



FCC Test Report

APPLICANT : Commtiva Technology Limited
EQUIPMENT : Smart Phone
BRAND NAME : InFocus
MODEL NAME : VZU
MARKETING NAME : InFocus VZU
FCC ID : 2AL86VZU
STANDARD : FCC 47 CFR FCC Part 15 Subpart B
CLASSIFICATION : Certification

The product was received on May 07, 2017 and testing was completed on May 28, 2017. 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 test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Louis Wu

Reviewed by: Louis Wu / Manager

Jones Tsai

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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FCC ID : 2AL86VZU

Page Number : 1 of 24

Report Issued Date : Jun. 09, 2017

Report Version : Rev. 01

Report Template No.: BU5-FD15B Version 2.0



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC721738-02	Rev. 01	Initial issue of report	Jun. 09, 2017



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 12.30 dB at 0.158 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 2.15 dB at 80.800 MHz for Quasi-Peak



1. General Description

1.1. Applicant

Commtiva Technology Limited

Grand Pavilion, Hibiscus Way, 802 West Bay Road, P. O. Box 31119, Grand Cayman, KY1-1205
Cayman Islands

1.2. Manufacturer

SHENZHEN HONGFUJIN PRECISION INDURSTY CO., LTD

AREA B, HONGGUAN TECHNOLOGY PARK, FOXCONN, GUANLAN, LONGHUA NEW DISTRICT,
SHENZHEN, GUANGDONG PROVINCE, P.R.CHINA

1.3. Product Feature of Equipment Under Test

WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, NFC, and GPS.

Product Specification subjective to this standard	
Antenna Type	WWAN: Fixed Internal Antenna WLAN: Monopole Antenna Bluetooth: Monopole Antenna GPS / Glonass : Monopole Antenna NFC: Loop Antenna

1.4. Modification of EUT

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

1.5. Test Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	CO05-HY	03CH06-HY

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 30-2, Dingfu Tsuen, Linkou District, New Taipei City, Taiwan 244, R.O.C. TEL: +886-2-2603-5367 / +886-2-2601-1640 FAX: +886-2-2601-1695	
Test Site No.	Sporton Site No.	FCC Registration No.
	OS03-LK	TW1023

1.6. 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

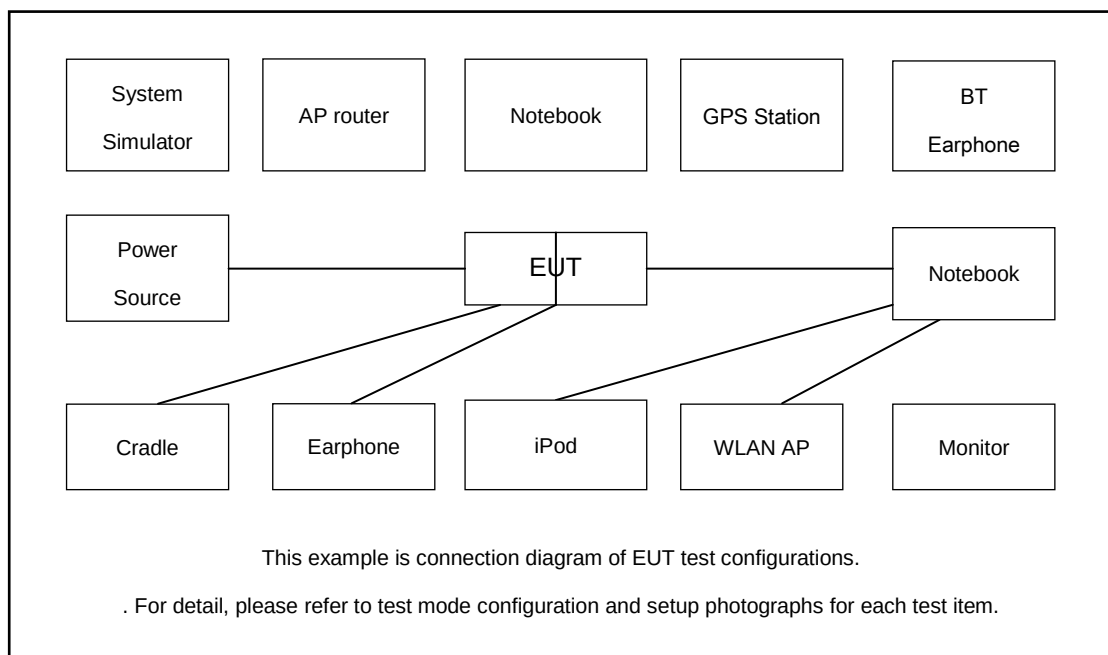
2.1. Test Mode

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).

Test Items	Function Type
AC Conducted Emission	Mode 1: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + NFC On + Earphone + USB Cable (Charging from Adapter)
	Mode 2: WCDMA Band II Idle + Bluetooth Idle + WLAN Idle + MPEG4 + Earphone + USB Cable (Charging from Adapter)
	Mode 3: LTE Band 4 Idle + Bluetooth Idle + WLAN Idle + Camera + Earphone + USB Cable (Charging from Adapter)
	Mode 4: LTE Band 12 Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Earphone + USB Cable (Data Link with Notebook)
Radiated Emissions	Mode 1: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + NFC On + Earphone + USB Cable (Charging from Adapter)
	Mode 2: WCDMA Band II Idle + Bluetooth Idle + WLAN Idle + MPEG4 + Earphone + USB Cable (Charging from Adapter)
	Mode 3: LTE Band 4 Idle + Bluetooth Idle + WLAN Idle + Camera + Earphone + USB Cable (Charging from Adapter)
	Mode 4: LTE Band 12 Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Earphone + USB Cable (Data Link with Notebook)
Remark: 1. The worst case of AC is mode 4; only the test data of this mode was reported. 2. The worst case of RE is mode 1; only the test data of this mode was reported. 3. Data Link with Notebook means data application transferred mode between EUT and Notebook.	

