

**ESTECH Co., Ltd.**Rm 1015, World Venture Center II,
426-5 Gasan-dong, Guncheon-gu,
Seoul, 158-803, Korea**Electromagnetic
Interference
Test Report****Test Report for FCC**

FCC ID : TKWRPF

Report Number		ESTF151203-004			
Applicant	Company name	Suprema Inc.			
	Address	16F Parkview Tower, Jeongja-dong, Bundang-gu, Seongnam, Gyeonggi, 463-863 Korea			
	Telephone	82-31-783-4505			
Product	Product name	RealPass-F			
	Model No.	RPF	Manufacturer	Suprema Inc.	
	Serial No.	NONE	Country of origin	KOREA	
Test date	16-Mar-12		Date of issue	21-Mar-12	
Testing location	ESTECH Co., Ltd. 58-1 OSan-Ri Kanam-Myon, Yeosu-Gun, KyungKi-Do, Korea 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea				
Standard	FCC PART 15 (2010), ANSI C 63.4 2003				
Test item	<input checked="" type="checkbox"/> Conducted Emission	<input type="checkbox"/> Class A	<input checked="" type="checkbox"/> Class B	Test result	OK
	<input checked="" type="checkbox"/> Radiated Emission	<input type="checkbox"/> Class A	<input checked="" type="checkbox"/> Class B	Test result	OK
Measurement facility registration number	94696				
Tested by	Engineer S.B.LEE				
Reviewed by	Engineering Manager J.M.Yang				
Abbreviation	OK, Pass = Complied, Fail = Failed, N/A = not applicable				
<p>* Note</p> <p>- This test report is not permitted to copy partly without our permission</p> <p>- This test result is dependent on only equipment to be used</p> <p>- This test result based on a single evaluation of one sample of the above mentioned</p>					

Contents

1. Laboratory Information	3
2. Description of EUT	4
3. Test Standards	5
4. Measurement condition	6
5. Measurement of radiated emission	8
5.1 Measurement equipment	8
5.2 Environmental conditions	8
5.3 Test data	9
6. Measurement of conducted emission	10
6.1 Measurement equipment	10
6.2 Environmental conditions	10
6.3 Test data	11
7. Photographs of test setup	12
8. Photographs of EUT	14

Appendix 1. Special diagram



1. Laboratory Information

1.1 General

This EUT (Equipment Under Test) has been shown to be capable of compliance with the applicable technical standards and is tested in accordance with the measurement procedures as indicated in this report. ESTECH Lab attests to accuracy of test data. All measurement reported herein were performed by ESTECH Co., Ltd.

ESTECH Lab assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

1.2 Test Lab.

Corporation Name : ESTECH Co., Ltd.

Head Office : Rm 1015, World Venture Center II, 426-5, Gasan-dong, Geumcheon-gu, Seoul, Korea
(Safety & Telecom. Test Lab)

EMC Test Lab : 58-1 Osan-Ri, GaNam-Myon, YeoJoo-Gun, KyungKi-Do, Korea
97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea

1.3 Official Qualification(s)

KCC : Granted Accreditation from Ministry of Information & Communication for EMC, Safety and Telecommunication

KOLAS : Accredited Lab By Korea Laboratory Accreditation Schema base on CENELEC requirements

FCC : Filed Laboratory at Federal Communications Commission

VCCI : Granted Accreditation from Voluntary Control Council for Interference from ITE

2. Description of EUT

2.1 Summary of Equipment Under Test

Product	: RealPass-F
Model Number	: RPF
Serial Number	: NONE
Manufacturer	: Suprema Inc.
Country of origin	: KOREA
Rating	: ADAPTER Input : (100 – 240) Va.c, (50 – 60) Hz, 0.3 A Output : 5 Vd.c., 2.0 A
Receipt Date	: 5-Mar-12
X-tal list(s) or Frequencies generated	: 13.56 MHz, 24 MHz, 25 MHz, 27 MHz, 30 MHz

