



FCC EMI TEST REPORT

FCC ID : PY7-33726V
Equipment : Bluetooth Device
Brand Name : Sony
Applicant : Sony Mobile Communications Inc.
4-12-3 Higashi-Shinagawa,
Shinagawa-ku, Tokyo, 140-0002, Japan
Manufacturer : Sony Mobile Communications Inc.
4-12-3 Higashi-Shinagawa,
Shinagawa-ku, Tokyo, 140-0002, Japan
Standard : FCC 47 CFR FCC Part 15 Subpart B

The product was received on Oct. 30, 2018 and testing was started from Dec. 09, 2018 and completed on Dec. 12, 2018. We, SPORTON INTERNATIONAL 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Jones Tsai

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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Appendix A. AC Conducted Emission Test Result**Appendix B. Radiated Emission Test Result**



History of this test report



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.107	AC Conducted Emission	Pass	Under limit 6.19 dB at 6.000 MHz
3.2	15.109	Radiated Emission	Pass	Under limit 7.68 dB at 51.060 MHz for Quasi-Peak

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

None

Reviewed by: Louis Wu**Report Producer: Maggie Chiang**



1. General Description

1.1. Product Feature of Equipment Under Test

Bluetooth and NFC

Product Specification subjective to this standard		
Antenna Type	Bluetooth: PIFA Antenna NFC: Loop Antenna	
EUT Information List		
HW Version	SW Version	Performed Test Item
A	2.1.1	Conducted Emission Radiated Emission
Accessory List		
USB Cable	Model No. : UCB22/AI-0161	

Note:

1. Above EUT list used are electrically identical per declared by manufacturer.
2. Above the accessories list are used to exercise the EUT during test, and the serial number of each type of accessories is listed in each section of this report.
3. For other wireless features of this EUT, test report will be issued separately.

1.2. Modification of EUT

No modifications are made to the EUT during all test items.



1.3. Test Location

Sportun Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1093 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sportun Site No.	
	CO05-HY	03CH06-HY

1.4. Applicable Standards

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

- FCC 47 CFR FCC 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

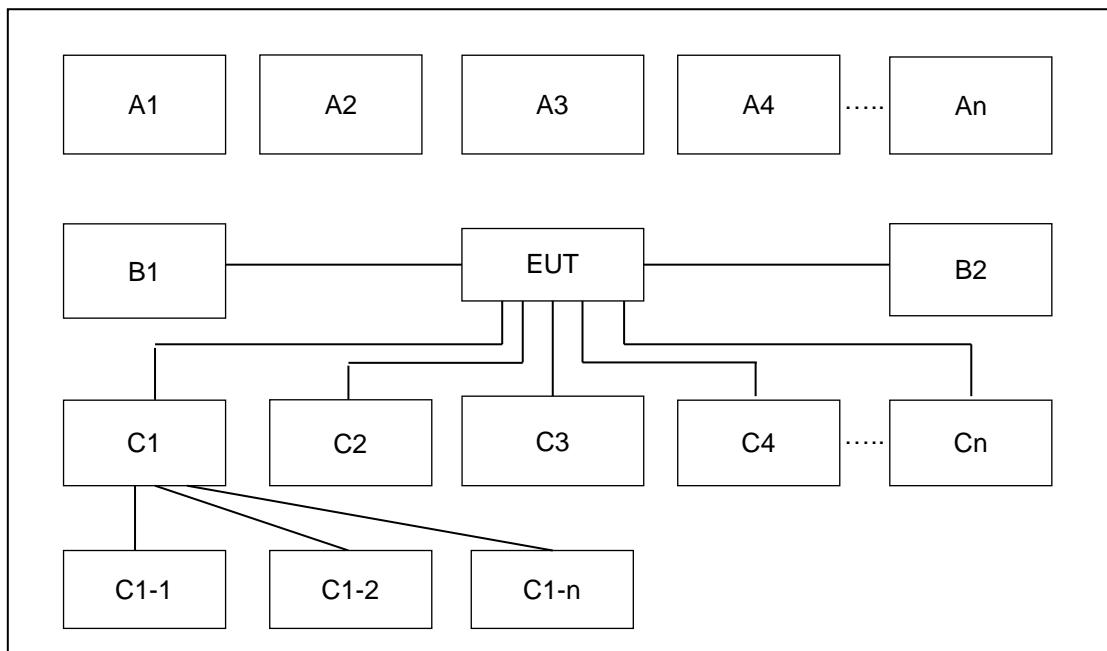
2.1. Test Mode

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). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report

Test Items	Function Type
AC Conducted Emission	Mode 1: EUT + Bluetooth Idle + Phone + NFC Tag + USB Cable (Charging from Adapter) Mode 2: EUT + Bluetooth Link + Phone + MP3 + USB Cable (Charging from Adapter)
Radiated Emissions	Mode 1: EUT + Bluetooth Idle + Phone + NFC Tag Mode 2: EUT + Bluetooth Idle + Phone + NFC Tag + USB Cable (Charging from Adapter) Mode 3: EUT + Bluetooth Idle + Phone + NFC Tag + DC Car Charger (12V) Mode 4: EUT + Bluetooth Idle + Phone + NFC Tag + DC Car Charger (24V) Mode 5: EUT + Bluetooth Link + Phone + MP3
Remark:	
1. The worst case of AC is mode 2. 2. The worst case of RE is mode 4.	

2.2. Connection Diagram of Test System



Conduction Test Setup								
No.	Wireless Station	Connection Type	Test Mode					
			1	2	-	-	-	-
A1	Phone	Bluetooth	X	X				
Power Source								
B1	AC : 120V/60Hz	AC Power Cable	X	X				

Radiation Test Setup								
No.	Wireless Station	Connection Type	Test Mode					
			1	2	3	4	5	-
A1	Phone	Bluetooth	X	X	X	X	X	
Power Source								
B1	AC : 120V/60Hz	AC Power Cable		X				
B2	DC : 12V/24V	DC Power Cable			X	X		
Setup Peripherals								
C1	Phone	USB Cable			X	X		



2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	Data Cable	Power Cord
1.	Mobile Phone	Sony	PY7-58241M	NA	NA
2.	Car Battery	YUASA	46B24R(S)	N/A	N/A
3.	Adapter	Sony	UCH 20. 1295-9705	NA	NA

2.4. EUT Operation Test Setup

At the same time, the following programs installed in the EUT were programmed during the test.

1. The phone executed “Music Player” to play MP3 file, and transfer to the EUT via Bluetooth.
2. Execute Bluetooth function.



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.

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.

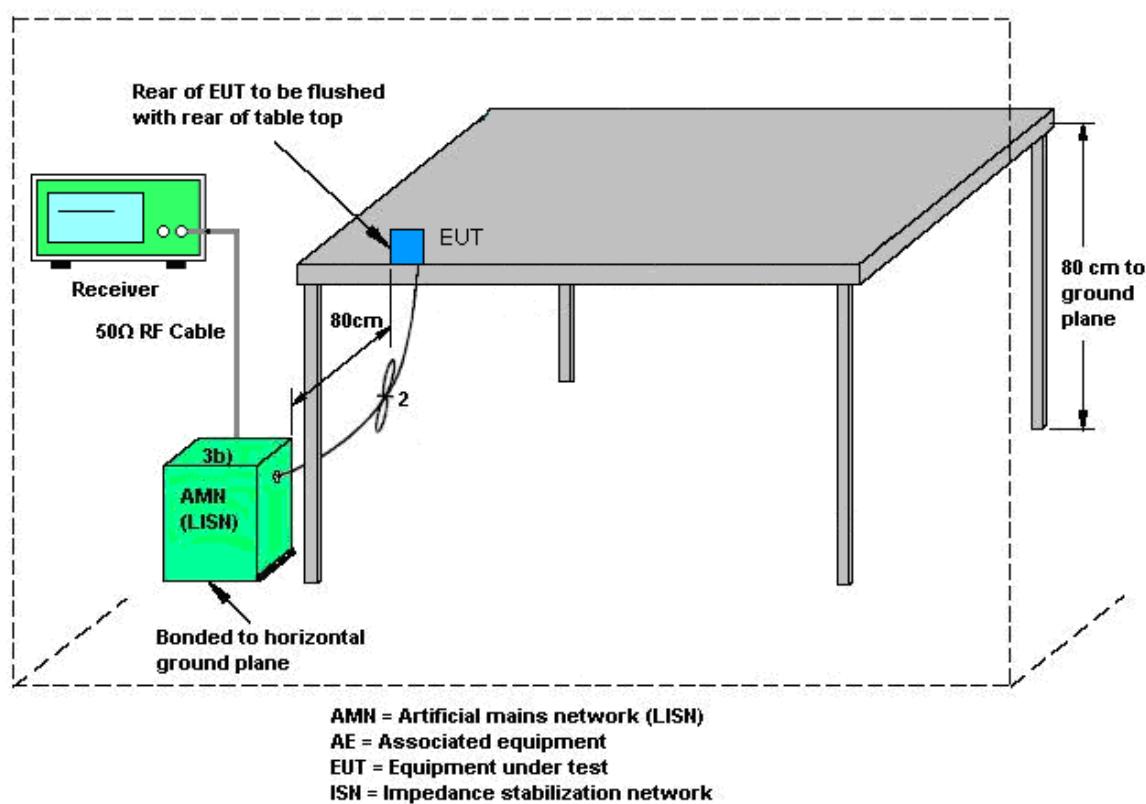
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in 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