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.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	Pendulum	GSG-54	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
4.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
5.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
6.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
7.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A



2.4. EUT Operation Test Setup

The EUT was in WCDMA or LTE idle mode during the testing. The EUT was synchronized to the BCCH, and is in continuous receiving mode by setting system simulator's paging reorganization.

At the same time, 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. Data application is transferred between Laptop and EUT via USB cable.
2. Execute "GPS test" to make the EUT receive continuous signals from GPS station.
3. Execute "Video Player" to play MPEG4 files.
4. Turn on camera to capture images.
5. Turned on NFC 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.

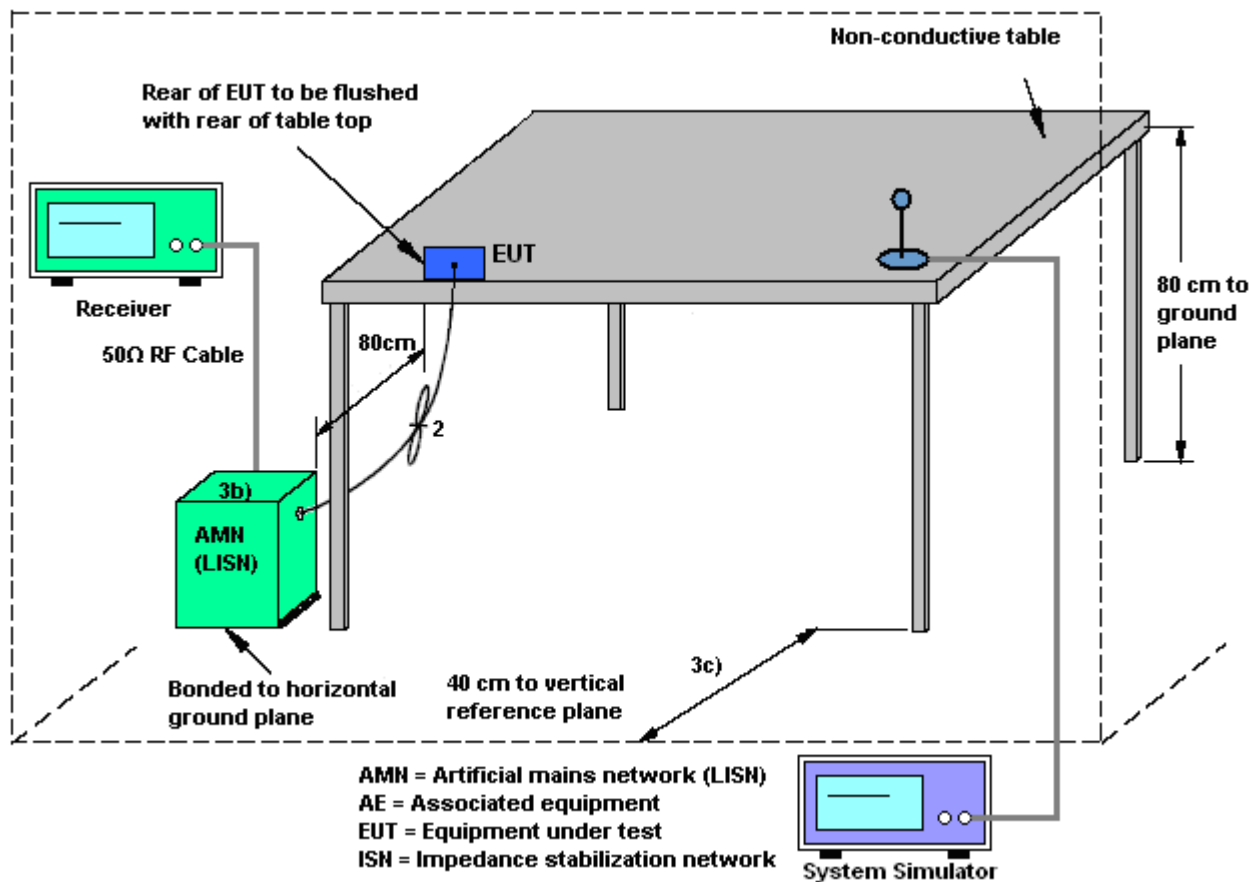
3.1.2 Measuring Instruments

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

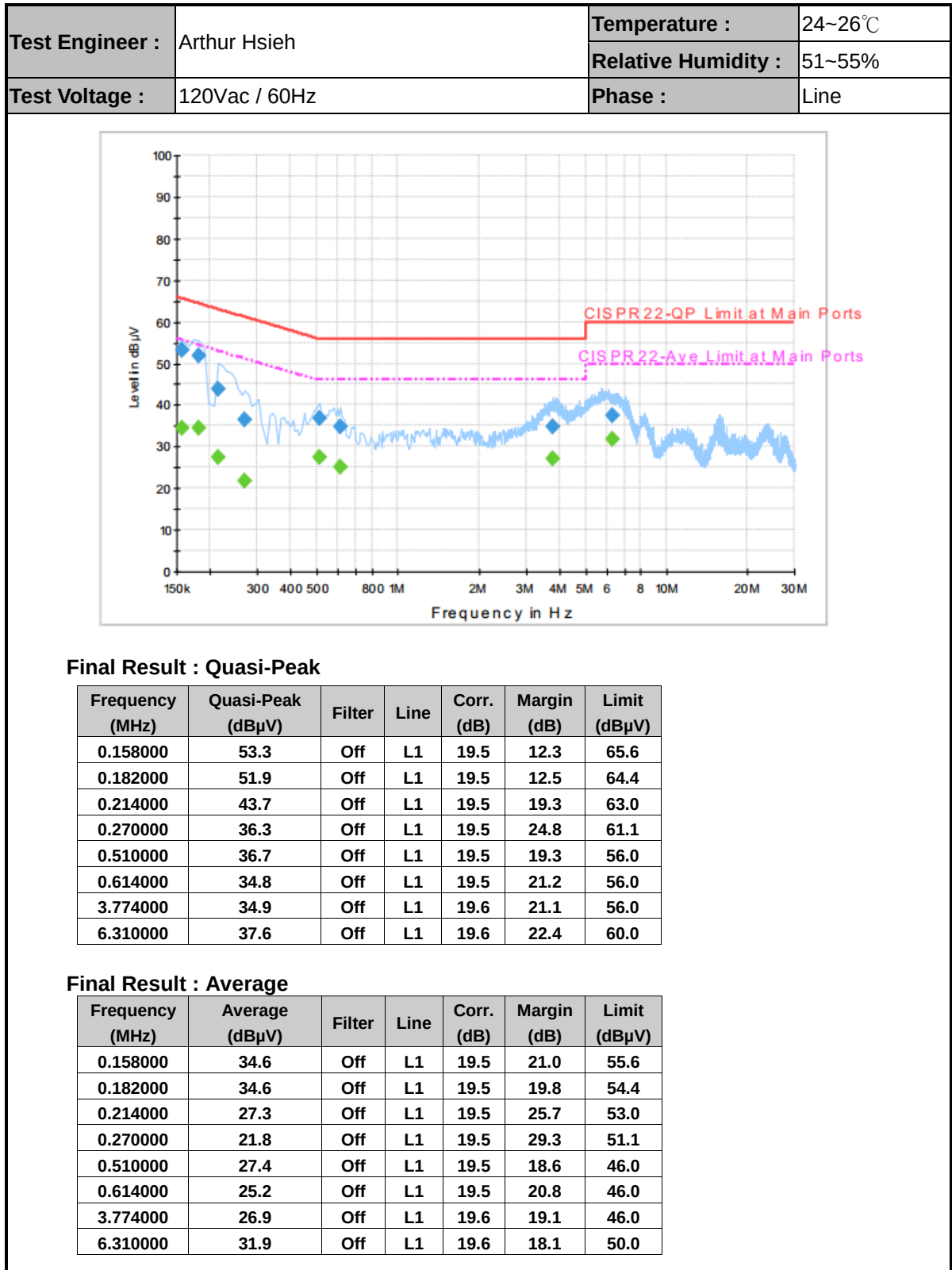
3.1.3 Test Procedure

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.

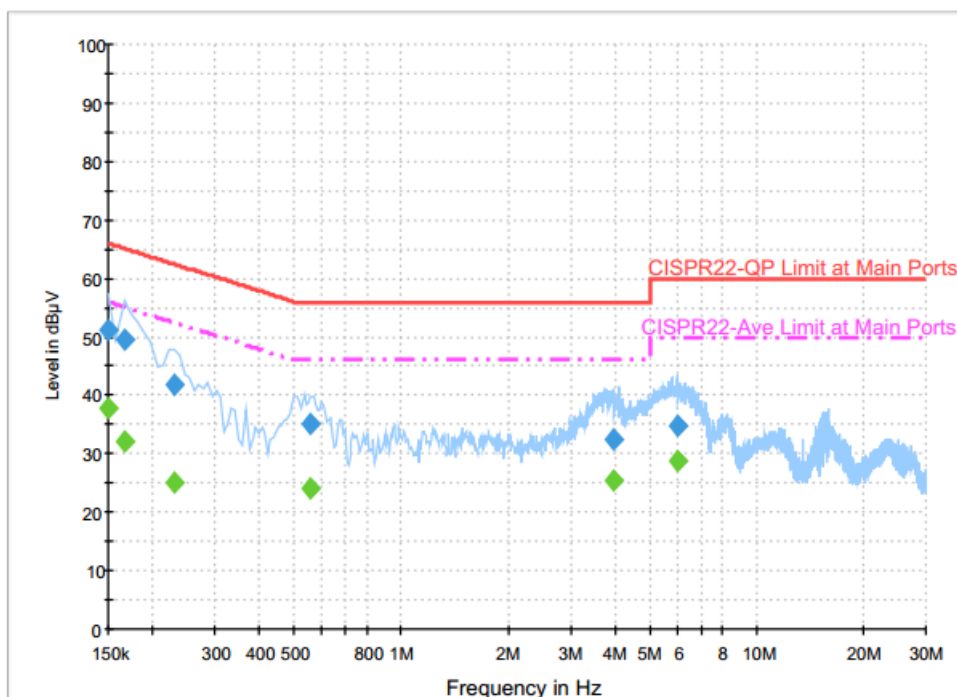
3.1.4 Test Setup



3.1.5 Test Result of AC Conducted Emission



Test Engineer :	Arthur Hsieh	Temperature :	24~26°C
		Relative Humidity :	51~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral


Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	51.2	Off	N	19.5	14.8	66.0
0.166000	49.7	Off	N	19.5	15.5	65.2
0.230000	42.0	Off	N	19.5	20.4	62.4
0.558000	35.3	Off	N	19.5	20.7	56.0
3.950000	32.5	Off	N	19.6	23.5	56.0
6.022000	34.8	Off	N	19.6	25.2	60.0

