FCC EMI TEST REPORT

REPORT NO.	**:**	**FC661722**
MODEL NO.	**:**	**OAW-AP1101**
RECEIVED DATE	**:**	**Jun. 17, 2016**
FINAL TESTED DATE	**:**	**Jul. 12, 2016**
ISSUED DATE	**:**	**Aug. 08, 2016**
TEST STANDARD	**:**	**47 CFR FCC Rules and Regulations Part 15 Subpart B, Class B Digital Device** **Canada Standard ICES-003, Issue 6, Class B**
Filing Type	**:**	**Certification**
FCC ID	**:**	**2AI9TOAW-AP1101**
APPLICANT	**:**	**ALE USA Inc.**
ADDRESS	**:**	**26801 West Agoura Road, Calabasas, CA 91301**
Manufacturer	**:**	**ALE USA Inc.**
ADDRESS	**:**	**26801 West Agoura Road, Calabasas, CA 91301**
ISSUED BY	**:**	**SPORTON International Inc.**
LAB ADDRESS	**:**	**No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.**

- The test result refers exclusively to the test presented test model / sample.
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- This test report is only applicable to U.S.A. / Canada.

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History of This Test Report

REPORT NO.	VERSION	ISSUED DATE	Description
FC661722	Rev. 01	Aug. 08, 2016	Initial issue of report

VERIFICATION OF COMPLIANCE

EQUIPMENT NAME	:	**Alcatel-Lucent Enterprise Access Point**
BRAND NAME	:	**Alcatel-Lucent Enterprise**
MODEL NO.	:	**OAW-AP1101**
APPLICANT	:	**ALE USA Inc.**
ADDRESS	:	**26801 West Agoura Road, Calabasas, CA 91301**
FINAL TESTED DATE	:	**Jul. 12, 2016**
TEST STANDARD	:	**47 CFR FCC Rules and Regulations Part 15 Subpart B, Class B Digital Device** **Canada Standard ICES-003, Issue 6, Class B**

I **HEREBY** DECLARE THAT:

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 – 2014**.

The above equipment has been tested by **SPORTON International Inc.** LAB., and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMI characteristics under the conditions specified in this report.

Beck Wu

Beck Wu
SPORTON INTERNATIONAL INC.

1. Summary of Test Results

After estimating all the combination of every test mode, the result shown as below is the worst case.

The EUT has been tested according to the following specifications.

EMISSION			
Test Standard	**Test Type**	**Result**	**Remarks**
47 CFR FCC Rules and Regulations Part 15 Subpart B, Class B Digital Device and Canada Standard ICES-003, Issue 6, Class B	AC Power Port Conducted emission test 150 kHz – 30 MHz	PASS	Meet minimum passing margin is -10.19dB at 0.3872MHz.
	Radiated emission test 30 MHz – 1,000 MHz @ 3 m 1,000 MHz – 18,000 MHz @ 3 m 18,000 MHz – 30,000 MHz @ 1 m	PASS	Meet minimum passing margin is -3.88dB at 32.91MHz.

2. General Description of Equipment under Test

Product Detail	
Equipment Name	Alcatel-Lucent Enterprise Access Point
Model No.	OAW-AP1101
Brand Name	Alcatel-Lucent Enterprise
Power Supply	From power adapter or PoE
Accessories	N/A

2.1. Feature of Equipment under Test

1. The EUT's highest operating frequency is 5.8GHz.
2. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.2. Modification of EUT

Please refer to the Photographs of EUT.

3. Test Configuration of Equipment under Test

3.1. Test Mode

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Conducted Emissions	
Test Mode	Description
1	EUT + Adapter
2	EUT + PoE
Mode 1 generated the worst test result, so it was recorded in this report.	

Radiated Emissions	
Test Mode	Description
1	EUT Y axis + Adapter
2	EUT Z axis + Adapter
Mode 1 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3 will follow this same test mode.	
3	EUT Y axis + PoE
For Radiated Emission test below 1GHz: Mode 3 generated the worst test result, so it was recorded in this report. For Radiated Emission test above 1GHz: Mode 3 generated the worst test result for Radiated emission below 1GHz test, thus the measurement for Radiated emission above 1GHz test will follow this same test configuration.	

Note: 1. The defines from manufacturer, "Console port" for debugging use only.