2.2 General descriptions of EUT

Dimension (W x D x H, mm)	With cover: 167 x 192 x 94 Without cover: 167 x 192 x 89
Window Size (W x L, mm)	130 x 90mm
Weight	0.95kg
Image Resolution	450dpi
Image Color Depth	24 bits / pixels
Light Sources	Visible, IR
Processing Time	Image Capture(WH,IR) and MRZ Reading < 3 sec
Ingress Protection	IP54
RF & Smart card	ISO 14443 A/B contactless RFID ISO 7816 contact smartcard
Operating Temperature	0°C ~ 40°C
Power Supply	USB Power (5V 1A) or 5V 1A DC Adaptor (Optional)
Data Interface	USB 2.0
Operating Systems	Windows XP(32/64bit), Vista(32/64bit), 7(32/64bit)
SDK	Full SDK including DLLs with a demo program
TWAIN Driver	TWAIN 2.1 or higher (for windows)
Support Language	VC++, VB.net, C#, C++ Builder, Delphi

3. Test Standards

Test Standard : FCC PART 15 (2010)

This Standard sets out the regulations under which an intentional, unintentional, or incidental radiator may be operated without an individual license. It also contains the technical specifications, administrative requirements and other conditions relating to the marketing of Part 15 devices.

Test Method : ANSI C 63.4 (2003)

This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and may be applied to any such equipment unless otherwise specified by individual equipment requirements. These methods cover measurement of certain devices that deliberately radiate energy, such as intentional emitters, but does not cover licensed transmitters. This standard is not intended for certification/approval of avionic equipment or for industrial, scientific, and medical (ISM) equipment. These methods apply to the measurement of individual units or systems comprised of multiple units.



ESTECH Co., Ltd.

Rm 1015, World Venture Center II,
426-5 Gasan-dong, Guncheon-gu,
Seoul, 158-803, Korea



