

FCC Test Report

APPLICANT : Acer Incorporated
EQUIPMENT : Notebook computer
BRAND NAME : acer
MODEL NAME : N18H1
FCC ID : HLZ9560D2W
STANDARD : FCC CFR Title 47 Part 15 Subpart B
CLASSIFICATION : Certification

The product was received on Mar. 28, 2018 and testing was completed on Apr. 23, 2018. We, Sporton International (Shenzhen) Inc., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2014 and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Shenzhen) Inc., the test report shall not be reproduced except in full.



Approved by: Eric Shih / Manager

Sporton International (Shenzhen) Inc.

**1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City
Guangdong Province 518055 China**



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC832801	Rev. 01	Initial issue of report	May 11, 2018



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.107	AC Conducted Emission	< 15.107 limits	PASS	Under limit 6.90 dB at 0.52 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 4.07 dB at 960.00 MHz



1. General Description

1.1. Applicant

Acer Incorporated

8F ,88, Sec.1 Xintai 5th Rd. Xizhi, New Taipei City 221, Taiwan, R.O.C

1.2. Manufacturer

Acer Incorporated

8F ,88, Sec.1 Xintai 5th Rd. Xizhi, New Taipei City 221, Taiwan, R.O.C

1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	Notebook computer
Brand Name	acer
Model Name	N18H1
FCC ID	HLZ9560D2W
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/VHT160 Bluetooth v3.0 + EDR/ Bluetooth v 5.0 LE
HW Version	V2
SW Version	Windows 10 Pro 1709
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4. Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Rx Frequency	802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Antenna Type	WLAN : PIFA Antenna Bluetooth :PIFA Antenna
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n/ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : $\pi/4$ -DQPSK Bluetooth (3Mbps) : 8-DPSK

1.5. Modification of EUT

No modifications are made to the EUT during all test items

1.6. Keypart List

	(SKUA)	(SKUC)	(SKUD)	(SKUE)	(SKUH)
CPU	B	B	A	A	B
LP-DDR4	A(2GB)	A(4GB)	A(4GB)	B(4GB)	A(4GB)
Panel	A	B	A	C	B
Camera	A	A	B	A	A
Battery	A	A	A	A	A
WLAN Module	A	A	A	A	A
Acbel Adapter	A B	A B	A B	A B	A B
EMCC	B	A	C	D	/
HHD	A	/	/	/	B

Remark: "A/B/C/D" refer to the following table

Keyparts	Character	Supplier	Description	Item
CPU	Intel Gemini Lake	Intel	Intel N5000 1.1G/4C/4M, 1090pin	A
			Intel N4000 1.1G/2C/4M, 1090pin	B
LP-DDR4	8Gbx32 LP DDR4	Micron	MT53B256M32D1NP-062, KN.1GB04.017	A
		SK Hynix	H9HCNNN8KUMLHR-NME, KN.1GB0G.029	B
EMMC	32G	SK HYNIX	H26M62002JPR, KN.0320G.024, v5.1 F14	A
		SANDISK	SDINBDA4-32-1220V, KN.0320D.007, 3D TLC 64L	B
	64 GB	SANDISK	SDINBDA4-64-1220V, KN.0640D.008, 3D TLC 64L	C
		SK HYNIX	H26M74002HMR, KN.0640G.011, v5.1 F14	D
HHD	250G/320G/500G: TBD	WD(BS)	500G_HDD WD 2.5" 5400rpm 500GB WD5000LPCX-21VHAT0, MN500S-2, 7mmzh HDD, 500G/P SATA III 16MB LF F/W:01.01A01_SATA3_Acer	A
		Toshiba(BS)	500G_HDD TOSHIBA 2.5" 5400rpm 500GB Aquarius-B,MQ01ABF050,500G/P, 7mmzh SATA III 8MB LF+HF F/W:AM002J_SATA3_Acer	B
WIFI	CNVi, 2*2 AC, 1216 solder down	Intel	Wireless LAN Intel 802.11ac Bluetooth FM INT9560D2W.NV JFP2 2x2 AC MU-MIMO/160Mhz + BT5 1216 non-vPro	-
Battery	AP16L5J	Acer	4570mAh; 7.7Vdc	A
Adapter	45W	Chicony	Input: 100-240Vac, 50-60Hz, 1.2A; Output: 19Vdc, 2.37A, W15-045N4A	A
		Delta	Input: 100-240VAC 50-60Hz 1.2A Output: 19VDC 2.37A, ADP-45HE D	B
Panel	11.6" TN/HD 3.0mm(max)	BOE	N11.6HDSUP, 1366*768, KL.1160E.004, NT116WHM-N42 V8.0 (eDP) (AG) 250nits 8ms 400:1 45%	A
	11.6" IPS/HD 3.0mm(max)	AUO	N11.6HDSUPI, B116XAN06.1 (eDP/IPS) (AG) 250nits 25ms 800:1 50% IPS (Bracket)	B
		INNOLUX	N116BGE-EA2	C
Camera	0.3M VGA_MIC	Chicony	Camera _59.8*6*2.64_30 W_Hynix Hi-708_ MIC_ LED_FF_ZIF_Acer CNFG023	A
		Liteon	Camera _59.8*6*2.79_30 W_Hynix 708_ MIC_ LED_FF_ZIF_Acer 6SF009N2	B

1.7. Test Location

Sporton International (Shenzhen) Inc. is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0) and the FCC designation No are CN5018 and CN5019.

