

ABBA INNOVATION

S.A.S

Mobile Phone

Main Model: Q5

Serial Model: Q5 Pro

January 13, 2012

Report No.: 11070198-FCC-15B

(This report supersedes NONE)



Modifications made to the product : None

This Test Report is Issued Under the Authority of:

Deon Dai

Deon Dai
Compliance Engineer

Alex Liu

Alex Liu
Technical Manager

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Test result presented in this test report is applicable to the representative sample only.

EMC Test Report

To: FCC Part 15 Subpart B Class B; 2011

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 Page: 2 of 26
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| Country/Region | Accreditation Body | Scope |
|----------------|------------------------|------------------------------------|
| USA | FCC, A2LA | EMC , RF/Wireless , Telecom |
| Canada | IC, A2LA, NIST | EMC, RF/Wireless , Telecom |
| Taiwan | BSMI , NCC , NIST | EMC, RF, Telecom , Safety |
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| Europe | A2LA, NIST | EMC, RF, Telecom , Safety |

Accreditations for Product Certifications

| Country/Region | Accreditation Body | Scope |
|----------------|--------------------|-----------------------|
| USA | FCC TCB, NIST | EMC , RF , Telecom |
| Canada | IC FCB , NIST | EMC , RF , Telecom |
| Singapore | iDA, NIST | EMC , RF , Telecom |
| EU | NB | EMC & R&TTE Directive |
| Japan | MIC, (RCB 208) | RF , Telecom |
| Hong Kong | OFTA (US002) | RF , Telecom |



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Report No: 11070198-FCC-15B
Issue Date: January 13, 2012
Page: 3 of 26
www.siemic.com.cn

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CONTENTS

| | | |
|-----------------|---|-----------|
| 1 | EXECUTIVE SUMMARY & EUT INFORMATION | 5 |
| 2 | TECHNICAL DETAILS | 6 |
| 3 | MODIFICATION | 7 |
| 4 | TEST SUMMARY | 8 |
| 5 | MEASUREMENTS, EXAMINATION AND DERIVED RESULTS | 9 |
| ANNEX A. | TEST INSTRUMENT & METHOD | 15 |
| ANNEX B. | EUT AND TEST SETUP PHOTOGRAPHS | 20 |
| ANNEX C. | TEST SETUP AND SUPPORTING EQUIPMENT | 21 |
| ANNEX D. | USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PART LIST | 25 |
| ANNEX E. | DECLARATION OF SIMILARITY | 26 |

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Report No: 11070198-FCC-15B
Issue Date: January 13, 2012
Page: 5 of 26
www.siemic.com.cn

1 EXECUTIVE SUMMARY & EUT INFORMATION

The purpose of this test programme was to demonstrate compliance of the Shenzhen Sumtech Industry Development Co., limited Mobile Phone and model: Q5 against the current Stipulated Standards. The Mobile Phone has demonstrated compliance with the FCC Part 15 Subpart B Class B: 2011.

EUT Information

EUT Description : **Mobile Phone**

Main Model : **Q5**

Serial Model : **Q5 Pro**

Input Power : **AC/DC Adaptor
Model: AQ5
Input: AC 100-240V 50/60Hz 150mA
Output: DC 5V 500 mA
Li-ion Battery
Model: BL-5BT 3.7 V**

**Classification
Per Stipulated
Test Standard** : **FCC Part 15 Subpart B Class B: 2011**

2 TECHNICAL DETAILS

| | |
|--|---|
| Purpose | Compliance testing of Mobile Phone with stipulated standard |
| Applicant / Client | ABBA INNOVATION S.A.S Calle 76 No 52-40 Local 1, Alto Prado, Barranquilla, Colombia |
| Manufacturer | Shenzhen Sumtech Industry Development Co., limited Room 521, No.1001 Shennian East Road, Luohu, Shenzhen, China |
| Laboratory performing the tests | SIEMIC Nanjing (China) Laboratories NO.2-1, Longcang Dadao, Yuhua Economic Development Zone, Nanjing, China Tel: +86(25)86730128/86730129 Fax: +86(25)86730127 Email: info@siemic.com |
| Test report reference number | 11070198-FCC-15B |
| Date EUT received | January 09, 2012 |
| Standard applied | FCC Part 15 Subpart B Class B: 2011 |
| Dates of test | January 10, 2012 |
| No of Units | #1 |
| Equipment Category | Class B Emission Product |
| Trade Name | ABBA ONE |
| RF Operating Frequency (ies) | GSM850 TX : 824.2 ~ 848.8 MHz; RX : 869.2 ~ 893.8 MHz PCS1900 TX : 1850.2 ~ 1909.8 MHz; RX : 1930.2 ~ 1989.8 MHz Bluetooth: 2402 ~ 2480 MHz |
| Number of Channels | 300CH (PCS1900) and 125CH (GSM850) Bluetooth: 79CH |
| Modulation | GSM / GPRS: GMSK Bluetooth: GFSK |
| FCC ID | Z87Q5 |



