FCC 47 CFR PART 15 SUBPART B AND ANSI C63.4:2003
IC ICES-003 Issue 4
TEST REPORT

For

Dual-WAN Security Firewall

Model : Vigor2960FVn

Data Applies To : Vigor2960 ; Vigor2960n ; Vigor2960Vn ; Vigor2960F ; Vigor2960Fn ; Vigor300B ; VigorIPPBX 3520 ; VigorIPPBX 3520n

Trade Name : DrayTek

Issued for

DrayTek Corp.

No. 26, Fushing Rd., Hukou, Hsinchu Industrial Park, Hsinchu, 303, Taiwan

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	08/29/2012	Initial Issue	All Page 23	Liz Ou

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TITLE PAGE NO.

1. TEST REPORT CERTIFICATION

Applicant	：	DrayTek Corp.
Address	：	No. 26, Fushing Rd., Hukou, Hsinchu Industrial Park, Hsinchu, 303, Taiwan.
Equipment Under Test	：	Dual-WAN Security Firewall
Model	：	Vigor2960FVn
Data Applies To	：	Vigor2960 ; Vigor2960n ; Vigor2960Vn ; Vigor2960F ;Vigor2960Fn ; Vigor300B ; VigorIPPBX 3520 ; VigorIPPBX 3520n
Trade Name	：	DrayTek
Tested Date	：	July 12 ~ August 22, 2012

APPLICABLE STANDARD		
Standard	**Item**	**Test Result**
FCC Part 15 Subpart B, CLASS A AND ANSI C63.4:2003 IC ICES-003 Issue 4	Radiated Emission	PASS
	Conducted Emission	PASS

WE HEREBY CERTIFY THAT: The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:

Sb Lu
Sr. Engineer

Reviewed by:

Gundam Lin
Sr. Engineer

2. EUT DESCRIPTION

Product Name	Dual-WAN Security Firewall
Model Number	Vigor2960FVn
Data Applies To	Vigor2960 ; Vigor2960n ; Vigor2960Vn ; Vigor2960F ;Vigor2960Fn ; Vigor300B ; VigorIPPBX 3520 ; VigorIPPBX 3520n
Identify Number	T120726S01
Received Date	July 12, 2012
Power Rating	110-240Vac
Test Voltage	120Vac/60Hz
I/O Port	LAN Port × 4, WAN Port × 1, TP WAN Port × 1, FXS Port × 1, FXO Port × 3, Power Port × 1, USB Port × 2

Built-in power adapter :

No.	Manufacturer	Model No.	Power Input	Power Output
1	L.T.E	LTE45F-S2-01	100-240Vac, 47-63Hz, 2A	12Vdc, 4.2A
2	Yang yun	CFG318P-1215	100-240Vac, 47-63Hz, 0.5A	12Vdc, 1.5A

The difference of the series model

Model name	Ethernet LAN (10/100/1000)	Ethernet WAN (10/100/1000)	Fibre WAN (SFP)	VOIP	USB Port	WLAN (2T2R)
Vigor2960FVn	4	1	1	v	2	v
Vigor2960	4	2	-	-	2	-
Vigor2960n	4	2	-	-	2	v
Vigor2960Vn	4	2	-	v	2	v
Vigor2960F	4	1	1	-	2	-
Vigor2960Fn	4	1	1	-	2	v
Vigor300B	2	4	-	-	2	-
VigorIPPBX 3520	4	2	-	v	2	-
VigorIPPBX 3520n	4	2	-	v	2	v

Remark : *1.For more details, please refer to the User's manual of the EUT.*

*2. The model Vigor2960*FVn *was considered the main model for testing.*

3. Model: Vigor2960FVn Vigor2960F, Vigor2960Fn WAN Port and Fiber WAN Port, available software control switch.

4. Model: Vigor300B Ethernet LAN Port and Ethernet WAN Port available software control switch.

3. DESCRIPTION OF TEST MODES

1. The following test modes were scanned during the preliminary test:

No.	Pre-Test Mode
1	Normal Operating / Power Adapter (1)
2	Normal Operating / Power Adapter (2)

2. After the preliminary scan, the following test mode was found to produce the highest emission level.

Final Test Mode		
Emission	Radiated Emission	Normal Operating / Power Adapter (1)
	Conducted Emission	Normal Operating / Power Adapter (1) Normal Operating / Power Adapter (2)

Remark : *Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.*

4. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4:2003 and FCC CFR 47 Part 15 Subpart B, IC ICES-003 Issue 4.

5. FACILITIES AND ACCREDITATION

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

NO. 989-1 Wen Shan Rd., Shang Shan Village,
Qionglin Shiang Hsinchu County 30741, Taiwan, R.O.C

The sites are constructed in conformance with the requirements of ANSI C63.4:2003 and CISPR 22. All receiving equipment conforms to CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-3, CISPR 16-1-4, CISPR 16-1-5.

5.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

Taiwan	TAF

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	INDUSTRY CANADA
Japan	VCCI
Taiwan	BSMI
USA	FCC MRA

Copies of granted accreditation certificates are available for downloading from our web site, http:///www.ccsrf.com

5.3 MEASUREMENT UNCERTAINTY

The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4-2.

PARAMETER	UNCERTAINTY
Open Area Test Site (OATS No.3) / Radiated Emission, 30 to 1000 MHz	+/- 4.21
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 30 to 1000 MHz	+/- 3.97
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 1 to 18GHz	+/- 3.58
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 18 to 26 GHz	+/- 3.59
Semi Anechoic Chamber (966 Chamber_B) / Radiated Emission, 26 to 40 GHz	+/- 3.81
Conducted Emission (Mains Terminals), 9kHz to 30MHz	+/- 2.48

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Consistent with industry standard (e.g. CISPR 22: 2006, clause 11, Measurement Uncertainty) determining compliance with the limits shall be base on the results of the compliance measurement. Consequently the measure emissions being less than the maximum allowed emission result in this be a compliant test or passing test.