3.1.5 Test Result of AC Conducted Emission

Please refer to Appendix A.



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:

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

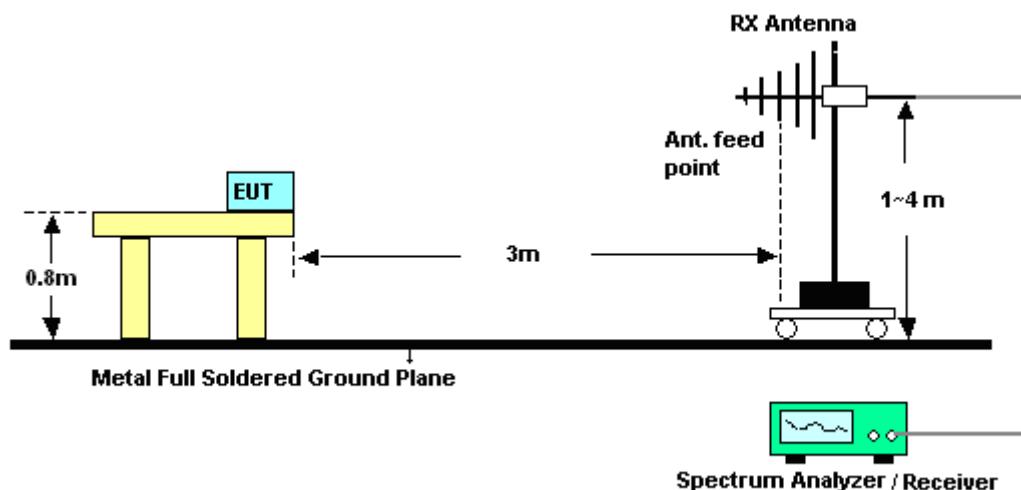
Refer a test equipment and calibration data table in this test report.

3.2.3. Test Procedures

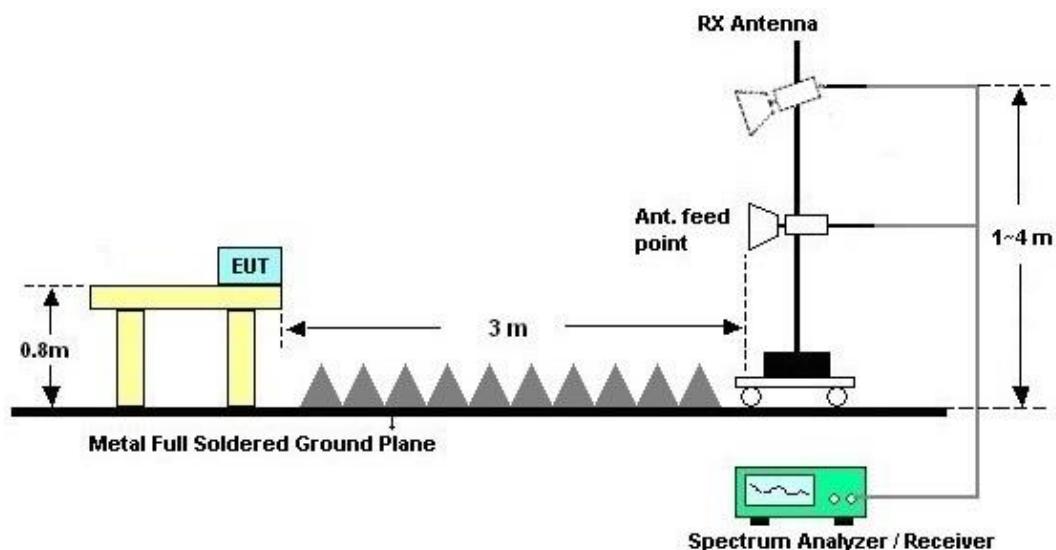
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna 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

Please refer to Appendix B.



4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Dec. 09, 2018	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9KHz~3.6GHz	Nov. 12, 2018	Dec. 09, 2018	Nov. 11, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 14, 2018	Dec. 09, 2018	Nov. 13, 2019	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Dec. 09, 2018	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 03, 2018	Dec. 09, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 03, 2018	Dec. 09, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Bilog Antenna	Schaffner	CBL6111C&N-6-06	2725&AT-N06 01	30MHz~1GHz	Oct. 13, 2018	Dec. 12, 2018	Oct. 12, 2019	Radiation (03CH06-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100472	20Hz~26.5GHz	Jan. 04, 2018	Dec. 12, 2018	Jan. 03, 2019	Radiation (03CH06-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1156	1GHz~18GHz	Aug. 24, 2018	Dec. 12, 2018	Aug. 23, 2019	Radiation (03CH06-HY)
Preamplifier	SONOMA	310N	186713	9kHz~1GHz	May 02, 2018	Dec. 12, 2018	May 01, 2019	Radiation (03CH06-HY)
Preamplifier	MITEQ	AMF-7D-00101 800-30-10P	1850117	1GHz ~ 18GHz	May 24, 2018	Dec. 12, 2018	May 23, 2019	Radiation (03CH06-HY)
Antenna Mast	MF	MF-7802	MF780208212	1m~4m	N/A	Dec. 12, 2018	N/A	Radiation (03CH06-HY)
Turn Table	INN-CO	DS2000	420/650/00	0-360 degree	N/A	Dec. 12, 2018	N/A	Radiation (03CH06-HY)
Test Software	AUDIX	e3	6.2009-8-24 (k5)	N/A	N/A	Dec. 12, 2018	N/A	Radiation (03CH06-HY)
RF Cable	HUBER+SUHNER/WOKEN/HARBOUR INDUSTRIES	SUCOFLEX 104 /STORM/LL142	MY24966/4/00100A102A 178T/CA3601-3601-1000	30MHz-26GHz	Nov. 22, 2018	Dec. 12, 2018	Nov. 21, 2019	Radiation (03CH06-HY)
Filter	Microwave	H1G013G1	SN477215	1.0G High Pass	Nov. 02, 2018	Dec. 12, 2018	Nov. 01, 2019	Radiation (03CH06-HY)
Filter	Wainwright	WLKS1200-8SS	SN3	1.2G Low Pass	Nov. 02, 2018	Dec. 12, 2018	Nov. 01, 2019	Radiation (03CH06-HY)



5. Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_{C(y)}$)	2.2
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_{C(y)}$)	3.9
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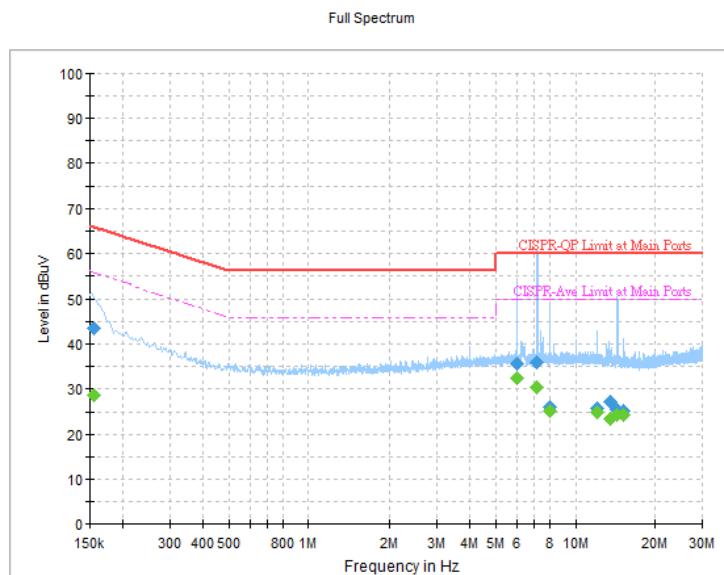
Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_{C(y)}$)	4.7
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Appendix A. AC Conducted Emission Test Results

