Test Report for FCC

FCC ID:TKWXPH

Report Number		ESTF151006-004		
Applicant	Company name	Suprema Inc.		
	Address	16F Parkview Office Tower, Jeongja-dong, Bundang-gu,Seongnam, Gyeonggi, 463-863 Korea		
	Telephone	82-31-710-2443		
Product	Product name	XPASS		
	Model No.	XPH-E, XPH	Manufacturer	Suprema Inc.
	Serial No.	NONE	Country of origin	Korea
Test date	2010-04-28 ~ 2010-05-03		Date of issue	15-Jun-10
Testing location	ESTECH. Co., Ltd. 97-1 Hoiuk-Ri Majang-Myon, Icheon-city, KyungKi-Do, Korea			
Standard	FCC PART 15 2008 , ANSI C 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	Senior Engineer H.H.Lee	(Signature)		
Reviewed by	Engineering Manager J.M.Yang	(Signature)		
Abbreviation	OK, Pass = Passed, Fail = Failed, N/A = not applicable			

* Note
- XPH-E : This model has a POE function.
- XPH : This model hasn't a POE function.
- 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, 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 : XPASS
Model Number : XPH-E, XPH
Serial Number : NONE
Manufacturer : Suprema Inc.
Country of origin : Korea
Operating Frequency : 125 kHz
Antenna Type : COIL ANTENNA
Modulation Type : ASK
Channel Spacing : 1
Rating : AC input 120V,1.0A, 60Hz,DC output 12V----2.5A
Receipt Date : 13-Apr-10
X-tail lists : 32.768 kHz, 25 MHz, 16 MHz

2.2 General descriptions of EUT

Specification

CPU	32 bit Micro-processor
Memory	8MB FLASH + 16MB SDRAM
RF Card	13.56 MHz Mifare (XPM) 125 KHz EM Prox (XPE) 125 KHz HID Prox (XPH)
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
RTC	Lithium-ion rechargeable batteries
I/O	Relay x 1 Tamper x 1 Switch input x 2 Wiegand x 1
Power	12Vdc, POE
Operating Temperature	-20 ~ 50° C
Size	45 x 130 x 27mm (W x H x D)
Certificates	CE, FCC, KCC, IP65

3. Test Standards

Test Standard : FCC PART 15 (2008)

