

Electromagnetic Emission

FCC MEASUREMENT REPORT

CERTIFICATION OF COMPLIANCE

FCC Part 15 Verification Measurement

PRODUCT

LCD MONITOR

MODEL/TYPE NO

P276L / NONE

FCC ID

PJIP276L

MULTIPLE MODEL

L27DPFLP0

BRAND NAME

-MYUNDAI

APPLICANT

HYUNDAI IBT CORP.

THONDALIBLEONE.

106, Apogongdan-gil, Apo-eup, Gimcheon-si, Gyeongsangbuk-do, 740-862 Republic of Korea

Attn.: Yoon Suk Lee / Manager

MANUFACTURER

HYUNDAI IBT CORP.

106, Apogongdan-gil, Apo-eup, Gimcheon-si, Gyeongsangbuk-do, 740-862 Republic of Korea

FCC CLASSIFICATION

Class B Personal computers and peripherals

RULE PART(S)

FCC Part 15 Subpart B

FCC PROCEDURE

ANSI C63.4-2009

TEST REPORT No.

ETLE160609.0496

DATES OF TEST

June 11, 2016 to June 16, 2016

REPORT ISSUE DATE

June 29, 2016

TEST LABORATORY

ETL Inc. (FCC Designation Number: KR0022)

This LCD MONITOR, Model P276L has been tested in accordance with the measurement procedures specified in ANSI C63.4-2009 at the ETL/EMC Test Laboratory and has been shown to be complied with the electromagnetic radiated emission limits specified in FCC Rule Part15 Subpart B:

I attest to the accuracy of data. All measurement herein was performed by me or was made under my supervision and is correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Prepared by:

Chul Min, Ji (Test Engineer)

June 29, 2016

Reviewed by:

Hyung Min, Choi (Chief Engineer)

June 29, 2016

ETL Inc.

Head office: #371-51, Gasan-dong, Geumcheon-gu, Seoul, 153-803, Korea

Open site: #499-1, Sagot-ri, Seosin-myeon, Hwaseong-si, Gyeonggi-do, 445-882, Korea

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FCC MEASUREMENT REPORT

Scope – Measurement and determination of electromagnetic emission(EME) of radio frequency devices including intentional radiators and/or unintentional radiators for compliance with the technical rules and regulations of the U.S Federal Communications Commission(FCC)

General Information

Applicant Name: HYUNDAI IBT CORP.

Address: 106, Apogongdan-gil, Apo-eup, Gimcheon-si,

Gyeongsangbuk-do, 740-862 Republic of Korea

Attention : Yoon Suk Lee / Manager

EUT Type : LCD MONITOR

Model Number : P276L
 S/N : NONE

• Rule Part(s): FCC Part 15 Subpart B

Test Procedure : ANSI C63.4-2009

• FCC Classification: Class B Personal computers and peripherals

• Dates of Tests: June 11, 2016 to June 16, 2016

Environmental of Tests :

Temperature: (23.0 ± 1.3) °C

Humidity: (59 ± 18) % R.H.

Atmospheric Pressure: (100.2 ± 0.4) kPa

• Place of Tests: ETL Inc. Testing Lab. (FCC Designation Number : KR0022)

Radiated Emission test 1;

#499-1, Sagot-ri, Seosin-myeon, Hwaseong-si,

Gyeonggi-do, 445-882, Korea

Radiated Emission test 2 and Conducted Emission test; #371-51, Gasan-dong, Geumcheon-gu, Seoul, 153-803, Korea

Test Report No.: ETLE141124.1685

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1. INTRODUCTION

The measurement test for radiated and conducted emission test was conducted at the ETL Inc. The site is constructed in conformance with the requirements of the ANSI C63.4-2009 and CISPR Publication 16. The ETL has site descriptions on file with the FCC for 3 m and 10 m site configurations. Detailed description of test facility was found to be in compliance with the requirements of Section 2.948 FCC Rules according to the ANSI C63.4-2009 and registered to the Federal Communications Commission (FCC Designation Number: KR0022).

The measurement procedure described in American National Standard for Method of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (ANSI C63.4-2009) was used in determining radiated and conducted emissions from the HYUNDAI IBT CORP., Model: P276L.



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2. PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the LCD MONITOR (model: P276L).

The model P276L is basic model that was tested.

The multiple models L27DPFLP0 is identical to basic model, except for model designation.

2.2 General Specification

	Item	Specification		
	Visible Screen Area	597.89 mm (H) x 336.31 mm (V)		
	Pixel Pitch	0.311 4 mm (H) x 0.311 4 mm (V)		
	Recommended Resolution	1 920 x 1 080 @ 60 Hz		
LCD	Maximum Visible Angle	170°/160° (H/V)		
LOD	Displayed Color	16.7 M		
	Brightness	300 cd/m ²		
	Contrast Ratio	1 000:1		
	Response Time	5 msec		
	Horizontal Frequency	31 kHz – 80 kHz		
Input Signal	Vertical Frequency	60 Hz – 75 Hz		
	Video Signal	Analog VGA, DVI		
	Connector	DVI-D, AUDIO, Display Port, D-SUB		
	Power Consumption	< 24 W (Typ.)		
Power	Stand by Power	< 0.5 W		
	Input Power	AC 100 V – 240 V; 50 Hz/60 Hz; 1.5 A		
Multimedia Spo	eakers	1 W x 2		
	Operation	Temperature: (25 ± 15) °C		
Operating	Operation	Humidity: (50 ± 30) % (non-condensing)		
Environment	Storago	Temperature: (20 ± 30) °C		
	Storage	Humidity: (50 ± 40) % (non-condensing)		
High Internal F	requency	F/MEMORY clock → 75 MHz		

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3. DESCRIPTION OF TESTS

3.1 Conducted Emission Measurement

Conducted emissions measurements were made in accordance with section 11, "Measurement of Information Technology Equipment" of ANSI C63.4-2009. The measurements were performed over the frequency range of 0.15 MHz to 30 MHz using a 50 Ω /50 μ H LISN as the input transducer to a Spectrum Analyzer or a Test Receiver. The measurements were made with the detector set for "Peak" amplitude within a bandwidth of 9 kHz or for "quasi-peak" within a bandwidth of 9 kHz.