Test Mode :	Mode 1	Temperature :	24~26°C
Test Engineer :	Jimmy Chang	Relative Humidity :	52~54%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

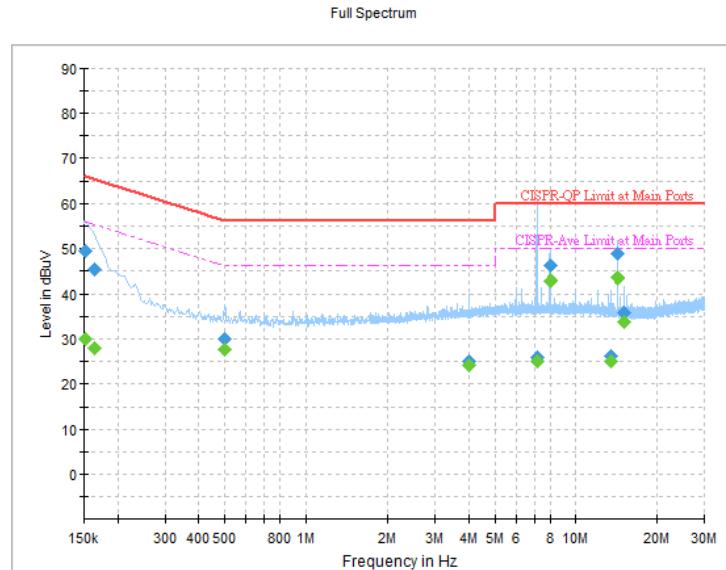


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.154500	43.52	---	65.75	22.23	L1	OFF	19.5
0.154500	---	28.63	55.75	27.12	L1	OFF	19.5
6.000000	35.81	---	60.00	24.19	L1	OFF	19.8
6.000000	---	32.36	50.00	17.64	L1	OFF	19.8
7.129500	35.87	---	60.00	24.13	L1	OFF	19.8
7.129500	---	30.48	50.00	19.52	L1	OFF	19.8
8.000250	25.99	---	60.00	34.01	L1	OFF	19.8
8.000250	---	25.02	50.00	24.98	L1	OFF	19.8
12.000750	25.72	---	60.00	34.28	L1	OFF	20.0
12.000750	---	24.78	50.00	25.22	L1	OFF	20.0
13.560000	27.14	---	59.12	31.98	L1	OFF	19.5
13.560000	---	23.41	49.12	25.71	L1	OFF	19.5
14.255250	25.30	---	60.00	34.70	L1	OFF	20.1
14.255250	---	24.36	50.00	25.64	L1	OFF	20.1
15.132750	25.23	---	60.00	34.77	L1	OFF	20.1
15.132750	---	24.18	50.00	25.82	L1	OFF	20.1



Test Mode :	Mode 1	Temperature :	24~26°C
Test Engineer :	Jimmy Chang	Relative Humidity :	52~54%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

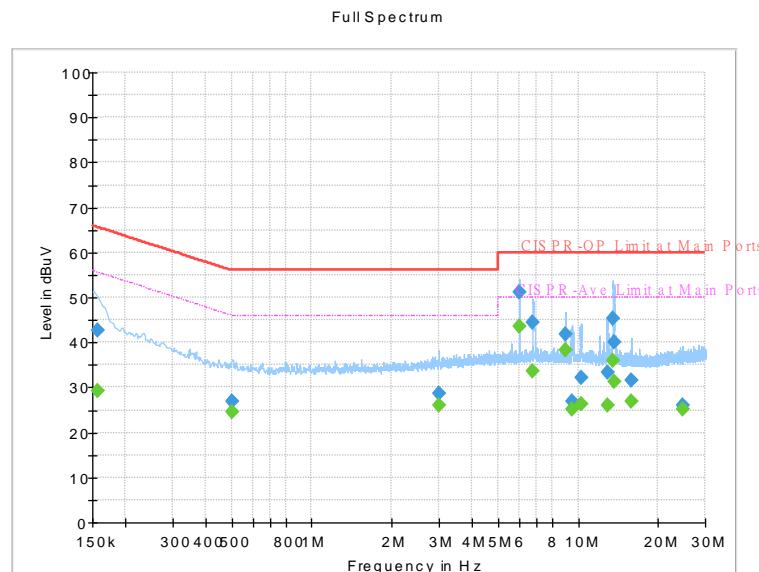


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	49.34	---	65.88	16.54	N	OFF	19.5
0.152250	---	29.95	55.88	25.93	N	OFF	19.5
0.163500	45.33	---	65.28	19.95	N	OFF	19.5
0.163500	---	28.02	55.28	27.26	N	OFF	19.5
0.501000	30.04	---	56.00	25.96	N	OFF	19.5
0.501000	---	27.75	46.00	18.25	N	OFF	19.5
3.999750	25.04	---	56.00	30.96	N	OFF	19.7
3.999750	---	24.25	46.00	21.75	N	OFF	19.7
7.154250	25.91	---	60.00	34.09	N	OFF	19.8
7.154250	---	25.01	50.00	24.99	N	OFF	19.8
8.000250	46.04	---	60.00	13.96	N	OFF	19.8
8.000250	---	42.89	50.00	7.11	N	OFF	19.8
13.560000	26.16	---	60.00	33.84	N	OFF	20.5
13.560000	---	25.13	50.00	24.87	N	OFF	20.5
14.309250	48.90	---	60.00	11.10	N	OFF	20.1
14.309250	---	43.56	50.00	6.44	N	OFF	20.1
15.155250	36.04	---	60.00	23.96	N	OFF	20.1
15.155250	---	33.94	50.00	16.06	N	OFF	20.1



Test Mode :	Mode 2	Temperature :	24~26°C
Test Engineer :	Jimmy Chang	Relative Humidity :	52~54%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

