



SHENZHEN MOST ELECTRONICS CO., LTD.
Tel: (86) 755-26825180 Fax: (86) 755-86170310
Http:// www. szmost.com Email: szmost@szmost.com

Test Report

Product Name: RFM300 Modulation

FCC ID: UGRFSARFM001

Applicant:

FSA ELECTRONICS CO., LTD.
13F Block B, Baoan Square Sungang Road, Luohu District,
Shenzhen, Guang Dong Province China

Date Received: 7/31/2006

Date Tested: 7/31/2006



SHENZHEN MOST ELECTRONICS CO., LTD.
Tel: (86) 755-26825180 Fax: (86) 755-86170310
Http:// www. szmost.com Email: szmost@szmost.com

TABLE OF CONTENTS

APPLICANT: FSA ELECTRONICS CO., LTD.

FCC ID: UGRFSARFM001

TEST REPORT CONTAINING:

PAGE 1.....TEST EQUIPMENT LIST
PAGE 2.....TEST PROCEDURE
PAGE 3-5.....POWER LINE CONDUCTED INTERFERENCE AND PLOTS
PAGE 6-7.....RADIATION INTERFERENCE TEST DATA
PAGE 8-11.....OCCUPIED BANDWIDTH AND PLOTS

EXHIBIT INCLUDED:

PAGE 1.....BLOCK DIAGRAM
PAGE 2.....SCHEMATIC
PAGE 3.....USERS MANUAL
PAGE 4.....LABEL SAMPLE
PAGE 5.....LABEL LOCATION
PAGE 6.....EXTERNAL PHOTOGRAPHS
PAGE 7.....INTERNAL PHOTOGRAPHS
PAGE 8.....OPERATIONAL DESCRIPTION
PAGE 9.....TEST SET UP PHOTOGRAPHS

APPLICANT: FSA Electronics Co., Ltd.
FCC ID: UGRFSARFM001

TABLE OF CONTENTS



SHENZHEN MOST ELECTRONICS CO., LTD.
Tel: (86) 755-26825180 Fax: (86) 755-86170310
Http:// www. szmost.com Email: szmost@szmost.com

EMC Equipment List

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	ROHDE&SCHWARZ	ESCS30	100307	Mar 20,2006	1 Year
LISN	ROHDE&SCHWARZ	ESH3-Z5	100305	Mar 20,2006	1 Year
Pulse Limiter	ROHDE&SCHWARZ	ESH3-Z2	100305	Mar 20,2006	1 Year
50 Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 20,2006	1 Year
Spectrum Analyzer	ANRITSU	MS2651B	6200238856	Mar 20,2006	1 Year
Bilog Antenna	SCHWARZBECK	VULB 9163	9163-194	Mar 20,2006	1 Year
50 Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 20,2006	1 Year
Cable	Resenberger	N/A	NO.1	Mar 20,2006	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Mar 20,2006	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Mar 20,2006	1 Year
DC Power Filter	DuoJi	DL2×30B	N/A	N/A	N/A
Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	N/A	N/A
3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A	N/A	N/A
AC Power Source	California Instruments	5001iX-400	55689	Mar 20,2006	1 Year
Test analyzer	California Instruments	PACS-1	72254	Mar 20,2006	1 Year
ESD Tester	HAEFELY	PESD 1610	H4001552	Mar 20,2006	1 Year
Signal Generator	IFR	2032	203002/100	Mar 20,2006	1 Year
Amplifier	A&R	150W1000	301584	NCR	NCR
Dual Directional Coupler	A&R	DC6080	301508	Mar 20,2006	1 Year
Power Head	A&R	PH2000	301193	Mar 20,2006	1 Year
Power Meter	A&R	PM2002	302799	Mar 20,2006	1 Year
Field Monitor	A&R	FM5004	300329	Mar 20,2006	1 Year
Field Probe	A&R	FP5000	300221	Mar 20,2006	1 Year
EMCPRO System	Thermo	RO-BASE	0403271	Mar 20,2006	1 Year
Capacitive Clamp	Thermo	PRO-CCL	0403272	Mar 20,2006	1 Year
EMCPRO System	Thermo	PRO-BASE	0403271	Mar 20,2006	1 Year
Coupler decoupler for telecom lines	Thermo	CM-TEL-CD	0403273	Mar 20,2006	1 Year
Signal Generator	IFR	2032	203002/100	Mar 20,2006	1 Year
Amplifier	A&R	150W1000	301584	NCR	NCR
EMCPRO System	Thermo	PRO-BASE	0403271	Mar 20,2006	1 Year

Remark:

Test Firm Name: ACCURATE TECHNOLOGY CO. LTD

Test Firm Address: F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan
Shenzhen Guangdong China

FCC Registered Test Site Number: 253065

APPLICANT: FSA Electronics Co., Ltd.