Final Result : Average

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	37.7	Off	N	19.5	18.3	56.0
0.166000	32.0	Off	N	19.5	23.2	55.2
0.230000	25.0	Off	N	19.5	27.4	52.4
0.558000	24.1	Off	N	19.5	21.9	46.0
3.950000	25.4	Off	N	19.6	20.6	46.0
6.022000	28.8	Off	N	19.6	21.2	50.0

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)
Above 960	500	3

Note: Measurement below 1GHz follows the CISPR 22 limit line as below :

15.109 (g) As an alternative to the radiated emission limits shown in paragraphs (a) and (b) of this section, digital devices may be shown to comply with the standards contained in Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22, "Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement"

Frequency (MHz)	Field Strength (dBuV/meter)	Measurement Distance (meters)
30 – 230	30	10
230 – 1000	37	10

3.2.2. Measuring Instruments

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

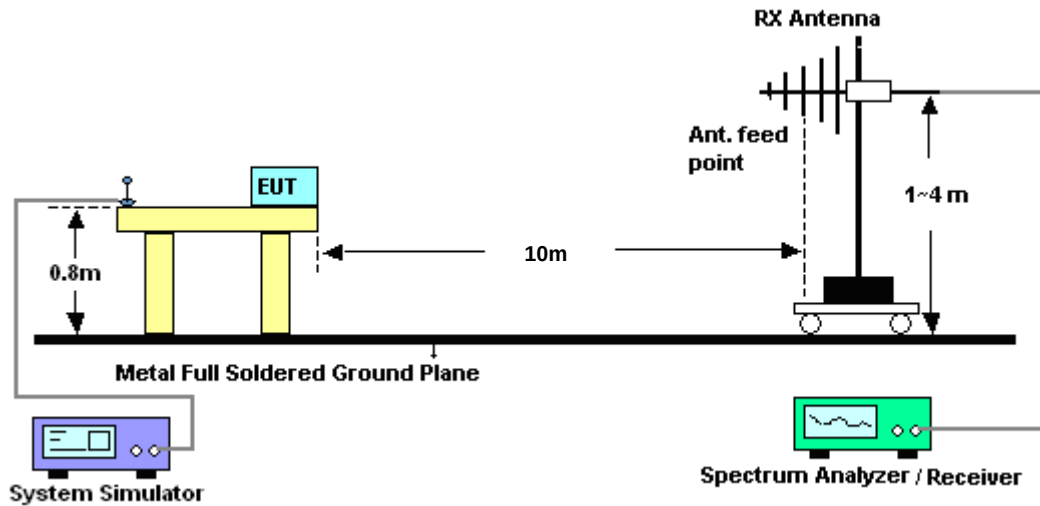


3.2.3. Test Procedures

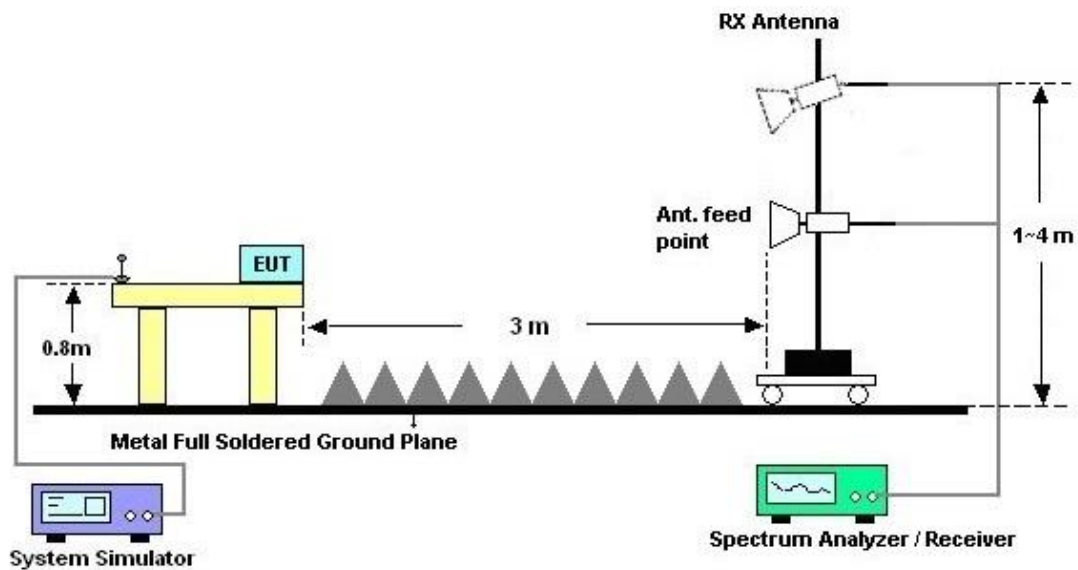
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 10 meters (30M~1G) and 3 meters (1G~ 13G) from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the 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 (dBμV/m) = 20 log Emission level (μV/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