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Report No: 11070198-FCC-15B
Issue Date: January 13, 2012
Page: 7 of 26
www.siemic.com.cn

3 MODIFICATION

NONE

4 TEST SUMMARY

The product was tested in accordance with the following specifications.
All testing has been performed according to below product classification:

Class B Emission Product

Test Results Summary

| Emissions | | | |
|-------------------------------------|-----------------------------|---------------|-------------|
| Test Standard | Description | Product Class | Pass / Fail |
| FCC Part 15 Subpart B Class B: 2011 | AC Line Conducted Emissions | See Above | Pass |
| FCC Part 15 Subpart B Class B: 2011 | Radiated Emissions | See Above | Pass |

All measurement uncertainty is not taken into consideration for all presented test result.

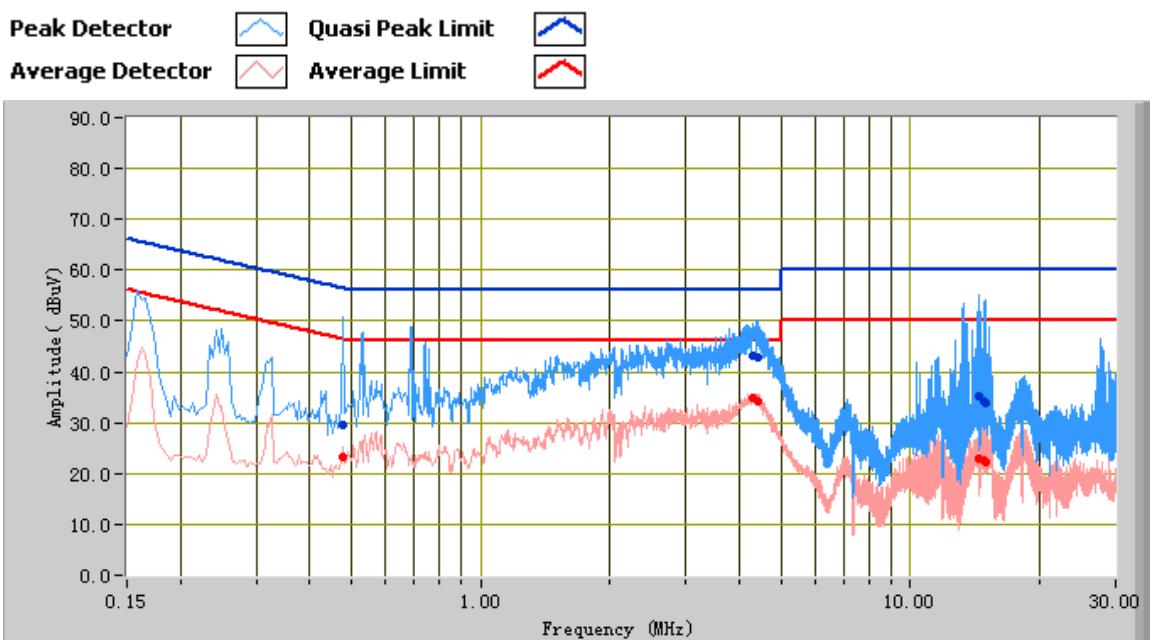
5 MEASUREMENTS, EXAMINATION AND DERIVED RESULTS

5.1 AC Line Conducted Emissions Test Result

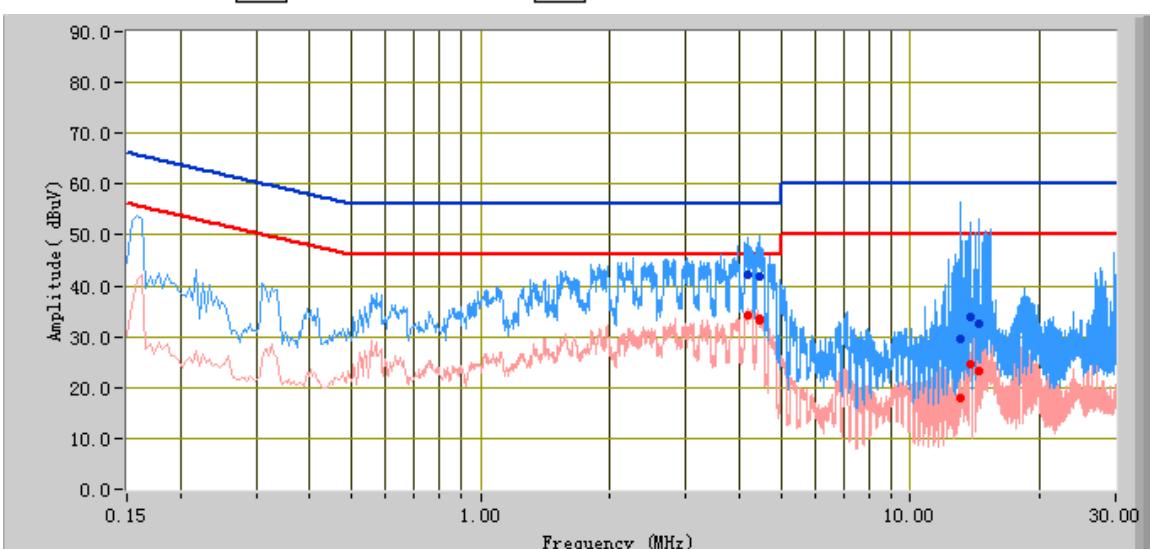
Note:

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR and Average detectors, are reported. All other emissions were relatively insignificant.
2. A "ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Conducted Emissions Measurement Uncertainty
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 9kHz – 30MHz (Average & Quasi-peak) is ±3.86dB.
4. Environmental Conditions Temperature 16°C
 Relative Humidity 50%
 Atmospheric Pressure 1009mbar
5. Test date : January 10, 2012
Tested By : Deon Dai

Test Result: Pass

Test Mode:**Charging & Downloading
Power-- Line****Test Data****Phase Line Plot at 120Vac, 60Hz**

