ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

OF

Product Name:	**Rechargeable Wireless Optical Mouse**
Brand Name:	**IONE**
Model Name:	**Lynx-P11**
Model Difference:	**N/A**
FCC ID:	**F2Q-RFLYNXP11U**
Report No.:	**ER/2005/80009**
Issue Date:	**Aug. 10, 2005**
FCC Rule Part:	**§15.227**
Prepared for	**Itron Technology Inc.** **9F, #75, Sec. 1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien, Taiwan, R.O.C.**
Prepared by	**SGS Taiwan Ltd.** **No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei County, Taiwan.**

VERIFICATION OF COMPLIANCE

Applicant:	Itron Technology Inc. 9F, #75, Sec. 1, Hsin Tai Wu Rd., Hsichih, Taipei Hsien, Taiwan, R.O.C.
Product Description:	Rechargeable Wireless Optical Mouse
FCC ID Number:	F2Q-RFLYNXP11U
Brand Name:	IONE
Model No.:	Lynx-P11
Model Difference:	N/A
File Number:	ER/2005/80009
Date of Test:	Aug. 08, 2005 ~ Aug. 10, 2005
Date of EUT Received:	Aug. 08, 2005

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.227.

The test results of this report relate only to the tested sample identified in this report.

Test By:	Henk Huang	***Date***	Aug. 10, 2005
	Henk Huang		
Prepared By:	Gigi Yeh	***Date***	Aug. 10, 2005
	Gigi Yeh		
Approved By:	Vincent Su	***Date***	Aug. 10, 2005
	Vincent Su		

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1. GENERAL INFORMATION

1.1 Product Description

The Itron Technology Inc., Model: TX: Lynx-P11 (referred to as the EUT in this report) The EUT is an short range, lower power, Wireless mouse system as an "Input Device. It is designed by way of utilizing the FSK modulation achieves the system operating.

A major technical descriptions of EUT is described as following:
A). Operation Frequency: 27.045MHz, one channel.
B). Modulation : Frequency Shifting Key (FSK) Modulation
C). Antenna Designation: Non-User Replaceable (Fixed)
D). Power Supply: 1.2 Vdc by AAA Battery*2. or 5 Vdc from Receiver

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: F2Q-RFLYNXP11U filing to comply with Section 15.227 of the FCC Part 15, Subpart C Rules. The composite system (receiver) is compliance with Subpart B is authorized under a DoC procedure.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the address of SGS Taiwan Ltd. No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003 and CISPR 22/EN 55022 requirements. Site No. 1(3 &10 meters) Registration Number: 94644, Anechoic chamber (3 meters) Registration Number: 573967

1.5 Special Accessories

Not available for this EUT intended for grant.

1.6 Equipment Modifications

Not available for this EUT intended for grant.

2. System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. the Tx frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 7 and 13 of ANSI C63.4-2003.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 8 and 13 of ANSI C63.4-2003.

2.4 Limitation

(1) Conducted Emission

According to section 15.207(a) Conducted Emission Limits is as following.

Frequency range MHz	Limits dB (uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note 1.The lower limit shall apply at the transition frequencies 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

(2) Radiated Emission

a. The field strength of any emission within this band (section 15.227 frequency between 26.96MHz -27.28MHz) shall not exceed 10000 micro volts/meter at 3 meters. (80dBμV at 3m) The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in section 15.35 for limiting peak emissions apply.

b.The field strength of any emissions which appear outside of this band shall not exceed the general radiated emission limits in section 15.209(Intentional Radiators general limit).as below.

Frequency (MHz)	Field strength μV/m	Distance (m)	Field strength at 3m dBμV/m
1.705-30	30	30	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

Remark: 1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205
4. Emission spurious frequency which appearing within the Restricted Bands specified in provision of ξ15.205, then the general radiated emission limits in ξ 15.209 apply.