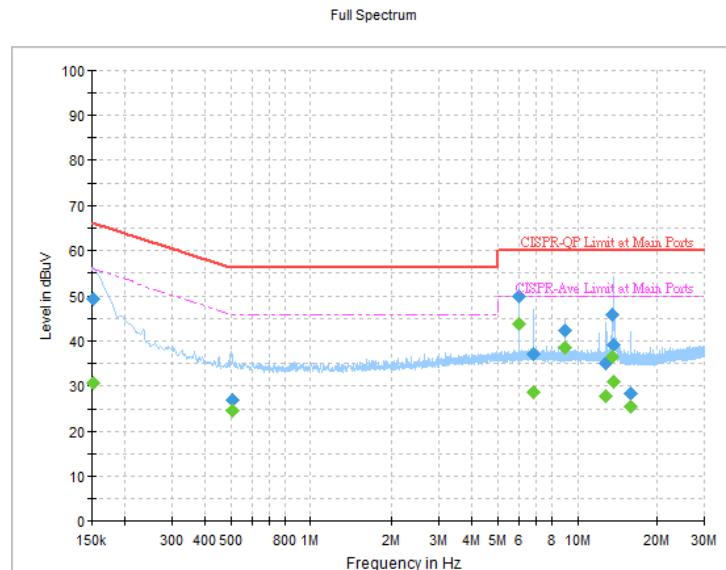


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.156750	---	29.37	55.63	26.26	L1	OFF	19.5
0.156750	42.80	---	65.63	22.83	L1	OFF	19.5
0.503250	---	24.62	46.00	21.38	L1	OFF	19.5
0.503250	26.86	---	56.00	29.14	L1	OFF	19.5
2.998500	---	26.09	46.00	19.91	L1	OFF	19.6
2.998500	28.63	---	56.00	27.37	L1	OFF	19.6
6.000000	---	43.44	50.00	6.56	L1	OFF	19.8
6.000000	51.30	---	60.00	8.70	L1	OFF	19.8
6.771750	---	33.75	50.00	16.25	L1	OFF	19.8
6.771750	44.53	---	60.00	15.47	L1	OFF	19.8
8.999250	---	38.17	50.00	11.83	L1	OFF	19.9
8.999250	41.72	---	60.00	18.28	L1	OFF	19.9
9.519000	---	25.17	50.00	24.83	L1	OFF	19.9
9.519000	26.84	---	60.00	33.16	L1	OFF	19.9
10.241250	---	26.39	50.00	23.61	L1	OFF	19.9
10.241250	32.25	---	60.00	27.75	L1	OFF	19.9
12.851250	---	26.05	50.00	23.95	L1	OFF	20.0
12.851250	33.31	---	60.00	26.69	L1	OFF	20.0
13.560000	---	36.01	50.00	13.99	L1	OFF	20.0
13.560000	45.29	---	60.00	14.71	L1	OFF	20.0
13.632000	---	31.37	50.00	18.63	L1	OFF	20.0
13.632000	39.94	---	60.00	20.06	L1	OFF	20.0
15.778500	---	26.87	50.00	23.13	L1	OFF	20.1
15.778500	31.60	---	60.00	28.40	L1	OFF	20.1
24.603000	---	25.05	50.00	24.95	L1	OFF	20.4
24.603000	26.06	---	60.00	33.94	L1	OFF	20.4



Test Mode :	Mode 2	Temperature :	24~26°C
Test Engineer :	Jimmy Chang	Relative Humidity :	52~54%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