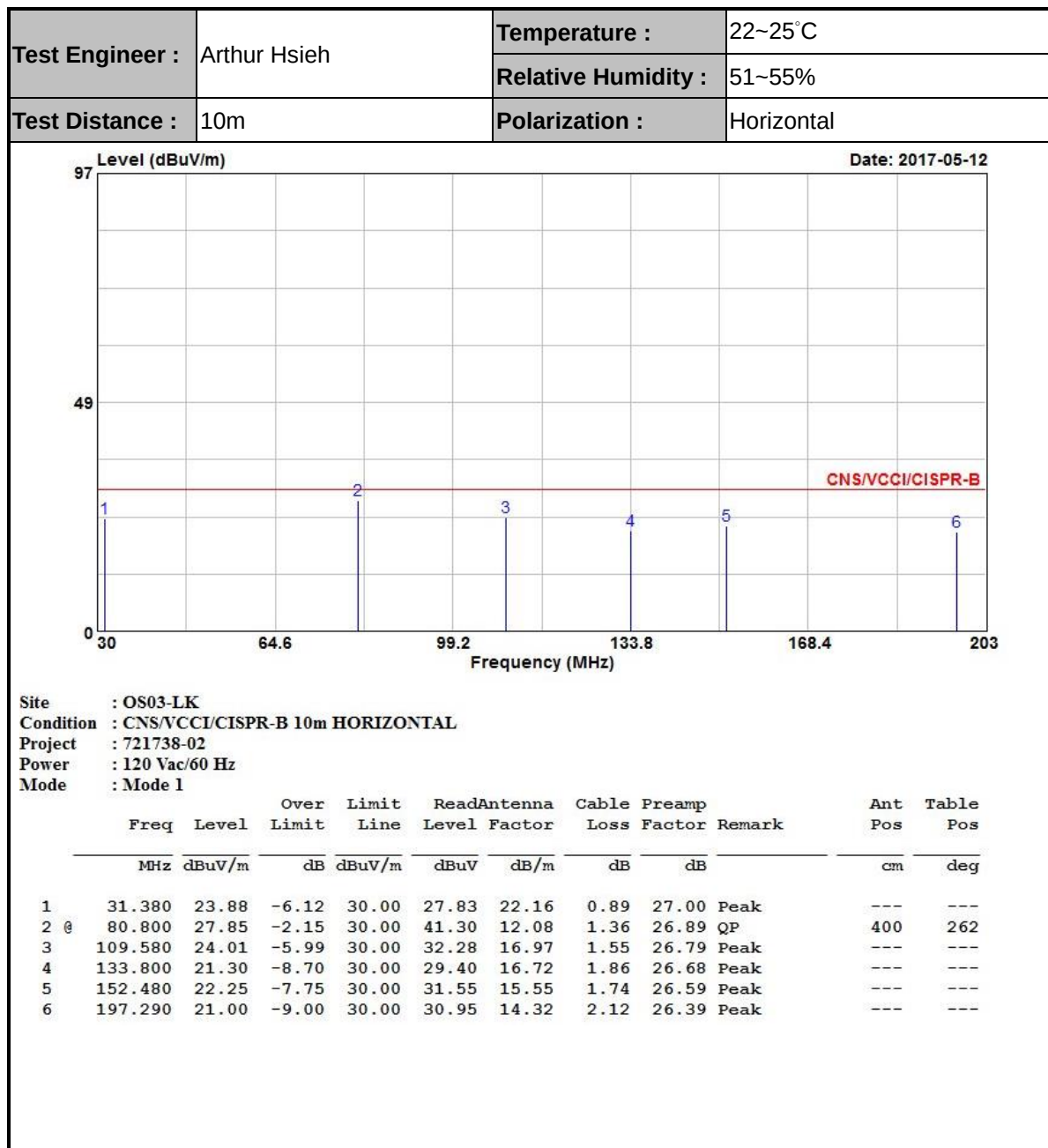


For radiated emissions above 1GHz



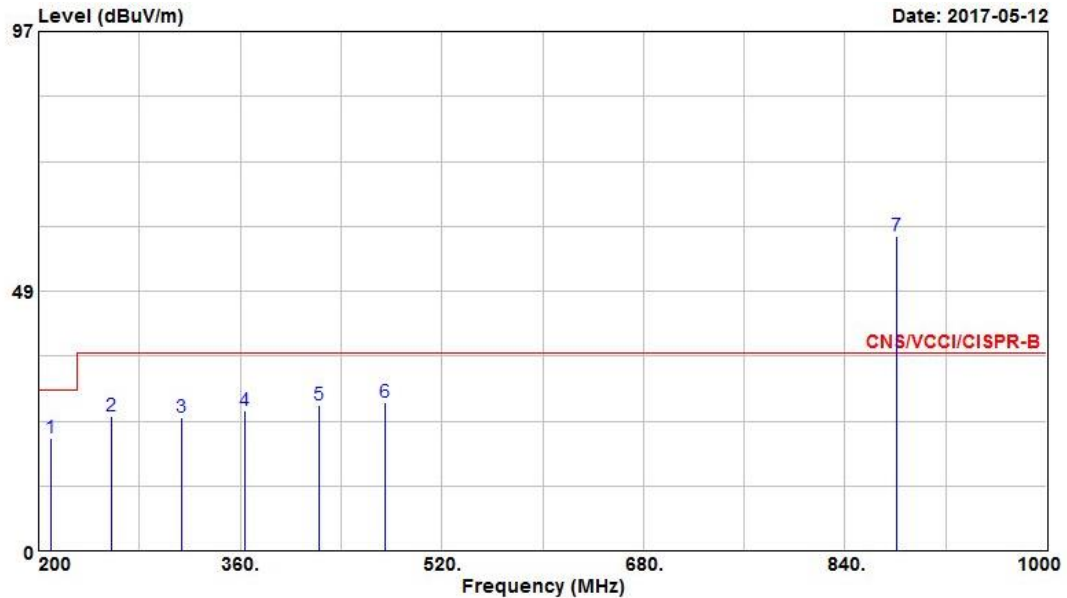


3.2.5. Test Result of Radiated Emission



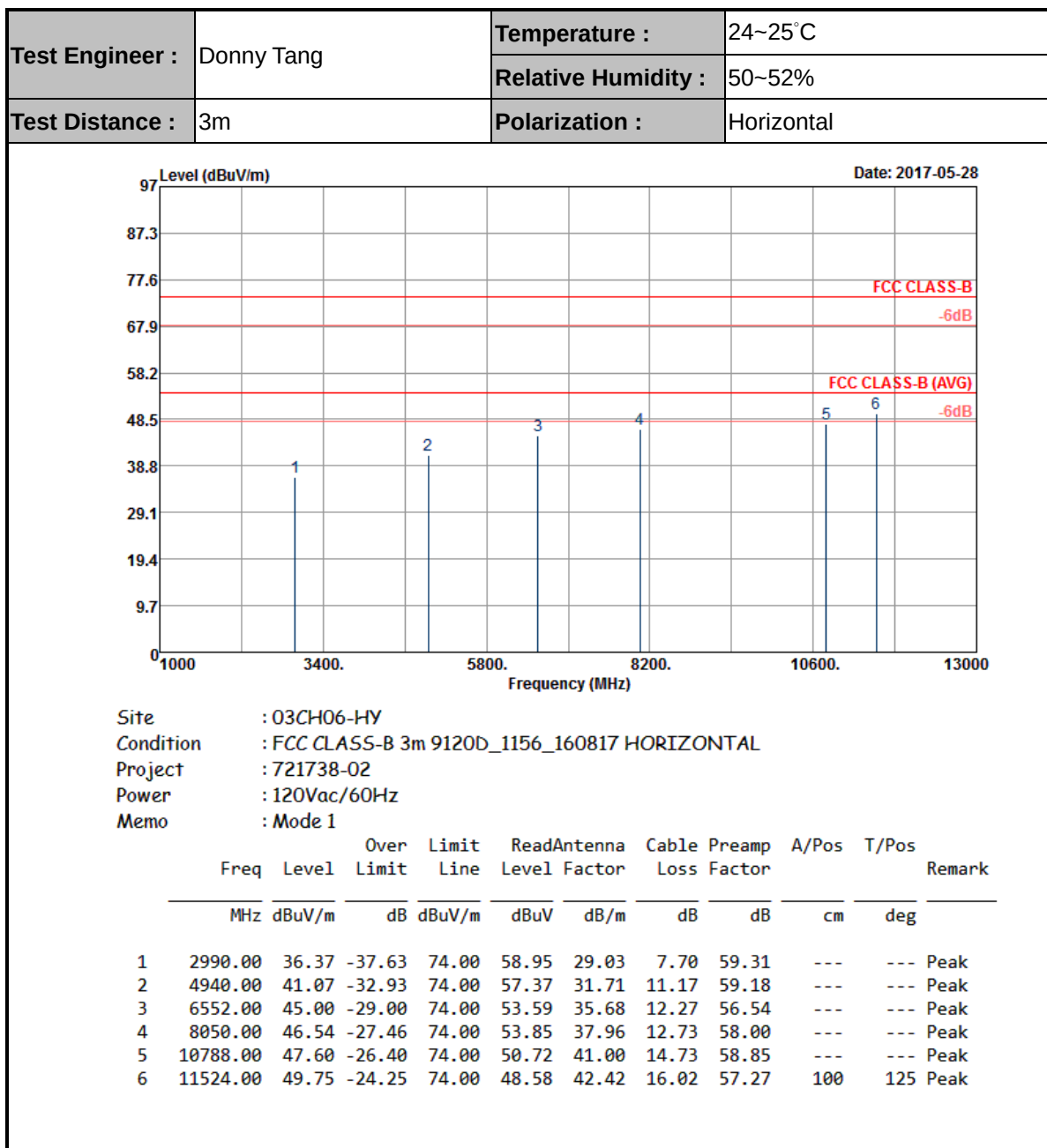


Test Engineer :	Arthur Hsieh	Temperature :	22~25°C
		Relative Humidity :	51~55%