The acceptable measurement uncertainty value without requiring revision of the compliance statement is base on conducted and radiated emissions being less than U_{CISPR} which is 3.6dB and 5.2dB respectively. CCS values (called U_{Lab} in CISPR 16-4-2) is less than U_{CISPR} as shown in the table above. Therefore, MU need not be considered for compliance.

6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

No.	Product	Manufacturer	Model No.	Serial No.	FCC ID
1	Notebook PC	HP	ProBook 4421s	CNF03242PJ	DoC
2	Notebook PC	IBM (Lenovo)	ThinkPad T61 7663-AS6	L3F3864	DoC
3	Notebook PC	DELL	INSPIRON 640m PP19L	CN-0MG532-70166-71G-03EC	DoC
4	Telephone	ROMEO	TC-215	20080124	---
5	Telephone	ROMEO	TC-215	200806222	---
6	USB	Transcend	---	---	---
7	Printer	HP	C6431D	CN19T6S03T	---

No.	Power & Signal Cable Description
1	Non-shielded RJ-45 cable, 10m × 2
2	Non-shielded RJ-45 cable, 3m × 4
3	Non-shielded RJ-11 cable, 1m × 2
4	Non-shielded RJ-11 cable, 3m × 3
5	AC power cord, 1.8m × 1

SETUP DIAGRAM FOR TESTS

EUT & peripherals setup diagram is shown in appendix setup photos.

EUT OPERATING CONDITION

All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

1. Setup whole system for test as shown on diagram.
2. Notebook PC 1 ping 192.168.3.1 to WAN port.
3. Notebook PC 2 ping 192.168.1.1 to EUT.
4. Notebook PC 3 WIFI ping 192.168.1.1 to EUT.
5. All of the functions are under run.
6. Start test.

7. EMISSION TEST

7.1 RADIATED EMISSION

LIMITS

(1) For Frequency Below 1GHz

☒ 47 CFR Part 15 Subpart B Section 15.109 (a) (b)

Frequency (MHz)	Class A			Class B		
	Field Strength (μV/m)	Field Strength (dBμV/m)	Distance (meters)	Field Strength (μV/m)	Field Strength (dBμV/m)	Distance (meters)
30 - 88	90	39.0	10	100	40.0	3
88 - 216	150	43.5	10	150	43.5	3
216 - 960	210	46.4	10	200	46.0	3
Above 960	300	49.5	10	500	54.0	3

☐ CISPR 22 (According to 47 CFR Part 15 Subpart B Section 15.109 (g))

Frequency (MHz)	Field Strengths (dBμV/m)		Distance (meters)
	Class A	Class B	
30 - 230	40	30	10
230 - 1000	47	37	10

(2) For Frequency Above 1GHz (According to 47 CFR Part 15 Subpart B Section 15.109)

Frequency (GHz)	Field Strength (dBμV/m)				Distance (meters)
	Class A		Class B		
	Peak	Average	Peak	Average	
Above 1GHz	80	60	74	54	3

(3) Frequency Range of Radiated Measurement (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5^{th} harmonic of the highest frequency or 40GHz, whichever is lower

TEST EQUIPMENT

Radiated Emission below 1GHz / OATS3

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Bi-log Antenna	SCHAFFER	CBL6112B	2696	10/03/2012
EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101131	01/15/2013

Remark: *Each piece of equipment is scheduled for calibration once a year.*

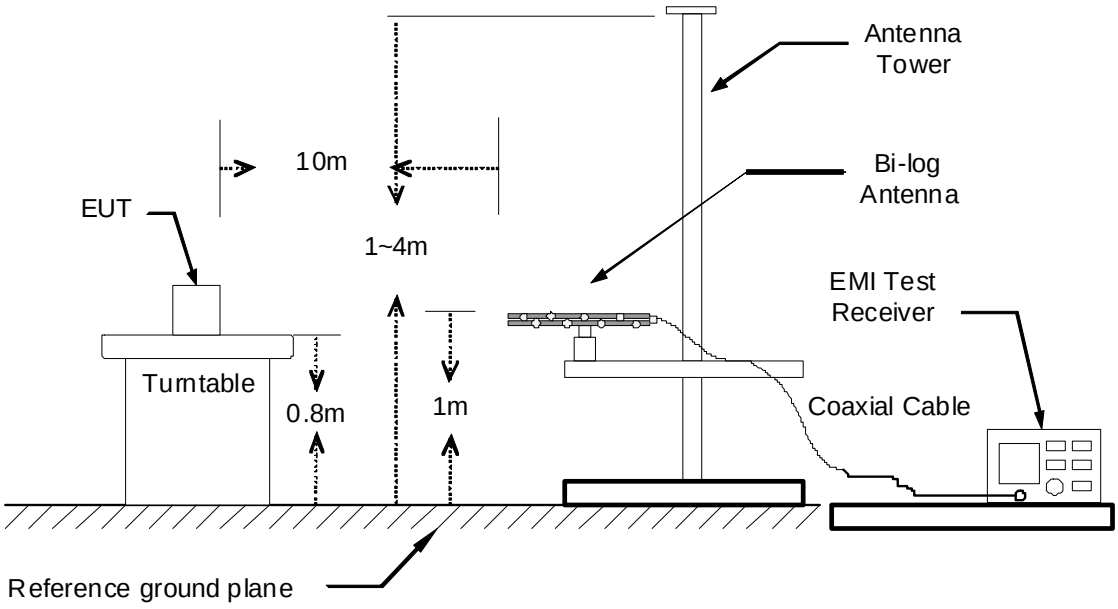
Radiated Emission above 1GHz / 966Chamber_B