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

Summary of Test Results

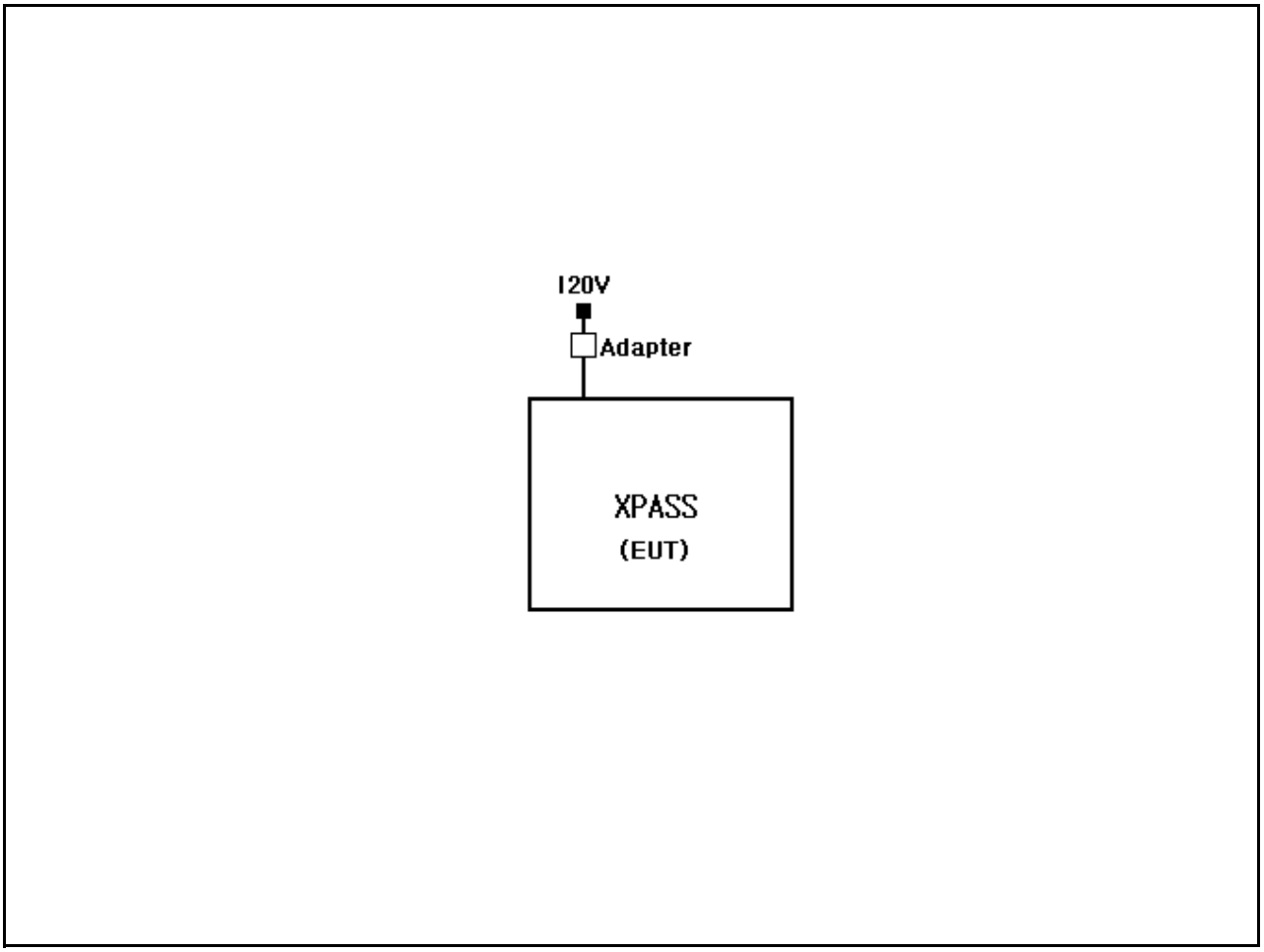
Applied Satandard : 47 CFR Part 15, Subpart C				
Standard	Test Type	Result	Remark	Limit
15.203	Antenna Requirement	Pass	See Appendix 2	
15.207	AC Power Conducted Emission	Pass	Meet the requirement	
15.205	Restricted bands	Pass	Meet the requirement	
15.209	Radiated Emission	Pass	Meet the requirement	

4. Measurement Condition

4.1 EUT Operation.

The EUT was measured by transmitter mode continuosly.

4.2 Configuration and Peripherals



4.3 EUT and Support equipment

Equipment Name	Model Name	S/N	Manufacturer	Remark (FCC ID)
XPASS	XPH-E, XPH	NONE	Suprema Inc.	EUT
Adapter	JPW128KA1200N06	NONE	AULT KOREA corp.	

4.4 Cable Connecting

Start Equipment		End Equipment		Cable Standard		Remark
Name	I/O port	Name	I/O port	Length	Shielded	
XPASS	Power	Adapter	-	2	No	

5. Measurement of radiated disturbance

The EUT was placed on the top of a rotating table 0.8 m above the ground at a 3 m Open test site. The table was rotated 360 ° to determine the position of the highest radiation.Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular of the antenna are set to make the measurement. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 ° to find the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

5.1 Radiated emission limits, general requirements

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength(microvolt/meter)	Distance(meter)
0.009-0.490	2400/F(KHz)	300
0.490-1.705	24000/F(KHz)	30
1.705-30	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

* dBuV/m=20*log(uV/m) * Distance factor=40dB / decade(15.31(f))

5.2 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
Test Receive	ESVS10	Rohde & Schwarz	838562/002	1-Feb-11
Spectrum Analyzer	R3273	ADVANTEST	110600592	1-Feb-11
Logbicon Antenna	VULB9160	Schwarzbeck	3142	19-May-11
Horn Antenna	BBHA 9120 D	Schwarzbeck	352	17-Jun-10
Amplifier	8447F	HP	2805A02972	1-Feb-11
PREAMPLIFIER	8449B	Sonoma Instrument	3008A00595	30-Dec-10
Loop Antenna	HFH2-Z2	Rohde & Schwarz	100188	2-Jul-10
Turn Table	2087	EMCO	2129	-
Antenna Mast	2070-01	EMCO	9702-203	-
ANT Mast Controller	2090	EMCO	1535	-
Turn Table Controller	2090	EMCO	1535	-