| Frequency (MHz) | Quasi Peak (dB μ V) | Limit (dB μ V) | Margin (dB) | Average (dB μ V) | Limit (dB μ V) | Margin (dB) | Factors (dB) |
|-----------------|-------------------------|--------------------|-------------|----------------------|--------------------|-------------|--------------|
| 14.39 | 35.17 | 60.00 | -24.83 | 22.94 | 50.00 | -27.06 | 10.46 |
| 0.48 | 29.55 | 56.38 | -26.83 | 23.31 | 46.38 | -23.07 | 10.17 |
| 14.92 | 33.78 | 60.00 | -26.22 | 22.34 | 50.00 | -27.66 | 10.47 |
| 4.40 | 42.94 | 56.00 | -13.06 | 34.24 | 46.00 | -11.76 | 10.44 |
| 14.80 | 34.29 | 60.00 | -25.71 | 22.60 | 50.00 | -27.40 | 10.47 |
| 4.29 | 43.08 | 56.00 | -12.92 | 34.85 | 46.00 | -11.15 | 10.46 |

Test Mode:**Charging & Downloading
Power-- Neutral****Peak Detector****Quasi Peak Limit****Average Detector****Average Limit****Test Data****Phase Neutral Plot at 120Vac, 60Hz**

| Frequency (MHz) | Quasi Peak (dB μ V) | Limit (dB μ V) | Margin (dB) | Average (dB μ V) | Limit (dB μ V) | Margin (dB) | Factors (dB) |
|-----------------|-------------------------|--------------------|-------------|----------------------|--------------------|-------------|--------------|
| 13.11 | 29.65 | 60.00 | -30.35 | 18.03 | 50.00 | -31.97 | 10.43 |
| 4.46 | 41.99 | 56.00 | -14.01 | 33.46 | 46.00 | -12.54 | 10.43 |
| 4.17 | 42.30 | 56.00 | -13.70 | 34.18 | 46.00 | -11.82 | 10.48 |
| 14.40 | 32.46 | 60.00 | -27.54 | 23.35 | 50.00 | -26.65 | 10.46 |
| 13.80 | 33.93 | 60.00 | -26.07 | 24.61 | 50.00 | -25.39 | 10.44 |
| 4.47 | 41.86 | 56.00 | -14.14 | 33.31 | 46.00 | -12.69 | 10.43 |