**Electromagnetic
Interference
Test Report**

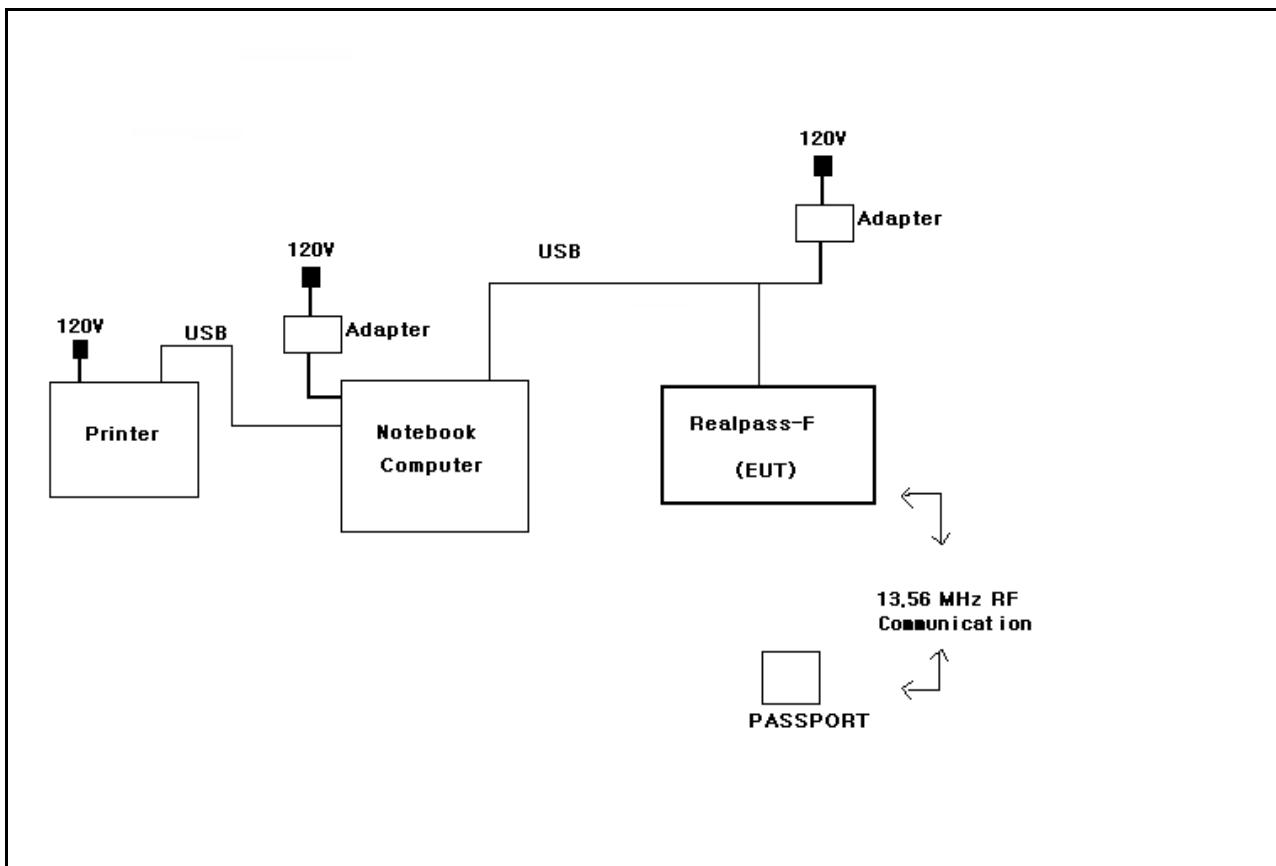
4. Measurement Condition

4.1 EUT Operation.

- The EUT was in the following operation mode during all testing

1. Check to normal mode operation.
2. Read the PASSPORT continuously and check the 13.56 MHz RF Signal output.
3. Execute scanning mode continuously and check normal operating.

4.2 Configuration and Peripherals



4.3 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
RealPass-F	RPF	NONE	Suprema Inc.	EUT
Adapter	BPI010S05NXX	NONE	I.T. EPOWER SUPPLY	
Notebook Computer	dm1	NONE	HEWLETT-PACKARD COMPANY	
Adapter	Series PPP009H	F12921114005620	CHICONY POWER TECHNOLOGY (SUZHOU) CO., TLD	
PASSPORT	NONE	NONE	NONE	
PRINTER	K10299	NONE	CANON VITENAM CO.,LTD.	

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
RealPass-F	Power	Adapter	-	2	Unshielded	
RealPass-F	USB	Notebook Computer	USB	2	Shielded	
RealPass-F	13.56 RF Signal	PASSPORT	13.56 RF Signal	-	-	
Notebook Computer	Power	Adapter	-	2	Shielded	
Notebook Computer	USB	Printer	USB	2	Shielded	

Remark : To meet the radiated emission added at the adapter and USB cable of the EUT.

5. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC PART 15 (2010). The test setup was made according to ANSI C 63.4 (2003) on an open test site, which allows a 3 m distance measurement. The EUT was placed in the center of wooden turntable. The height of this table was 0.8 m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated. For further description of the configuration refer to the picture of the test setup.

5.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
TEST Receiver	ESVS10	Rohde & Schwarz	838562/002	25-Jan-13
Spectrum Analyzer	R3273	ADVANTEST	110600592	25-Jan-13
LogBicon Antenna	VULB 9160	Schwarzbeck	3106	14-Apr-12
Pre Amplifier	8447F	HP	2944A03711	25-Jan-13
Pre Amplifier	8449B	HP	3008A00581	25-Jan-13
Turn Table	2081-1.2M	EMCO	NONE	-
Antenna Mast	2070-1	EMCO	0005-2205	-
ANT Mast Controller	2090	EMCO	9612-1202	-

5.2 Environmental Condition

Test Place : Open site(3 m)

Temperature (°C) : 7 °C

Humidity (% R.H.) : 54 % R.H.