Test Distance :	10m	Polarization :	Horizontal
Remark :	#7 is system simulator signal which can be ignored.		



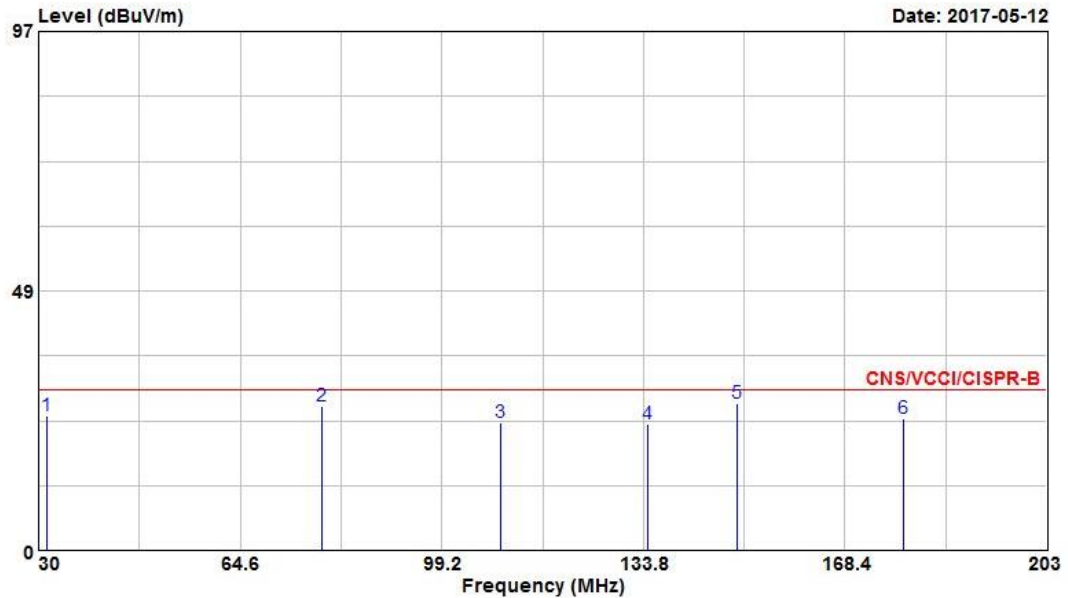
Site : OS03-LK
Condition : CNS/VCCI/CISPR-B 10m HORIZONTAL
Project : 721738-02
Power : 120 Vac/60 Hz
Mode : Mode 1