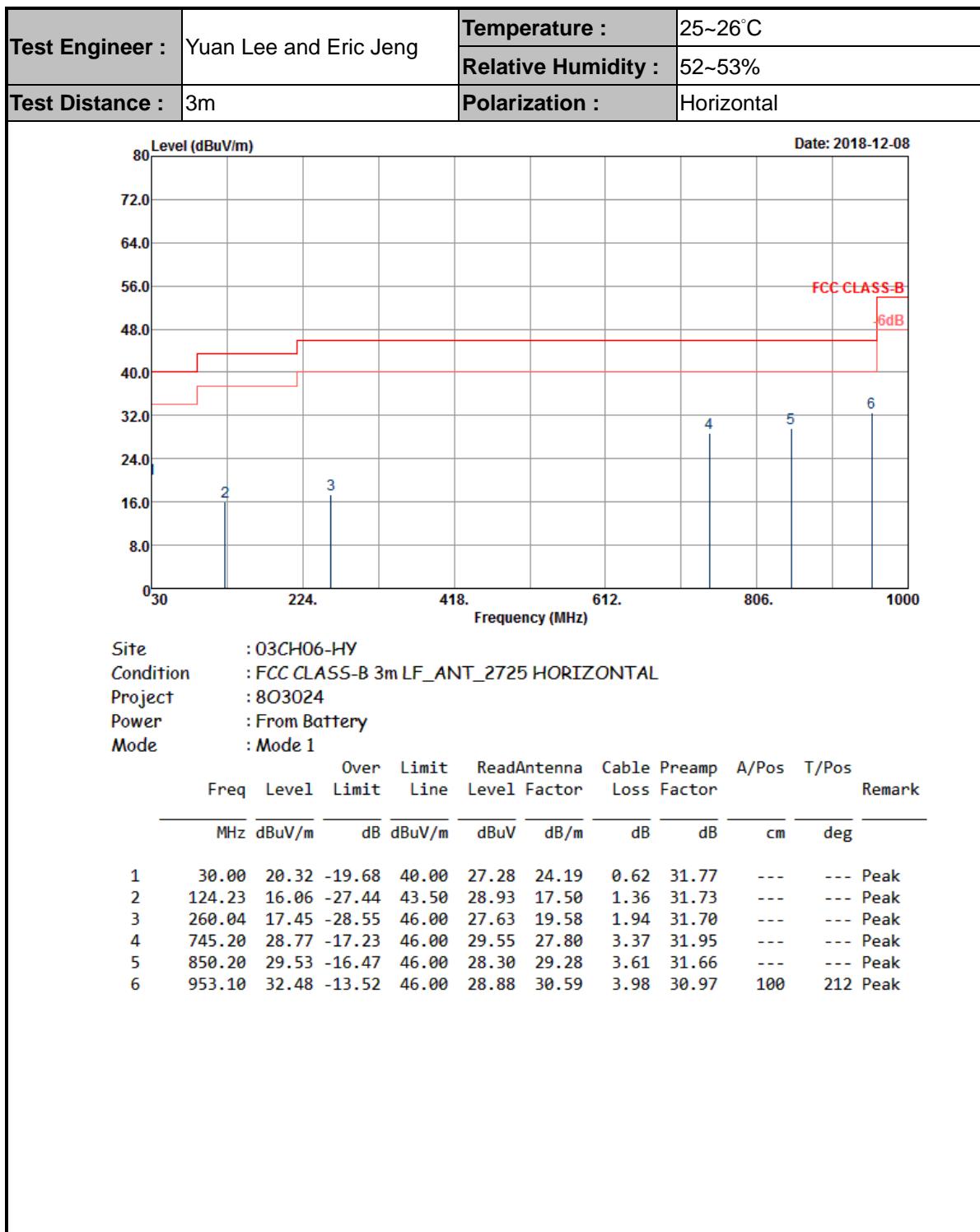


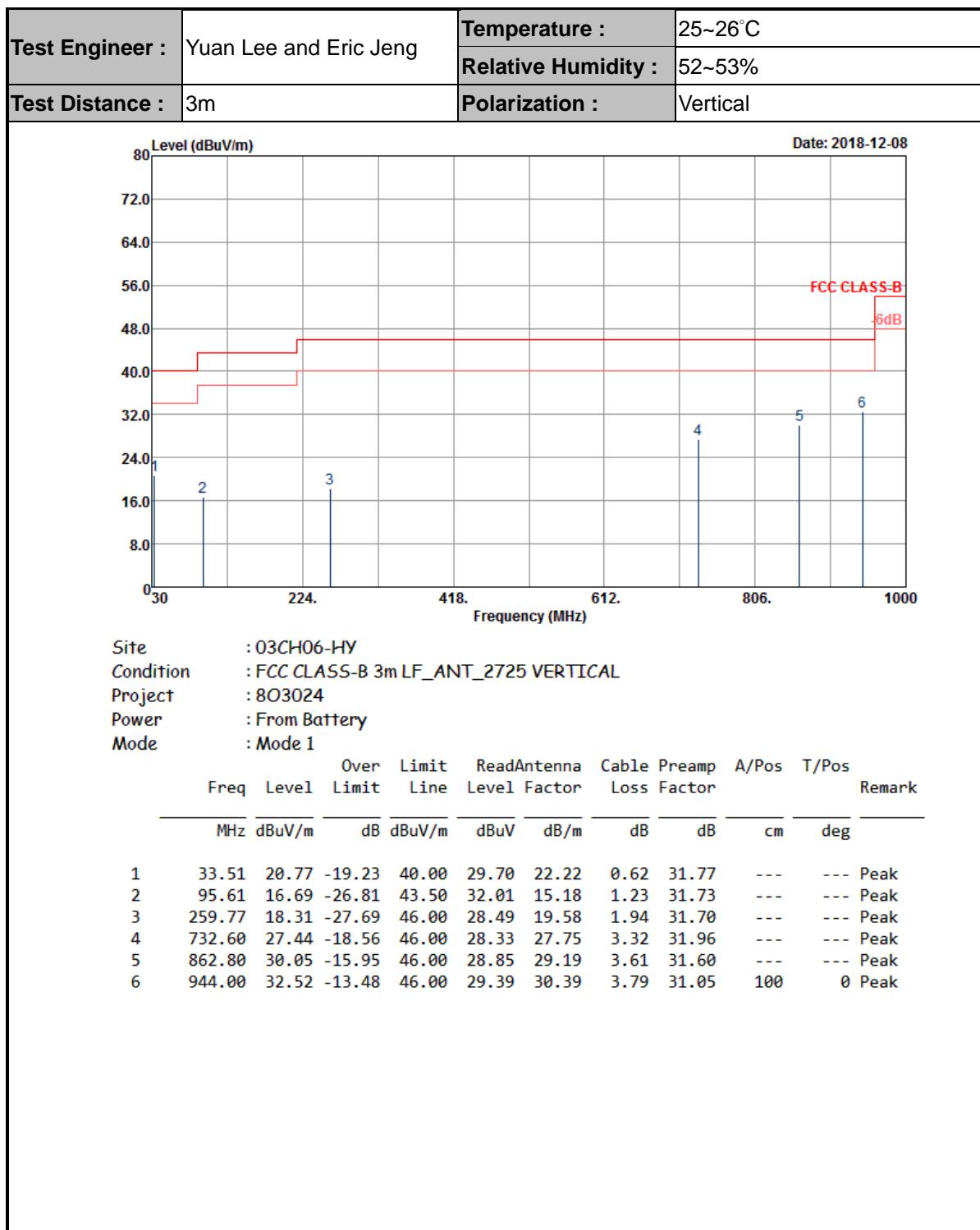
Final Result

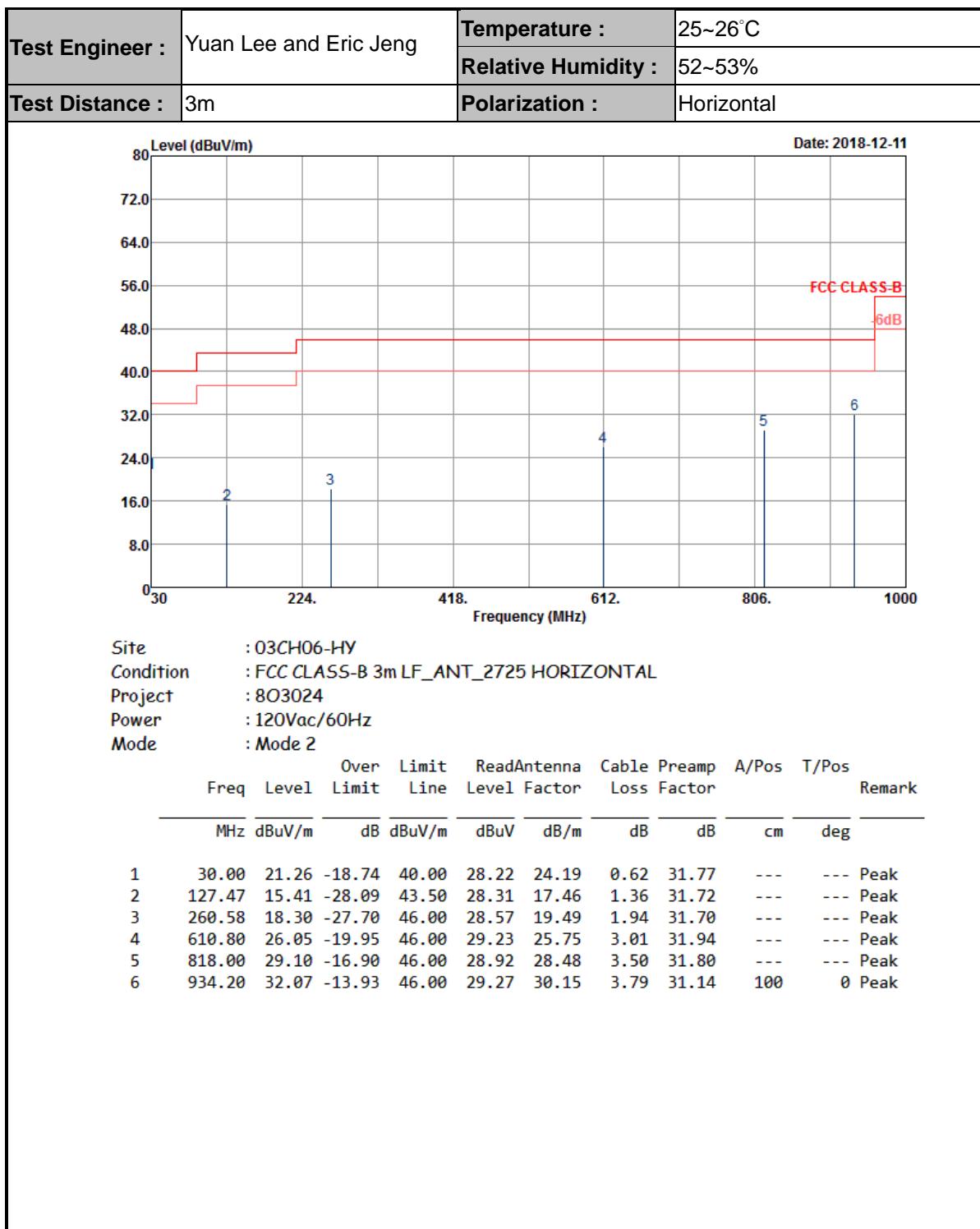
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	30.71	55.88	25.17	N	OFF	19.5
0.152250	49.37	---	65.88	16.51	N	OFF	19.5
0.505500	---	24.68	46.00	21.32	N	OFF	19.5
0.505500	26.82	---	56.00	29.18	N	OFF	19.5
6.000000	---	43.81	50.00	6.19	N	OFF	19.8
6.000000	50.09	---	60.00	9.91	N	OFF	19.8
6.816750	---	28.78	50.00	21.22	N	OFF	19.8
6.816750	37.10	---	60.00	22.90	N	OFF	19.8
8.999250	---	38.61	50.00	11.39	N	OFF	19.9
8.999250	42.30	---	60.00	17.70	N	OFF	19.9
12.817500	---	27.81	50.00	22.19	N	OFF	20.0
12.817500	35.08	---	60.00	24.92	N	OFF	20.0
13.560000	---	36.61	50.00	13.39	N	OFF	20.1
13.560000	46.04	---	60.00	13.96	N	OFF	20.1
13.656750	---	30.97	50.00	19.03	N	OFF	20.1
13.656750	39.14	---	60.00	20.86	N	OFF	20.1
15.814500	---	25.38	50.00	24.62	N	OFF	20.2
15.814500	28.28	---	60.00	31.72	N	OFF	20.2