5.3 Test data (Below 1 GHz)

Test Date : 16-Mar-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value(Quasi-peak)		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
30.00	45.20	V	1.0	10.53	-25.12	40.00	30.61	9.39
75.84	38.70	V	1.0	8.86	-24.42	40.00	23.14	16.86
111.92	37.40	V	1.0	10.05	-24.01	43.50	23.44	20.06
120.02	39.10	V	1.0	10.87	-23.84	43.50	26.13	17.37
135.06	43.50	H	2.2	12.07	-24.13	43.50	31.44	12.06
145.41	43.00	V	1.0	12.54	-24.04	43.50	31.51	11.99
230.52	44.40	H	1.5	11.27	-23.06	46.00	32.62	13.38
271.10	38.50	H	1.2	13.07	-22.88	46.00	28.69	17.31
322.56	37.20	H	1.0	14.65	-22.42	46.00	29.43	16.57
375.00	37.00	V	1.0	15.49	-22.91	46.00	29.58	16.42
431.99	37.20	V	1.0	17.33	-23.42	46.00	31.11	14.89
523.76	37.20	H	1.0	19.60	-23.79	46.00	33.01	12.99
Remark	H : Horizontal, V : Vertical *Reading = receiver reading + Amplifier Gain *CL = Cable Loss-Amplifier Gain *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection							

**ESTECH Co., Ltd.**Rm 1015, World Venture Center II,
426-5 Gasan-dong, Guncheon-gu,
Seoul, 158-803, Korea**Electromagnetic
Interference
Test Report**

5.3 Test data (Above 1 GHz)

Test Date : 16-Mar-12

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
Peak(RBW:1 MHz VBW:1 MHz)								
997.80	54.74	H	1.4	25.16	-20.36	74.00	59.54	14.46
997.80	52.74	V	1.0	25.16	-20.36	74.00	57.54	16.46
1596.60	53.27	H	1.2	25.74	-33.09	74.00	45.92	28.08
1596.60	50.66	V	1.0	25.74	-33.09	74.00	43.31	30.69
3194.00	48.02	H	1.0	28.74	-31.38	74.00	45.39	28.61
3194.00	45.21	V	1.0	28.74	-31.38	74.00	42.58	31.42
Average(RBW:1 MHz VBW:10 Hz)								
997.80	35.34	H	1.4	25.16	-20.36	54.00	40.14	13.86
997.80	35.48	V	1.0	25.16	-20.36	54.00	40.28	13.72
1596.60	35.84	H	1.2	25.74	-33.09	54.00	28.49	25.51
1596.60	36.17	V	1.0	25.74	-33.09	54.00	28.82	25.18
3194.00	34.24	H	1.0	28.74	-31.38	54.00	31.61	22.39
3194.00	32.31	V	1.0	28.74	-31.38	54.00	29.68	24.32
Remark	<p>H : Horizontal, V : Vertical *Reading = receiver reading + Amplifier Gain *CL = Cable Loss-Amplifier Gain *The resolution bandwidth and video bandwidth of spectrum analyzer is 1 MHz and 10 Hz for average detection at frequency above 1 GHz.</p> <p>*Application method of the highest frequency is in the following *Highest frequency of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. *Highest frequency of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. *Highest frequency of the EUT is between 500 MHz and 1 GHz, the measurement shall only be made up to 5 GHz. *Highest frequency of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 40 GHz,</p>							

6. Measurement of conducted disturbance

The continuous disturbance voltage of AC Mains in the frequency from 0.15 MHz to 30 MHz was measured in accordance to FCC PART 15 (2010). The test setup was made according to ANSI C 63.4 (2003) in a shielded room. The EUT was placed on a non-conductive table at least 0.8 m above the ground plan. A grounded vertical reference plane was positioned in a distance of 0.4 m from the EUT. The distance from the EUT to other metal surfaces was at least 0.8 m. The EUT was only earthen by its power cord through the line impedance stabilizing network. The power cord has been bundled to a length of 1.0 m. The test receiver with Quasi Peak detector complies with CISPR 16.