2. All the specification of test configurations and test modes were based on customer's request.

Support Unit	Brand	Model	FCC ID
PoE	PHIHONG	POE31U-1AT(SC)	DoC
Adapter	LEI	NU36-D480080-I1	DoC

3.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

For AC Power Port Conducted emission test:

Support Unit	Brand	Model	FCC ID
NB*3	DELL	E6430	DoC
Adapter	LEI	NU36-D480080-I1	DoC

For Radiated emission test:

Support Unit	Brand	Model	FCC ID
NB*2	Apple	Mac Book	DoC
NB	DELL	E4300	DoC
PoE	PHIHONG	POE31U-1AT(SC)	DoC

3.3. EUT Operation Condition

For AC Power Port Conducted emission test:

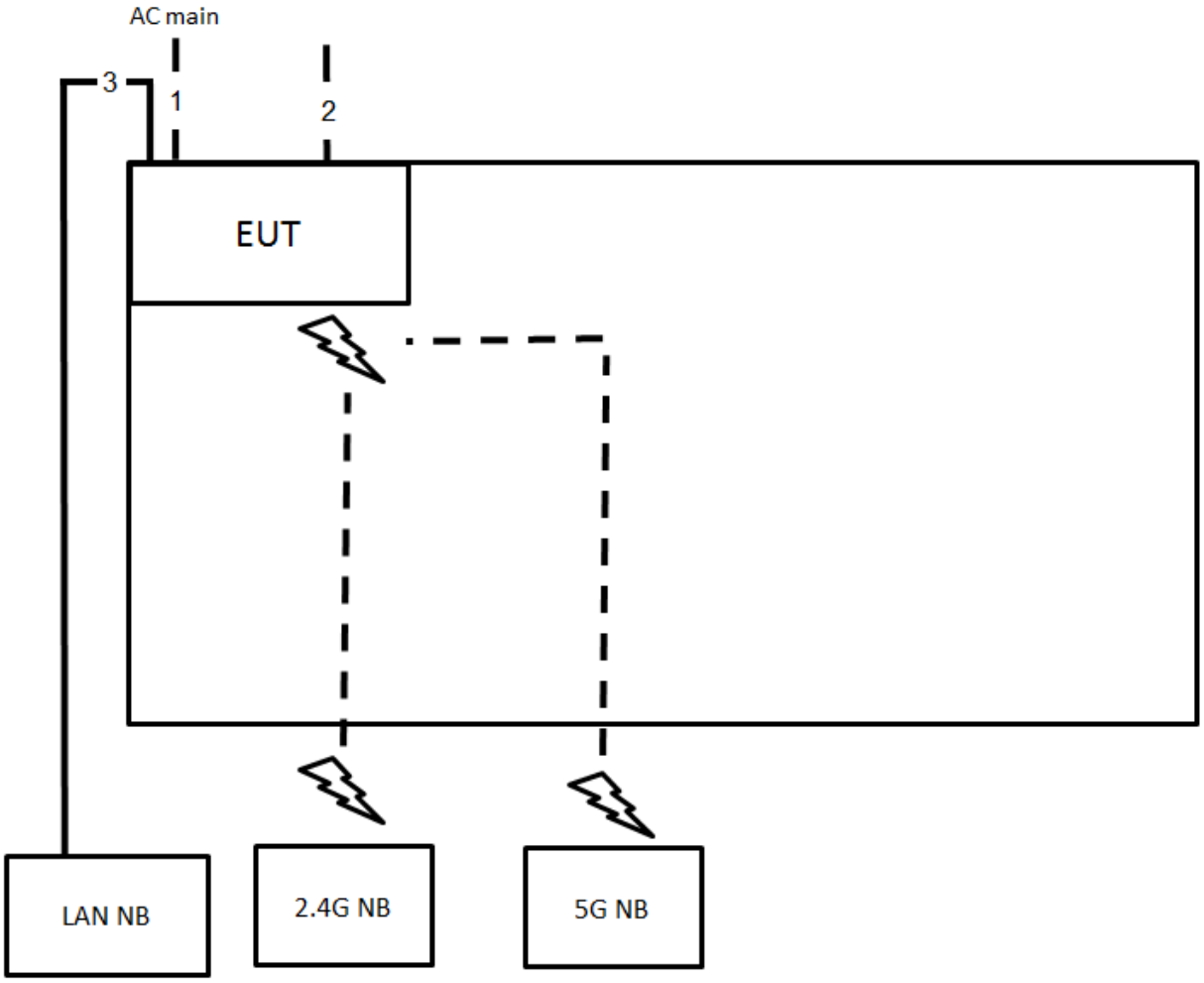
During the test, the remote notebook executed "ping.exe" under WIN 7 to link with the EUT to maintain the connection by LAN and WLAN.

For Radiated emission test:

During the test, the remote notebook executed "ping.exe" under WIN XP to link with the EUT to maintain the connection by LAN and WLAN.