Test Site	Sporton International (Shenzhen) Inc.	
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan Shenzhen City Guangdong Province 518055 China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595	
Test Site No.	Sporton Site No.	FCC Test Firm Registration No.
	CO01-SZ	251365
Test Site	Sporton International (Shenzhen) Inc.	
Test Site Location	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan District Shenzhen City Guangdong Province 518055 China TEL: +86-755-3320-2398	
Test Site No.	Sporton Site No.	FCC Test Firm Registration No.
	03CH03-SZ	577730

Note: The test site complies with ANSI C63.4 2014 requirement.

1.8. Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC CFR Title 47 Part 15 Subpart B
- ♦ ANSI C63.4-2014

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2. Test Configuration of Equipment Under Test

2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

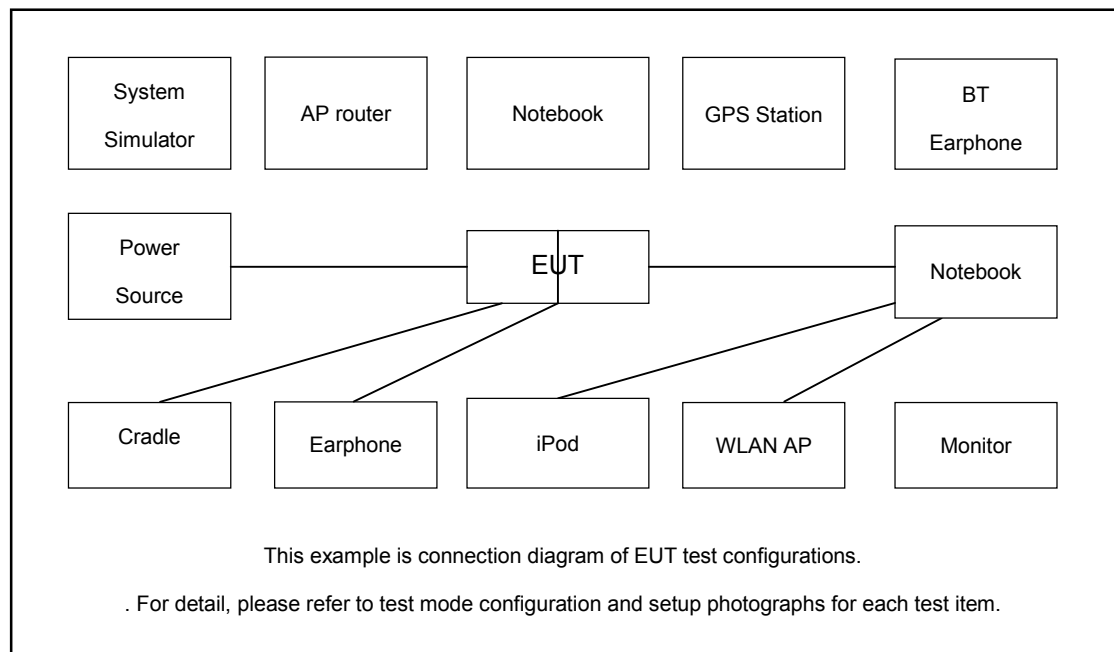
Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
AC Conducted Emission	Mode 1: NB mode + TP + Earphone + Bluetooth Idle + WLAN(2.4G) Idle + Camera + Adapter 1 for SKU A
	Mode 2: Pad mode(parallel) + TP + Earphone + Bluetooth Idle + WLAN(5G) Idle + Camera + Adapter 1 for SKU A
	Mode 3: Pad mode(Vertical) + TP + Earphone + Bluetooth Idle + WLAN(2.4G) Idle + Camera + Adapter 1 + for SKU A
	Mode 4: NB mode + TP + Earphone + Bluetooth Idle + WLAN(5G) Idle + Camera + Adapter 2 + for SKU A
	Mode 5: NB mode + TP + Earphone + Bluetooth Idle + WLAN(5G) Idle + Camera + Adapter 2 + for SKU C
	Mode 6: NB mode + TP + Earphone + Bluetooth Idle + WLAN(5G) Idle + Camera + Adapter 2 + for SKU D
	Mode 7: NB mode + TP + Earphone + Bluetooth Idle + WLAN(5G) Idle + Camera + Adapter 2 + for SKU E
	Mode 8: NB mode + TP + Earphone + Bluetooth Idle + WLAN(5G) Idle + Camera + Adapter 2 + for SKU H
Radiated Emissions	Mode 1: NB mode + TP + Earphone + Bluetooth Idle + WLAN(2.4G) Idle + Camera + Adapter 1 for SKU A
	Mode 2: Pad mode(parallel) + TP + Earphone + Bluetooth Idle + WLAN(5G) Idle + Camera + Adapter 1 for SKU A
	Mode 3: Pad mode(Vertical) + TP + Earphone + Bluetooth Idle + WLAN(2.4G) Idle + Camera + Adapter 1 + for SKU A
	Mode 4: NB mode + TP + Earphone + Bluetooth Idle + WLAN(5G) Idle + Camera + Adapter 2 + for SKU A
	Mode 5: NB mode + TP + Earphone + Bluetooth Idle + WLAN(2.4G) Idle + Camera + Adapter 1 for SKU H
	Mode 6: NB mode + TP + Earphone + Bluetooth Idle + WLAN(2.4G) Idle + Camera + Adapter 1 for SKU C
	Mode 7: NB mode + TP + Earphone + Bluetooth Idle + WLAN(2.4G) Idle + Camera + Adapter 1 for SKU D
	Mode 8: NB mode + TP + Earphone + Bluetooth Idle + WLAN(2.4G) Idle + Camera + Adapter 1 for SKU E