5.2 Radiated Emissions Test Result

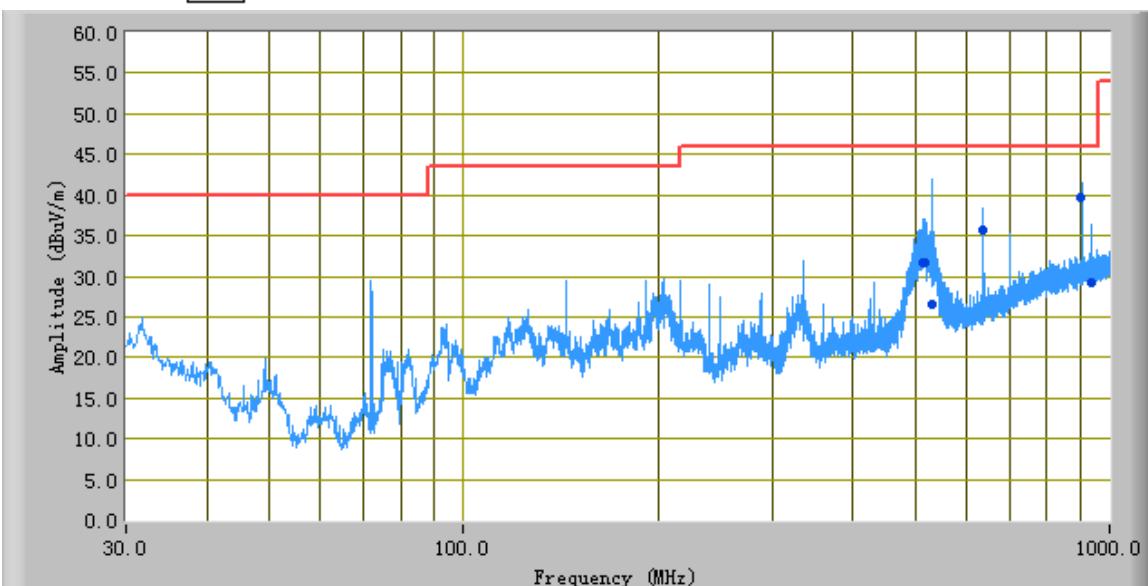
Note:

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Radiated Emissions Measurement Uncertainty
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 1GHz & 1GHz above (3m & 10m) is +5.6/-4.5dB.
4. Environmental Conditions Temperature 16°C
 Relative Humidity 50%
 Atmospheric Pressure 1009mbar
5. Test date : January 10, 2012
Tested By : Deon Dai