Name of Equipment	Manufacture	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY46180323	04/22/2013
EMI Receiver	ROHDE & SCHWARZ	ESCS 30	826547/004	10/27/2012
Broadband Hybrid Bi-Log Antenna	Sunol Sciences	JB1	A100209-4	10/05/2012
Double-Ridged Waveguide Horn	ETS-LINDGREN	3117	00078733	12/06/2012
Pre-Amplifier	Agilent	8447D	2944A10052	07/17/2013
Pre-Amplifier	Agilent	8449B	3008A01916	07/17/2013
Notch Filters Band Reject	Micro-Tronics	BRM05702-01	026	N.C.R

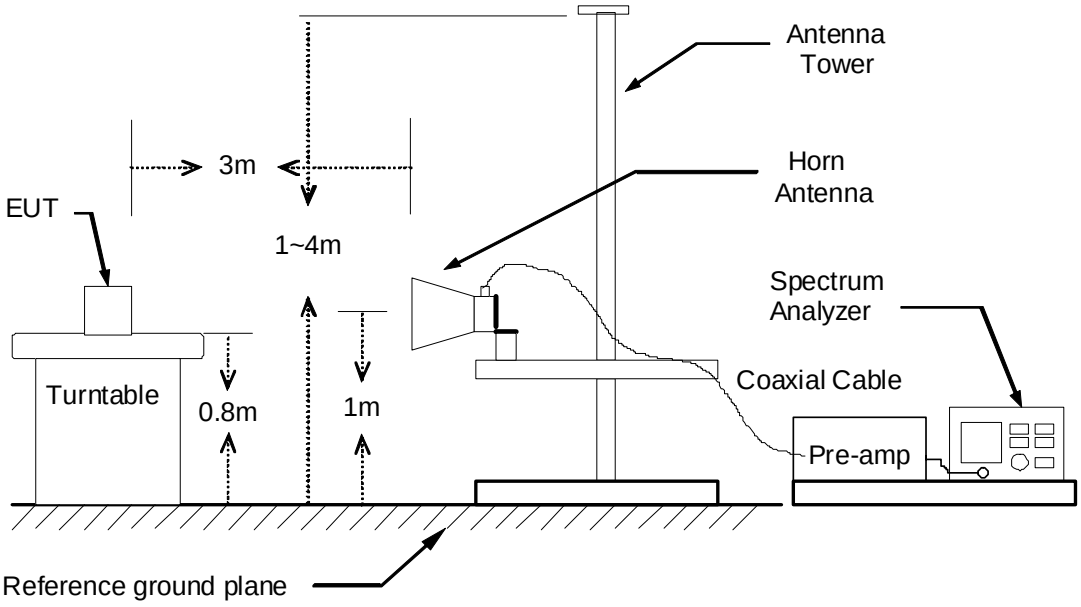
Remark: *1. Each piece of equipment is scheduled for calibration once a year.*
2. N.C.R = No Calibration Request.

TEST SETUP

The diagram below shows the test setup that is utilized to make the measurements for emission from below 1GHz.



The diagram below shows the test setup that is utilized to make the measurements for emission above 1GHz.



TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.4:2003.

The devices under test were placed on a rotatable table top 0.8 meter above ground. The table was rotated 360 degrees to determine the position of the highest radiation. EUT is set 3 or 10m meters from the interference receiving antenna which is mounted on the top of a variable height mast. The antenna height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.

Note：

1. The bandwidth setting on the E.M.I. meter (EMI TEST RECEIVER) is 120 KHz. The levels are Quasi-Peak value readings. The frequency spectrum from 30MHz to 1000MHz was investigated.
2. The resolution bandwidth, video bandwidth and detector of test spectrum analyzer is 1 MHz, 1MHz and Peak for Peak detection and frequency above 1GHz.
3. The resolution bandwidth, video bandwidth and detector of test spectrum analyzer is 1 MHz, 1MHz and Average for Average detection and frequency above 1GHz.

TEST RESULTS

Below 1 GHz

Product Name	Dual-WAN Security Firewall	Test By	Alan Wu
Test Model	Vigor2960FVn	Test Date	2012/07/12
Test Mode	Normal Operating / Power Adapter (1)	Temp. & Humidity	30°C, 40%

OATS3 at 10Meter / Horizontal

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Limits (dBμV/m)	Emission Level (dBμV/m)	Margin Limit (dB)	Azimuth (°)	Height (cm)	Remark
125.00	11.82	2.03	13.60	43.50	27.46	-16.05	360	400	QP
250.00	12.69	3.12	14.50	46.40	30.31	-16.10	150	400	QP
375.00	15.05	4.16	23.00	46.40	42.21	-4.19	90	400	QP
625.00	18.71	5.66	3.64	46.40	28.01	-18.40	250	400	QP
750.00	19.73	6.20	11.70	46.40	37.63	-8.77	90	400	QP
875.00	20.19	6.89	14.50	46.40	41.58	-4.83	150	100	QP

OATS3 at 10Meter / Vertical

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Limits (dBμV/m)	Emission Level (dBμV/m)	Margin Limit (dB)	Azimuth (°)	Height (cm)	Remark
76.48	7.04	1.77	9.00	39.00	17.81	-21.19	180	100	QP
114.60	11.46	1.96	12.40	43.50	25.82	-17.68	0	100	QP
125.00	11.82	2.03	21.00	43.50	34.86	-8.65	90	100	QP
250.00	12.69	3.12	22.00	46.40	37.81	-8.60	90	100	QP
375.00	15.05	4.16	22.20	46.40	41.41	-4.99	120	100	QP
500.00	17.49	5.01	12.50	46.40	35.00	-11.40	280	300	QP
625.00	18.71	5.66	16.10	46.40	40.47	-5.94	220	300	QP
750.00	19.73	6.20	7.20	46.40	33.13	-13.27	110	200	QP

Remark:

1. *Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit.*
2. *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.*
3. *Emission Level (dBuV/m) = Antenna Factor (dB/m) + Cable Loss (dB) + Meter Reading (dBμV)*
4. *Margin (dB) = Emission Level (dBuV/m) - Quasi-peak limit (dBuV/m)*

Above 1 GHz

Product Name	Dual-WAN Security Firewall	Test By	Alan Wu
Test Model	Vigor2960FVn	Test Date	2012/08/01
Test Mode	Normal Operating / Power Adapter (1)	Temp. & Humidity	28°C, 62%

966 Chamber_B at 3Meter / Horizontal

Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Azimuth (°)	Height (cm)	Remark
1125.00	49.53	---	-3.56	45.97	---	80.00	60.00	-14.03	280.80	100.00	Peak
2210.00	43.28	---	2.96	46.24	---	80.00	60.00	-13.76	282.70	200.00	Peak
2580.00	43.50	---	4.12	47.61	---	80.00	60.00	-12.39	324.20	200.00	Peak
3185.00	42.66	---	5.38	48.04	---	80.00	60.00	-11.96	165.50	200.00	Peak
3950.00	40.25	---	7.06	47.32	---	80.00	60.00	-12.68	195.20	200.00	Peak
4755.00	39.96	---	9.04	49.01	---	80.00	60.00	-10.99	285.50	100.00	Peak
5460.00	38.14	---	10.32	48.46	---	80.00	60.00	-11.54	358.60	100.00	Peak

966 Chamber_B at 3Meter / Vertical

Frequency (MHz)	Reading-PK (dBuV)	Reading-AV (dBuV)	Correction Factor (dB/m)	Result-PK (dBuV/m)	Result-AV (dBuV/m)	Limit-PK (dBuV/m)	Limit-AV (dBuV/m)	Margin (dB)	Azimuth (°)	Height (cm)	Remark
1125.00	50.87	---	-3.56	47.31	---	80.00	60.00	-12.69	219.40	100.00	Peak
1455.00	47.78	---	-2.41	45.37	---	80.00	60.00	-14.63	281.70	100.00	Peak
2225.00	42.61	---	3.02	45.62	---	80.00	60.00	-14.38	104.20	100.00	Peak
2545.00	43.38	---	4.04	47.43	---	80.00	60.00	-12.57	249.10	100.00	Peak
3210.00	42.17	---	5.43	47.60	---	80.00	60.00	-12.40	147.90	100.00	Peak
3865.00	40.28	---	6.87	47.15	---	80.00	60.00	-12.85	221.70	100.00	Peak
5305.00	38.71	---	10.10	48.81	---	80.00	60.00	-11.19	175.60	100.00	Peak

Remark:

1. *Average test would be performed if the peak result were greater than the average limit.*
2. *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.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Result = Reading + Correction Factor*
   Margin = Result – Limit
   Remark Peak = Result(PK) – Limit(AV)
   Remark AVG = Result(AV) – Limit(AV)

7.2 CONDUCTED EMISSION

LIMITS

Frequency Range (MHz)	Voltage Limits (dBμV)			
	Class A		Class B	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.50	79	66	66 - 56*	56 - 46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

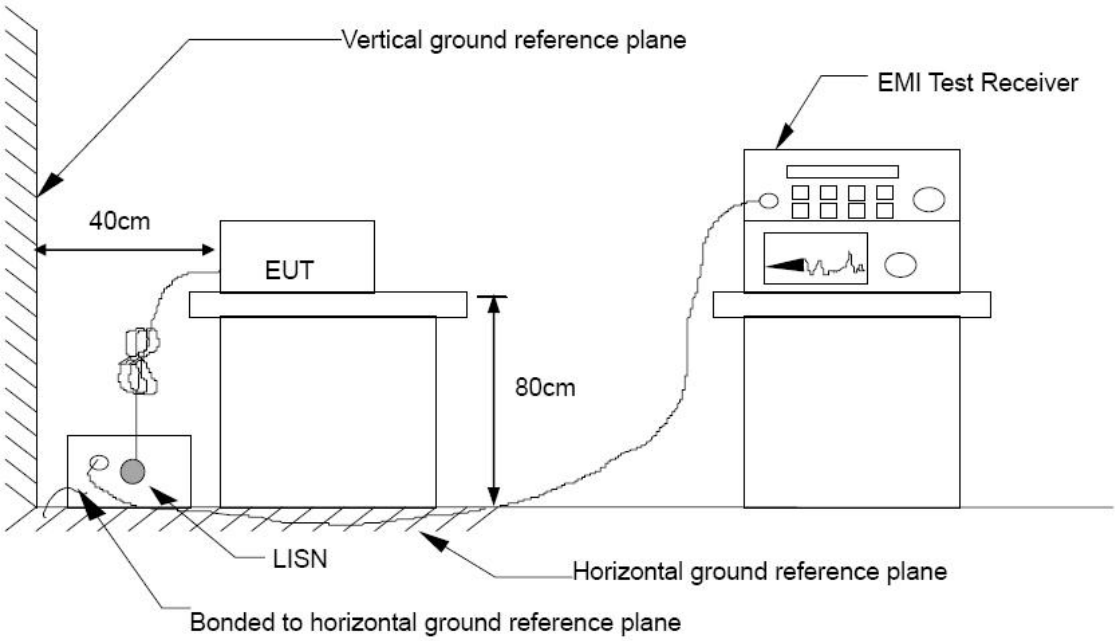
Remark: *(1) The limit decreases linearly with logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.*
(2) The lower limit shall apply at the transition frequency.
*(3) * Decreasing linearly with the logarithm of the frequency.*