FCC ID: UGRFSARFM001



SHENZHEN MOST ELECTRONICS CO., LTD.
Tel: (86) 755-26825180 Fax: (86) 755-86170310
Http:// www. szmost.com Email: szmost@szmost.com

TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of SHENZHEN MOST ELECTRONICS CO., LTD. The EUT was transmitting a test signal during the testing.

POWER LINE CONDUCTED INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a 50 uH LISN. Both Lines were observed. The bandwidth of the receiver was 10kHz with an appropriate sweep speed. The ambient temperature of the EUT was 25 with a humidity of 58%.

RADIATION INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a ANRITSU spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a micro volt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3 MHz above 1 GHz. The ambient temperature of the EUT was 25 with a humidity of 58%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Pre-selector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

$$\begin{array}{ll} \text{Freq (MHz) METER READING + ACF = FS} \\ 33 \quad 20 \text{ dBuV} + 10.36 \text{ dB} = 30.36 \text{ dBuV/m @ 3m} \end{array}$$

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSI Standard C63.4-2003 10.1.7 with the EUT 40 cm from the vertical ground wall.



SHENZHEN MOST ELECTRONICS CO., LTD.
Tel: (86) 755-26825180 Fax: (86) 755-86170310
Http:// www. szmost.com Email: szmost@szmost.com

APPLICANT: FSA ELECTRONICS CO., LTD.

FCC ID: UGRFSARFM001

NAME OF TEST: POWER LINE CONDUCTED INTERFERENCE

RULES PART NUMBER: 15.107

MINIMUM REQUIREMENTS:	FREQUENCY	LEVEL
	<u>MHz</u>	<u>UV</u>
	0.150-30	250

TEST PROCEDURE: ANSI STANDARD C63.4-2003

THE HIGHEST EMISSION READ FOR LINE 1 WAS 29.3dB_{UV} @ 480kHz.

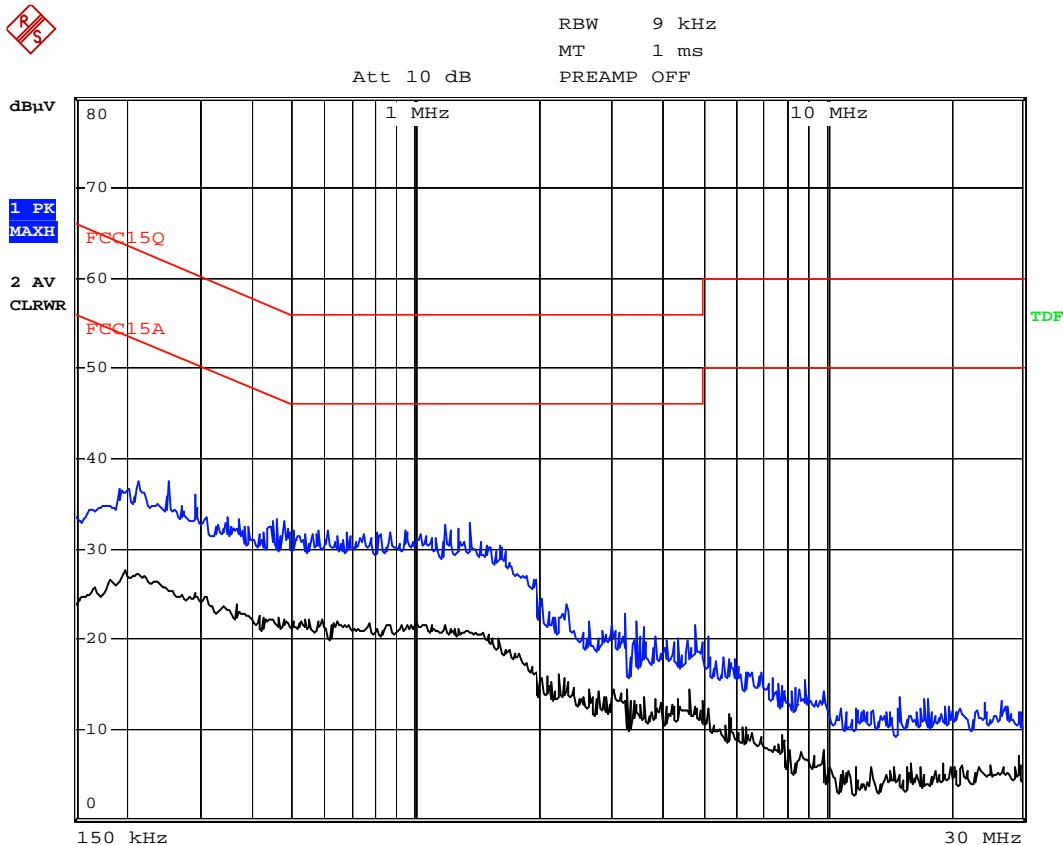
THE HIGHEST EMISSION READ FOR LINE 2 WAS 29.0dB_{UV} @ 480kHz.