6.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
TEST Receiver	ESHS 30	Rohde & Schwarz	828765/002	16-Dec-12
LISN	ENV 216	Rohde & Schwarz	101231	9-Sep-12
LISN	ESH3-Z5	Rohde & Schwarz	836679/025	27-Sep-12
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	25-Jan-13

6.2 Environmental Condition

Test Place : Shielded Room
 Temperature (°C) : 21 °C
 Humidity (% R.H.) : 46 % R.H.



ESTECH Co., Ltd.

Rm 1015, World Venture Center II,
426-5 Gasan-dong, Gumcheon-gu,
Seoul, 158-803, Korea



**Electromagnetic
Interference
Test Report**

6.3 Test data

Test Date : 16-Mar-12

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dBμV)	Reading (dBμV)	Result (dBμV)	Limit (dBμV)	Reading (dBμV)	Result (dB)
0.17	0.15	0.27	H	64.96	38.32	38.74	54.96		
0.27	0.13	0.30	N	61.12	40.65	41.08	51.12		
0.31	0.15	0.31	H	59.97	43.04	43.50	49.97		
0.38	0.14	0.33	N	58.28	43.12	43.58	48.28		
0.39	0.16	0.33	H	58.06	43.95	44.44	48.06		
0.71	0.15	0.38	H	56.00	33.93	34.46	46.00		
Remark	H : Hot Line, N : Neutral Line *Correction Factor = Lisn + Cable *Result = Correction Factor + Reading								



ESTECH Co., Ltd.

Rm 1015, World Venture Center II,
426-5 Gasan-dong, Guncheon-gu,
Seoul, 158-803, Korea



**Electromagnetic
Interference
Test Report**

7. Photographs of test setup

7.1 Setup for Radiated Test : 30 MHz ~ 1000 MHz

[Front]



[Rear]





ESTECH Co., Ltd.

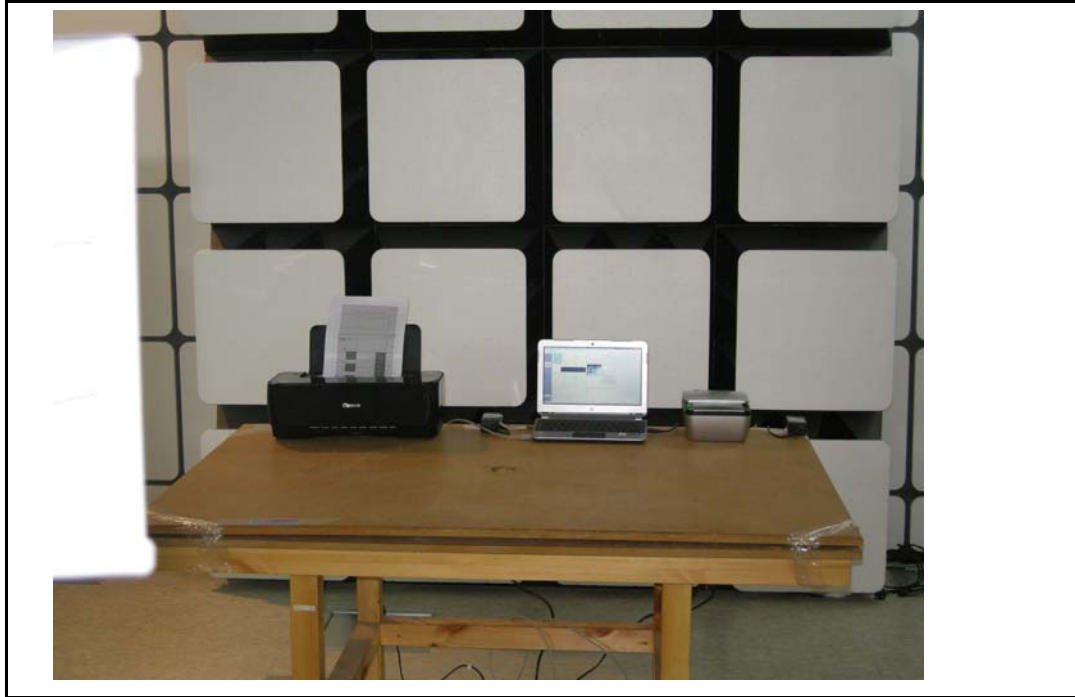
Rm 1015, World Venture Center II,
426-5 Gasan-dong, Guncheon-gu,
Seoul, 158-803, Korea