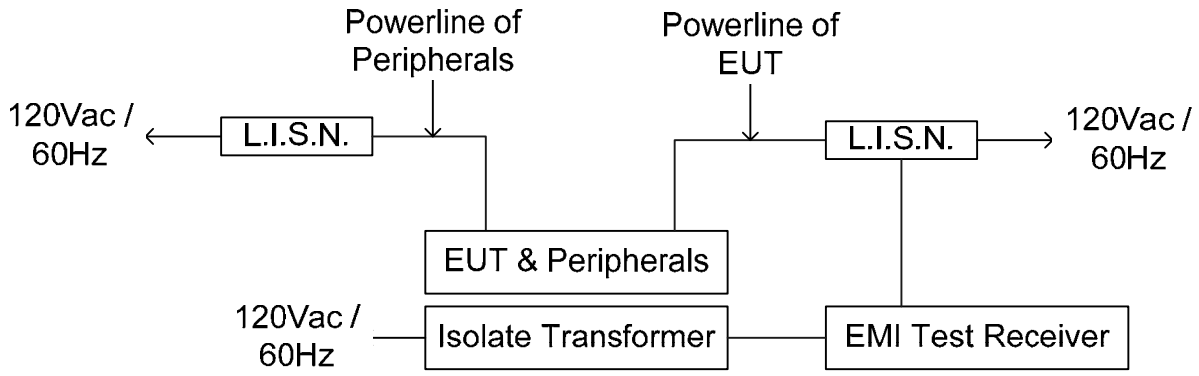
TEST EQUIPMENT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
L.I.S.N	SCHWARZBECK	NSLK 8127	8127-465	08/07/2013
L.I.S.N	SCHWARZBECK	NSLK 8127	8127-473	03/12/2013
EMI Receiver	ROHDE & SCHWARZ	ESCS 30	835418/008	10/20/2012
Pulse Limit	ROHDE & SCHWARZ	ESH3-Z2	100117	07/03/2013

Remark: *Each piece of equipment is scheduled for calibration once a year.*

TEST SETUP





TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.4:2003.

The test procedure is performed in a 4m × 3m × 2.4m (L×W×H) shielded room.

The EUT along with its peripherals were placed on a 1.0m (W) × 1.5m (L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.

The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.

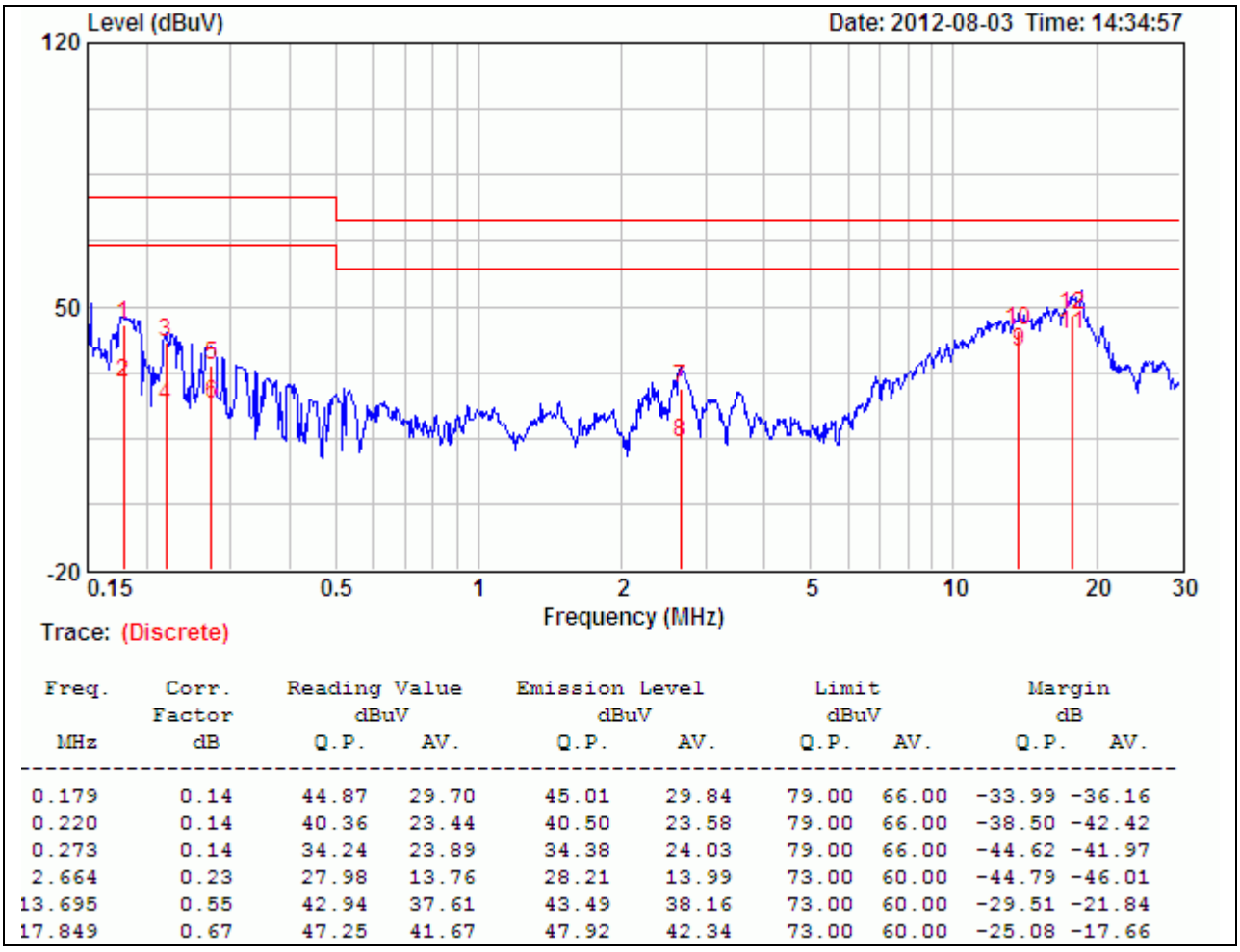
The EUT was located so that the distance between the boundary of the EUT and the closest surface of the LISN is 0.8 m. Where a mains flexible cord was provided by the manufacturer shall be 1 m long, or if in excess of 1 m, the excess cable was folded back and forth as far as possible so as to form a bundle not exceeding 0.4 m in length.