THE PLOTS ON THE NEXT PAGE REPRESENT THE EMISSIONS READ FOR POWER LINE CONDUCTED FOR THIS DEVICE.

APPLICANT: FSA Electronics Co., Ltd.
FCC ID: UGRFSARFM001



SHENZHEN MOST ELECTRONICS CO., LTD.
Tel: (86) 755-26825180 Fax: (86) 755-86170310
Http:// www. szmost.com Email: szmost@szmost.com



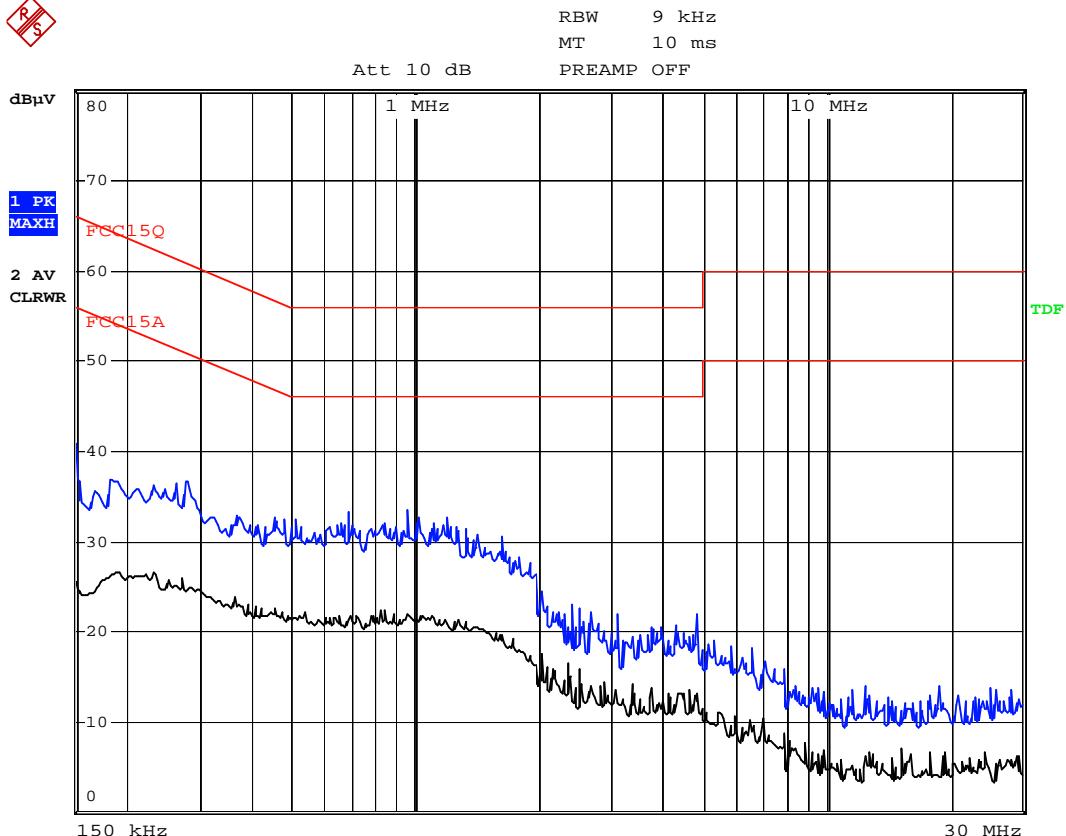
Date: 31.JUL.2006 10:51:09

APPLICANT: FSA Electronics Co., Ltd.
FCC ID: UGRFSARFM001



SHENZHEN MOST ELECTRONICS CO., LTD.
Tel: (86) 755-26825180 Fax: (86) 755-86170310
Http:// www. szmost.com Email: szmost@szmost.com

R
S



Date: 31.JUL.2006 10:53:15

APPLICANT: FSA Electronics Co., Ltd.
FCC ID: UGRFSARFM001



SHENZHEN MOST ELECTRONICS CO., LTD.
Tel: (86) 755-26825180 Fax: (86) 755-86170310
Http:// www. szmost.com Email: szmost@szmost.com

APPLICANT: FSA ELECTRONICS CO., LTD.