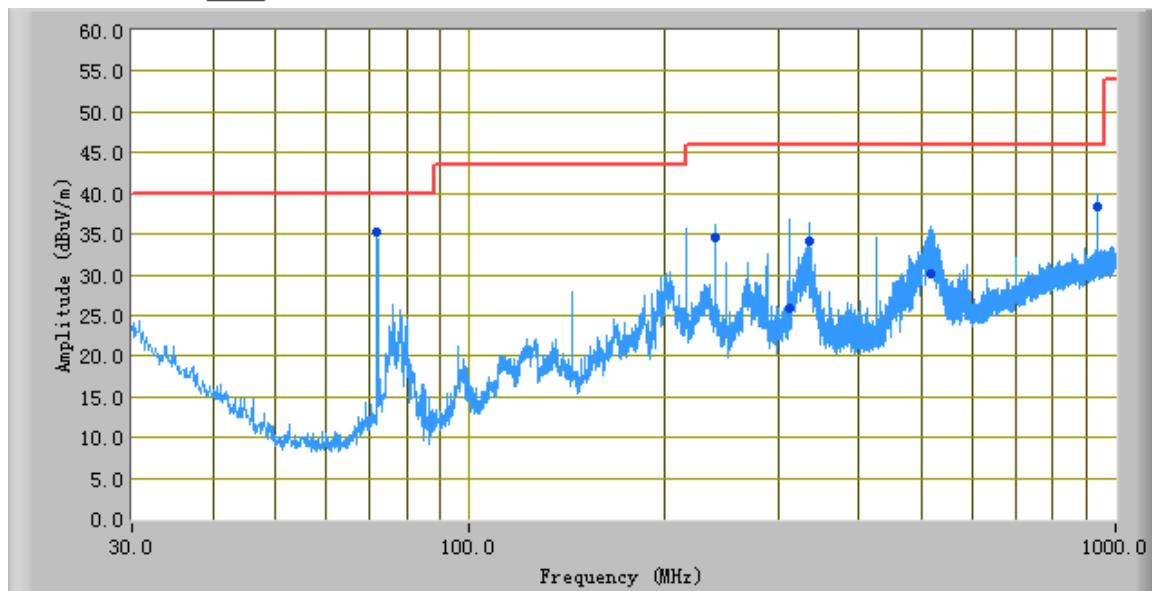
Test Result: Pass

Test Mode:**Charging & Downloading****Below 1GHz**

Peak Detector 
 Quasi Peak Limit 

**Test Data****Vertical Polarity Plot @3m**

| Frequency (MHz) | Quasi Peak (dBµV/m) | Azimuth | Polarity(H /V) | Height (cm) | Factors (dB) | Limit (dBµV/m) | Margin (dB) |
|-----------------|---------------------|---------|----------------|-------------|--------------|----------------|-------------|
| 530.30 | 26.43 | 48.00 | V | 137.00 | -25.43 | 46.00 | -19.57 |
| 908.54 | 34.84 | 48.00 | V | 359.00 | -15.19 | 46.00 | -11.16 |
| 637.59 | 35.92 | 170.00 | V | 159.00 | -21.08 | 46.00 | -10.08 |
| 518.64 | 31.64 | 184.00 | V | 122.00 | -26.05 | 46.00 | -14.36 |
| 514.72 | 31.70 | 195.00 | V | 131.00 | -26.02 | 46.00 | -14.30 |
| 936.00 | 29.26 | 193.00 | V | 147.00 | -15.54 | 46.00 | -16.74 |

Peak Detector Quasi Peak Limit 

Test Data

Horizontal Polarity Plot @3m

| Frequency (MHz) | Quasi Peak (dBµV/m) | Azimuth | Polarity(H /V) | Height (cm) | Factors (dB) | Limit (dBµV/m) | Margin (dB) |
|-----------------|---------------------|---------|----------------|-------------|--------------|----------------|-------------|
| 72.00 | 35.22 | 176.00 | H | 261.00 | -37.19 | 40.00 | -4.78 |
| 936.12 | 38.09 | 295.00 | H | 109.00 | -15.16 | 46.00 | -7.91 |
| 312.02 | 25.94 | 312.00 | H | 143.00 | -29.42 | 46.00 | -20.06 |
| 336.01 | 34.20 | 289.00 | H | 108.00 | -29.09 | 46.00 | -11.80 |
| 240.00 | 34.64 | 290.00 | H | 119.00 | -31.52 | 46.00 | -11.36 |
| 518.21 | 30.17 | 40.00 | H | 156.00 | -25.75 | 46.00 | -15.83 |

Note: The data above 1 GHz which below 20 dB to the limit was not recorded.



Annex A. TEST INSTRUMENT & METHOD

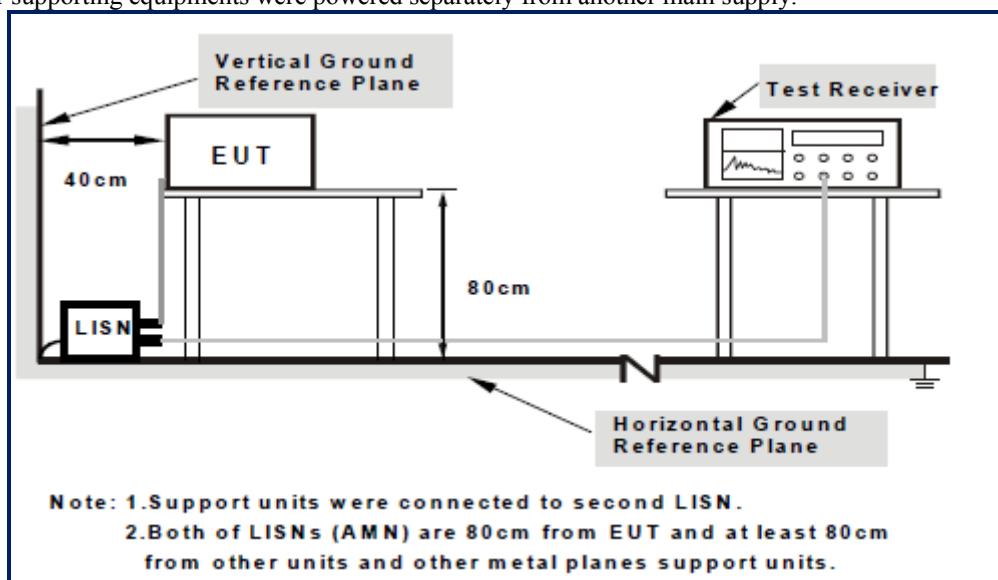
Annex A.i. TEST INSTRUMENTATION & GENERAL PROCEDURES