The line-conducted emission test is conducted inside a shielded anechoic chamber room with 1 m x 1.5 m x 0.8 m wooden table which is placed 40 cm away from the vertical wall and 1.5 m away from the side wall of the chamber room. Two LISN are bonded to the shielded room. The EUT is powered from the LISN and the support equipment is powered from the other LISN. Power to the LISNs are filtered by a noise cut power line filters. All electrical cables are shielded by braided tinned steel tubing with inner ϕ 1.2 cm. If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and these supply lines will be connected to the LISN. Non-inductive bundling to a 1 m length shortened all interconnecting cables more than 1 m. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the EMI Test Receiver to determine the frequency producing the maximum emission from the EUT. The frequency producing the maximum level was reexamined using to set Quasi-Peak mode by manual, after scanned by automatic Peak mode from 0.15 MHz to 30 MHz. The bandwidth of the spectrum analyzer was set to 9 kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission.

Photographs of the worst-case emission can be seen in photographs of conducted emission test setup in Appendix B.



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3.2 Radiated Emission Measurement

Radiated emission measurements were made in accordance with section 11, "Measurement of Information Technology Equipment" of ANSI C63.4-2009. The measurements were performed over the frequency range of 30 MHz to 40 GHz (or 5th harmonic of the highest frequency) in using antenna as the input transducer to a spectrum analyzer or a field intensity meter. The measurements below 1 GHz were made with the detector set for "Quasi-peak" within a bandwidth of 120 kHz. The measurements above 1 GHz were made with the detector set for "Peak and Average" within a bandwidth of 1 MHz.

Preliminary measurements were made at 3 m using broadband antennas, and spectrum analyzer to determined the frequency producing the maximum emission in shielded room. Appropriate precaution was taken to ensure that all emission from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth and height with respect to the antenna were noted for each frequency found. The spectrum was scanned from 30 MHz to 1 000 MHz using Log-Bicon antenna. Above 1 GHz, linearly polarized double ridge horn antennas were used. Final measurements were made open site or SVSWR chamber at 3 m. The test equipment was placed on a styrofoam table. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. Each frequency found during pre-scan measurements was re-examined by manual. The EUT, support equipment and interconnecting cables were re-configured to the set-up producing the maximum emission for the frequency and were placed on top of a 0.8 m high nonmetallic 1 m x 1.5 m table. The EUT, support equipment, and interconnecting cables were re-arranged and manipulated to maximize each emission. The turntable containing the system was rotated; the antenna height was varied 1 m to 4 m and stopped at the azimuth or height producing the maximum emission. Each emission was maximized by: varying the mode of operation to the EUT and/or support equipment and changing the polarity of the antenna, whichever determined the worst-case emission.

Photographs of the worst-case emission can be seen in Photographs of the worst-case emission test setup can be seen in Appendix B.

Open site: #499-1, Sagot-ri, Seosin-myeon, Hwaseong-si, Gyeonggi-do, 445-882, Korea



FCC ID: PJIP276L

4. TEST CONDITION

4.1 Test Configuration

The device was configured for testing in a typical fashion (as a customer would normally use it). During the tests, the EUT and the supported equipments were installed to meet FCC requirement and operated in a manner and which tends to maximize its emission level in a typical application.

4.2 EUT operation

The equipment under test was operated during the measurement under following conditions:

Conditions	Remark
Stand by	
The EUT was connected as user's guide. And during the executed test program for EMI program with "H" pattern display on monitor. (BurnIn Test program)	VGA mode
The EUT was connected as user's guide. And during the executed test program for EMI program with "H" pattern display on monitor. (BurnIn Test program)	DVI mode
The EUT was connected as user's guide. And during the executed test program for EMI program with "H" pattern display on monitor. (BurnIn Test program)	DP mode

4.3 Support Equipment Used

Description	Model Name	Serial No.	Manufacturer	FCC
PC	D08M	6GPJXBX	Dell Inc.	DoC
Keyboard	SWT1200US	27314C2600967	Great Pleasure Electronics Co., Ltd.	-
Mouse	M-U0039	1347LZ0C7NR8	LOGITECH Inc.	DoC

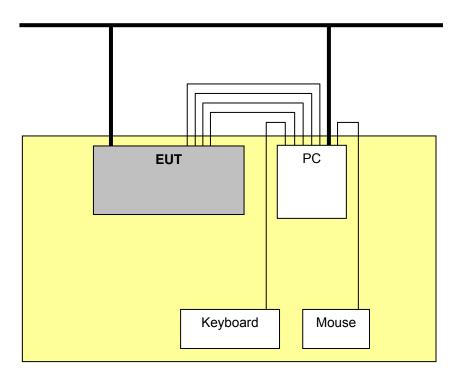


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4.4 Type of Cables Used

Device from	Device to	Type of I/O port	Length[m]	Type of shield	Used ferrite core
EUT	PC	VGA	1.2	Shielded	0
EUT	PC	DVI	1.2	Shielded	0
EUT	PC	DP	1.2	Shielded	Х
EUT	PC	Audio In	1.2	Shielded	0
EUT	Power socket	AC Input	1.5	Unshielded	Х
PC	Keyboard	USB	1.5	Shielded	Х
PC	Mouse	USB	1.5	Shielded	Х
PC	Power socket	AC Input	1.5	Unshielded	Х

4.5 The setup drawing(s)



: Data Line
: Power Line
: Adapter



FCC ID: PJIP276L

5. TEST RESULTS

5.1 Summary of Test Results

The measurement results were obtained with the EUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum emission of the EUT are reported.

FCC Rule	Measurement Required	Result
15.107(a)	Conducted Emission Measurement	Passed by 19.00 dB
15.109(a)	Radiated Emission Measurement (Below 1 GHz)	Passed by 5.63 dB
15.109(a)	Radiated Emission Measurement (Above 1 GHz)	Passed by 11.60 dB

The data collected shows that the **HYUNDAI IBT CORP.** / **LCD MONITOR** / **P276L** complied with technical requirements of above rules part 15.107(a) and 15.109(a) Class B Limits.

The equipment is not modified anything, mechanical or circuits to improve EMI status during a measurement. No EMI suppression device(s) was added and/or modified during testing.