5.3 Environmental Condition

Test Place : Open site(3m)
Temperature (°C) : 25 ℃
Humidity (%) : 43 %

5.4 Test data Test mode:POE MODULE Mounting

Test Date : 28-Apr-10 Measurement Distance : 3 m

Frequency (kHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Result Value(Qeas-Peak)		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
125.32	50.18	H	1.0	20.00	0.1	105.6	70.26	-35.32

Remark

H : Horizontal, V : Vertical
*Below 30 Mhz was applied Peak Detector.
*There is no found Restricted bands.
*Emission above 30 MHz were reported in Report No.ESTF151006-001
*The 300m limit was converted to 3m Limit using square factor(x) as it was found by measurements as follows;
3 m Limit(dBuV/m) = 20log(2400/F(KHz))+40log(300/3)= 20log(2400/125)+40log(300/3)

5.4 Test data Test mode: POE MODULE Remove

Test Date : 28-Apr-10 Measurement Distance : 3 m

Frequency (kHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Result Value(Qeas-Peak)		
				Ant Factor (dB)	Cable (dB)	Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
125.32	50.13	H	1.0	20.00	0.1	105.6	70.21	-35.37

Remark

H : Horizontal, V : Vertical
*Below 30 Mhz was applied Peak Detector.
*There is no found Restricted bands.
*Emission above 30 MHz were reported in Report No.ESTF151006-003
*The 300m limit was converted to 3m Limit using square factor(x) as it was found by measurements as follows;
3 m Limit(dBuV/m) = 20log(2400/F(KHz))+40log(300/3)= 20log(2400/125)+40log(300/3) = 25.67+80

6. Measurement of conducted disturbance

The continuous disturbance voltage of AC Mains in the frequency from 0.15 to 30 MHz was measured in accordance to FCC Part 15 (2008). 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 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	ESH3-Z5	Rohde & Schwarz	838979/010	2011. 2. 1
LISN	NNLA8120A	Schwarzbeck	8120161	2011. 2. 1
TEST Receiver	ESPI7	Rohde & Schwarz	100185	2011. 2. 1
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	2011. 2. 1

6.2 Environmental Condition

Test Place : Shield Room
Temperature (°C) : 24 ℃
Humidity (%) : 41 %

6.3 Test data Test mode: POE MODULE Mounting

Test Date : 3-May-10

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)
0.19	0.17	0.8	N	63.69	41.40	46.26	53.69	35.61	39.65
0.20	0.19	0.8	N	61.69	38.29	30.35	51.69	31.49	26.01
0.25	0.14	0.8	N	61.30	32.02	39.45	51.30	29.84	32.06
0.26	0.21	0.9	N	59.53	36.33	48.74	49.53	30.73	42.71
0.38	0.13	0.8	H	57.94	29.55	40.22	47.94	24.61	34.41
0.45	0.20	0.8	H	56.66	30.08	32.48	46.66	25.68	26.20
0.58	0.20	0.8	H	56.00	38.77	36.40	46.00	33.04	26.95
0.64	0.36	0.9	H	56.00	40.69	34.88	46.00	35.88	24.74
0.77	0.36	0.9	H	56.00	32.40	34.34	46.00	26.73	25.35
4.02	0.31	0.9	H	56.00	32.11	36.49	46.00	22.01	26.93
4.84	0.38	0.9	H	56.00	34.94	36.87	46.00	29.68	26.18
4.97	0.40	1.0	H	56.00	33.44	36.79	46.00	27.79	27.43
10.39	0.56	1.3	H	60.00	39.99	45.97	50.00	34.23	38.55
10.58	0.77	1.3	N	60.00	41.32	41.90	50.00	33.77	31.11
11.60	0.60	1.3	H	60.00	43.03	43.52	50.00	35.87	34.16
12.05	0.82	1.3	N	60.00	42.01	42.11	50.00	32.97	32.03
12.30	0.69	1.4	H	60.00	42.98	43.42	50.00	37.23	31.62
12.81	0.75	1.3	N	60.00	38.70	40.93	50.00	33.19	29.65
Remark	H : Hot Line, N : Neutral Line								