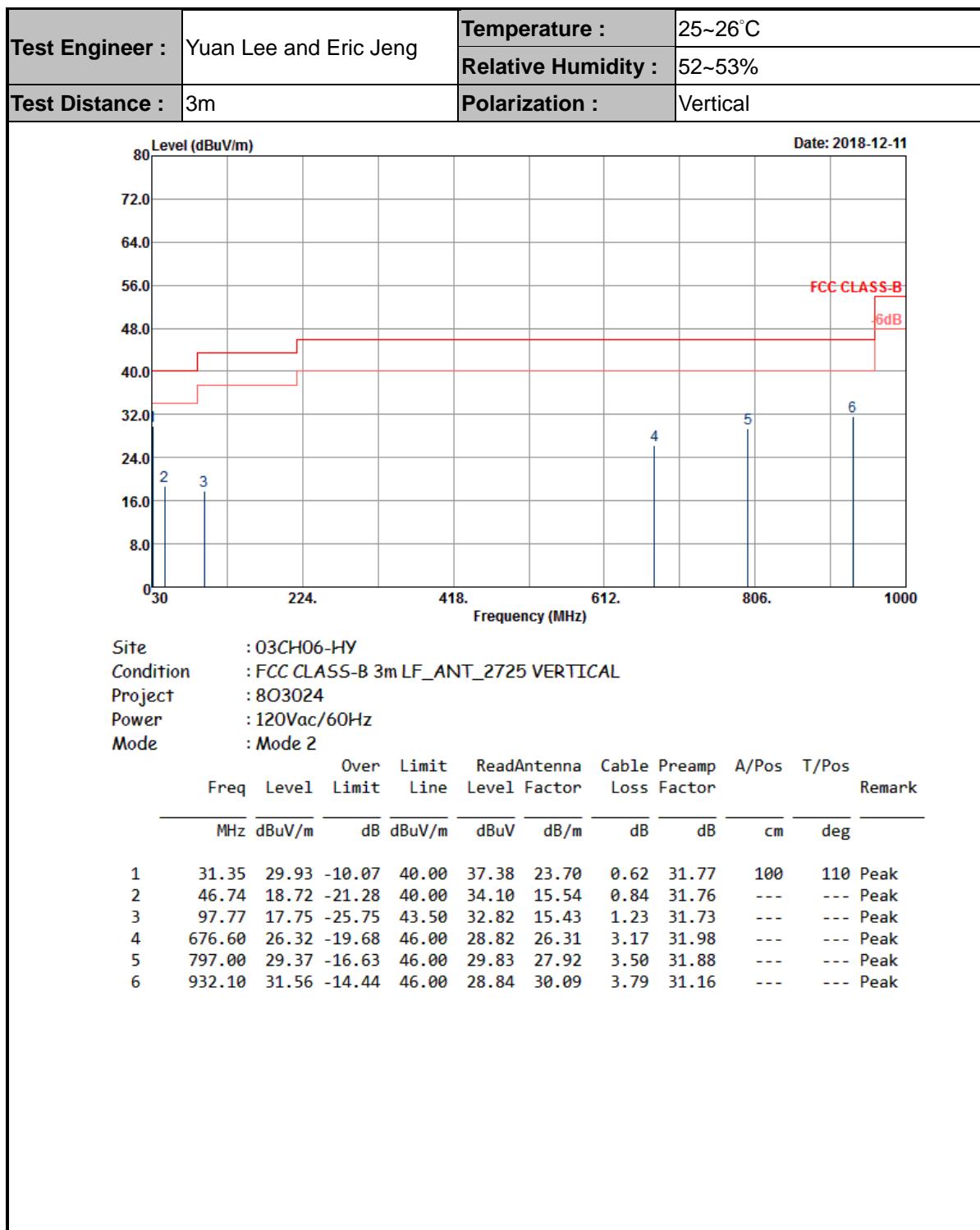


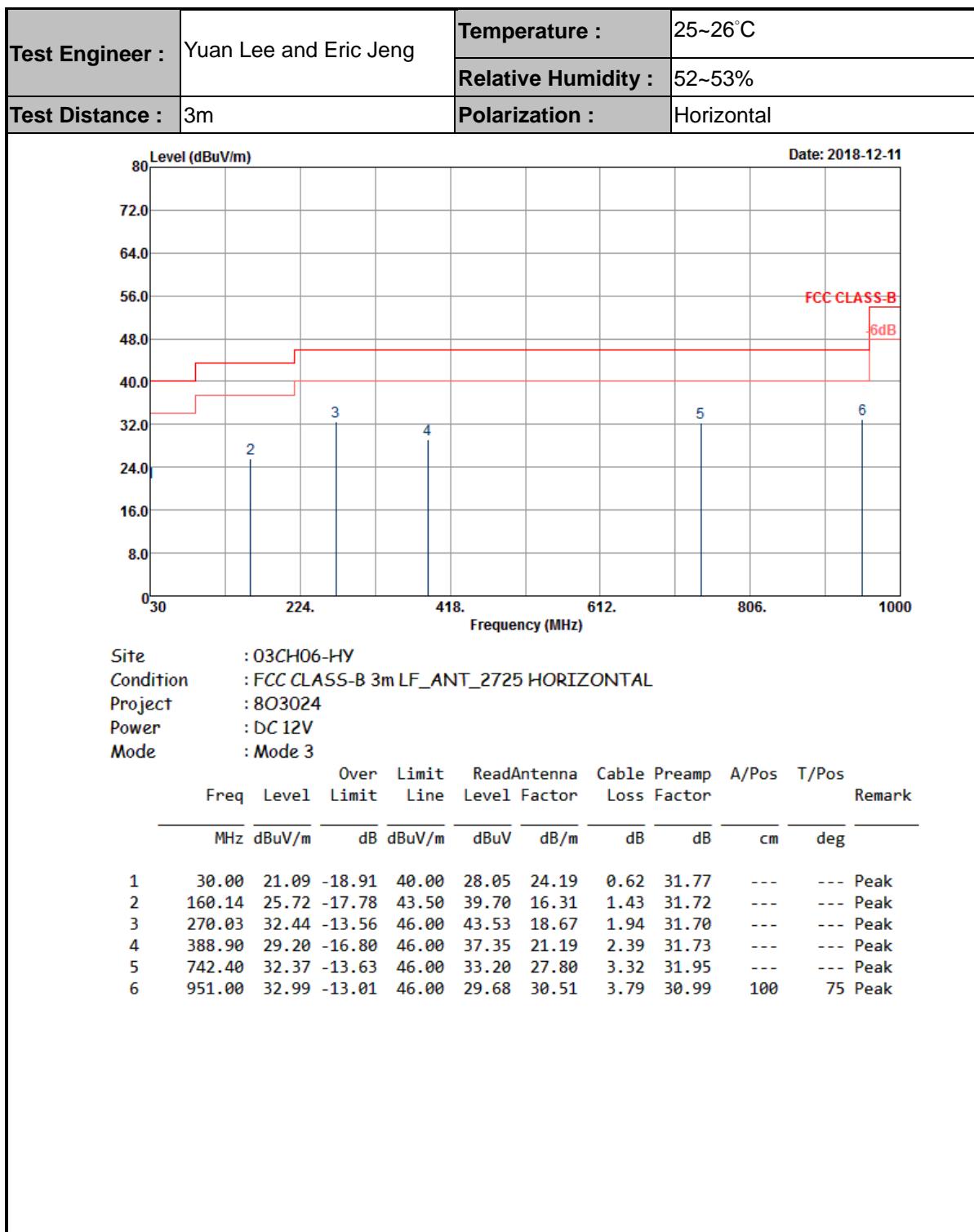
Appendix B. Radiated Emission Test Result