FCC ID: PJIP276L

5.2 Conducted Emissions Measurement

5.2.1 Conducted Emissions Data

EUT	LCD MONITOR / P276L (S/N: N/A)
Limit apply to	FCC Part 15.107(a) Class B
Test Date	June 15, 2016
Environmental of test	(23.6 ± 0.1) °C, (43 ± 0) % R.H., (100.3 ± 0.0) kPa
Operating Condition	The EUT was connected as user's guide. And during the executed test program for EMI program with "H pattern" display on monitor. (BurnIn Test program) - VGA mode
Result	Passed by 19.10 dB

Conducted Emission Test Data

The following data and graph shows the highest levels of conducted emissions on both polarizations of hot and neutral line.

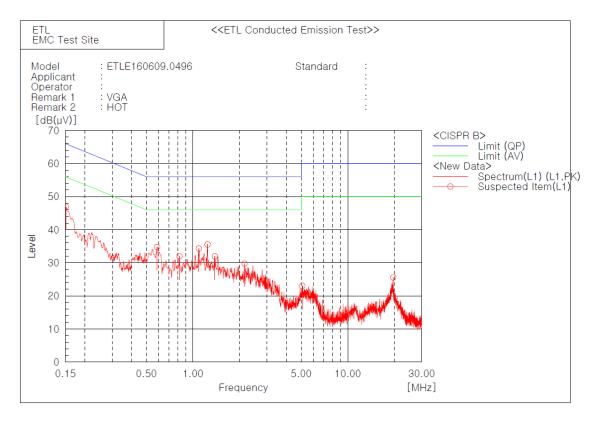
Detector mode: CISPR Quasi-Peak mode (6 dB Bandwidth: 9 kHz)

- 1. Please see the measured data and graph in next page.
- 2. The c.f value was included the LISN factor and cable loss.
- 3. Result value = Reading + c.f
- 4. Margin value = Limit Result
- 5. Measurement were performed at the AC Power Inlet in the frequency band of 150 kHz ~ 30 MHz according to the FCC Part 15.107(a) Class B.
- 6. If the average limit is met when using a Quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.



FCC ID: PJIP276L

Line: HOT



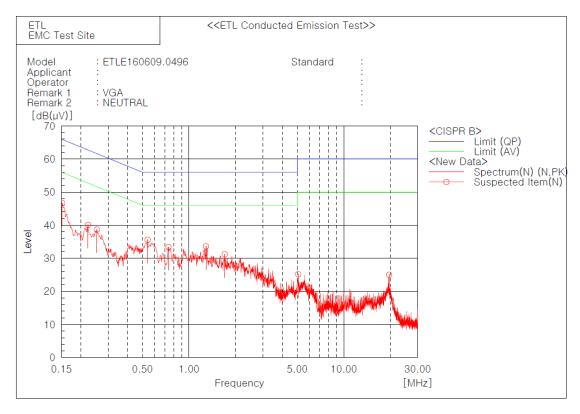
Spectrum Selection

	L1 Phase	_					
No.	Frequency	Reading	c.f	Result	Limit	Limit	Margin
			F := 3	PK	QP	AV	QP.
	[MHz]	[dB(µV)]	[dB]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB]
1	0.15071	46.5	0.4	46.9	66.0	56.0	19.1
2	0.58585	34.6	0.2	34.8	56.0	46.0	21.2
3	0.81815	31.8	0.2	32.0	56.0	46.0	24.0
4	1.09085	34.1	0.2	34.3	56.0	46.0	21.7
5	1.24235	35.3	0.2	35.5	56.0	46.0	20.5
6	1.38375	31.8	0.2	32.0	56.0	46.0	24.0
7	2.15135	29.5	0.3	29.8	56.0	46.0	26.2
8	5.07858	22.7	0.3	23.0	60.0	50.0	37.0
9	19.6354	25.0	0.6	25.6	60.0	50.0	34.4



FCC ID: PJIP276L

Line: Neutral



Spectrum Selection

	N Phase						
No.	Frequency	Reading	c.f	Result	Limit	Limit	Margin
				PK	QP	AV	QP
	[MHz]	[dB(µV)]	[dB]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB]
1	0.15141	46.3	0.4	46.7	65.9	55.9	19.2
2	0.22282	39.8	0.3	40.1	62.7	52.7	22.6
3	0.25393	38.4	0.3	38.7	61.6	51.6	22.9
4	0.5404	35.4	0.2	35.6	56.0	46.0	20.4
5	0.73735	33.2	0.2	33.4	56.0	46.0	22.6
6	1.2878	33.4	0.2	33.6	56.0	46.0	22.4
7	1.7019	31.0	0.2	31.2	56.0	46.0	24.8
8	5.07858	24.9	0.3	25.2	60.0	50.0	34.8
9	19.6152	24.4	0.6	25.0	60.0	50.0	35.0
7 8	1.7019 5.07858	31.0 24.9	0.2	31.2 25.2	56.0 60.0	46.0 50.0	24.8 34.8



FCC ID: PJIP276L

EUT	LCD MONITOR / P276L (S/N: N/A)
Limit apply to	FCC Part 15.107(a) Class B
Test Date	June 15, 2016
Environmental of test	(23.4 ± 0.0) °C, (41 ± 0) % R.H., (100.3 ± 0.0) kPa
Operating Condition	The EUT was connected as user's guide. And during the executed test program for EMI program with "H pattern" display on monitor. (BurnIn Test program) - DVI mode
Result	Passed by 19.00 dB

Conducted Emission Test Data

The following data and graph shows the highest levels of conducted emissions on both polarizations of hot and neutral line

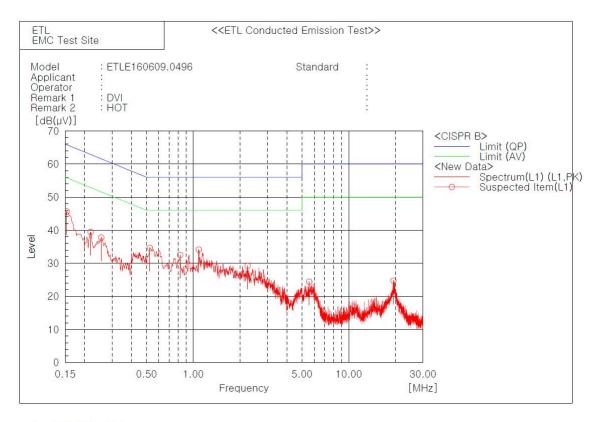
Detector mode: CISPR Quasi-Peak mode (6 dB Bandwidth: 9 kHz)

- 1. Please see the measured data and graph in next page.
- 2. The c.f value was included the LISN factor and cable loss.
- 3. Result value = Reading + c.f
- 4. Margin value = Limit Result
- 5. Measurement were performed at the AC Power Inlet in the frequency band of 150 kHz \sim 30 MHz according to the FCC Part 15.107(a) Class B.
- 6. If the average limit is met when using a Quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.



