Test Report for FCC

FCC ID:TKWXPSM

Report Number		ESTF151109-003		
Applicant	Company name	Suprema Inc.		
	Address	16F Parkview Office Tower, Jeongja-dong, Bundang-gu, Seongnam, Gyeonggi, 463-863 Korea		
	Telephone	82-31-783-4505		
Product	Product name	RFID READER		
	Model No.	XPass S(XPSM)	Manufacturer	Suprema Inc.
	Serial No.	NONE	Country of origin	KOREA
Test date	30-Aug-11		Date of issue	16-Sep-11
Testing location	ESTECH Co., Ltd. 58-1 OSan-Ri Kanam-Myon, Yeoju-Gun, KyungKi-Do, Korea			
Standard	FCC PART 15 2010 , ANSI 63.4 2003			
Test item	■ Conducted Emission	□ Class A ■ Class B	Test result	OK
	■ Radiated Emission	□ Class A ■ Class B	Test result	OK
Measurement facility registration number		94696		
Tested by	Engineer S.B.LEE		(Signature)	
Reviewed by	Engineering Manager J.M.Yang		(Signature)	
Abbreviation	OK, Pass = Complied, Fail = Failed, N/A = not applicable			

* Note

- This test report is not permitted to copy partly without our permission
- This test result is dependent on only equipment to be used
- This test result based on a single evaluation of one sample of the above mentioned

Contents

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 Kanam-Myon, Yeoju-Gun, 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	:	RFID READER
Model Number	:	XPass S(XPSM)
Serial Number	:	NONE
Manufacturer	:	Suprema Inc.
Country of origin	:	KOREA
Rating	:	Input : (100 - 240) Va.c., 1.0 A (50 - 60) Hz EUT input : 12 Vd.c., 2.5 A
Receipt Date	:	25-Aug-11
X-tal list(s)	:	25.00 MHz x 2ea, 13.56 MHz x 1ea, 32.768 kHz x 1ea

2.2 General descriptions of EUT

CPU	32 bit Micro-processor
Memory	8MB FLASH + 16MB SDRAM
RF Card	13.56 MHz Mifare (XPSM)
User Capacity	40000 user
Log Capacity	50000 log
Network interfaces	TCP/IP, RS485
IP Rate	IP 65 class
Sound	Multi-tone buzzer
LED	Multi-color LED
I/O	Relay x 1 Tamper x 1 Switch input x 2 Wiegand x 1
Power	12Vdc
Operating Temperature	-20 ~ 50°C
Size	80 x 120 x 11mm (W x H x D)
Certificates	CE, FCC, KCC, IP65

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)