| Instrument | Model | Calibration Date | Calibration Due Date |
|--------------------------------------|------------------------|------------------|----------------------|
| AC Line Conducted Emissions | | | |
| R&S EMI Test Receiver | ESPI3 | 05/25/2011 | 05/25/2012 |
| Com-Power LISN | LI-115 | 05/25/2011 | 05/25/2012 |
| A-INFOMW Antenna(1 ~18GHz) | JXTXLB-10180 | 06/02/2011 | 06/02/2012 |
| Universal Radio Communication Tester | CMU200 | 02/22/2011 | 02/22/2012 |
| Radiated Emissions | | | |
| Hp Spectrum Analyzer | 8563E | 01/10/2011 | 01/10/2012 |
| R&S EMI Receiver | ESPI3 | 05/18/2011 | 05/18/2012 |
| Antenna (30MHz~2GHz) | JB1 | 05/25/2011 | 05/25/2012 |
| ETS-Lindgren Antenna(1 ~18GHz) | 3115 | 06/02/2011 | 06/02/2012 |
| A-INFOMW Antenna(1 ~18GHz) | JXTXLB-10180 | 06/02/2011 | 06/02/2012 |
| Horn Antenna (18~40GHz) | AH-840 | 07/23/2011 | 07/23/2013 |
| Microwave Pre-Amp (18~40GHz) | PA-840 | Every 2000 Hours | |
| Hp Agilent Pre-Amplifier | 8447F | 05/25/2011 | 05/25/2012 |
| MITEQ Pre-Amplifier(1 ~ 18GHz) | AMF-7D-00101800-30-10P | 05/25/2011 | 05/25/2012 |
| Universal Radio Communication Tester | CMU200 | 02/22/2011 | 02/22/2012 |
| Chamber | 3m | 04/13/2011 | 04/13/2012 |

Annex A.ii. AC LINE CONDUCTED EMISSIONS TEST DESCRIPTION

Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B.
2. The power supply for the EUT was fed through a $50\Omega/50\mu\text{H}$ EUT LISN, connected to filtered mains.
3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.
4. All other supporting equipments were powered separately from another main supply.



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration1

Test Method

1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.
3. High peaks, relative to the limit line, were then selected.
4. The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 KHz. For FCC tests, only Quasi-peak measurements were made; while for CISPR/EN tests, both Quasi-peak and Average measurements were made.
5. Steps 2 to 4 were then repeated for the LIVE line (for AC mains) or DC line (for DC power).

Description of Conducted Emission Program

This EMC Measurement software run LabView automation software and offers a common user interface for electromagnetic interference (EMI) measurements. This software is a modern and powerful tool for controlling and monitoring EMI test receivers and EMC test systems. It guarantees reliable collection, evaluation, and documentation of measurement results. Basically, this program will run a pre-scan measurement before it proceeds with the final measurement. The pre-scan routine will run the common scan range from 150 kHz to 30 MHz; the program will first start a peak and average scan on selectable measurement time and step size. After the program complete the pre-scan, this program will perform the Quasi Peak and Average measurement, based on the pre-scan peak data reduction result.



Sample Calculation Example

At 20 MHz

limit = 250 μ V = 47.96 dB μ V

Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.20 dB

Q-P reading obtained directly from EMI Receiver = 40.00 dB μ V
(Calibrated for system losses)