6.3 Test data Test mode: POE MODULE Remove

Test Date : 3-May-10

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)
0.19	0.17	0.8	N	63.69	41.05	39.21	53.69	32.05	28.30
0.20	0.19	0.8	N	61.40	37.23	34.20	51.40	29.07	25.72
0.25	0.21	0.9	N	60.33	34.68	38.17	50.33	26.47	30.84
0.26	0.13	0.9	N	59.38	35.15	32.85	49.38	26.82	22.72
0.32	0.13	0.8	N	57.94	30.80	32.33	47.94	23.14	23.51
0.38	0.13	0.8	H	56.57	31.39	30.21	46.57	23.70	21.81
0.64	0.13	0.8	H	56.00	39.31	36.00	46.00	31.06	26.52
3.25	0.34	0.9	H	56.00	29.83	33.02	46.00	22.34	22.50
3.70	0.38	0.9	N	56.00	29.89	36.79	46.00	21.67	26.30
4.08	0.36	0.9	H	56.00	31.63	34.58	46.00	24.16	24.65
4.59	0.40	1.0	N	56.00	31.31	35.79	46.00	23.88	26.48
4.72	0.36	0.9	H	56.00	33.25	34.24	46.00	25.41	24.41
6.57	0.69	1.4	H	60.00	35.90	42.22	50.00	27.96	31.34
7.53	0.77	1.3	N	60.00	36.13	41.58	50.00	27.52	31.98
7.59	0.42	1.1	H	60.00	37.22	42.15	50.00	28.31	32.86
8.64	0.49	1.2	H	60.00	37.48	42.65	50.00	31.06	33.82
10.08	0.67	1.4	H	60.00	38.42	42.34	50.00	30.13	32.65
10.53	0.78	1.3	N	60.00	36.24	41.89	50.00	28.66	32.25
Remark	H : Hot Line, N : Neutral Line								

7. Photographs of test setup

7.1 Setup for Radiated Test (below 30MHz)

[Front]

[Rear]

7.2 Setup for Conducted Test : 0.15 MHz ~ 30 MHz

[Front]

[Rear]

8. Photographs of EUT

[Front]

[Rear]

8.1 Photographs of EUT

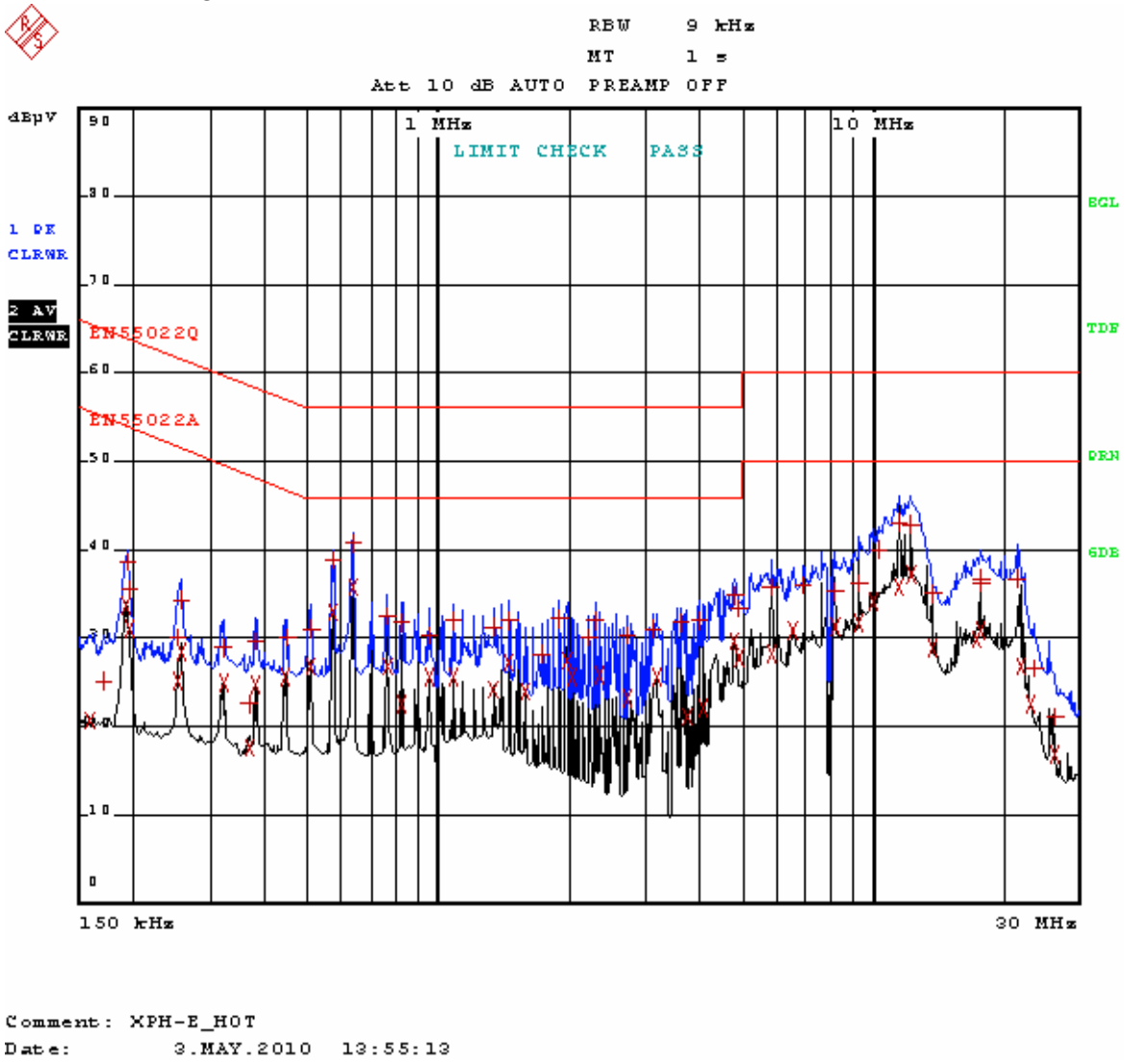
[Front]