Remark:

1. The worst case of AC is mode 4; only the test data of this mode is reported.
2. The worst case of RE is mode 1; only the test data of this mode is reported.
3. Data Link with Notebook means data application transferred mode between EUT and Notebook.
4. TP:HDMI+SD card +USB Link + colour bar+ Mobile phone (Moto) (Take the mobile phone as the EUT load)

2.2.Connection Diagram of Test System



2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8m
2.	Bluetooth Earphone	Samsung	EO-MG900	CCA14LP1680T5	N/A	N/A
3.	Monitor	Dell	1707FPt	Fcc DoC	Shielded, 1.2m	Unshielded, 1.8m
4.	mobile phone	MOTO	XF1662	Fcc DoC	N/A	N/A
5.	SD Card	Kingston	MicroSD HC	FCC DoC	N/A	N/A
6.	Earphone	Apple	MC690ZP/A	N/A	Shielded, 1.0m	N/A
7.	USB Disk 3.0	Lenovo	F310S	Fcc DoC	N/A	N/A
8.	Bluetooth Earphone	Samsung	EO-MG900	PYAHS-107W	N/A	N/A
9.	WLAN AP	Dlink	DIR-820L	KA2IR820LA1	N/A	Unshielded, 1.8m
10.	SD Card	N/A	MicroSD HC	FCC DoC	N/A	N/A
11.	Mobile Phone	Moto	N/A	N/A	N/A	Unshielded, 1.8m
12.	USB Disk	QT	N/A	N/A	N/A	N/A
13.	Earphone	Apple	DCAYIV-A9007ZJW3-000	N/A	N/A	N/A
14.	Monitor	Dell	P2715QT	FCC DoC	Monitor	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.4. EUT Operation Test Setup

The EUT was attached to the Bluetooth earphone or WLAN AP, and the following programs installed in the EUT were programmed during the test.

1. Execute the programs, "PassMark Burn-In Tests V8.1" installed in EUT for files transfer with Mobile Phone/USB Disk via USB cable.
2. Turn on camera to capture images.
3. Connect LCD Monitor via HDMI Cable.