TEST RESULTS

Mains Ports

Product Name	Dual-WAN Security Firewall	Test By	Alan Wu
Test Model	Vigor2960FVn	Test Date	2012/08/03
Test Mode	Normal Operating / Power Adapter (1)	Temp. & Humidity	25°C, 55%

LINE



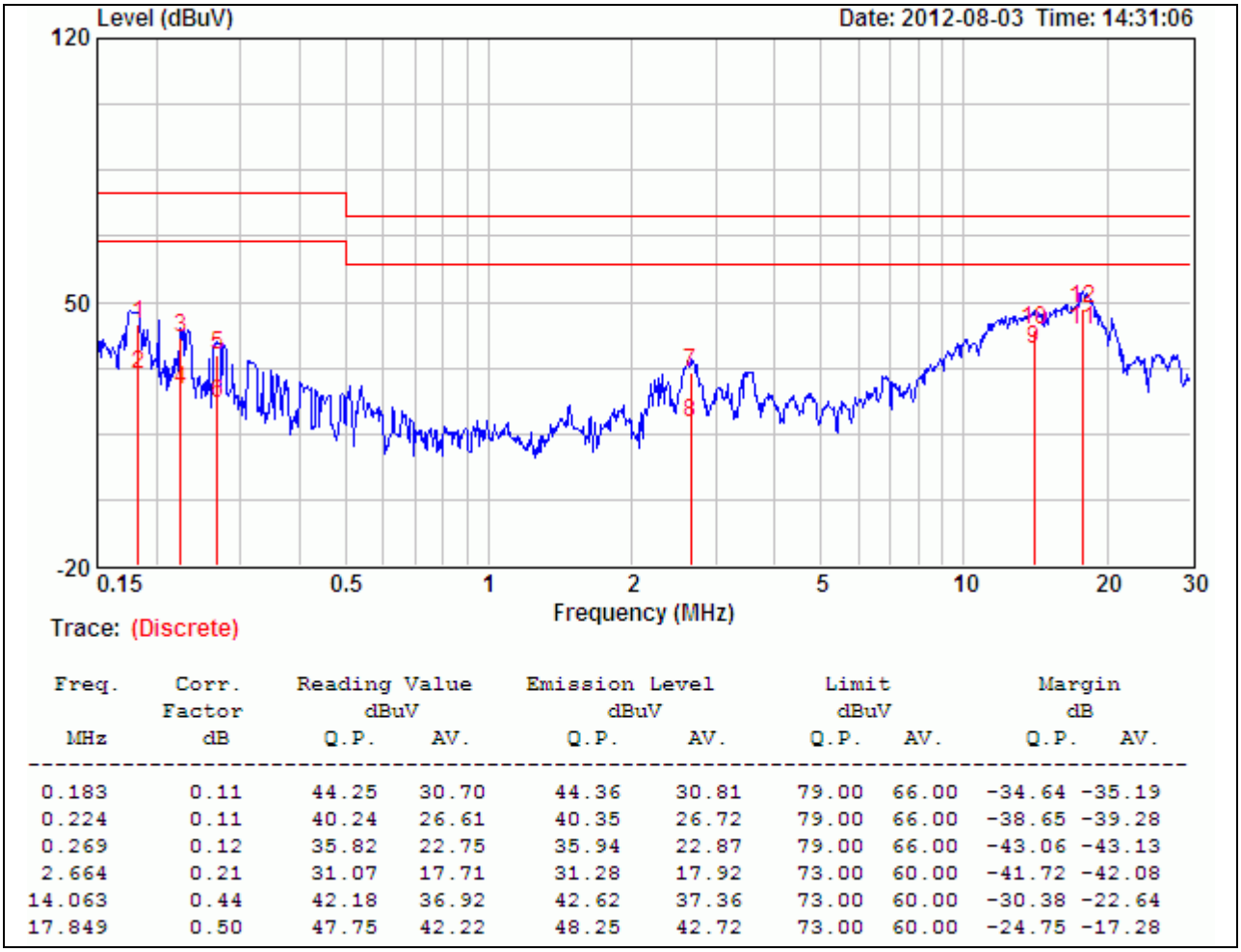
Freq. MHz	Corr. Factor dB	Reading Value dBuV Q.P.	Reading Value dBuV AV.	Emission Level dBuV Q.P.	Emission Level dBuV AV.	Limit dBuV Q.P.	Limit dBuV AV.	Margin dB Q.P.	Margin dB AV.
0.179	0.14	44.87	29.70	45.01	29.84	79.00	66.00	-33.99	-36.16
0.220	0.14	40.36	23.44	40.50	23.58	79.00	66.00	-38.50	-42.42
0.273	0.14	34.24	23.89	34.38	24.03	79.00	66.00	-44.62	-41.97
2.664	0.23	27.98	13.76	28.21	13.99	73.00	60.00	-44.79	-46.01
13.695	0.55	42.94	37.61	43.49	38.16	73.00	60.00	-29.51	-21.84
17.849	0.67	47.25	41.67	47.92	42.34	73.00	60.00	-25.08	-17.66

Remark:

1. *Correction Factor = Insertion loss + Cable loss*
2. *Emission level = Reading Value + Correction factor*
3. *Margin value = Emission level – Limit value*

Product Name	Dual-WAN Security Firewall	Test By	Alan Wu
Test Model	Vigor2960FVn	Test Date	2012/08/03
Test Mode	Normal Operating / Power Adapter (1)	Temp. & Humidity	25°C, 55%