FCC ID: UGRFSARFM001

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.239, 15.209

REQUIREMENTS:

FIELD STRENGTH of S15.209
Fundamental:

88-108 MHZ	30 - 88 MHz 40 dBuV/m @3M
	88 - 216 MHz 43.5
	216 - 960 MHz 46
47.96 dBuV/m @3m	ABOVE 960 MHz 54dBuV/m

EMISSIONS RADIATED OUTSIDE OF THE SPECIFIED FREQUENCY BANDS, EXCEPT FOR HARMONICS, SHALL BE ATTENUATED BY AT LEAST 50 dB BELOW THE LEVEL OF THE FUNDAMENTAL OR TO THE GENERAL RADIATED EMISSION LIMITS IN 15.209, WHICHEVER IS THE LESSER ATTENUATION.

Fundamental Radiation Interference Data:

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)	FCC 15 Subpart C Limit (dBuV/m)
Low frequency			
88.700	Horizontal	39.10	47.96
88.700	Vertical	41.21	47.96
High frequency			
89.100	Horizontal	39.35	47.96
89.100	Vertical	41.60	47.96



SHENZHEN MOST ELECTRONICS CO., LTD.
Tel: (86) 755-26825180 Fax: (86) 755-86170310
Http:// www. szmost.com Email: szmost@szmost.com

APPLICANT: FSA ELECTRONICS CO., LTD.

FCC ID: UGRFSARFM001

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.239, 15.209

REQUIREMENTS:

FIELD STRENGTH of S15.209
Fundamental:

88-108 MHZ	30 - 88 MHz 40 dBuV/m @3M
	88 - 216 MHz 43.5
	216 - 960 MHz 46
47.96 dBuV/m @3m	ABOVE 960 MHz 54 dBuV/m

EMISSIONS RADIATED OUTSIDE OF THE SPECIFIED FREQUENCY BANDS, EXCEPT FOR HARMONICS, SHALL BE ATTENUATED BY AT LEAST 50 dB BELOW THE LEVEL OF THE FUNDAMENTAL OR TO THE GENERAL RADIATED EMISSION LIMITS IN 15.209, WHICHEVER IS THE LESSER ATTENUATION.

Continued:

General Radiation Interference Data:

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)	FCC 15 Subpart C Limit (dBuV/m)
32.040	Horizontal	33.06	40.0
315.520	Horizontal	32.23	46.0
34.160	Vertical	32.85	40.0
324.160	Vertical	32.85	46.0

TEST PROCEDURE: ANSI Standard C63.4-2003 using a ANRITSU spectrum analyzer with a pre-selector and an appropriate antenna. The resolution bandwidth of spectrum analyzer was 100 kHz below 1 GHz and 1 MHz above 1 GHz. An appropriate sweep speed was used. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The spectrum was searched to at least the tenth (10) harmonic of the fundamental.

APPLICANT: FSA Electronics Co., Ltd.
FCC ID: UGRFSARFM001



SHENZHEN MOST ELECTRONICS CO., LTD.
Tel: (86) 755-26825180 Fax: (86) 755-86170310
Http:// www. szmost.com Email: szmost@szmost.com

APPLICANT: FSA ELECTRONICS CO., LTD.

FCC ID: UGRFSARFM001

NAME OF TEST: Occupied Bandwidth and Band Edge Compliance

RULES PART NUMBER: 15.239

REQUIREMENTS: Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88.7-89.1 MHz.

Band edge emissions plots are included on the following pages

METHOD OF MEASUREMENT: A small sample of the transmitter output was fed into the spectrum analyzer and the attached plot was printed. The vertical scale is set to 10 dB per division.

TEST RESULTS: The unit DOES meet the FCC requirements.

APPLICANT: FSA Electronics Co., Ltd.
FCC ID: UGRFSARFM001



Compliance Laboratory

SHENZHEN MOST ELECTRONICS CO., LTD.

Tel: (86) 755-26825180 Fax: (86) 755-86170310

[Http:// www. szmost.com](http://www.szmost.com) Email: szmost@szmost.com



APPLICANT: FSA Electronics Co., Ltd.

FCC ID: UGRFSARFM001



Compliance Laboratory

SHENZHEN MOST ELECTRONICS CO., LTD.

Tel: (86) 755-26825180 Fax: (86) 755-86170310

[Http:// www. szmost.com](http://www.szmost.com) Email: szmost@szmost.com



APPLICANT: FSA Electronics Co., Ltd.

FCC ID: UGRFSARFM001