3. Test Result

3.1. Test of AC Conducted Emission Measurement

3.1.1 Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

<Class B Limit>

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

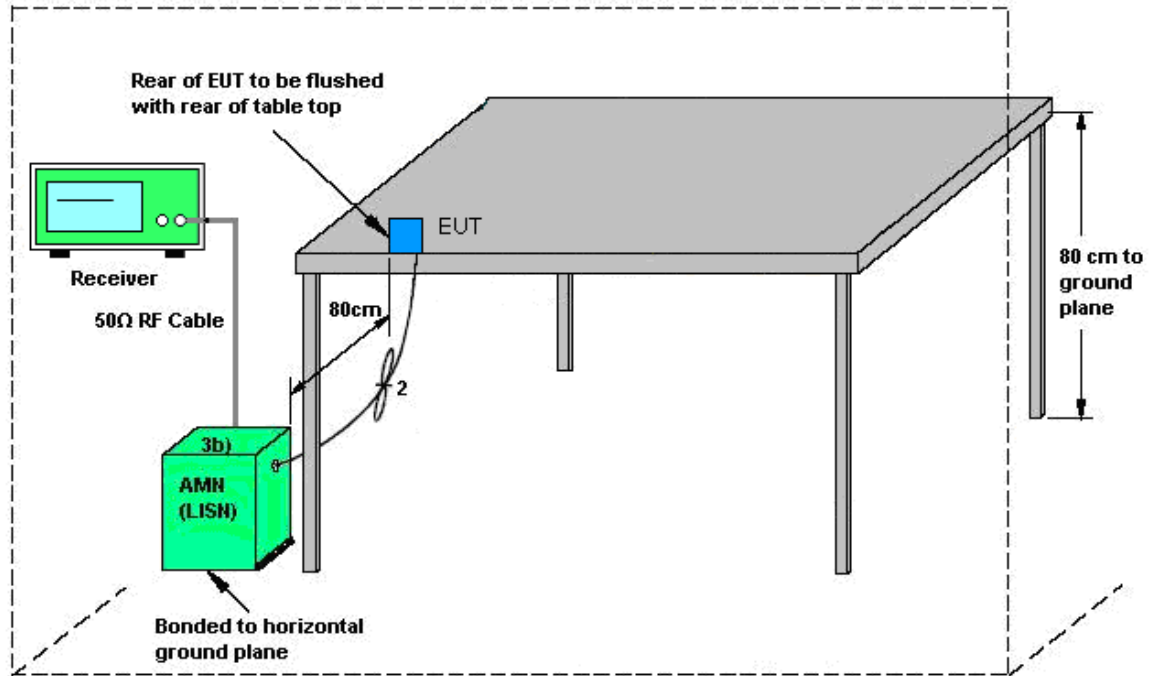
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedure