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Remark	Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	209.600	20.97	-9.03	30.00	31.00	14.23	2.11	26.37 Peak	---	---
2	257.600	25.15	-11.85	37.00	30.55	18.43	2.51	26.34 Peak	---	---
3	313.600	24.88	-12.12	37.00	30.08	18.58	2.64	26.42 Peak	---	---
4	364.000	26.22	-10.78	37.00	30.17	19.73	3.11	26.79 Peak	---	---
5	422.400	27.11	-9.89	37.00	29.33	21.60	3.36	27.18 Peak	---	---
6	475.200	27.62	-9.38	37.00	29.29	22.31	3.49	27.47 Peak	---	---
7 @	881.400	58.71			54.70	25.54	5.86	27.39 Peak	---	---





Test Engineer :	Arthur Hsieh	Temperature :	22~25°C
		Relative Humidity :	51~55%
Test Distance :	10m	Polarization :	Vertical

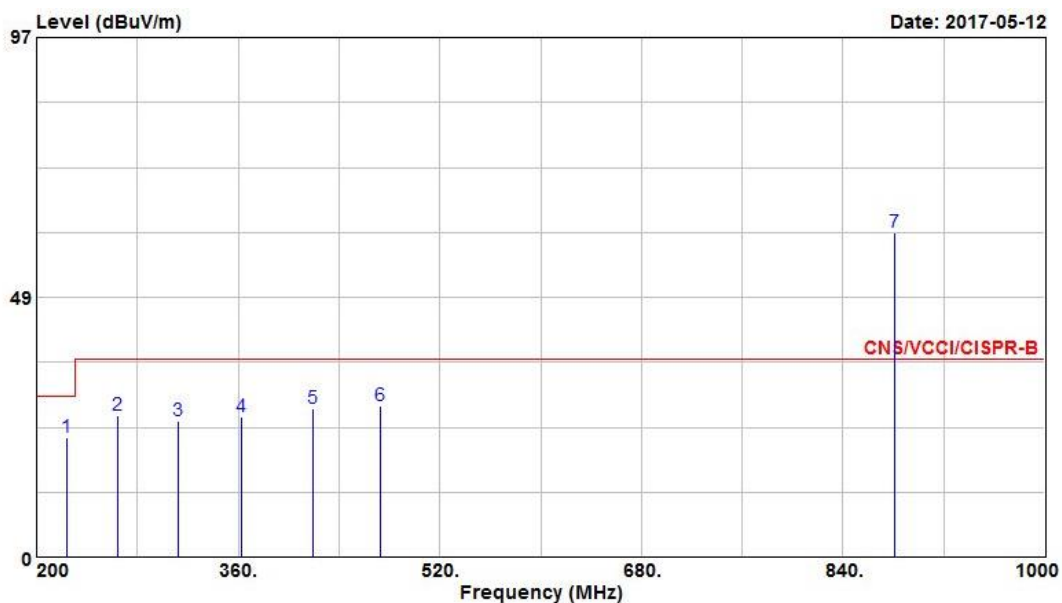


Site : OS03-LK
Condition : CNS/VCCI/CISPR-B 10m VERTICAL
Project : 721738-02
Power : 120 Vac/60 Hz
Mode : Mode 1

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	31.380	25.13	-4.87	30.00	29.08	22.16	0.89	27.00	Peak	---	---
2 @	78.610	26.90	-3.10	30.00	40.60	11.85	1.35	26.90	QP	---	---
3	109.230	23.80	-6.20	30.00	32.07	16.97	1.55	26.79	Peak	---	---
4	134.490	23.60	-6.40	30.00	31.78	16.64	1.86	26.68	Peak	---	---
5 @	150.000	27.36	-2.64	30.00	36.60	15.66	1.71	26.61	QP	100	281
6	178.430	24.71	-5.29	30.00	34.62	14.45	2.11	26.47	Peak	---	---