FCC ID: PJIP276L

Line: HOT



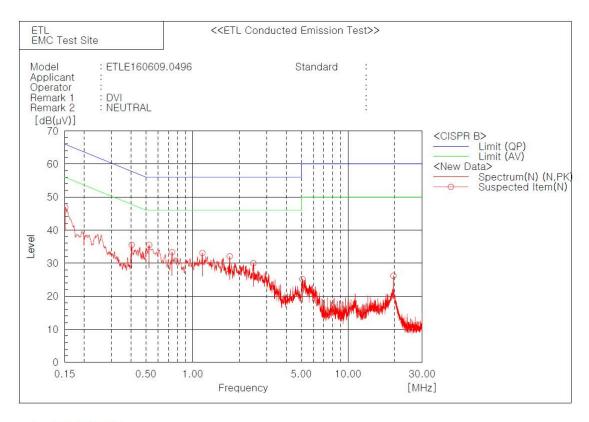
Spectrum Selection

	L1 Phase						
No.	Frequency	Reading	c.f	Result PK	Limit	Limit AV	Margin QP
	[MHz]	[dB(µV)]	[dB]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB]
1	0.15354	45.3	0.4	45.7	65.8	55.8	20.1
2	0.21858	39.2	0.3	39.5	62.9	52.9	23.4
3	0.25605	37.5	0.3	37.8	61.6	51.6	23.8
4	0.52525	34.5	0.2	34.7	56.0	46.0	21.3
5	0.8232	32.3	0.2	32.5	56.0	46.0	23.5
6	1.0858	33.9	0.2	34.1	56.0	46.0	21.9
7	2.2372	28.9	0.3	29.2	56.0	46.0	26.8
8	5.56944	24.1	0.3	24.4	60.0	50.0	35.6
9	19.393	24.1	0.6	24.7	60.0	50.0	35.3



FCC ID: PJIP276L

Line: Neutral



Spectrum Selection

	N Phase						
No.	Frequency	Reading	c.f	Result	Limit	Limit	Margin
				PK	QP	AV	QP
	[MHz]	$[dB(\mu V)]$	[dB]	[dB(µV)]	$[dB(\mu V)]$	[dB(µV)]	[dB]
1	0.15141	46.5	0.4	46.9	65.9	55.9	19.0
2	0.40523	35.3	0.2	35.5	57.7	47.7	22.2
3	0.52525	35.3	0.2	35.5	56.0	46.0	20.5
4	0.73735	33.1	0.2	33.3	56.0	46.0	22.7
5	1.1565	32.9	0.2	33.1	56.0	46.0	22.9
6	1.7322	31.9	0.2	32.1	56.0	46.0	23.9
7	2.4594	29.8	0.2	30.0	56.0	46.0	26.0
8	5.09676	24.8	0.3	25.1	60.0	50.0	34.9
9	19.6152	25.6	0.6	26.2	60.0	50.0	33.8



FCC ID: PJIP276L

EUT	LCD MONITOR / P276L (S/N: N/A)
Limit apply to	FCC Part 15.107(a) Class B
Test Date	June 15, 2016
Environmental of test	(23.5 ± 0.0) °C, (44 ± 0) % R.H., (100.3 ± 0.0) kPa
Operating Condition	The EUT was connected as user's guide. And during the executed test program for EMI program with "H pattern" display on monitor. (BurnIn Test program) - DP mode
Result	Passed by 19.30 dB

Conducted Emission Test Data

The following data and graph shows the highest levels of conducted emissions on both polarizations of hot and neutral line

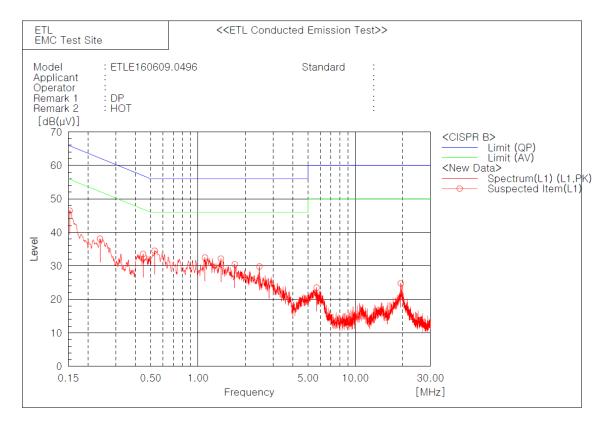
Detector mode: CISPR Quasi-Peak mode (6 dB Bandwidth: 9 kHz)

- 1. Please see the measured data and graph in next page.
- 2. The c.f value was included the LISN factor and cable loss.
- 3. Result value = Reading + c.f
- 4. Margin value = Limit Result
- 5. Measurement were performed at the AC Power Inlet in the frequency band of 150 kHz \sim 30 MHz according to the FCC Part 15.107(a) Class B.
- 6. If the average limit is met when using a Quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.



FCC ID: PJIP276L

Line: HOT



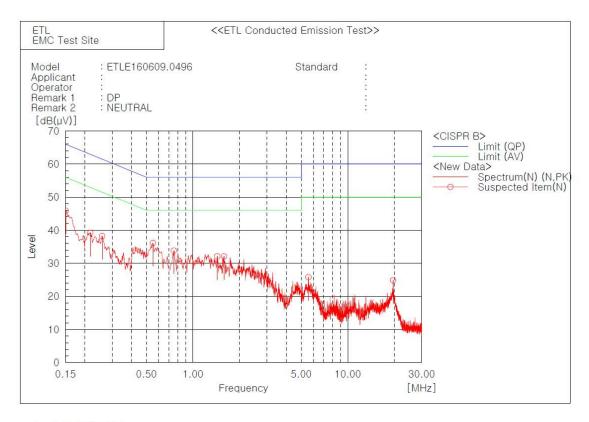
Spectrum Selection

	L1 Phase	_					
No.	Frequency	Reading	c.f	Result	Limit	Limit	Margin
				PK	QP	ΑV	QP
	[MHz]	[dB(µV)]	[dB]	[dB(µV)]	[dB(µV)]	[dB(µV)]	[dB]
1	0.15283	46.1	0.4	46.5	65.8	55.8	19.3
2	0.23838	37.8	0.3	38.1	62.2	52.2	24.1
3	0.44765	33.3	0.2	33.5	56.9	46.9	23.4
4	0.5303	34.3	0.2	34.5	56.0	46.0	21.5
5	1.106	32.3	0.2	32.5	56.0	46.0	23.5
6	1.3989	31.9	0.2	32.1	56.0	46.0	23.9
7	1.712	30.2	0.2	30.4	56.0	46.0	25.6
8	2.45435	29.5	0.3	29.8	56.0	46.0	26.2
9	5.67246	23.2	0.3	23.5	60.0	50.0	36.5
10	19.4132	24.2	0.6	24.8	60.0	50.0	35.2