2.5 Configuration of Tested System

Fig. 2-1 Configuration of Tested System (Charge and transmit Mode)

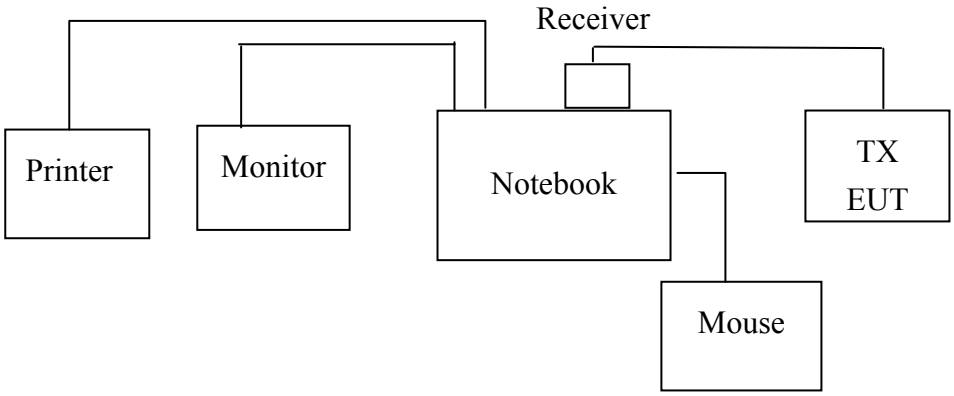


Fig. 2-2 Configuration of Tested System (Transmit mode)

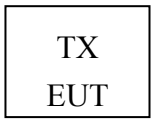


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	FCC ID	Series No.	Data Cable	Power Cord
1.	Notebook	Compaq	Presario 2100	N/A	CNF2450Q1R	N/A	N/A
2.	Monitor	HP	Vf51	N/A	TWTFG01092	Shielding 1.2m	Un-shielding 1.8m
3.	Printer	HP	DJ640C	N/A	TH12QE110Y	Shielding 1.8m	Un-shielding 1.2m
4.	Mouse	HP	P8131-D	N/A	K023302209	Shielding 1.8m	Un-shielding 1.2m

3. Summary of Test Results

FCC Rules	Description Of Test	Result
§15.207	Conducted Emission	Compliant
§15.227	Radiated Emission	Compliant
§15.227	26 dB Bandwidth	Compliant

4. Description of test modes

The EUT stay in continuous transmitting and change modes. The frequency 27.045 MHz is chosen for full testing.

5. Conducted Emissions Test

5.1 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)