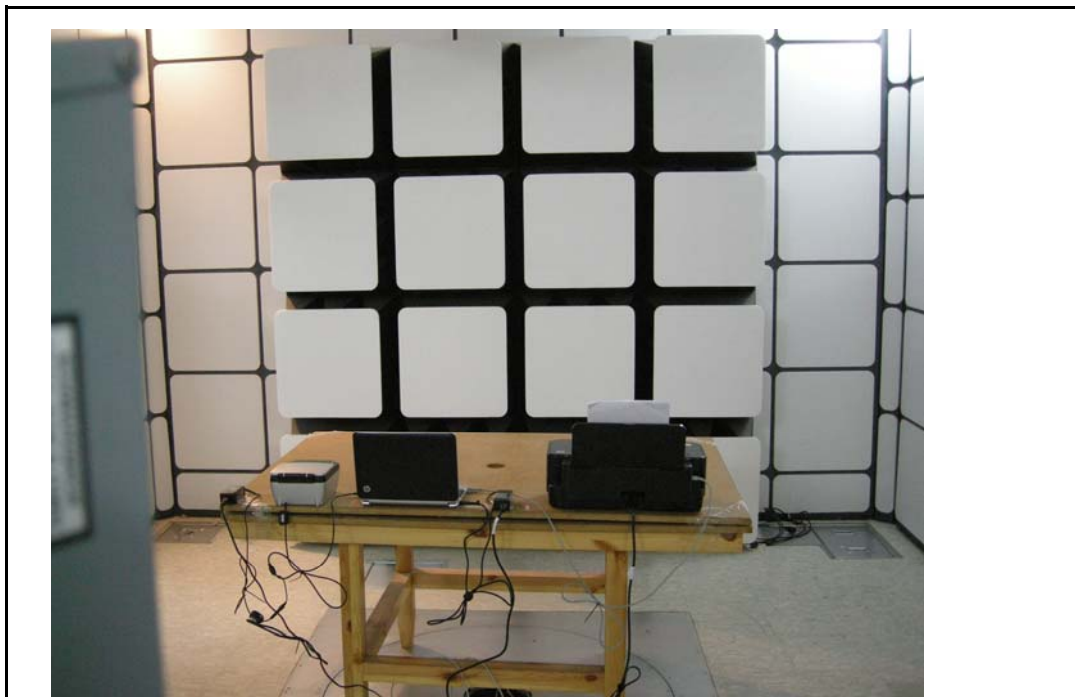
**Electromagnetic
Interference
Test Report**

7.2 Setup for Radiated Test : Above 1 GHz

[Front]



[Rear]





ESTECH Co., Ltd.