Therefore, Q-P margin = $47.96 - 40.00 = 7.96$ i.e. **7.96 dB below limit**

Annex A.iii. RADIATED EMISSIONS TEST DESCRIPTION

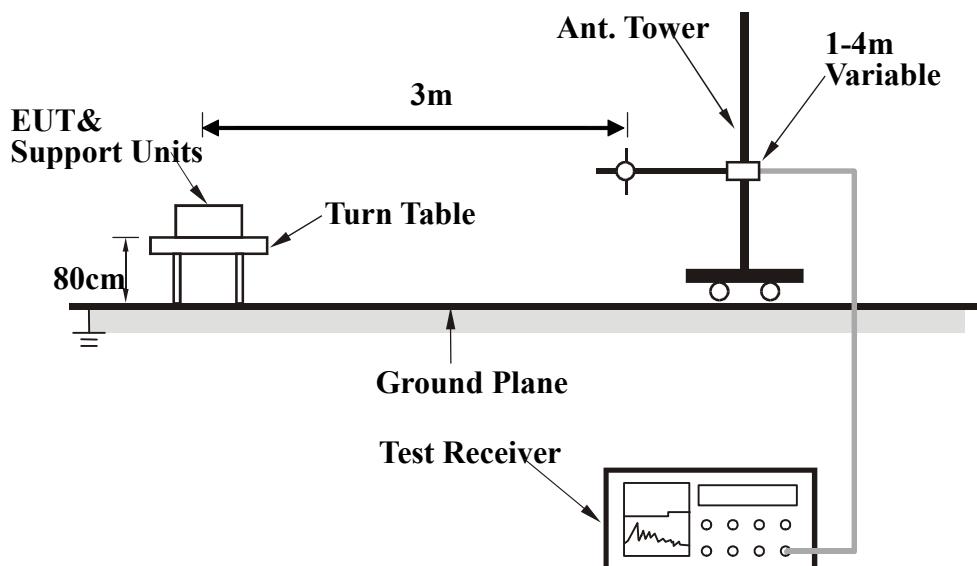
EUT Characterisation

EUT characterisation, over the frequency range from 30MHz to 10th Harmonic, was done in order to minimise radiated emissions testing time while still maintaining high confidence in the test results.

The EUT was placed in the chamber, at a height of about 0.8m on a turntable. Its radiated emissions frequency profile was observed, using a spectrum analyzer / receiver with the appropriate broadband antenna placed 3m away from the EUT. Radiated emissions from the EUT were maximised by rotating the turntable manually, changing the antenna polarisation and manipulating the EUT cables while observing the frequency profile on the spectrum analyzer / receiver. Frequency points at which maximum emissions occurred, clock frequencies and operating frequencies were then noted for the formal radiated emissions test at the Open Area Test Site (OATS) or 3m EMC chamber.

Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table.
2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.
3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration2

Test Method

The following procedure was performed to determine the maximum emission axis of EUT:

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antenna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.

Final Radiated Emission Measurement

1. Setup the configuration according to figure 1. Turn on EUT and make sure that it is in normal function.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading.
5. Repeat step 4 until all frequencies need to be measured were complete.
6. Repeat step 5 with search antenna in vertical polarized orientations.

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

| Frequency Band (MHz) | Function | Resolution bandwidth | Video Bandwidth |
|----------------------|----------|----------------------|-----------------|
| 30 to 1000 | Peak | 100 kHz | 100 kHz |
| Above 1000 | Peak | 1 MHz | 1 MHz |
| | Average | 1 MHz | 10 Hz |

Sample Calculation Example

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

$$\text{Peak} = \text{Reading} + \text{Corrected Factor}$$

where

$$\text{Corr. Factor} = \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain (if any)}$$

And the average value is

$$\text{Average} = \text{Peak Value} + \text{Duty Factor} \text{ or}$$

$$\text{Set RBW} = 1\text{MHz}, \text{VBW} = 10\text{Hz}.$$

Note:

If the measured frequencies are fall in the restricted frequency band, the limit employed must be quasi peak value when frequencies are below or equal to 1 GHz. And the measuring instrument is set to quasi peak detector function.



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Page: 20 of 26
www.siemic.com.cn

Annex B. EUT AND TEST SETUP PHOTOGRAPHS

Please see attachment

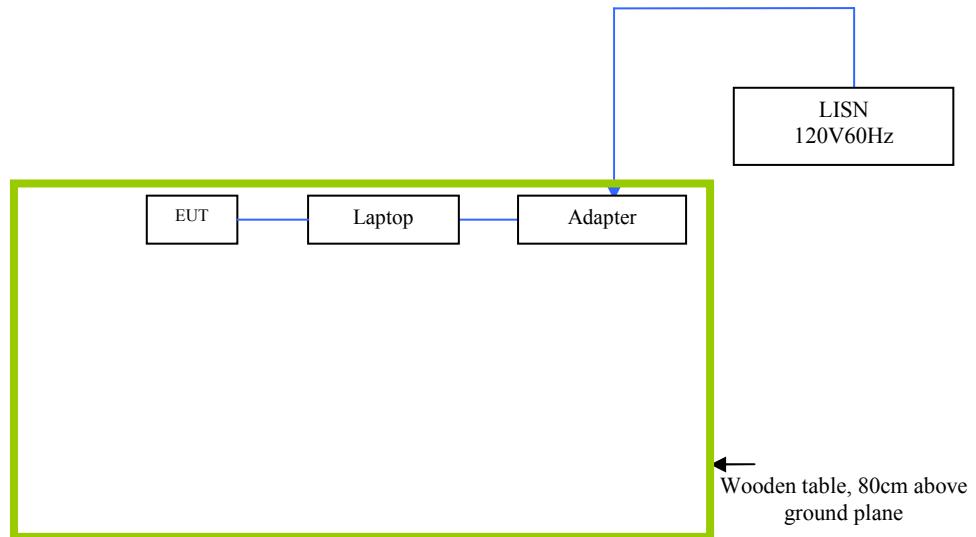
Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