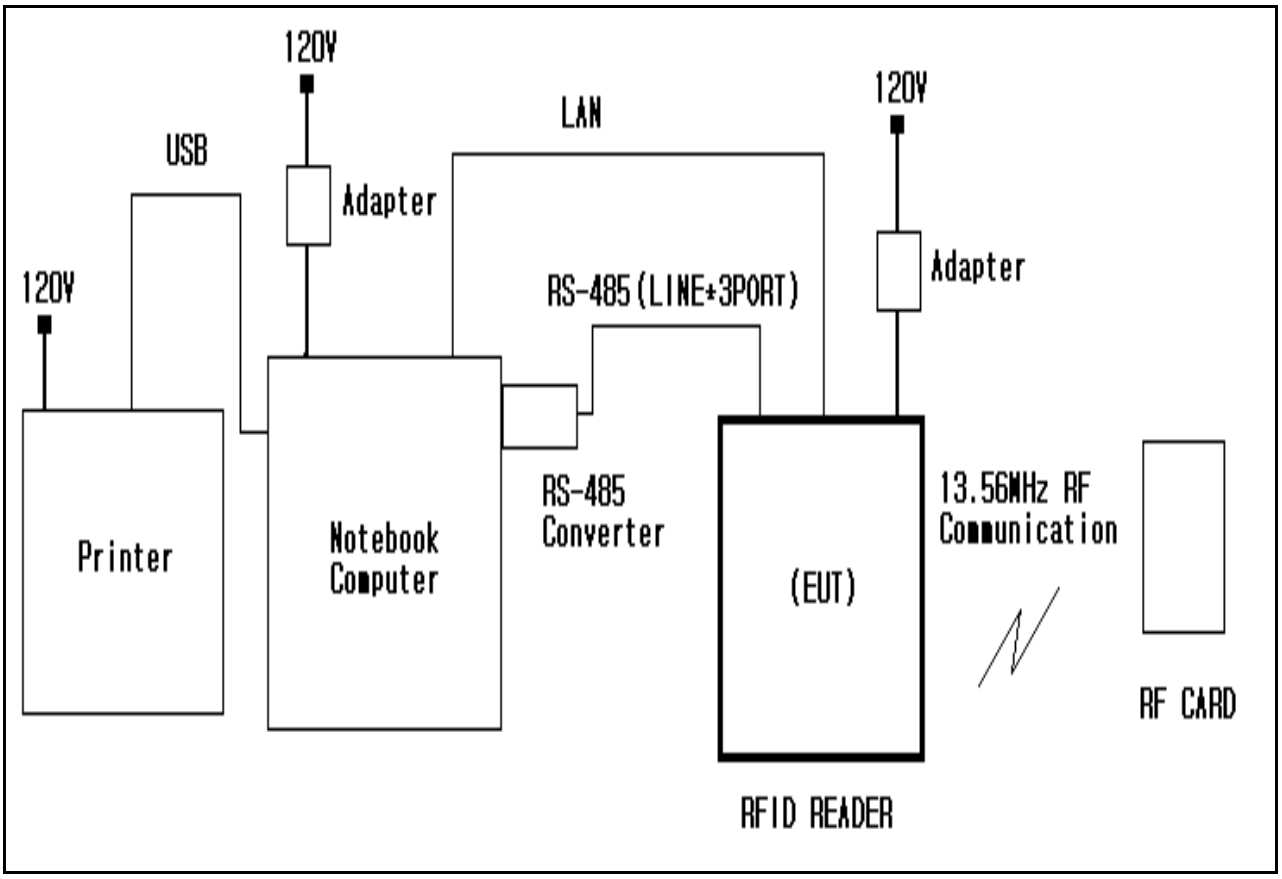
This standard sets forth uniform methods of measurement of radio-frequency (RF) signals and noise emitted from both unintentional and intentional emitters of RF energy in the frequency range 9 kHz to 40 GHz. Methods for the measurement of radiated and AC power-line conducted radio noise are covered and may be applied to any such equipment unless otherwise specified by individual equipment requirements. These methods cover measurement of certain decides 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 method apply to the measurement of individual units or systems comprised of multiple units

4. Measurement Condition

4.1 EUT Operation.

1. Check to normal mode operation.
2. The operational conditions of the EUT was determined by the manufacturer according to the typical use of the EUT with respect to the expected highest level of emission.
3. Check normal communication status by Note PC's RS-232 port.
4. Using ping command between external Network, Transmission and Receiving test at between external Network.

4.2 Configuration and Peripherals



4.3 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
RFID READER	XPass S(XPSM)	NONE	Suprema Inc.	EUT
Adapter	JPW128KA1200N05	NONE	BridgePower Corp.	
RS-485 Converter	TCC-80	TZIG01106470	Moxa Technologies Co.,Ltd.	
Notebook Computer	GW687AV	CNU0295RBD	HEWLETT-PACKARD COMPANY	
Adapter	PPP009D	WBGSV0ADDZ3O6N	DELTA ELECTRONICS (JIANG SU), LTD.	
RF CARD	NONE	NONE	Suprema Inc.	
Printer	K10229	NONE	CANON VIETNAM CO.,LTD.	