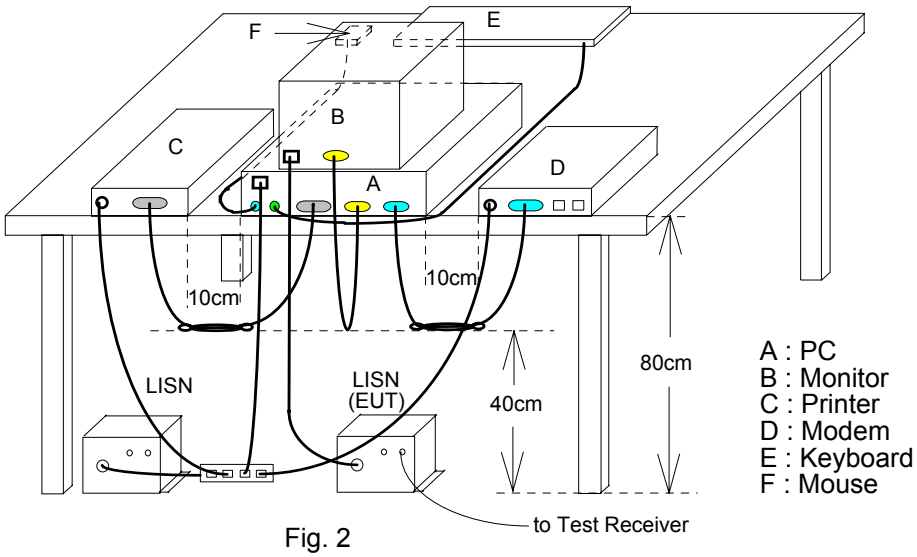


Fig. 2

5.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	Agilent	E4446A	MY43360126	03/29/2005	03/28/2006
Spectrum Analyzer	Agilent	7405A	US41160416	06/28/2005	06/29/2006
Spectrum Analyzer	R&S	FSP 40	100034	11/09/2004	11/10/2005
Power Sensor	Anritsu	MA2490A	31431	06/28/2005	06/29/2006
Power Meter	Anritsu	ML2487A	6K00002070	06/28/2005	06/29/2006
Temperature Chamber	TERCHY	MHG-120LF	911009	11/11/2004	11/12/2005
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A
Attenuator	Mini-Circult	BW-S10W5	N/A	10/07/2004	10/06/2005
Attenuator	Mini-Circult	BW-S6W5	N/A	10/07/2004	10/06/2005
Splitter	Mini-Circult	ZFSC-2-10G	N/A	10/07/2004	10/06/2005
Signal Generator	R&S	SMR40	100210	11/09/2004	11/10/2005
Diode Detector	Agilent	8471E	MY4224	N/A	N/A
AC Power Supply	APW-105N	887592	All Power	12/15/2004	12/14/2005

5.4 Measurement Result:

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Charge and transmit mode			Test Date :	Aug 09, 2005
Temperature:	24 ℃	Humidity:	56 %	Test By:	Henk

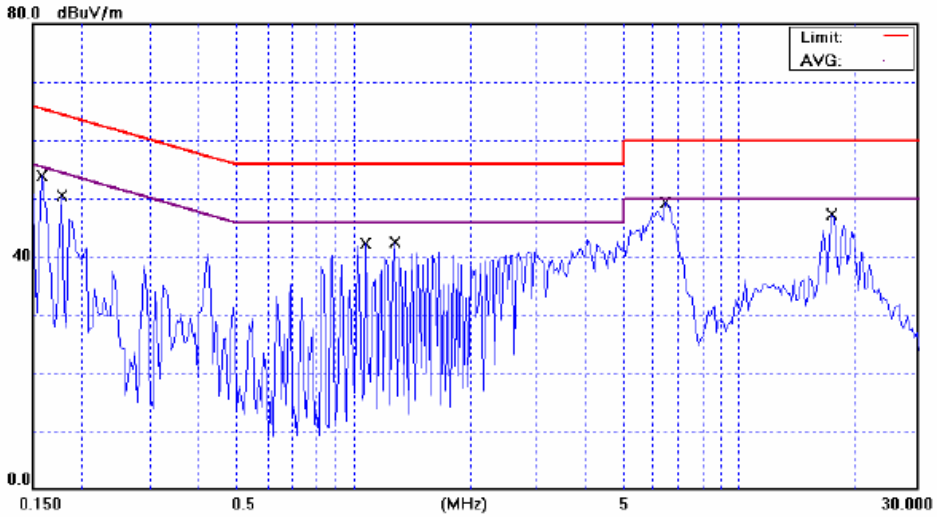
FREQ MHz	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.158	57.39	35.65	65.57	55.57	-8.18	-19.92	L1
0.177	51.22	---	64.61	54.61	-13.39	---	L1
1.084	43.38	---	56.00	46.00	-12.62	---	L1
1.283	43.84	---	56.00	46.00	-12.16	---	L1
6.509	43.82	---	60.00	50.00	-16.18	---	L1
17.506	46.16	---	60.00	50.00	-13.84	---	L1
0.158	57.22	40.47	65.58	55.58	-8.36	-15.11	L2
0.177	51.02	---	64.61	---	-13.59	---	L2
0.423	40.25	---	57.38	---	-17.13	---	L2
7.201	43.78	---	60.00	---	-16.22	---	L2
17.963	44.98	---	60.00	---	-15.02	---	L2
20.259	40.82	---	60.00	---	-19.18	---	L2

Remark：

(1) Measuring frequencies from 0.15 MHz to 30MHz。
(2) The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Qusia-Peak detector and Average detector.
(3) "---" denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.
(4) The IF bandwidth of SPA between 0.15MHz to 30MHz was 10KHz;
The IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9KHz;
(5) L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