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

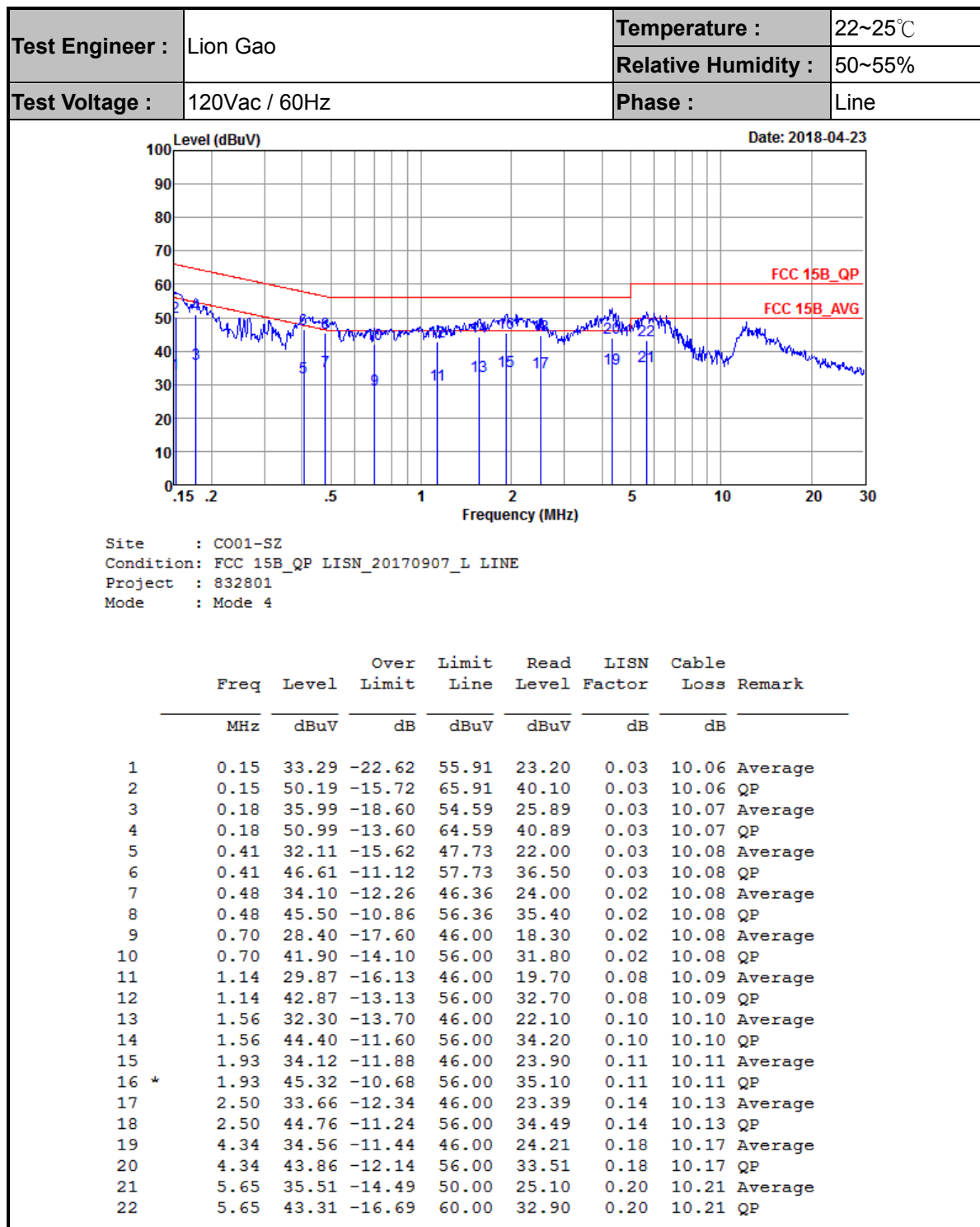
3.1.4 Test Setup

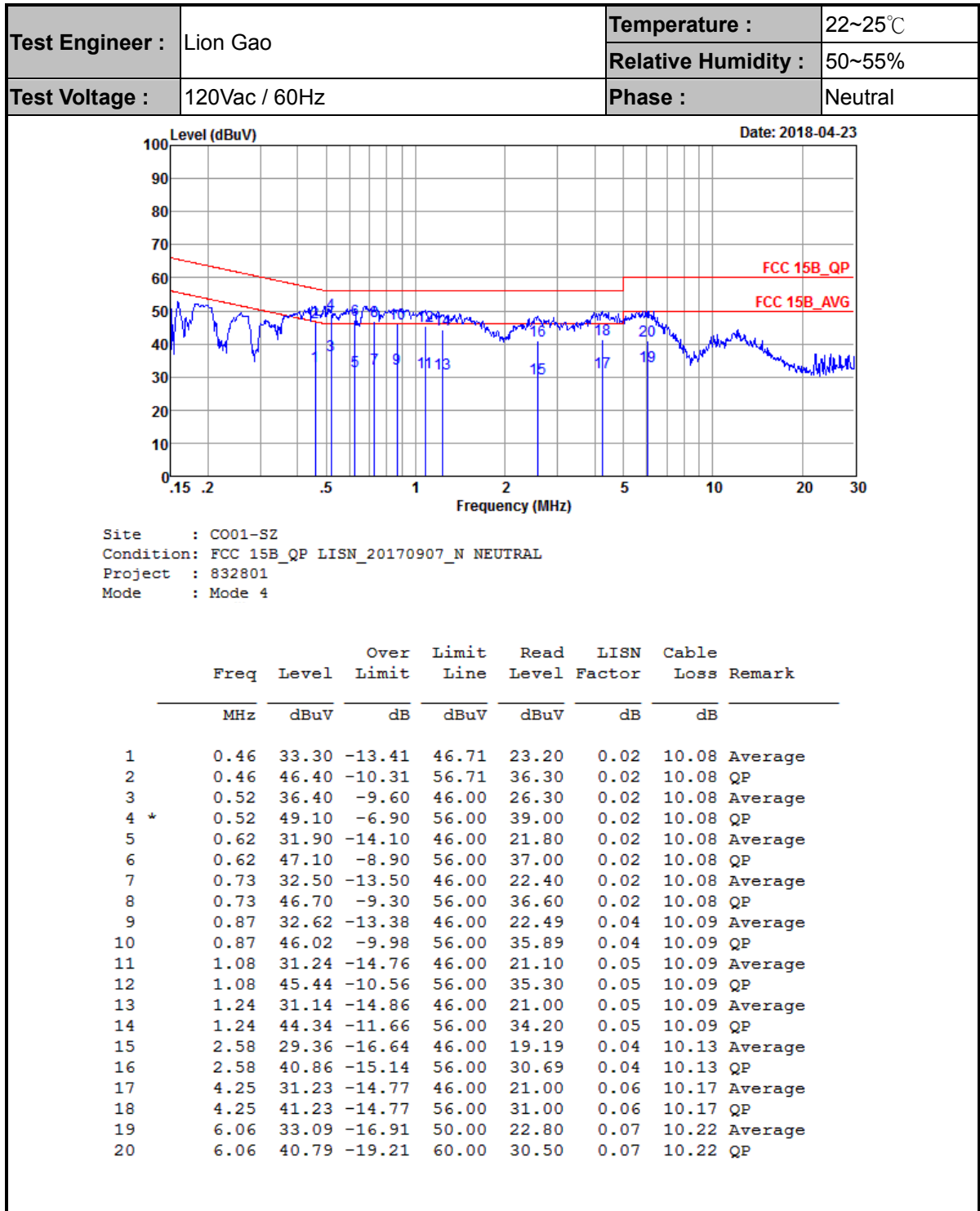


AMN = Artificial mains network (LISH)
 AE = Associated equipment
 EUT = Equipment under test
 ISN = Impedance stabilization network