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
RFID READER	POWER	Adapter	-	2	N	
RFID READER	LAN	Notebook Computer	LAN	3	N	
RFID READER	RS-485	RS-485 Converter	RS-485	3	N	
RFID READER	13.56MHz RF Signal	RF CARD	13.56MHz RF Signal	-	-	
RFID READER	LINE(RELAY)	-	-	3	N	Termination
RFID READER	LINE(SWITCH)	-	-	3	N	Termination
RFID READER	LINE(WIEDGAND)	-	-	3	N	Termination
Notebook Computer	Serial	RS-485 Converter	Serial	-	-	
Notebook Computer	POWER	Adapter	-	2	N	
Notebook Computer	USB	Printer	USB	2	Y	

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. EUT was positioned at the Z axis due to installation guideline.

5.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
Turn Table	2081-1.2M	EMCO	NONE	-
Antenna Mast	2070-1	EMCO	0005-2205	-
Pre Amplifier	8447F	HP	2944A03711	11-Jan-12
Pre Amplifier	8449B	HP	3008A00581	27-Jan-12
ANT Mast Controller	2090	EMCO	9612-1202	-
SPECTRUM ANALYZER	8568B	HP	2928A04802	21-Mar-12
Spectrum Analyzer	R3273	ADVANTEST	110600592	27-Jan-12
Logbicon Antenna	VULB 9160	SCHWARZBECK	3106	21-Mar-12
Horn Antenna	BBHA 9120 D	Schwarzbeck	352	22-Mar-12
Test Receiver	ESVS10	Rohde & Schwarz	838562/002	27-Jan-12

5.2 Environmental Condition

Test Place : Open site(3 m)

Temperature (°C) : 24 ℃

Humidity (%) : 65 % R.H.

5.3 Test data

Test Date : 30-Aug-11 Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
30.00	12.82	V	1.0	10.53	2.06	40.00	25.41	14.59
38.92	17.51	V	1.0	10.77	2.06	40.00	30.34	9.66
62.50	15.24	V	1.0	10.80	2.06	40.00	28.10	11.90
86.87	17.72	H	4.0	7.85	2.06	40.00	27.63	12.37
111.52	12.20	V	1.0	10.01	2.22	43.50	24.43	19.07
133.36	10.08	V	1.0	11.93	2.53	43.50	24.54	18.96
145.43	12.21	V	1.0	12.54	2.71	43.50	27.46	16.04
168.01	10.73	V	1.0	12.17	3.03	43.50	25.93	17.57
193.26	19.23	H	2.9	9.85	3.38	43.50	32.46	11.04
233.35	13.27	V	1.0	11.32	3.59	46.00	28.18	17.82
250.02	12.35	H	1.1	11.57	3.65	46.00	27.57	18.43
300.02	20.85	H	1.1	13.53	3.81	46.00	38.19	7.81
366.69	18.20	H	1.0	15.42	3.99	46.00	37.61	8.39
433.34	15.20	H	1.0	17.37	4.36	46.00	36.93	9.07
500.01	12.55	H	1.0	18.23	4.93	46.00	35.71	10.29

Remark	H : Horizontal, V : Vertical *CL = Cable Loss-Amplifier Gain(In case of above 1000 MHz) *CL = Cable Loss(In case of below 1000 MHz) *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.

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. 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
LISN	ESH2-Z5	POLARAD	872461/048	11-Jan-12
LISN	ESH3-Z5	Rohde & Schwarz	836679/025	19-Oct-11
Pulse Limiter	ESH3-Z2	Rohde & Schwarz	NONE	21-Mar-12
TEST Receiver	ESHS 30	Rohde & Schwarz	828765/002	17-Dec-11

6.2 Environmental Condition

Test Place : Shielded Room

Temperature (°C) : 21 ℃

Humidity (% R.H.) : 42 % R.H.