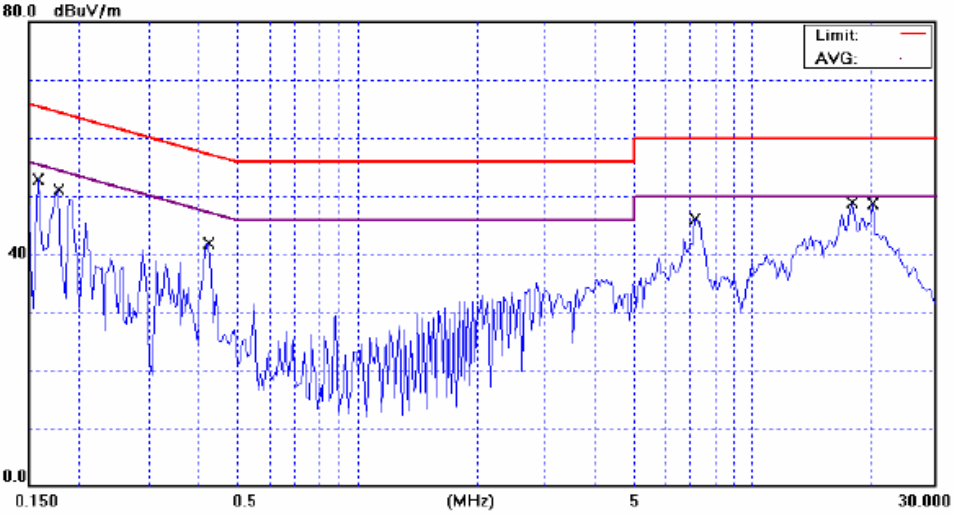
Conducted Emission Test Plot

Conducted Emission Measurement



Site SGS CONDUCTED #1	Phase: L1	Temperature: 24 ℃
Limit: EN55022 Class B Conduction(QP)	Power: AC110V/60HZ	Humidity: 56 %
EUT: Rechargeable Wireless Optical Mouse	Distance:	Air Pressure: hpa
M/N: Lynx-P11		
Note: Operation & Charge mode		

Conducted Emission Measurement



Site SGS CONDUCTED #1	Phase: N	Temperature: 24 ℃
Limit: EN55022 Class B Conduction(QP)	Power: AC110V/60HZ	Humidity: 56 %
EUT: Rechargeable Wireless Optical Mouse	Distance:	Air Pressure: hpa
M/N: Lynx-P11		
Note: Operation & charge mode		