NEUTRAL



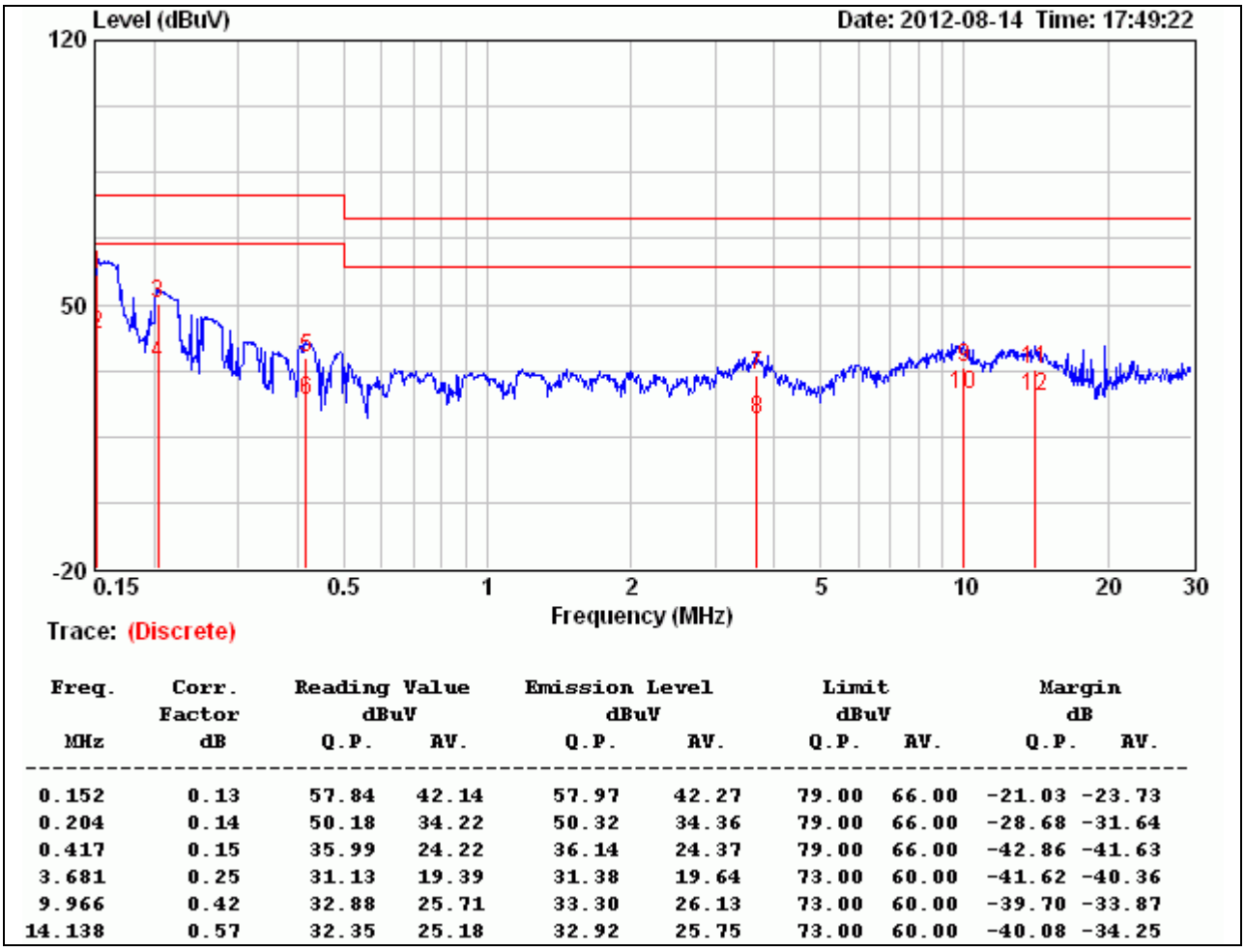
Freq. MHz	Corr. Factor dB	Reading Value dBuV Q.P.	Reading Value dBuV AV.	Emission Level dBuV Q.P.	Emission Level dBuV AV.	Limit dBuV Q.P.	Limit dBuV AV.	Margin dB Q.P.	Margin dB AV.
0.183	0.11	44.25	30.70	44.36	30.81	79.00	66.00	-34.64	-35.19
0.224	0.11	40.24	26.61	40.35	26.72	79.00	66.00	-38.65	-39.28
0.269	0.12	35.82	22.75	35.94	22.87	79.00	66.00	-43.06	-43.13
2.664	0.21	31.07	17.71	31.28	17.92	73.00	60.00	-41.72	-42.08
14.063	0.44	42.18	36.92	42.62	37.36	73.00	60.00	-30.38	-22.64
17.849	0.50	47.75	42.22	48.25	42.72	73.00	60.00	-24.75	-17.28

Remark:

1. Correction Factor = Insertion loss + Cable loss
2. Emission level = Reading Value + Correction factor
3. Margin value = Emission level – Limit value

Product Name	Dual-WAN Security Firewall	Test By	Alan Wu
Test Model	Vigor2960FVn	Test Date	2012/08/14
Test Mode	Normal Operating / Power Adapter (2)	Temp. & Humidity	25°C, 55%