FCC ID: PJIP276L

Line: Neutral



Spectrum Selection

Vi	N Phase						
No.	Frequency	Reading	c.f	Result	Limit	Limit	Margin
	520000 1200	a more respect	D 00000	PK	QP	AV	QP
	[MHz]	$[dB(\mu V)]$	[dB]	[dB(µV)]	$[dB(\mu V)]$	[dB(µV)]	[dB]
1	0.15071	45.5	0.4	45.9	66.0	56.0	20.1
2	0.21717	38.9	0.3	39.2	62.9	52.9	23.7
3	0.25888	37.9	0.3	38.2	61.5	51.5	23.3
4	0.5505	35.9	0.2	36.1	56.0	46.0	19.9
5	0.7525	33.6	0.2	33.8	56.0	46.0	22.2
6	1.43425	31.9	0.2	32.1	56.0	46.0	23.9
7	1.58575	31.9	0.2	32.1	56.0	46.0	23.9
8	5.56944	25.5	0.3	25.8	60.0	50.0	34.2
9	19.6152	24.3	0.6	24.9	60.0	50.0	35.1



FCC ID: PJIP276L

5.3 Radiated Emissions Measurement

5.3.1 Radiated Emissions Data

- Below 1 GHz

EUT	LCD MONITOR / P276L (S/N: N/A)				
Limit apply to	FCC Part 15.109(a) Class B				
Test Date	June 16, 2016				
Environmental of test	(22.9 ± 0.8) °C, (77 ± 0) % R.H., (99.8 ± 0.0) kPa				
Operating Condition	The EUT was connected as user's guide. And during the executed test program for EMI program with "H pattern" display on monitor. (BurnIn Test program) - VGA mode				
Result	Passed by 8.32 dB				

Radiated Emission Test Data

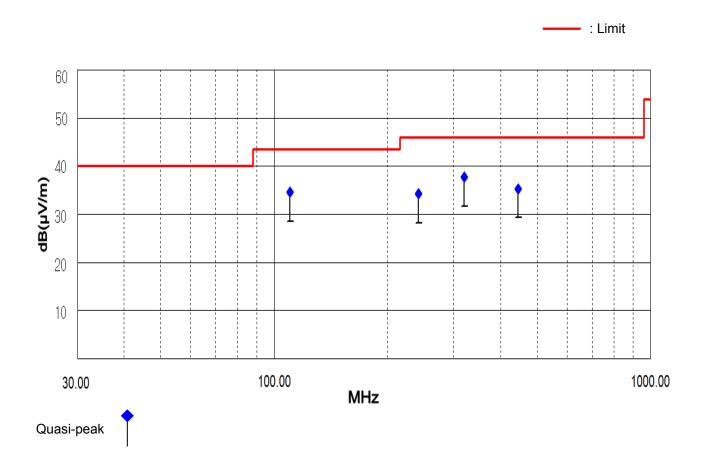
The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical. Detector mode: CISPR Quasi-Peak mode (6 dB Bandwidth: 120 kHz)

Frequency [MHz]	Reading [dB(µV)]	Polarization (*H/**V)	Ant. Factor [dB/m]	Cable Loss [dB(µV)]	Height [cm]	Result [dB(µV/m)]	Limit [dB(µV/m)]	Margin [dB]
110.48	55.10	V	9.32	-29.87	115	34.55	43.50	8.95
242.06	51.40	V	11.31	-28.45	126	34.26	46.00	11.74
319.80	51.50	V	14.02	-27.84	135	37.68	46.00	8.32
445.03	45.20	V	16.94	-26.81	148	35.33	46.00	10.67

- 1. * H: Horizontal polarization, ** V: Vertical polarization
- 2. The cable loss value was included the Amp. Gain.
- 3. Result = Reading + Antenna factor + Cable loss
- 4. Margin = Limit Result
- 5. The measurement was performed for the frequency range 30 MHz \sim 1 000 MHz according to the FCC Part 15.109(a) Class B.



FCC ID: PJIP276L





FCC ID: PJIP276L

- Below 1 GHz

EUT	LCD MONITOR / P276L (S/N: N/A)			
Limit apply to	FCC Part 15.109(a) Class B			
Test Date June 16, 2016				
Environmental of test	(23.0 ± 1.3) °C, (77 ± 0) % R.H., (99.8 ± 0.0) kPa			
Operating Condition	The EUT was connected as user's guide. And during the executed test program for EMI program with "H pattern" display on monitor. (BurnIn Test program) - DVI mode			
Result	Passed by 5.63 dB			

Radiated Emission Test Data

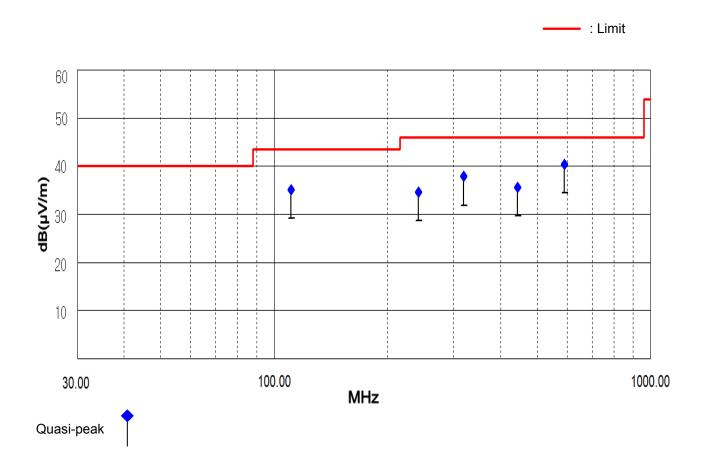
The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical. Detector mode: CISPR Quasi-Peak mode (6 dB Bandwidth: 120 kHz)