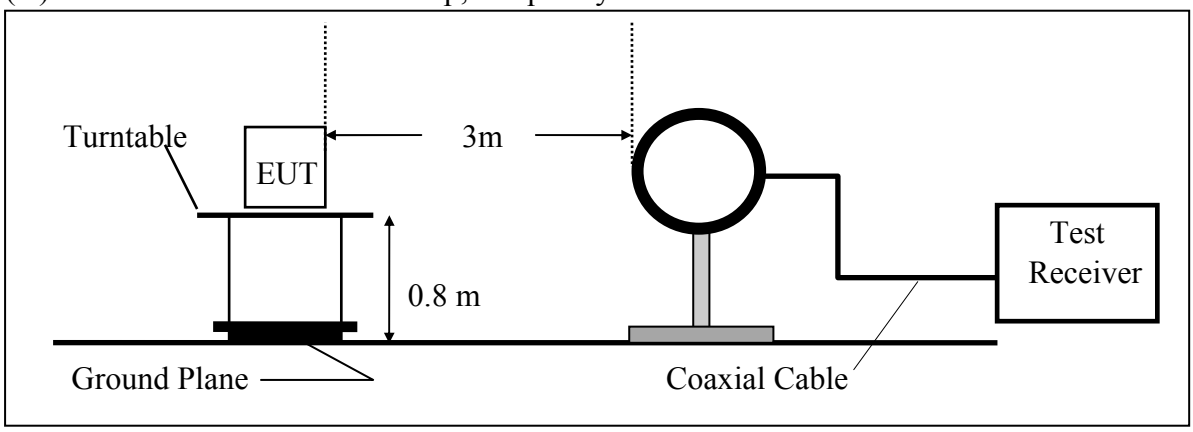
6. Radiated Emission Test

6.1 Measurement Procedure

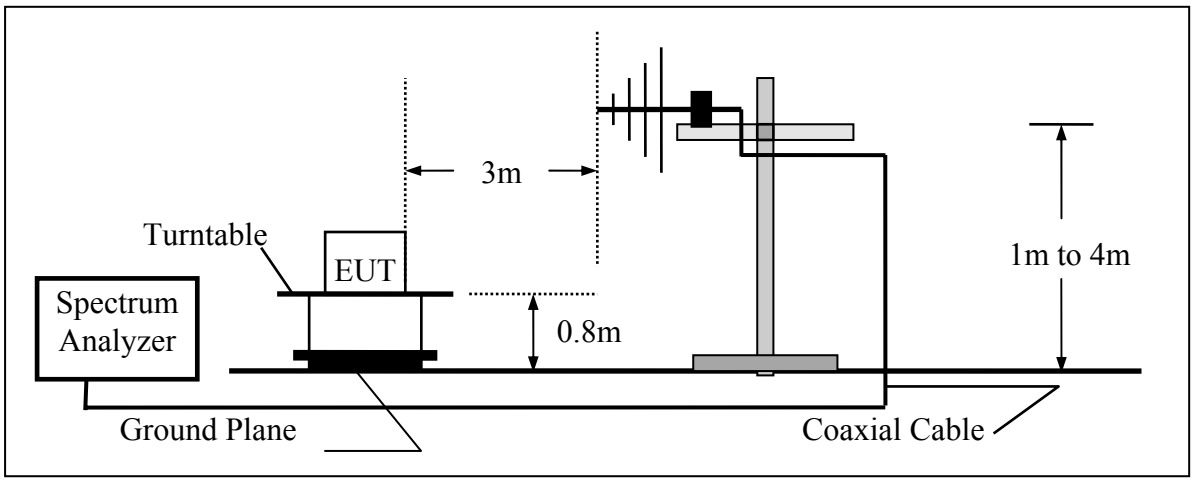
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

6.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



6.3 Measurement Equipment Used:

966 Chamber					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	R&S	FSP 40	100034	05/27/2005	05/26/2006
Spectrum Analyzer	Agilent	E7405A	US41160416	08/27/2004	08/27/2005
Loop Antenna	Messtec	FLA30	03/10086	03/06/2005	03/05/2006
Bilog Antenna	SCHWAZBECK	VULB9163	152	06/03/2005	06/02/2006
Bilog Antenna	SCHWAZBECK	VULB9160		06/03/2005	06/02/2006
Pre-Amplifier	HP	8447D	2944A09469	07/19/2005	07/18/2006
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	10/9/2004	10/08/2005
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	10/9/2004	10/08/2005
Site NSA	SGS	966 chamber	N/A	11/17/2004	11/16/2005
Site NSA	SGS	10m Open-Site	N/A	10/02/2004	10/01/2005

6.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

6.5 Measurement Result (Transmitting)

Operation Mode:	Transmitting Mode	Test Date :	Aug. 09, 2005
Fundamental Frequency:	27.045 MHz	Test By:	Henk
Temperature :	25 ℃	Pol:	Vertical
Humidity :	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/AV/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit (dBuV/m)	Safe Margin (dB)	Note
27.04	V	Peak	42.34	-15.09	27.25	80.00	-52.75	F
33.88	V	Peak	36.44	-15.13	21.31	40.00	-18.69	H
54.09	V	—						
75.59	V	Peak	39.91	-17.66	22.25	40.00	-17.75	H
81.14	V	—						
108.18	V	—						
135.23	V	—						
162.27	V	—						
189.32	V	—						
216.36	V	—						
243.41	V	—						
270.45	V	—						

Remark：

(1) Measuring frequencies from 25 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 25 MHz to 1000MHz were made with an instrument using Peak detector mode.

(3) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.

(4) Data of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) The IF bandwidth of SPA between 25MHz to 30MHz was 10KHz; 30MHz to 1GHz was 100KHz.

6.6 Measurement Result (Transmitting)

Operation Mode: Transmitting Mode
Fundamental Frequency: 27.045 MHz
Temperature : 25 ℃
Humidity : 65 %

Test Date : Aug. 09, 2005
Test By: Henk
Pol: Horizontal

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/AV/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit (dBuV/m)	Safe Margin (dB)	Note
27.04	H	Peak	62.98	-15.09	47.89	80.00	-32.11	F
33.88	H	Peak	37.90	-15.13	22.77	40.00	-17.23	H
54.09	H	—						
65.89	H	Peak	36.24	-15.35	20.89	40.00	-19.11	H
81.14	H	—						
108.18	H	—						
135.23	H	—						
162.27	H	—						
189.32	H	—						
216.36	H	—						
270.45	H	—						

Remark：

(1) Measuring frequencies from 25 MHz to the 1GHz。

(2) Radiated emissions measured in frequency range from 25 MHz to 1000MHz were made with an instrument using Peak detector mode.