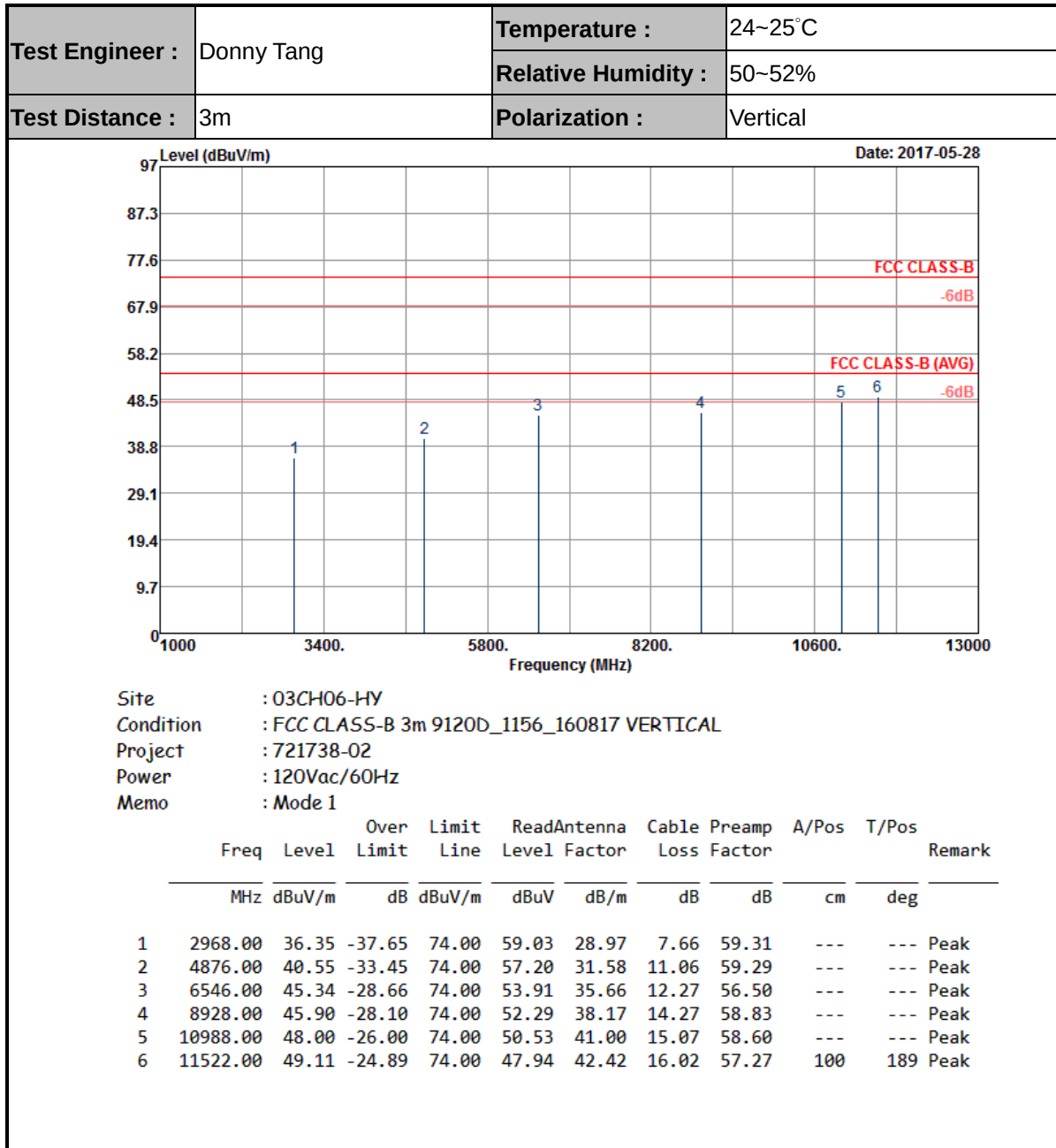


Test Engineer :	Arthur Hsieh	Temperature :	22~25°C
		Relative Humidity :	51~55%
Test Distance :	10m	Polarization :	Vertical
Remark :	#7 is system simulator signal which can be ignored.		



Site : OS03-LK
Condition : CNS/VCCI/CISPR-B 10m VERTICAL
Project : 721738-02
Power : 120 Vac/60 Hz
Mode : Mode 1

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Remark	Pos	Pos
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	224.000	22.39	-7.61	30.00	31.74	14.70	2.31	26.36 Peak	---	---
2	264.000	26.54	-10.46	37.00	31.97	18.37	2.54	26.34 Peak	---	---
3	312.800	25.38	-11.62	37.00	30.57	18.58	2.64	26.41 Peak	---	---
4	362.400	26.10	-10.90	37.00	30.04	19.72	3.11	26.77 Peak	---	---
5	419.200	27.63	-9.37	37.00	29.88	21.57	3.34	27.16 Peak	---	---
6	472.800	28.36	-8.64	37.00	30.09	22.24	3.48	27.45 Peak	---	---
7 @	881.400	60.46			56.45	25.54	5.86	27.39 Peak	---	---





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	May 14, 2017	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Aug. 30, 2016	May 14, 2017	Aug. 29, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 29, 2016	May 14, 2017	Nov. 28, 2017	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Dec. 06, 2016	May 14, 2017	Dec. 05, 2017	Conduction (CO05-HY)
Amplifier	HP	8447D	2944A09068	0.1MHz ~ 1.3GHz	Dec. 12, 2016	May 12, 2017	Dec. 11, 2017	Radiation (OS03-LK)
Test Receiver	R&S	ESR3	102052	9 kHz ~ 3.6 GHz	Apr. 05, 2017	May 12, 2017	Apr. 04, 2018	Radiation (OS03-LK)
Bilog Antenna with 5dB Attenuator	TESEQ & WOKEN	CBL6112D & 00800N1D01N-05	25236 & 007	30 MHz ~ 1 GHz	Jul. 30, 2016	May 12, 2017	Jul. 29, 2017	Radiation (OS03-LK)
Turn Table	EMCO	2080	9711-2021	0 ~ 360 degree	NCR	May 12, 2017	NCR	Radiation (OS03-LK)
Antenna Mast	EMCO	2075	9711-2115	1 m ~ 4 m	NCR	May 12, 2017	NCR	Radiation (OS03-LK)
EMI Test Receiver	Rohde & Schwarz	ESU26	100472	20Hz~26.5GHz	Dec. 29, 2016	May 28, 2017	Dec. 28, 2017	Radiation (03CH06-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1156	1GHz~18GHz	Aug. 05, 2016	May 28, 2017	Aug. 04, 2017	Radiation (03CH06-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1850117	1GHz ~ 18GHz	May 22, 2017	May 28, 2017	May 21, 2018	Radiation (03CH06-HY)
Antenna Mast	MF	MF-7802	MF780208212	1m~4m	N/A	May 28, 2017	N/A	Radiation (03CH06-HY)
Turn Table	INN-CO	DS2000	420/650/00	0-360 degree	N/A	May 28, 2017	N/A	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% ($U = 2Uc(y)$)	2.7
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.1
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.7
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