3.1.5 Test Result of AC Conducted Emission





3.2. Test of Radiated Emission Measurement

3.2.1. Limit of Radiated Emission

The emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

<Class B Limit>

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.2.2. Measuring Instruments

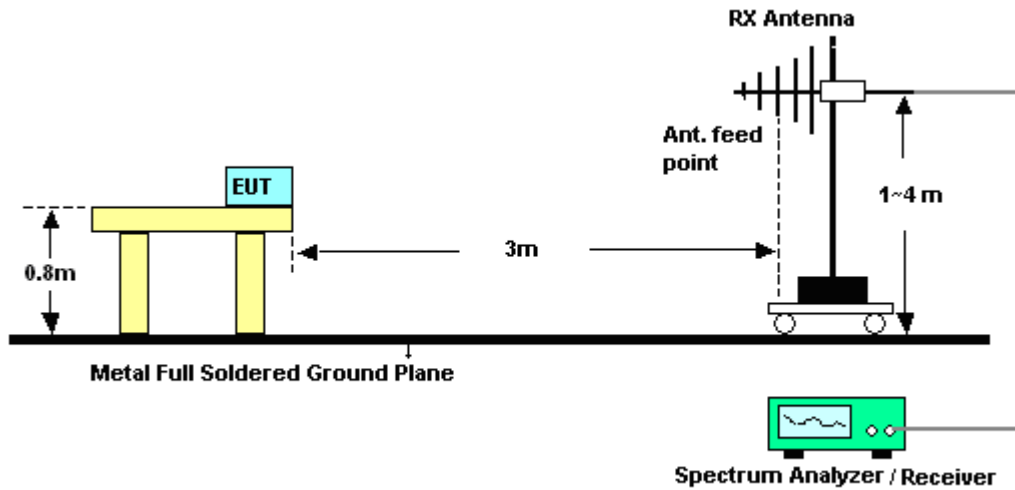
The measuring equipment is listed in the section 4 of this test report.

3.2.3. Test Procedures

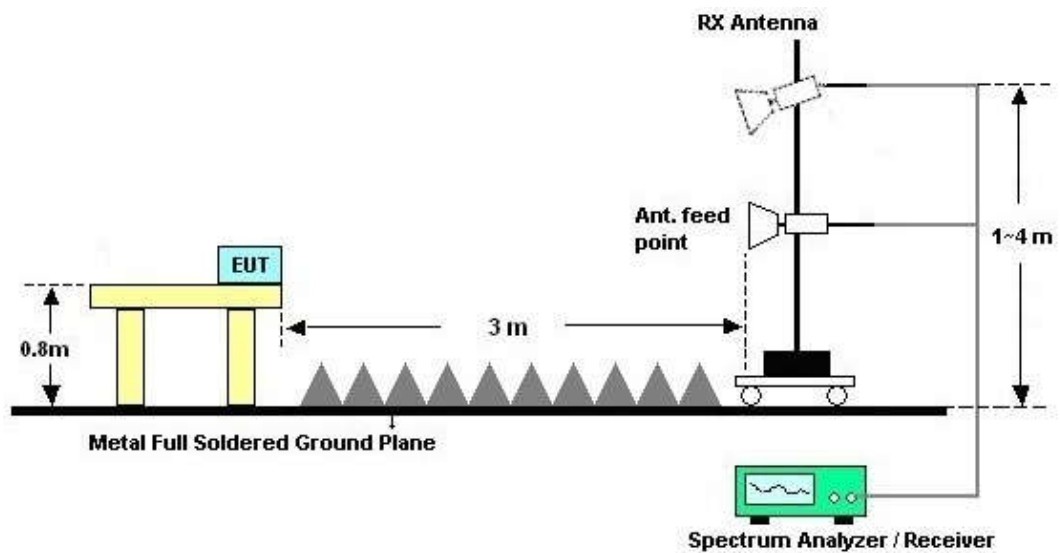
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode (RBW=120kHz/VBW=300kHz for frequency below 1GHz; RBW=1MHz VBW=3MHz (Peak), RBW=1MHz/VBW=10Hz (Average) for frequency above 1GHz).
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
8. Emission level (dB μ V/m) = 20 log Emission level (μ V/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz

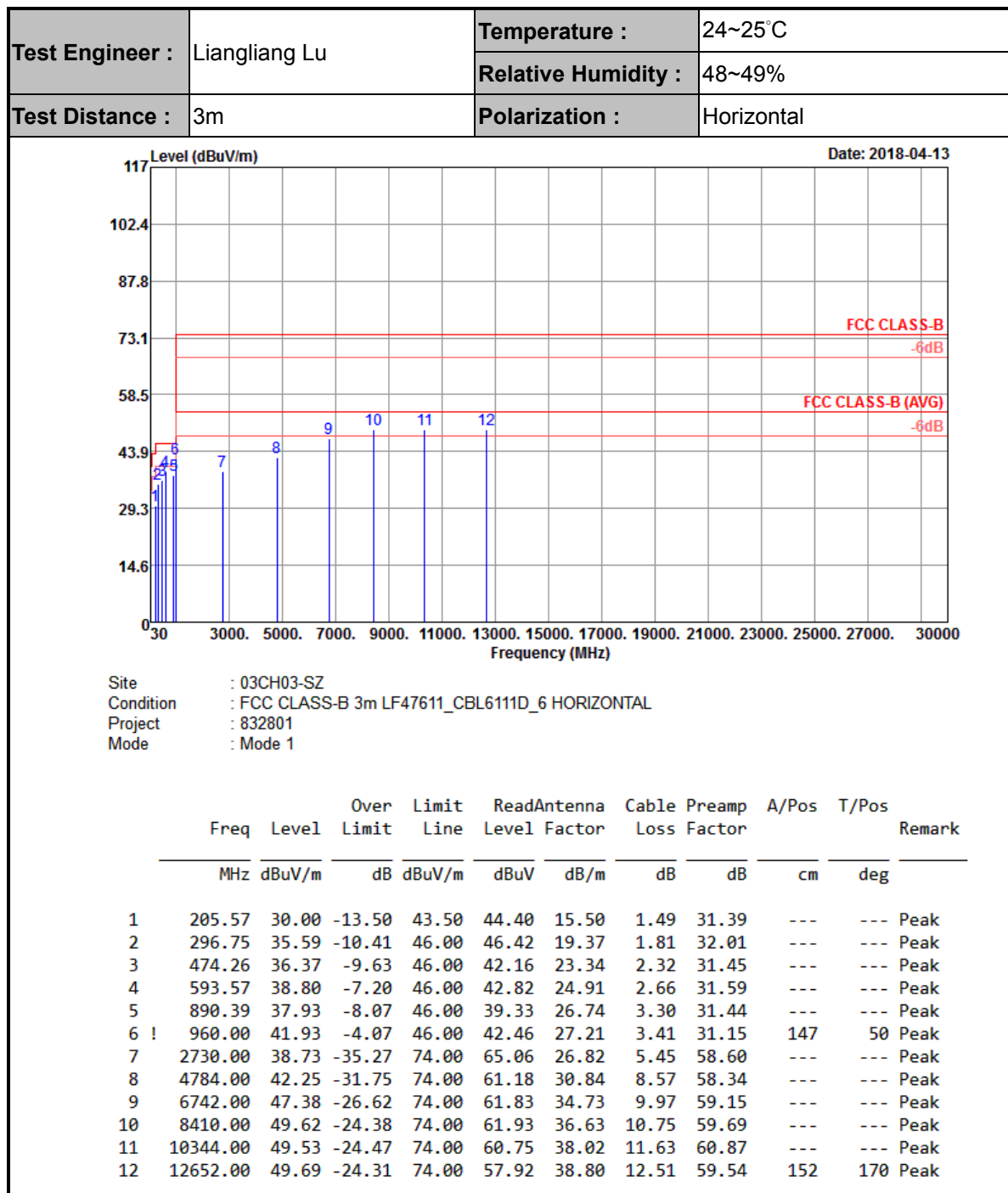


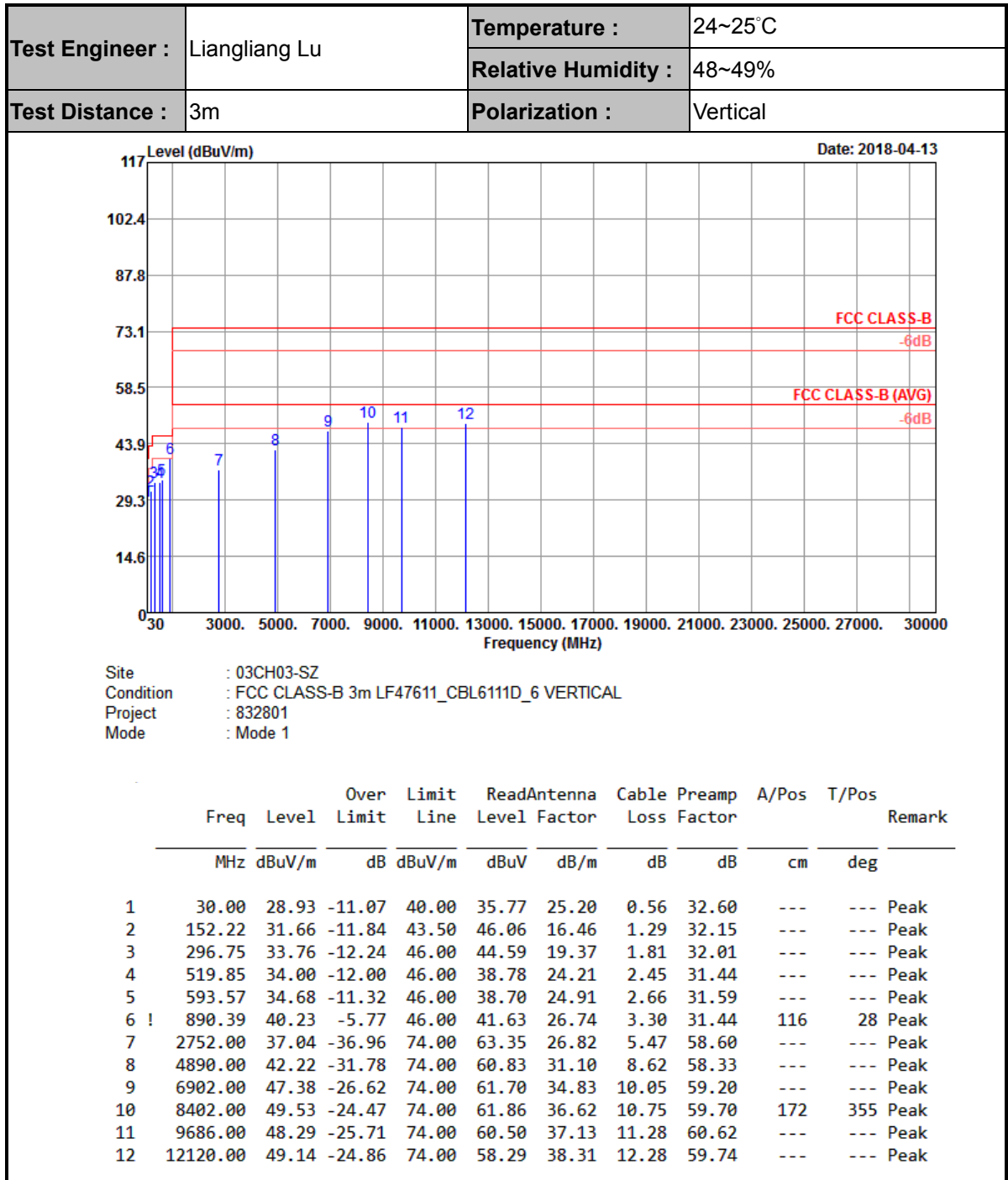
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission







4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver&SA	KEYSIGHT	N9038A	MY54450083	20Hz~8.4GHz	Apr. 20, 2017	Apr. 13, 2018	Apr. 19, 2018	Radiation (03CH03-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150246	10Hz~44GHz;	Apr. 20, 2017	Apr. 13, 2018	Apr. 19, 2018	Radiation (03CH03-SZ)
Bilog Antenna	TeseQ	CBL6112D	35408	30MHz~2GHz	May 14, 2017	Apr. 13, 2018	May 13, 2018	Radiation (03CH03-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1355	1GHz~18GHz	Jul. 09, 2017	Apr. 13, 2018	Jul. 08, 2018	Radiation (03CH03-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18GHz~40GHz	Jun. 16, 2017	Apr. 13, 2018	Jun. 15, 2018	Radiation (03CH03-SZ)
LF Amplifier	Burgeon	BPA-530	102210	0.01Hz~3000MHz	Oct. 19, 2017	Apr. 13, 2018	Oct. 18, 2018	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1943528	1GHz~18GHz	Oct. 19, 2017	Apr. 13, 2018	Oct. 18, 2018	Radiation (03CH03-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 18, 2017	Apr. 13, 2018	Jul. 17, 2018	Radiation (03CH03-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	NCR	Apr. 13, 2018	NCR	Radiation (03CH03-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Apr. 13, 2018	NCR	Radiation (03CH03-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Apr. 13, 2018	NCR	Radiation (03CH03-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Dec. 26, 2017	Apr. 23, 2018	Dec. 25, 2018	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Dec. 26, 2017	Apr. 23, 2018	Dec. 25, 2018	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	MessTec	3816/2SH	00103892	9kHz~30MHz	Nov. 01, 2017	Apr. 23, 2018	Oct. 31, 2018	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 19, 2017	Apr. 23, 2018	Jul. 18, 2018	Conduction (CO01-SZ)

NCR: No Calibration Required

5. Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.6 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	5.0 dB
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.8 dB
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Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.6 dB
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