Rm 1015, World Venture Center II,
426-5 Gasan-dong, Guncheon-gu,
Seoul, 158-803, Korea



**Electromagnetic
Interference
Test Report**

7.3 Setup for Conducted Test : 0.15 MHz ~ 30 MHz

[Front]



[Rear]



8. Photographs of EUT

[Front]



[Rear]



Appendix 1. Special diagram

*HOT

ES TECH
HOT LINE

16 Mar 2012 15:25

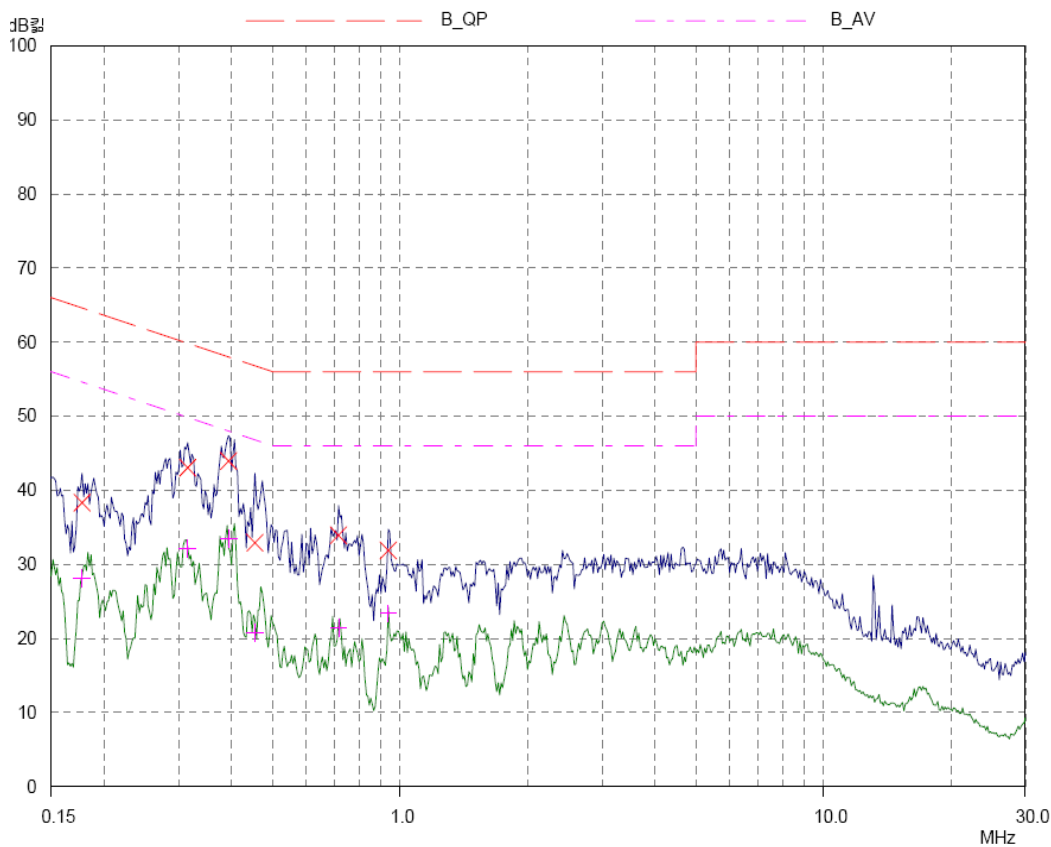
EUT: RPF
 Manuf:
 Op Cond: 120 V
 Operator: Engineer S.B. Lee
 Test Spec: CLASS B
 Comment:

Result File: 120304_h.dat :

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB

Final Measurement: Detectors: X QP / + AV
 Meas Time: 1sec
 Subranges: 25
 Acc Margin: 0 dB



*NEUTRAL

ES TECH
NEUTRAL LINE

16 Mar 2012 15:35

EUT: RPF
Manuf:
Op Cond: 120 V
Operator: Engineer S.B. Lee
Test Spec: CLASS B
Comment:

Result File: 120304_n.dat :

Scan Settings (1 Range)

Frequencies			Receiver Settings						
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge	
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB	

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 0 dB

