criterion A* | PASS |
| 80 ~ 1000 | V&H | Rear | 3 | Criterion A | Criterion A* | PASS |
| 80 ~ 1000 | V&H | Right | 3 | Criterion A | Criterion A* | PASS |
| 80 ~ 1000 | V&H | Left | 3 | Criterion A | Criterion A* | PASS |

*: There was no change compared with the initial operation during the test.

3.4.6 PHOTOGRAPH OF THE TEST ARRANGEMENT



4. PHOTOGRAPHS OF EUT





Remarks:

1. The instructions specified by the standard have to be in official language of each country, however, only English is checked for this report. It is the applicant responsibility to provide instruction in each official language of the EU.
2. This report is submitted for the exclusive use of the client to whom it is addressed. Its significance is subject to the adequacy and representative character of the sample(s) and to the comprehensiveness of the tests, examinations or surveys made.
3. The CE marking may only be used if all relevant and effective EC directives are complied with.
4. The test sample was pre-production samples without serial numbers.
5. The test results are responsible for the tested samples only.
6. A part of this report or certificate should not be duplicated in any way; however, the duplication of the whole document is allowed.
7. Objections to the test report must be submitted to GRT within 15 days.
8. The test report is invalid if altered.

===== End of Test Report =====



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