6.3 Test data

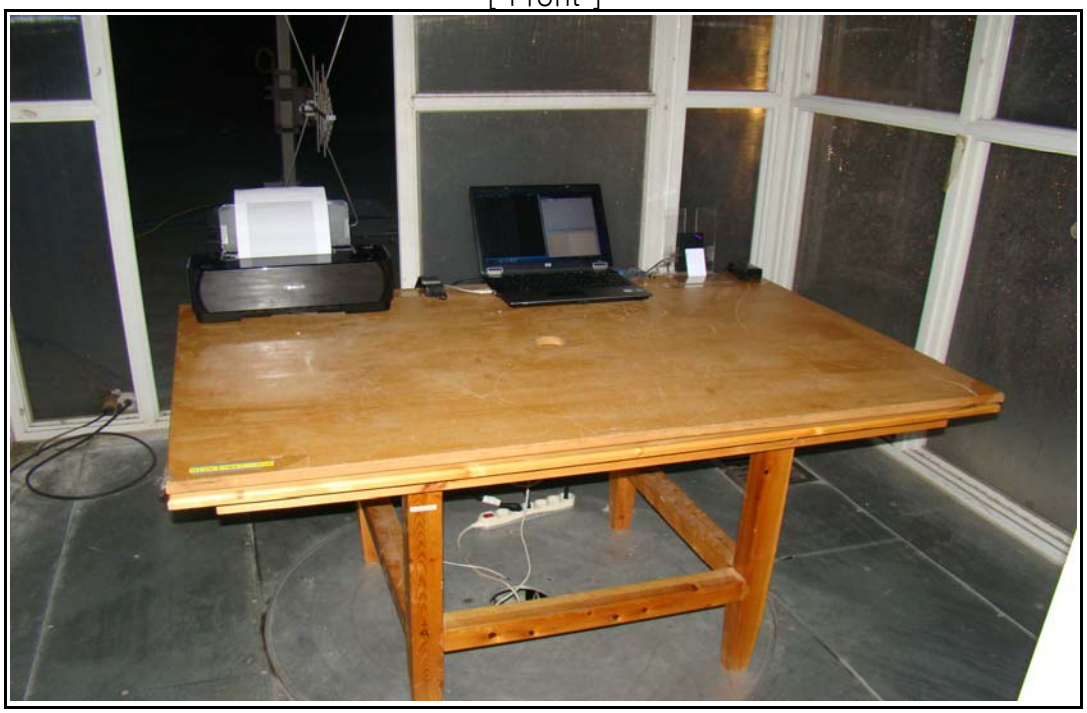
Test Date : 30-Aug-11

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)
0.15	0.17	0.4	N	66.00	29.66	30.18	56.00		
0.19	0.17	0.4	N	64.04	44.63	45.15	54.04		
0.26	0.17	0.4	H	61.43	39.60	40.13	51.43		
0.32	0.17	0.4	N	59.71	36.40	36.93	49.71		
0.39	0.18	0.4	N	58.06	36.06	36.60	48.06		
0.45	0.19	0.4	N	56.88	35.65	36.20	46.88		
0.52	0.19	0.4	H	56.00	32.46	33.02	46.00		
0.58	0.19	0.4	N	56.00	37.44	38.00	46.00		
0.59	0.19	0.4	H	56.00	38.74	39.30	46.00		
0.64	0.19	0.4	N	56.00	33.56	34.12	46.00		
0.65	0.20	0.4	N	56.00	39.73	40.30	46.00		
0.84	0.20	0.4	H	56.00	32.54	33.13	46.00		
0.97	0.21	0.5	N	56.00	32.99	33.65	46.00		
7.09	0.35	0.3	N	60.00	37.10	37.76	50.00		
7.74	0.36	0.4	N	60.00	38.12	38.83	50.00		
9.37	0.38	0.5	N	60.00	46.16	47.02	50.00	24.49	
14.65	0.55	0.5	N	60.00	32.20	33.30	50.00		
21.47	0.69	0.7	H	60.00	34.86	36.20	50.00		
Remark	H : Hot Line, N : Neutral Line *Correction Factor = Lisn + Cable *Result = Correction Factor + Reading								