[Label]

Appendix 1. Spectral diagram

POE MODULE Mounting

*HOT



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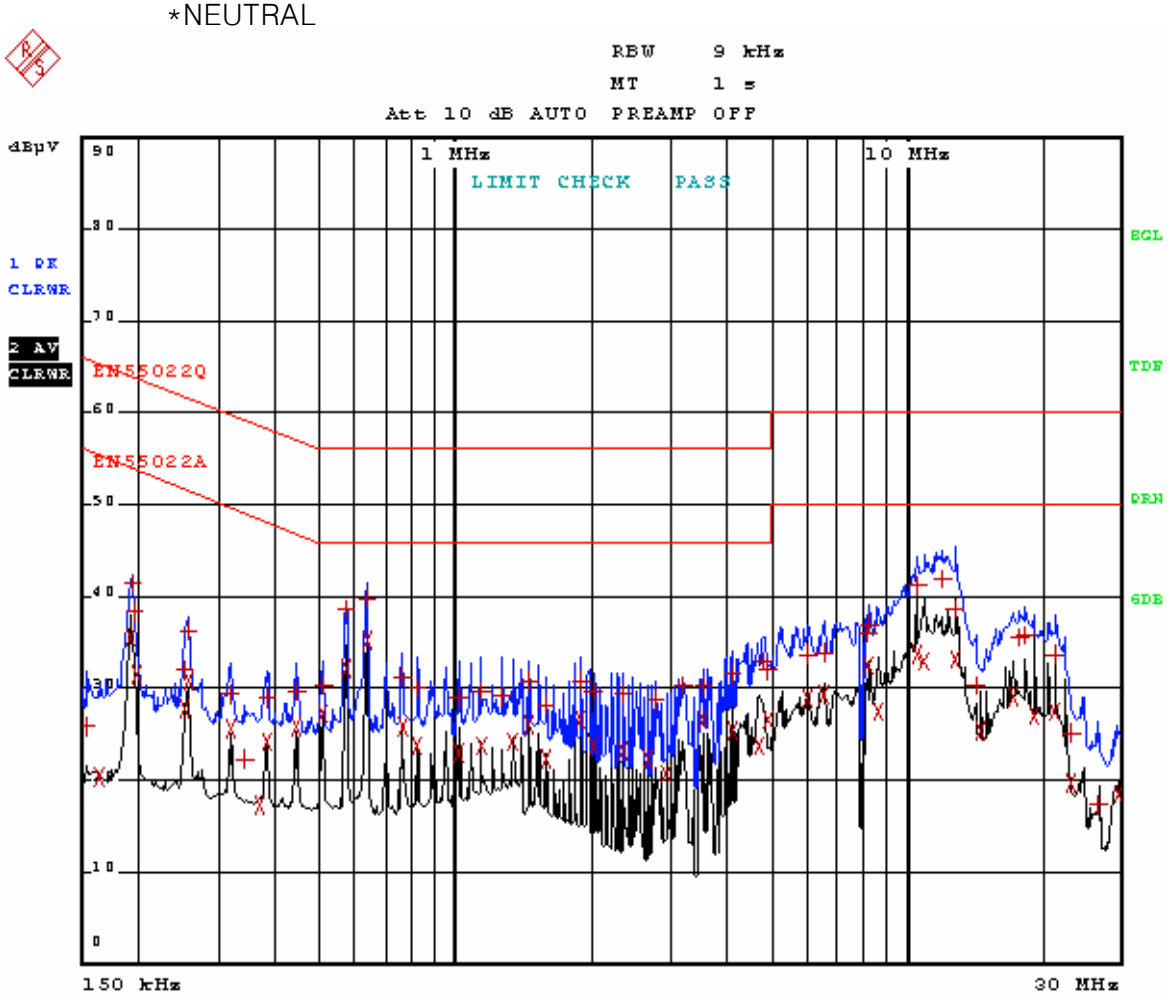