Frequency [MHz]	Reading [dB(µV)]	Polarization (*H/**V)	Ant. Factor [dB/m]	Cable Loss [dB(µV)]	Height [cm]	Result [dB(µV/m)]	Limit [dB(µV/m)]	Margin [dB]
111.20	55.60	V	9.37	-29.86	115	35.11	43.50	8.39
242.04	51.80	V	11.31	-28.45	127	34.66	46.00	11.34
319.31	51.70	V	14.00	-27.85	135	37.85	46.00	8.15
444.39	45.50	V	16.93	-26.82	147	35.61	46.00	10.39
590.70	46.10	V	19.91	-25.64	154	40.37	46.00	5.63

- 1. * H: Horizontal polarization, ** V: Vertical polarization
- 2. The cable loss value was included the Amp. Gain.
- 3. Result = Reading + Antenna factor + Cable loss
- 4. Margin = Limit Result
- 5. The measurement was performed for the frequency range 30 MHz \sim 1 000 MHz according to the FCC Part 15.109(a) Class B.



FCC ID: PJIP276L





FCC ID: PJIP276L

- Below 1 GHz

EUT	LCD MONITOR / P276L (S/N: N/A)				
Limit apply to	FCC Part 15.109(a) Class B				
Test Date	June 16, 2016				
Environmental of test	(23.2 ± 1.0) °C, (76 ± 1) % R.H., (99.8 ± 0.0) kPa				
Operating Condition	The EUT was connected as user's guide. And during the executed test program for EMI program with "H pattern" display on monitor. (BurnIn Test program) - DP mode				
Result	Passed by 7.94 dB				

Radiated Emission Test Data

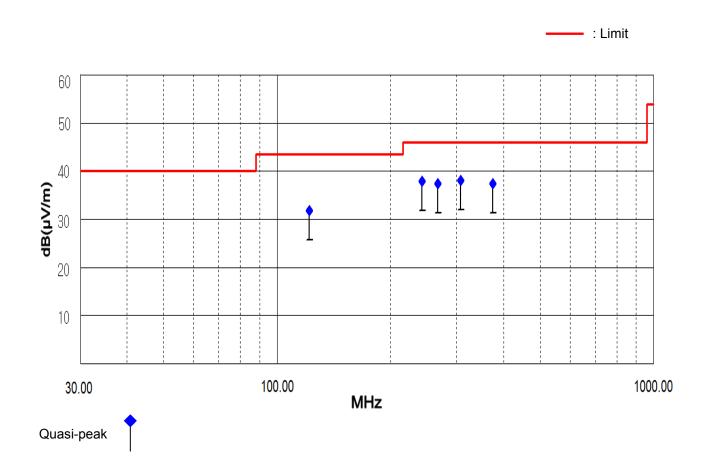
The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical. Detector mode: CISPR Quasi-Peak mode (6 dB Bandwidth: 120 kHz)

Frequency [MHz]	Reading [dB(µV)]	Polarization (*H/**V)	Ant. Factor [dB/m]	Cable Loss [dB(µV)]	Height [cm]	Result [dB(µV/m)]	Limit [dB(µV/m)]	Margin [dB]
122.04	51.30	V	10.24	-29.76	135	31.78	43.50	11.72
243.11	54.90	Н	11.36	-28.43	380	37.83	46.00	8.17
267.14	53.30	Н	12.31	-28.24	376	37.37	46.00	8.63
307.16	52.30	Н	13.71	-27.95	365	38.06	46.00	7.94
375.06	49.40	V	15.34	-27.38	143	37.36	46.00	8.64

- 1. * H : Horizontal polarization , ** V : Vertical polarization
- 2. The cable loss value was included the Amp. Gain.
- 3. Result = Reading + Antenna factor + Cable loss
- 4. Margin = Limit Result
- 5. The measurement was performed for the frequency range 30 MHz \sim 1 000 MHz according to the FCC Part 15.109(a) Class B.



FCC ID: PJIP276L





FCC ID: PJIP276L

- Above 1 GHz

EUT	LCD MONITOR / P276L (S/N: N/A)
Limit apply to	FCC Part 15.109(a) Class B
Test Date	June 11, 2016
Environmental of test	(23.5 ± 0.2) °C, (42 ± 0) % R.H., (100.5 ± 0.0) kPa
Operating Condition	The EUT was connected as user's guide. And during the executed test program for EMI program with "H pattern" display on monitor. (BurnIn Test program) - VGA mode
Result	Passed by 11.70 dB

Radiated Emission Test Data

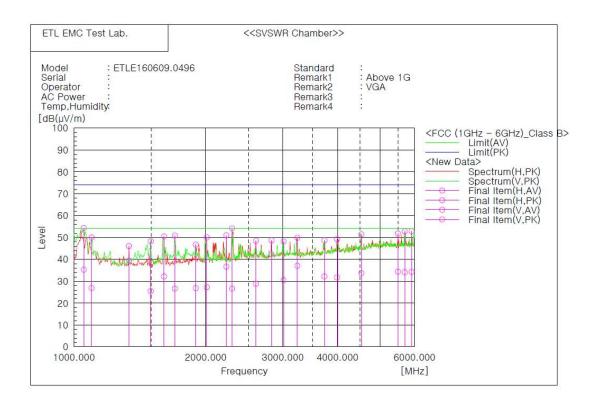
The following data and graph shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Detector mode: CISPR Peak mode, Average mode

- 1. Please see the measured data and graph in next page.
- 2. H: Horizontal polarization, V: Vertical polarization
- 3. The c.f value was included the antenna factor, cable loss and Amp. Gain.
- 4. Result value = Reading + c.f
- 5. Margin value = Limit Result
- 6. The measurement was performed for the frequency range 1 GHz \sim 6 GHz according to FCC Part 15.109(a) Class B.
- 7. Upper frequency of measurement range: 5th harmonic of the highest frequency.