LINE



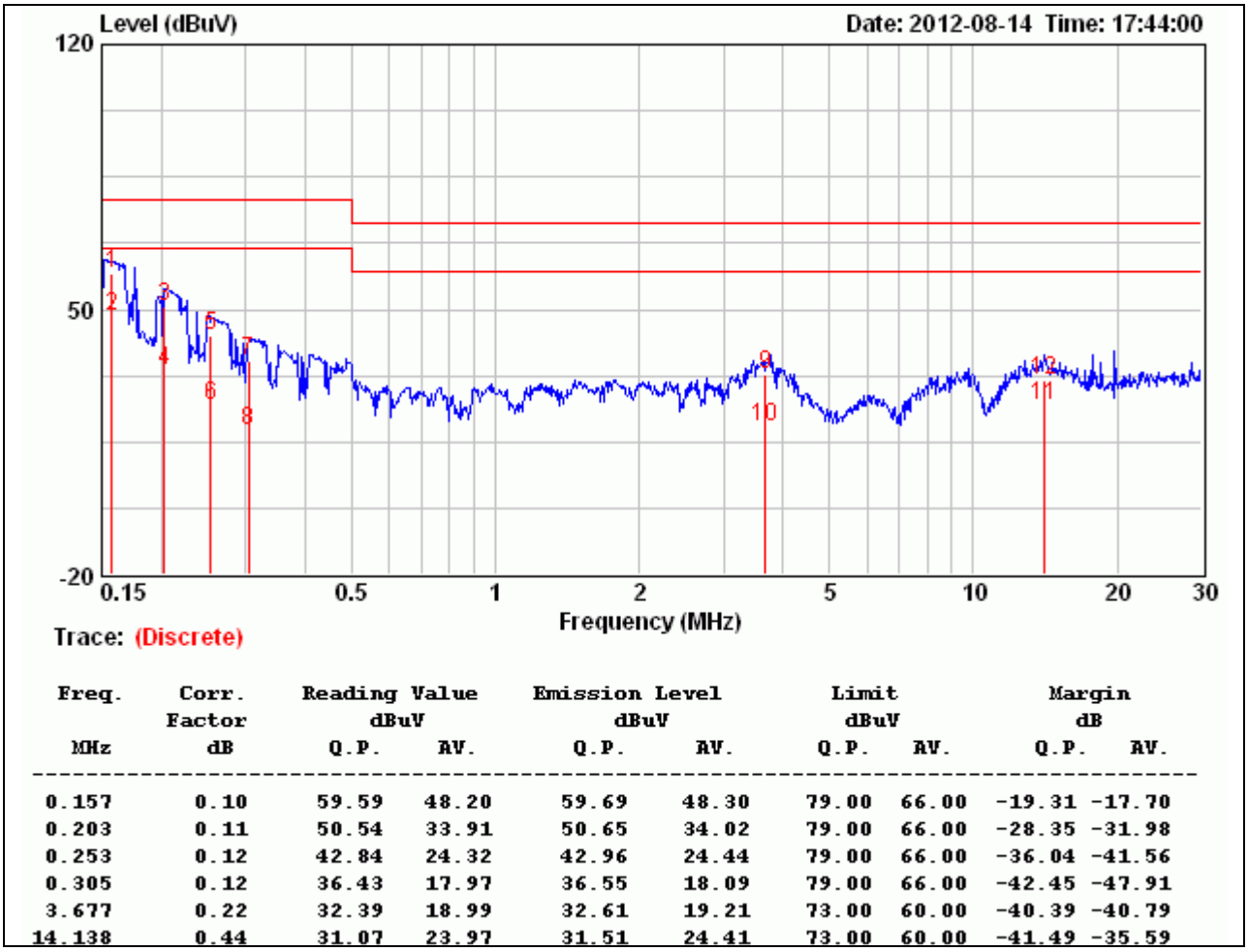
Freq. MHz	Corr. Factor dB	Reading Value dBuV Q.P.	Reading Value dBuV AV.	Emission Level dBuV Q.P.	Emission Level dBuV AV.	Limit dBuV Q.P.	Limit dBuV AV.	Margin dB Q.P.	Margin dB AV.
0.152	0.13	57.84	42.14	57.97	42.27	79.00	66.00	-21.03	-23.73
0.204	0.14	50.18	34.22	50.32	34.36	79.00	66.00	-28.68	-31.64
0.417	0.15	35.99	24.22	36.14	24.37	79.00	66.00	-42.86	-41.63
3.681	0.25	31.13	19.39	31.38	19.64	73.00	60.00	-41.62	-40.36
9.966	0.42	32.88	25.71	33.30	26.13	73.00	60.00	-39.70	-33.87
14.138	0.57	32.35	25.18	32.92	25.75	73.00	60.00	-40.08	-34.25

Remark:

1. Correction Factor = Insertion loss + Cable loss
2. Emission level = Reading Value + Correction factor
3. Margin value = Emission level – Limit value

Product Name	Dual-WAN Security Firewall	Test By	Alan Wu
Test Model	Vigor2960FVn	Test Date	2012/08/14
Test Mode	Normal Operating / Power Adapter (2)	Temp. & Humidity	25°C, 55%

NEUTRAL



Freq. MHz	Corr. Factor dB	Reading Value dBuV Q.P.	Reading Value dBuV AV.	Emission Level dBuV Q.P.	Emission Level dBuV AV.	Limit dBuV Q.P.	Limit dBuV AV.	Margin dB Q.P.	Margin dB AV.
0.157	0.10	59.59	48.20	59.69	48.30	79.00	66.00	-19.31	-17.70
0.203	0.11	50.54	33.91	50.65	34.02	79.00	66.00	-28.35	-31.98
0.253	0.12	42.84	24.32	42.96	24.44	79.00	66.00	-36.04	-41.56
0.305	0.12	36.43	17.97	36.55	18.09	79.00	66.00	-42.45	-47.91
3.677	0.22	32.39	18.99	32.61	19.21	73.00	60.00	-40.39	-40.79
14.138	0.44	31.07	23.97	31.51	24.41	73.00	60.00	-41.49	-35.59

Remark:

1. Correction Factor = Insertion loss + Cable loss
2. Emission level = Reading Value + Correction factor
3. Margin value = Emission level – Limit value

APPENDIX SETUP PHOTOS

RADIATED EMISSION SETUP

Below 1 GHz

Above 1 GHz