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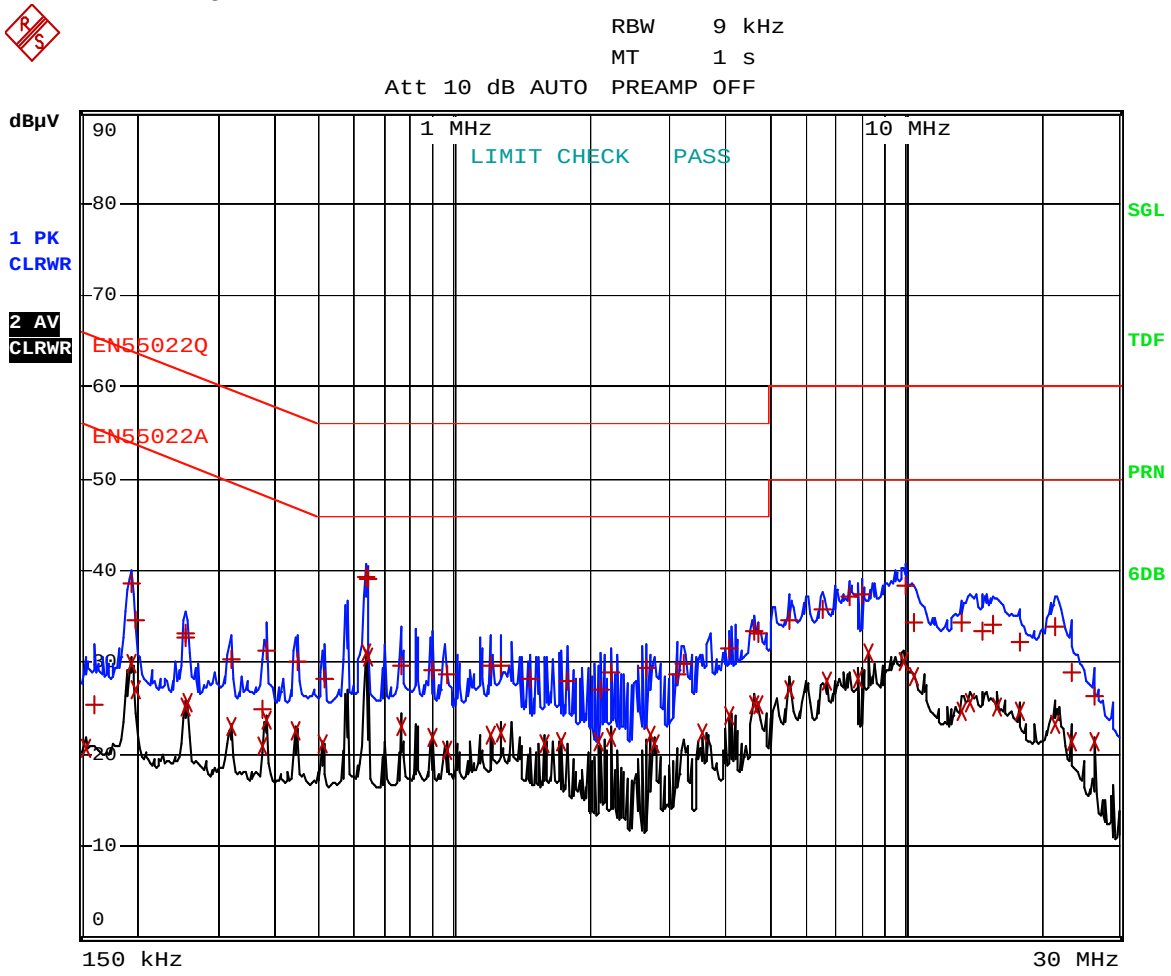
POE MODULE Remove
*HOT