7. Photographs of test setup

7.1 Setup for Radiated Test : 30 MHz ~ 1 000 MHz

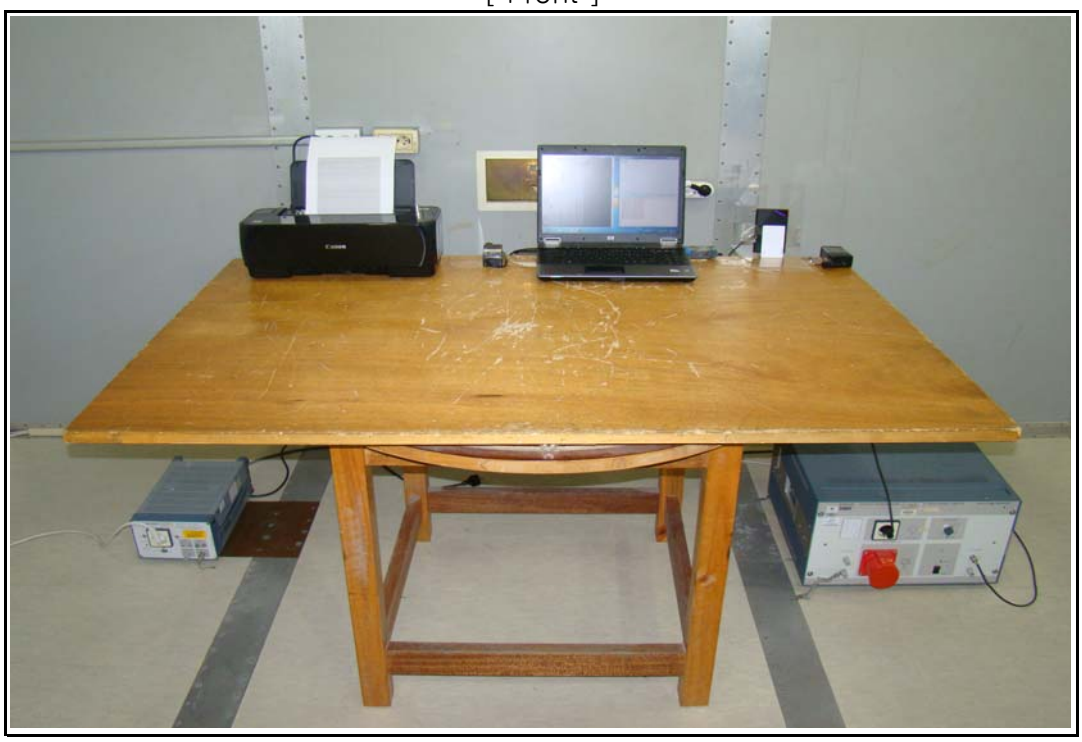
[Front]



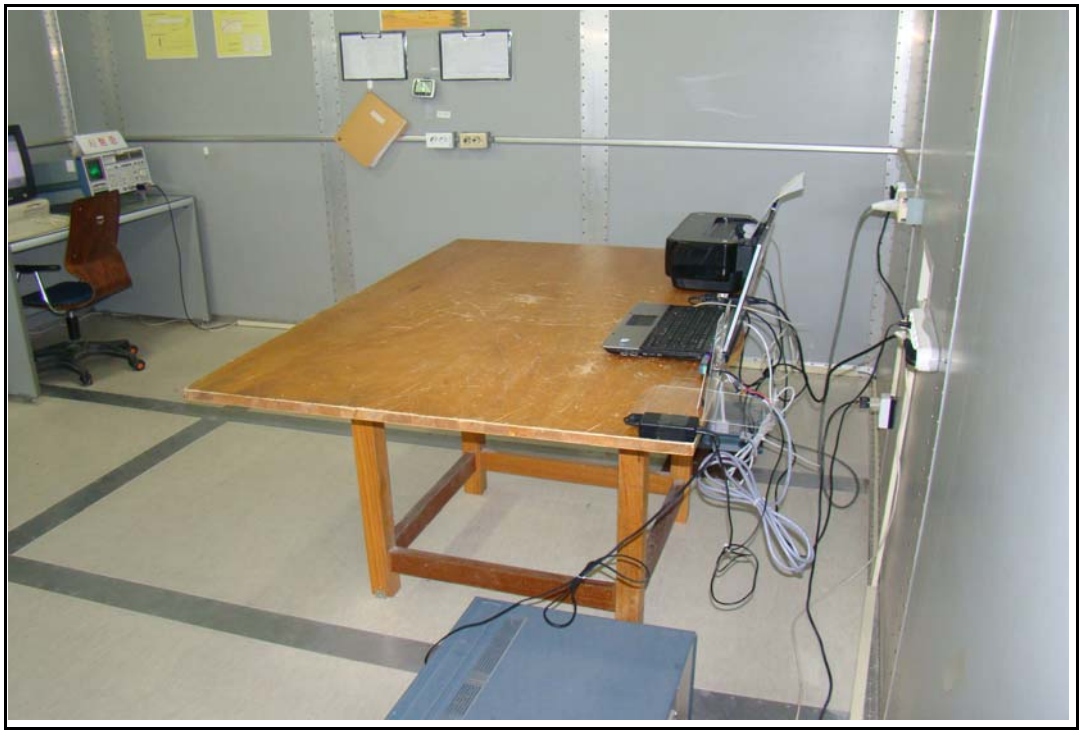
[Rear]