FCC ID: PJIP276L



Final Result

No. 1 2 3 4 5 6 7 8 9	[dB(µV)] 53.3 39.0 47.4 37.7 50.1 43.7 36.1 35.3	c.f [dB(1/m)] -13.8 -11.7	Result [dB(µV/m)] 39.5 27.3 36.7 28.9 42.3 37.1 31.8 34.4 34.1	Limit [dB(µV/m) 54.0 54.0 54.0 54.0 54.0 54.0 54.0 54.0	Margin [dB] 14.5 26.7 17.3 25.1 11.7 16.9 22.2 19.6 19.9
No. 1 2 3 4 5 6 7 8 9	61.8 61.7 57.3 56.5 56.5 53.5	c.f	Result [dB(µV/m)] 46.1 50.1 51.0 48.5 48.7 49.9 49.2 51.8 52.8	Limit [dB(µV/m) 74.0 74.0 74.0 74.0 74.0 74.0 74.0 74.0	Margin [dB] 27.9 23.9 23.0 25.5 25.3 24.1 24.8 22.2 21.2
No. 1 2 3 4 5 6	[dB(μV)] 49.9 41.4 38.8 45.2 39.4	c.f	Result [dB(µV/m)] 35.3 26.9 25.5 32.2 26.7 26.9	Limit [dB(µV/m) 54.0 54.0 54.0 54.0 54.0 54.0	Margin 18.7 27.1 28.5 21.8 27.3 27.1



FCC ID: PJIP276L

Final Result

No. 7 8 9 10 11	Vertical Po Frequency [MHz] 2296.840 3011.920 3733.260 4533.180 5902.740	Reading	c.f	Result [dB(µV/m)] 26.7 30.5 32.2 33.7 34.3	Limit [dB(µV/m 54.0 54.0 54.0 54.0 54.0	Margin (dB) 27.3 23.5 21.8 20.3 19.7
	Vertical Po Frequency [MHz] 1052.520 1096.960 1496.920 1606.000 1698.920 1896.880 2296.840 3011.920 3733.260 4533.180 5902.740	Reading	c.f [dB(1/m)] -14.6	Result [dB(µV/m)] 54.4 50.0 48.3 50.5 50.9 46.8 54.2 48.2 48.7 51.4 52.9	Limit [dB(µV/m 74.0 74.0 74.0 74.0 74.0 74.0 74.0 74.0	Margin 19.6 24.0 25.7 23.5 23.1 27.2 19.8 25.8 25.3 22.6 21.1



FCC ID: PJIP276L

- Above 1 GHz

EUT	LCD MONITOR / P276L (S/N: N/A)
Limit apply to	FCC Part 15.109(a) Class B
Test Date	June 11, 2016
Environmental of test	(23.7 ± 0.1) °C, (43 ± 0) % R.H., (100.5 ± 0.0) kPa
Operating Condition	The EUT was connected as user's guide. And during the executed test program for EMI program with "H pattern" display on monitor. (BurnIn Test program) - DVI mode
Result	Passed by 11.60 dB

Radiated Emission Test Data

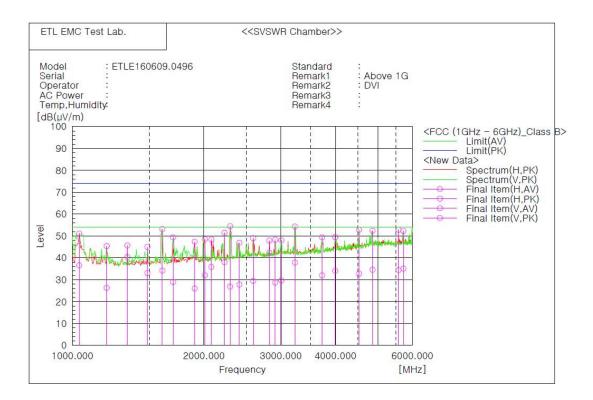
The following data and graph shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Detector mode: CISPR Peak mode, Average mode

- 1. Please see the measured data and graph in next page.
- 2. H: Horizontal polarization, V: Vertical polarization
- 3. The c.f value was included the antenna factor, cable loss and Amp. Gain.
- 4. Result value = Reading + c.f
- 5. Margin value = Limit Result
- 6. The measurement was performed for the frequency range 1 GHz \sim 6 GHz according to FCC Part 15.109(a) Class B.
- 7. Upper frequency of measurement range: 5th harmonic of the highest frequency.



FCC ID: PJIP276L



Final Result

Horizonta No. Frequenc [MHz] 1 1335.32 2 1904.96 3 2010.00 4 2078.68 5 2228.16 6 2296.84 7 2822.04 8 5575.50	[dB(µV)] 54.2 54.2 6 38.1 6 43.8 6 47.3 6 48.8 6 37.2 6 50.2	c.f	Result [dB(µV/m)] 40.4 26.0 32.1 35.9 38.1 26.9 42.4 34.4	Limit [dB(µV/m 54.0 54.0 54.0 54.0 54.0 54.0 54.0 54.0	Margin [dB] 13.6 28.0 21.9 18.1 15.9 27.1 11.6 19.6
	Reading [dB(μV)] 59.5 60 59.5 60 60.3 60 62.2 60 64.8 60 55.7	c.f [dB(1/m)] -13.8 -12.1 -11.7 -11.4	45.7 47.4	74.0 74.0	Margin 28.3 26.6 25.4 25.6 22.5 19.5 26.1 21.1
Vertical No. Frequenc [MHz] 1 1036.36 2 1197.96 3 1484.80 4 1606.00 5 1698.92 6 2409.96 7 2591.76 8 2910.92	Reading [dB(μV)] 50 51.3 60 40.5 60 47.2 60 47.5 60 37.5 60 38.3	c.f [dB(1/m)] -14.7 -14.2 -13.4 -13.0 -12.7	Result [dB(µV/m)] 36.6 26.3 33.1 34.2 29.0 27.8 29.5 28.8	Limit [dB(µV/m 54.0 54.0 54.0 54.0 54.0 54.0 54.0 54.0	Margin 17.4 27.7 20.9 19.8 25.0 26.2 24.5 25.2