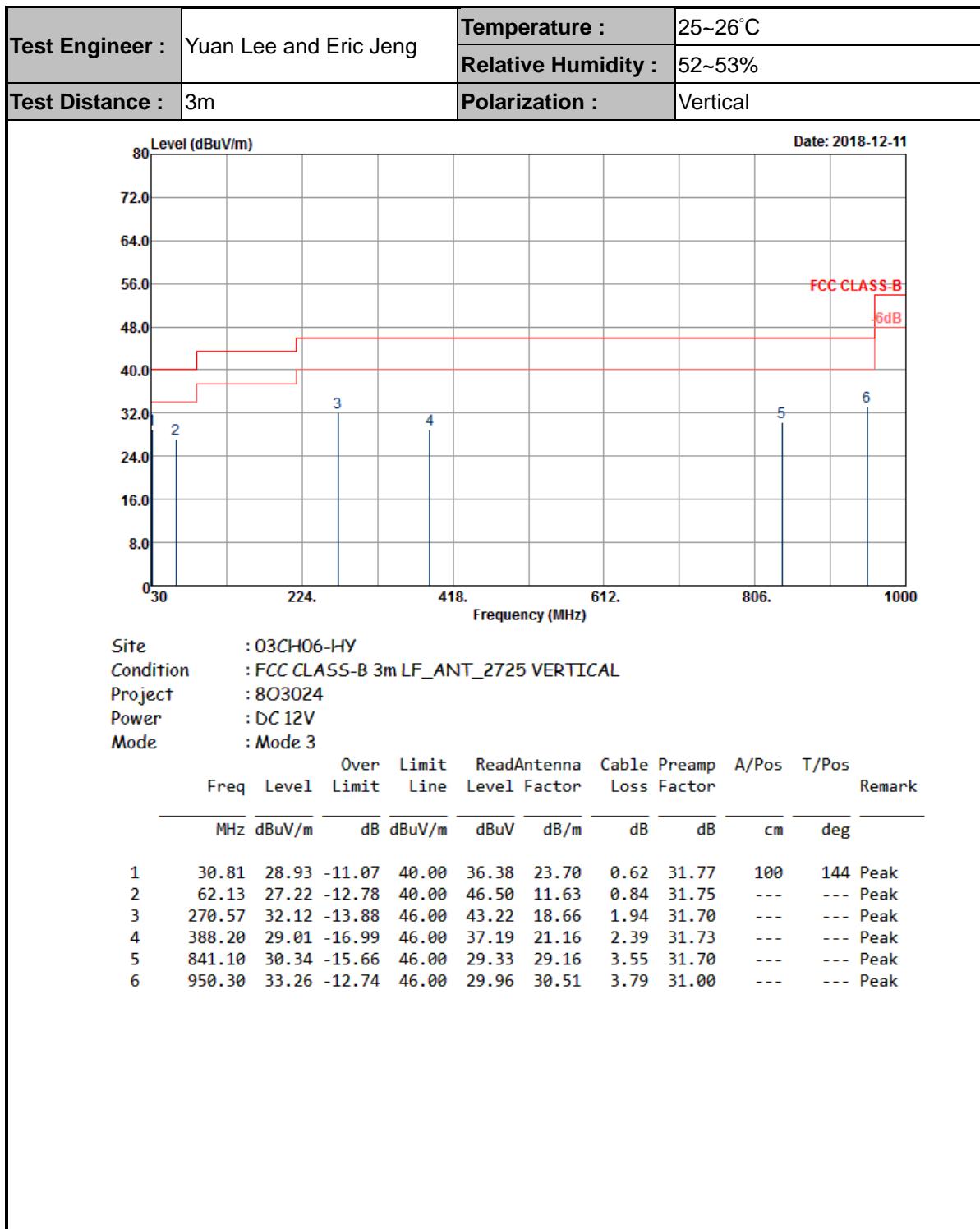


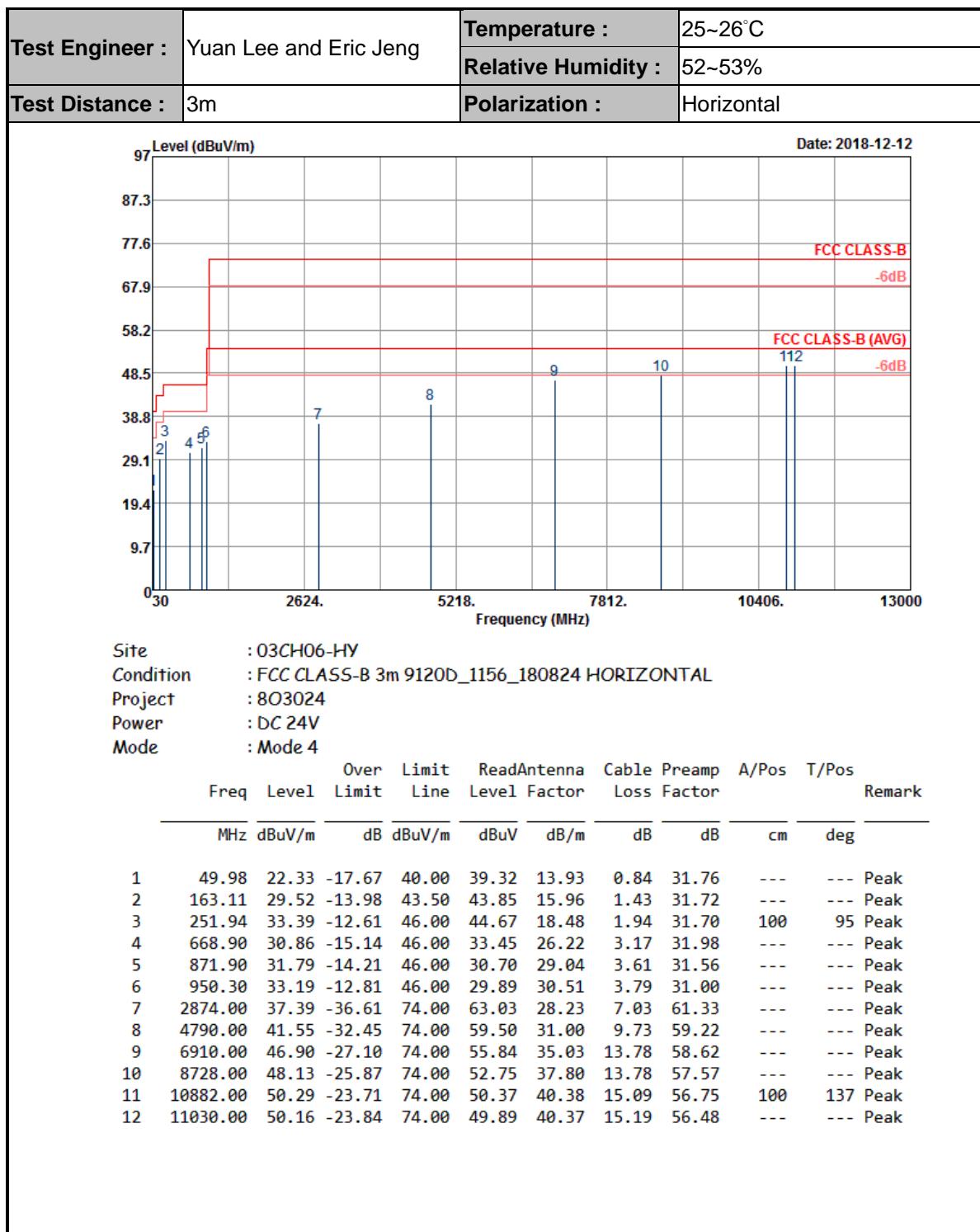


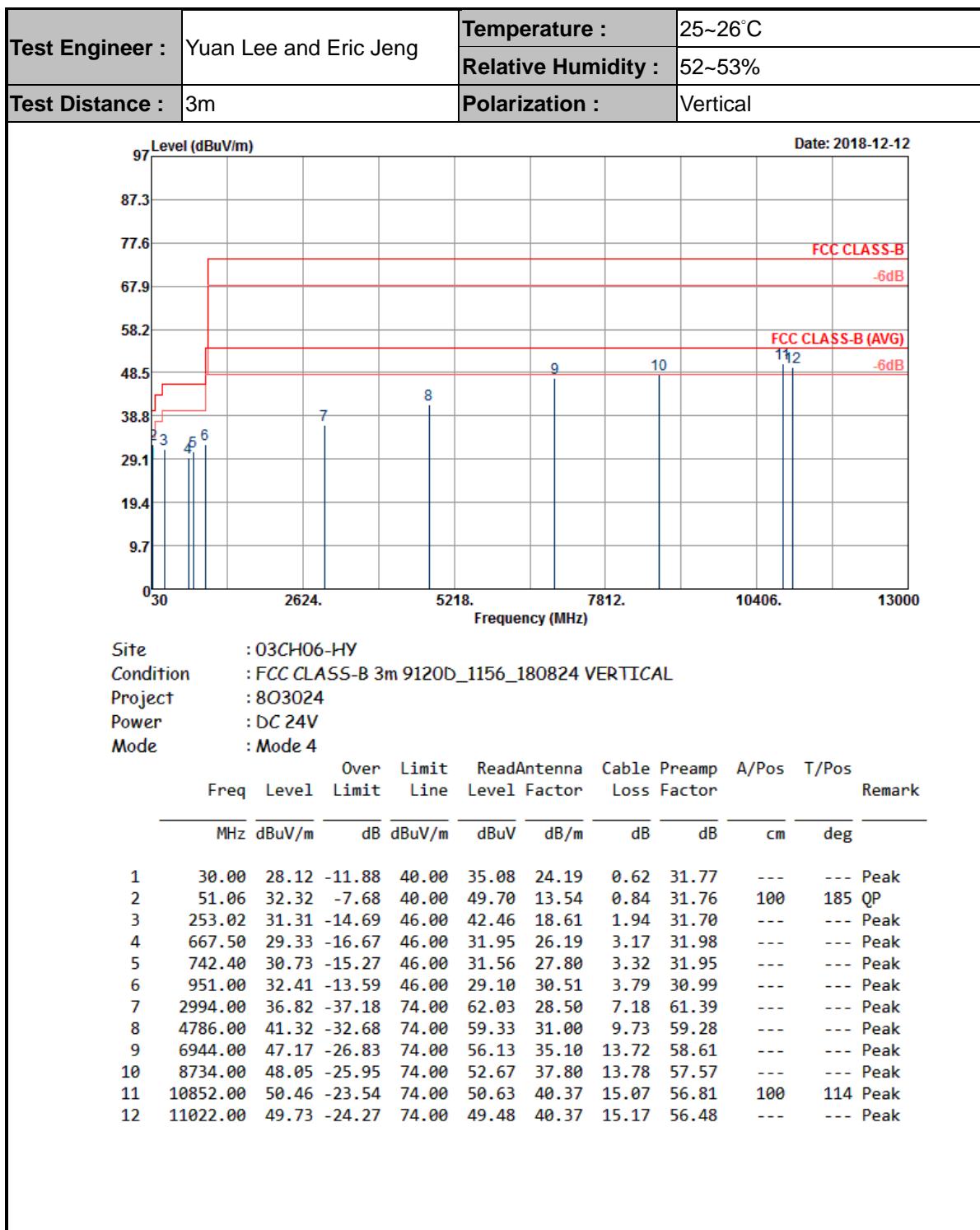