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

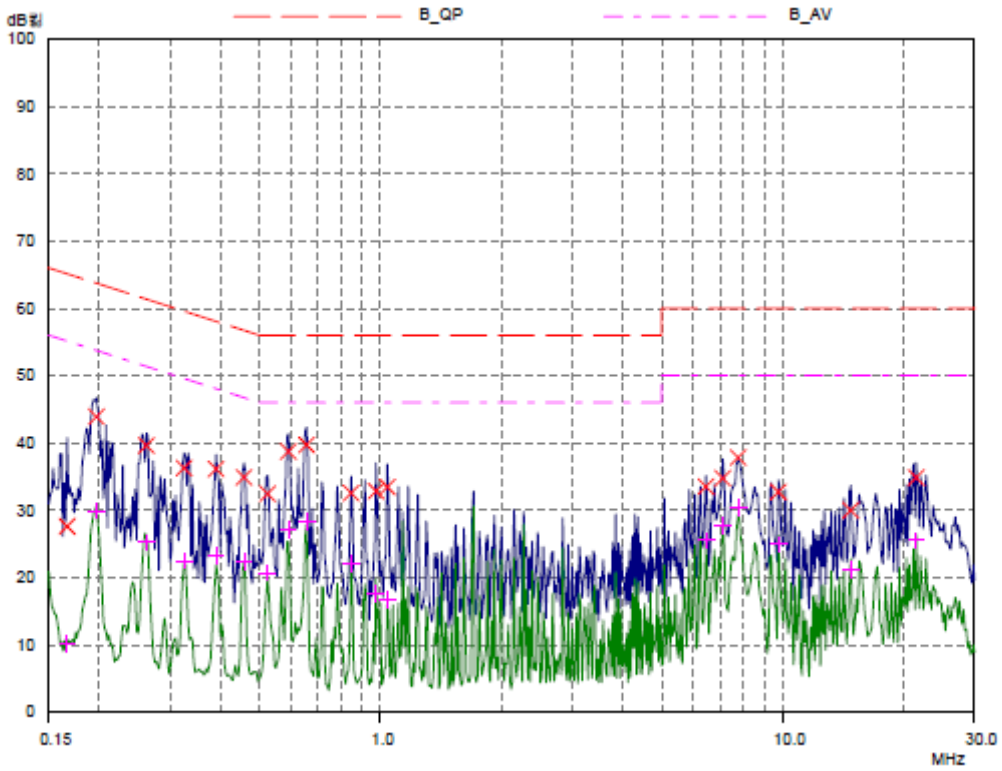
30 Aug 2011 01:27

HOT LINE

EUT:	XPass S(XPSM)
Manuf:	
Op Cond:	120 V
Operator:	S.B.LEE / Engineer
Test Spec:	CLASS B
Comment:	
Result File:	110903_h.dat : ESTF151109-003
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

30 Aug 2011 01:34

NEUTRAL LINE

EUT:	XPass S(XPSM)
Manuf:	
Op Cond:	120 V
Operator:	S.B.LEE / Engineer
Test Spec:	CLASS B
Comment:	

Result File: 110903_n.dat : ESTF151109-003

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