EUT TEST CONDITIONS

Annex C. i. SUPPORTING EQUIPMENT DESCRIPTION

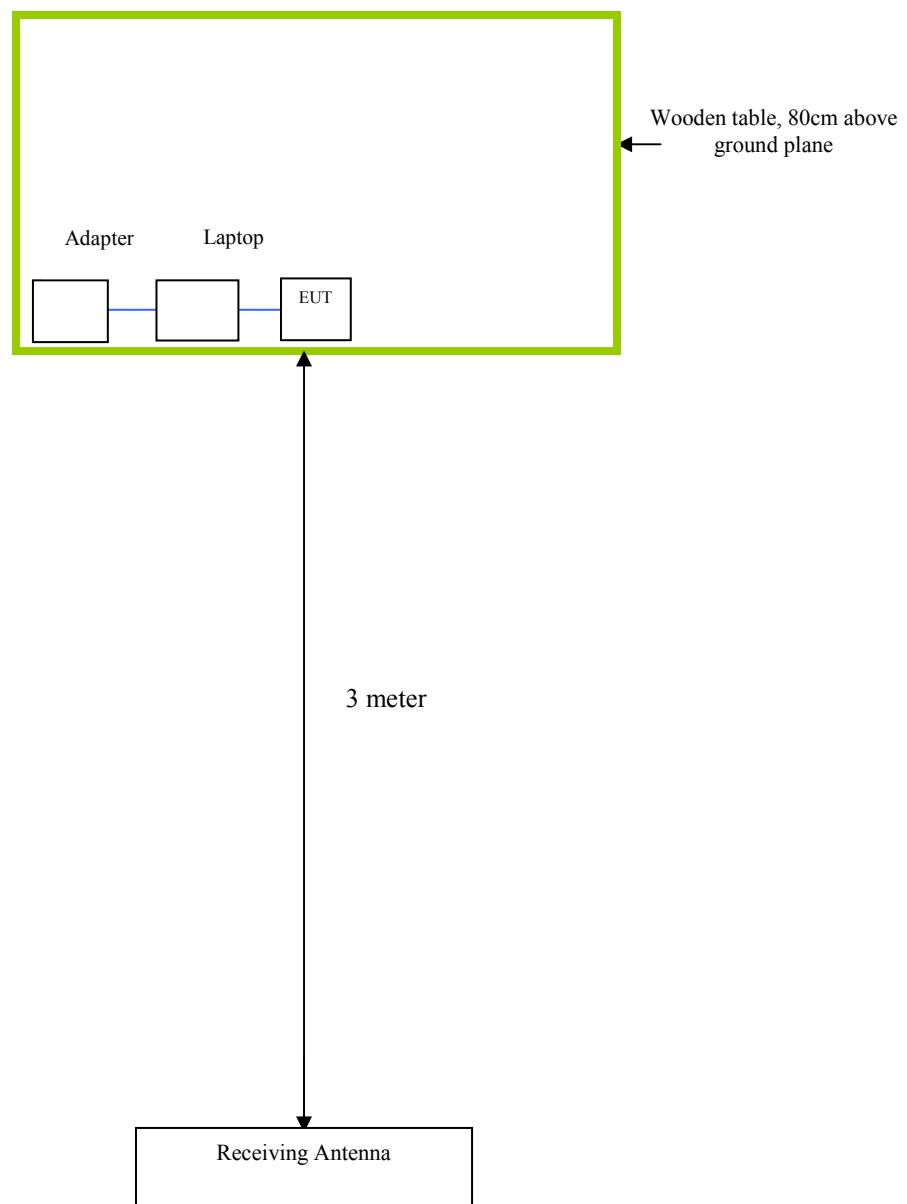
The following is a description of supporting equipment and details of cables used with the EUT.

| Equipment Description (Including Brand Name) | Model & Serial Number | Cable Description (List Length, Type & Purpose) |
|---|------------------------------------|--|
| Gateway Laptop | MS2288 & LXWHF02013951C3CA92200 | N/A |

Block Configuration Diagram for Conducted Emissions**Mode: Charging & Downloading**

Block Configuration Diagram for Radiated Emissions

Mode: Charging & Downloading



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Page: 24 of 26
www.siemic.com.cn

Annex C.ii. EUT OPERATING CONDITIONS

The following is the description of how the EUT is exercised during testing.

| Test | Description Of Operation |
|-------------------|--------------------------|
| Emissions Testing | Charging & Downloading |



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Page: 25 of 26
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Annex D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PART LIST

Please see attachment



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Annex E. DECLARATION OF SIMILARITY

Please see attachment