FCC ID: PJIP276L

Final Result

9 3 10 3 11 3 12 3 13 4 14 4		rization Reading dB(µV)] 36.9 44.5 37.2 38.3 35.4 36.0 35.8	c.f	Result [dB(µV/m)] 29.7 37.9 32.0 34.1 32.8 34.6 35.1		Margin 24.3 16.1 22.0 19.9 21.2 19.4 18.9
No. Fr 1 1 2 1 3 1 4 1 56 2 7 2 8 2 9 10 11 3 12 3 14 4	tical Pola equency [[MHz] [036.360 197.960 484.800 606.000 698.920 409.960 5911.760 9910.920 606.060 6230.280 6727.200 993.840 5527.120 860.420 6720.940	Reading	c.f	Result [dB(µV/m)] 51.1 45.4 45.0 53.2 49.4 46.9 49.0 48.3 48.0 54.3 49.5 52.9 52.4 52.3	Limit [dB(µV/m)] 74.0 74.0 74.0 74.0 74.0 74.0 74.0 74.0	Margin [dB] 22.9 28.6 29.0 20.8 24.6 27.1 25.0 25.7 26.0 19.7 24.6 24.5 21.1



FCC ID: PJIP276L

- Above 1 GHz

EUT	LCD MONITOR / P276L (S/N: N/A)
Limit apply to	FCC Part 15.109(a) Class B
Test Date	June 11, 2016
Environmental of test	(23.4 ± 0.0) °C, (43 ± 0) % R.H., (100.5 ± 0.0) kPa
Operating Condition	The EUT was connected as user's guide. And during the executed test program for EMI program with "H pattern" display on monitor. (BurnIn Test program) - DP mode
Result	Passed by 17.60 dB

Radiated Emission Test Data

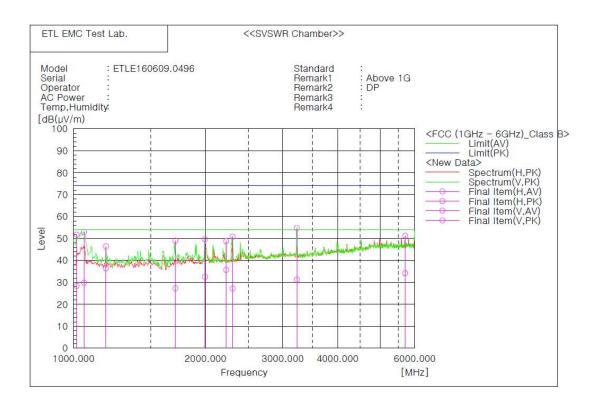
The following data and graph shows the highest levels of radiated emissions on both polarizations of horizontal and vertical

Detector mode: CISPR Peak mode, Average mode

- 1. Please see the measured data and graph in next page.
- 2. H: Horizontal polarization, V: Vertical polarization
- 3. The c.f value was included the antenna factor, cable loss and Amp. Gain.
- 4. Result value = Reading + c.f
- 5. Margin value = Limit Result
- 6. The measurement was performed for the frequency range 1 GHz \sim 6 GHz according to FCC Part 15.109(a) Class B.
- 7. Upper frequency of measurement range: 5th harmonic of the highest frequency.



FCC ID: PJIP276L



Final Result

No. Frequer [MHz 1 2228.	tal Polarization Reading [dB(μV)] 160 46.4	c.f [dB(1/m)] -10.7	[dB(µV/m)] 35.7	[dB(μV/m) 54.0	[dB] 18.3
No. Freque	tal Polarization Reading [dB(µV)] 160 59.5 760 52.0	c.f [dB(1/m)]	Result [dB(µV/m)] 48.8 51.3	[dB(µV/m)	[dB]
No. Freque [MHz 1 1016. 2 1056. 3 1185. 4 1707. 5 1993. 6 2304.	Polarization Reading [dB(µV)] 160 43.2 560 44.4 840 50.6 6000 40.0 840 44.2 920 37.5 280 37.9	c.f [dB(1/m)] -14.8 -14.6 -14.2 -12.7 -11.7	[dB(µV/m)] 28.4 29.8 36.4 27.3 32.5 27.2	[dB(µV/m) 54.0 54.0 54.0 54.0 54.0	25.6 24.2 17.6 26.7 21.5 26.8
No. Freque [MHz 1 1016. 2 1056. 3 1185. 4 1707.	560 67.6 840 60.6 000 61.7 840 61.4 920 61.2	c.f [dB(1/m)] -14.8 -14.6 -14.2 -12.7 -11.7 -10.3	[dB(µV/m)] 51.8 53.0 46.4	[dB(μV/m) 74.0 74.0 74.0 74.0 74.0 74.0	[dB] 22.2



FCC ID: PJIP276L

6. SAMPLE CALCULATION

Sample Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF

Where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor - Preamplifier Factor

 $dB(\mu V) = 20 \log_{10} (\mu V)$: Equation

 $dB(\mu V) = dBm + 107$

Example : @ 590.70 MHz

Class B Limit = $46.00 \text{ dB}(\mu\text{V/m})$

Reading = $46.10 \text{ dB}(\mu\text{V})$

Antenna Factor + (Cable Loss - Amp. Gain) = $19.91 + (-25.64) = -5.73 \text{ dB}(\mu\text{V/m})$

Total = $40.37 \text{ dB}(\mu\text{V/m})$

Margin = 46.00 - 40.37 = 5.63 dB

= 5.63 dB below Limit



FCC ID: PJIP276L

7. List of test equipments used for measurements

Test Equipment		Model	Mfg.	Serial No.	Cal. Date	Cal. Due Date
	EMI Test Receiver	ESCS30	R&S	100087	16.01.12	17.01.12
\boxtimes	EMI Test Receiver	ESPI3	R&S	100478	15.09.03	16.09.03
\boxtimes	EMI Test Receiver	ESCI7	R&S	100851	15.09.04	16.09.04
\boxtimes	Amplifier	310N	Sonoma Instrument	284750	15.12.08	16.12.08
\boxtimes	Two-Line V-Network	ENV216	R&S	102053	16.04.04	17.04.04
\boxtimes	Two-Line V-Network	ENV216	R&S	958599/106	16.03.15	17.03.15
\boxtimes	Horn Antenna	BBHA 9120D	Schwarzbeck	826	16.03.23	18.03.23
\boxtimes	Amplifier	TK-PA18	TESTEK.	120020	15.09.03	16.09.03
\boxtimes	LogBicon Antenna	VULB9160	Schwarzbeck	3164	15.06.08	17.06.08
\boxtimes	Turn-Table	DS1200-S	Innco Systems GmbH	2740311	N/A	N/A
\boxtimes	Turn-Table	TT 1.35 SI	SES	-	N/A	N/A
	Antenna Master	AM 4.5	SES	-	N/A	N/A