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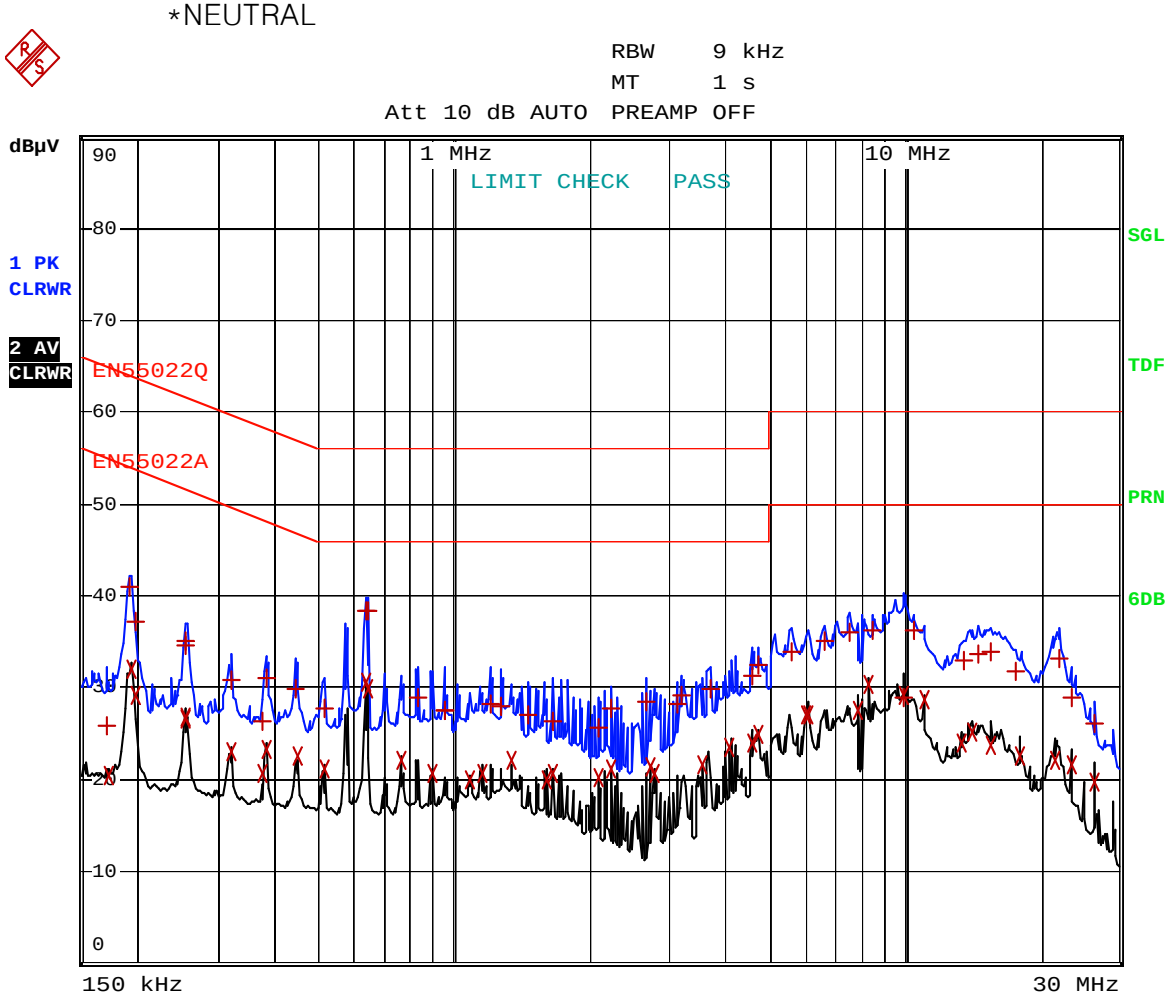

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Appendix 2. Antenna Requirement

Requlation

According to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Result

-Complied

The transmitter has an integral Loop coil antenna.