(3) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.

(4) Data of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) The IF bandwidth of SPA between 25MHz to 30MHz was 10KHz; 30MHz to 1GHz was 100KHz.

6.7 Measurement Result (Charge and transmit mode)

Operation Mode: Charge Mode
Fundamental Frequency: 27.045 MHz
Temperature : 25 ℃
Humidity : 65 %

Test Date : Aug. 09, 2005
Test By: Henk
Pol: Vertical

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/AV/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit (dBuV/m)	Safe Margin (dB)	Note
27.04	V	Peak	81.58	-15.09	66.49	80.00	-13.51	F
53.28	V	---	---	---	---	---	---	
75.59	V	---	---	---	---	---	---	
81.14	V	Peak	53.90	-18.47	35.43	40.00	-4.57	H
108.18	V	---	---	---	---	---	---	
109.54	V	Peak	50.68	-16.42	34.26	43.50	-9.24	H
135.23	V	---	---	---	---	---	---	
162.27	V	---	---	---	---	---	---	
189.32	V	Peak	50.46	-15.86	34.60	43.50	-8.90	H
216.36	V	Peak	48.55	-16.23	32.32	46.00	-13.68	H
269.59	V	Peak	45.96	-14.57	31.39	46.00	-14.61	H
298.68	V	---	---	---	---	---	---	
243.41	V	---	---	---	---	---	---	
270.45	V	---	---	---	---	---	---	
366.59	V	Peak	42.84	-11.51	31.33	46.00	-14.67	H

Remark：

(1) Measuring frequencies from 25 MHz to the 1GHz。
(2) Radiated emissions measured in frequency range from 25 MHz to 1000MHz were made with an instrument using Peak detector mode.
(3) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.
(4) Data of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(5) The IF bandwidth of SPA between 25MHz to 30MHz was 10KHz; 30MHz to 1GHz was 100KHz.

6.8 Measurement Result (charge and transmit mode)

Operation Mode: charge Mode
Fundamental Frequency: 27.045 MHz
Temperature : 25 ℃
Humidity : 65 %

Test Date : Aug. 09, 2005
Test By: Henk
Pol: Horizontal

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/AV/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit (dBuV/m)	Safe Margin (dB)	Note
27.04	H	Peak	72.96	-15.09	57.87	80.00	-22.13	F
54.09	H	---	---	---	---	---	---	
81.14	H	---	---	---	---	---	---	
88.44	H	Peak	50.25	-18.47	31.78	43.50	-11.72	H
108.18	H	---	---	---	---	---	---	
135.23	H	---	---	---	---	---	---	
162.27	H	---	---	---	---	---	---	
189.32	H	---	---	---	---	---	---	
216.36	H	Peak	51.92	-16.23	35.69	46.00	-10.31	H
270.45	H	---	---	---	---	---	---	
298.69	H	Peak	51.42	-13.37	38.05	46.00	-7.95	H
324.88	H	Peak	50.65	-12.66	37.99	46.00	-8.01	H
405.39	H	Peak	45.71	-10.49	35.22	46.00	-10.78	H

Remark：

(1) Measuring frequencies from 25 MHz to the 1GHz。
(2) Radiated emissions measured in frequency range from 25 MHz to 1000MHz were made with an instrument using Peak detector mode.
(3) “F” denotes fundamental frequency; “H” denotes spurious frequency. “E” denotes band edge frequency.
(4) Data of measurement within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(5) The IF bandwidth of SPA between 25MHz to 30MHz was 10KHz; 30MHz to 1GHz was 100KHz.

7. Occupied Bandwidth

7.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation
3. Set SPA Center Frequency = fundamental frequency, RBW, VBW= 10KHz, Span =100KHz.
4. Set SPA Max hold. Mark peak, -26dB.

7.2 Test SET-UP (Block Diagram of Configuration)

Same as 4.2 Radiated Emission Measurement.

7.3 Measurement Equipment Used:

Same as 4.2 Radiated Emission Measurement.

7.4 Measurement Results

26dB bandwidth = 45.5 KHz

Refer to attached data chart.

26dB Band Width Test Data