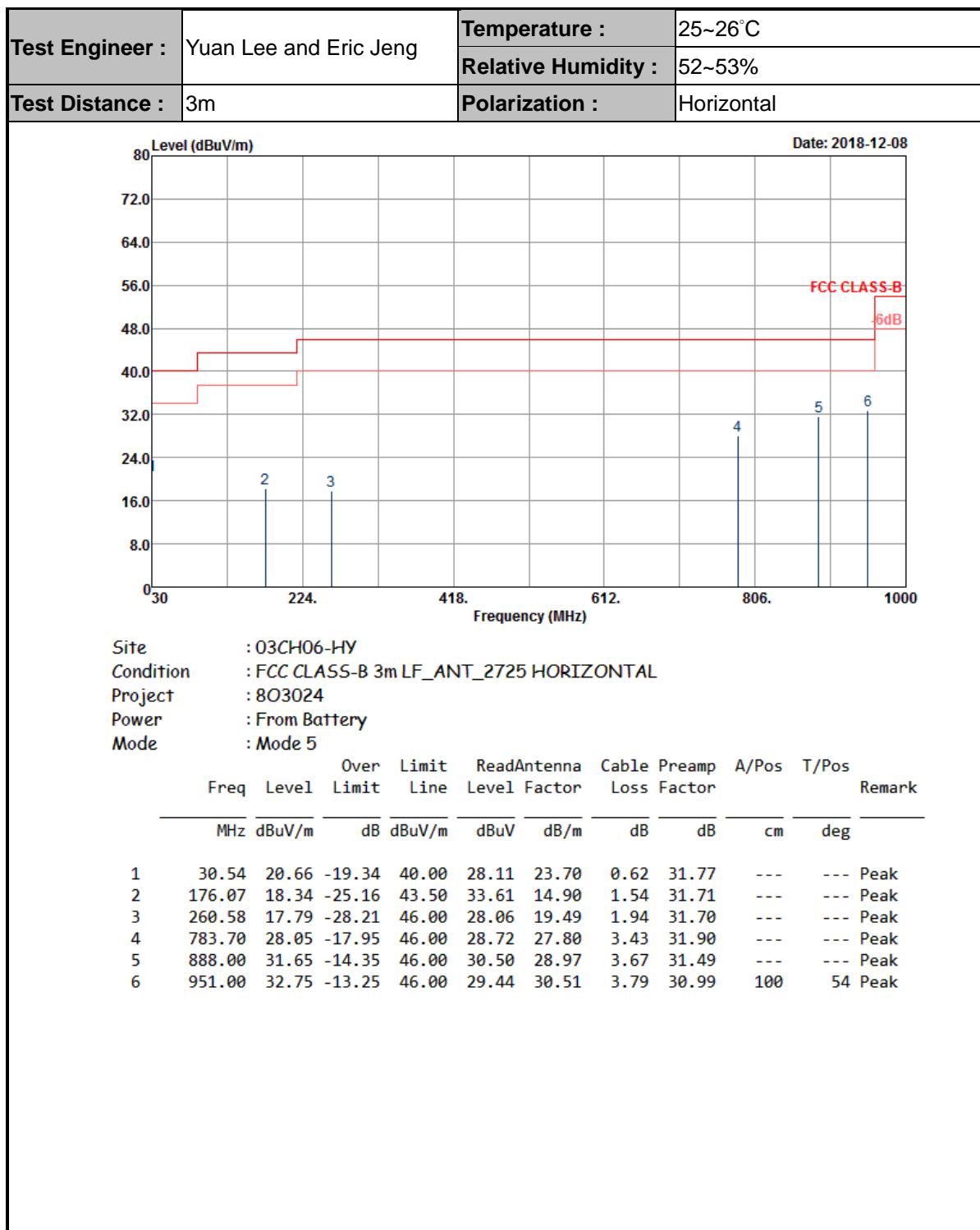


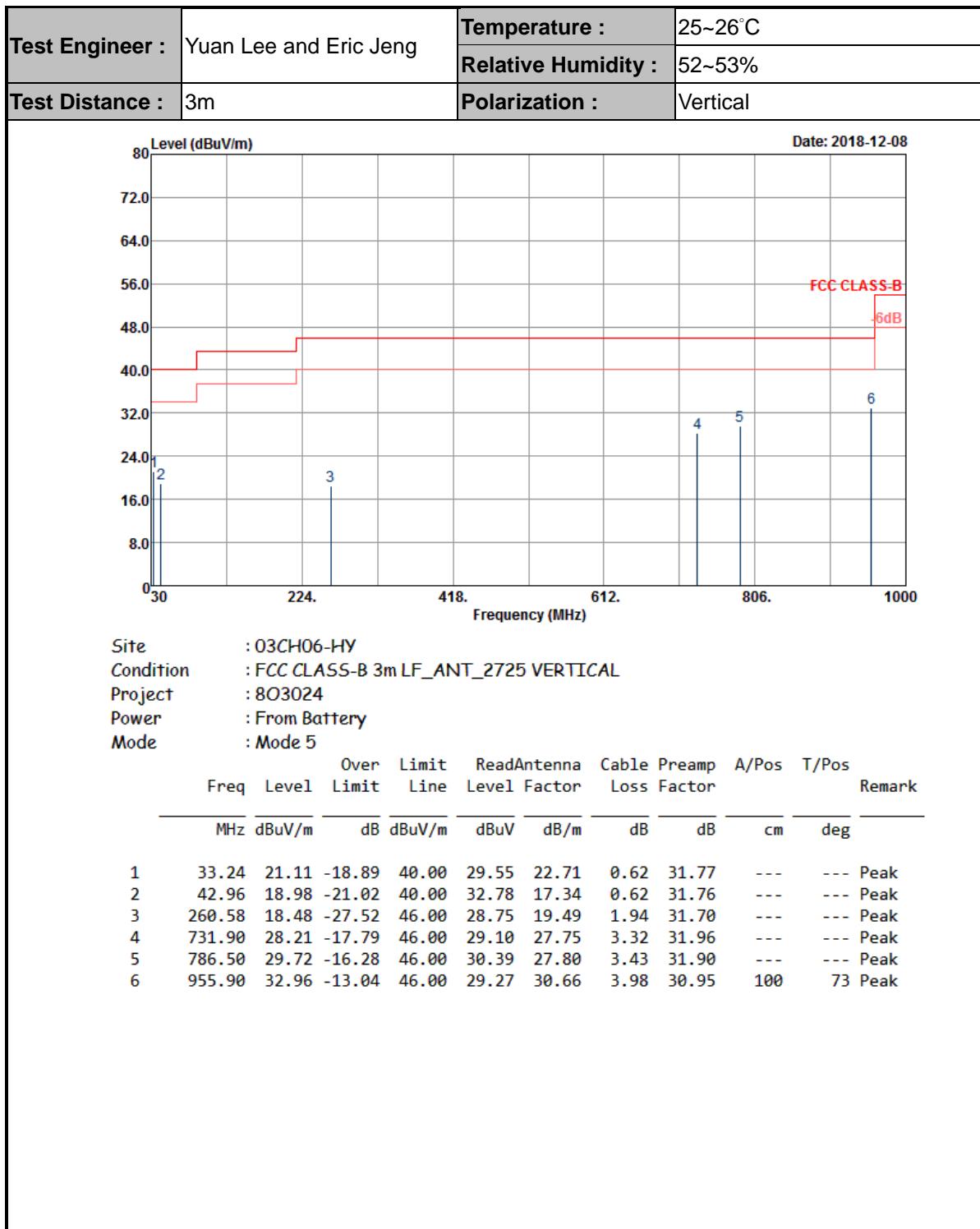












—————THE END—————