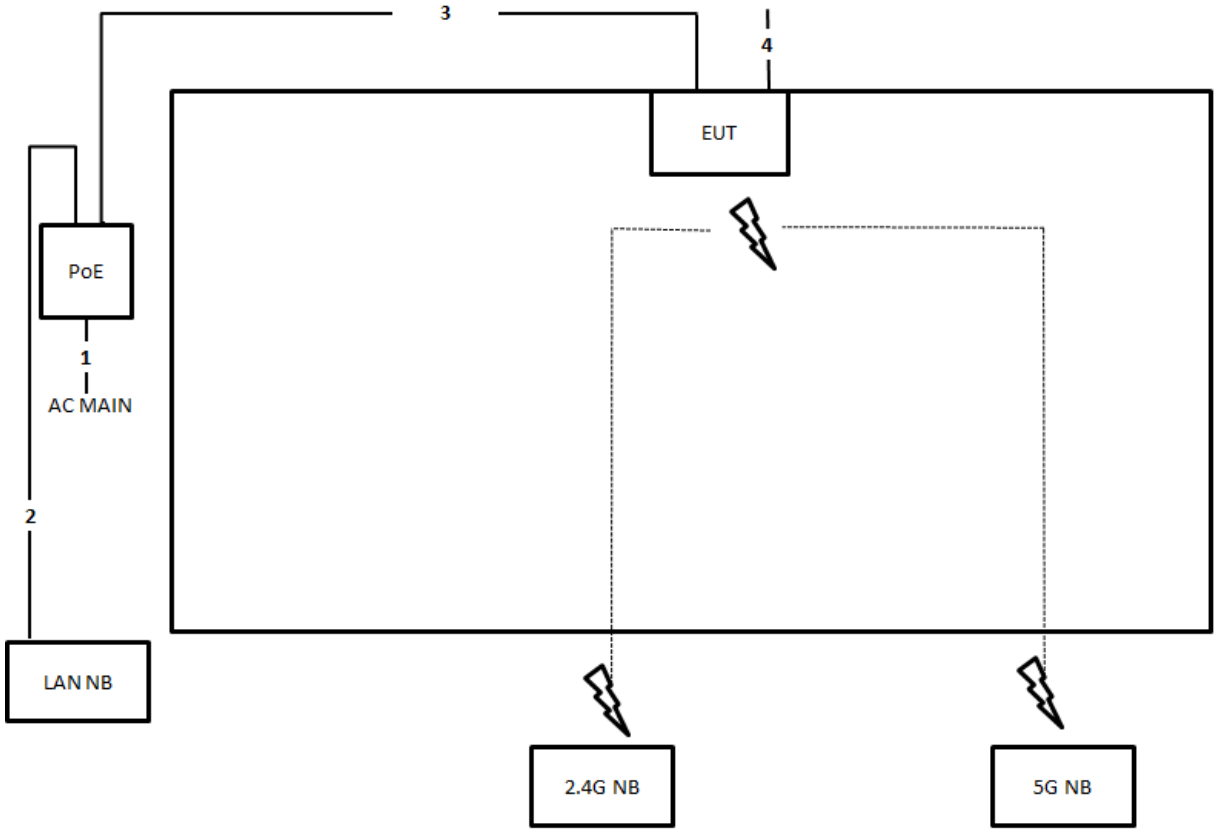
3.4. Connection Diagram of Test System

3.4.1. AC Power Line Conduction Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	2.4m
2	Console cable	No	1.5m
3	RJ-45 cable	No	10m

3.4.2. Radiation Emissions Test Configuration



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable	No	1.5m
3	RJ-45 cable	No	10m
4	Console cable	No	1.5m

4. General Information of Test

4.1. Test Facility

Test Site Location	:	No.8, Lane 724, Bo-ai St., Jhubei City, Hsinchu County 302, Taiwan, R.O.C.
TEL	:	886-3-656-9065
FAX	:	886-3-656-9085
Test Site No.	:	Conduction: CO01-CB Radiation: 03CH01-CB

4.2. Test Voltage

Power Type	Test Voltage
AC Power Supply	120 V / 60 Hz

4.3. Standard for Methods of Measurement

ANSI C63.4-2014

4.4. Frequency Range Investigated

Test Items	Frequency Range
Conducted emission test	150 kHz to 30 MHz
Radiated emission test	30 MHz to 30,000 MHz

4.5. Test Distance

Test Items	Test Distance
Radiated emission test below 1 GHz (30 MHz to 1,000 MHz)	3 m
Radiated emission test above 1 GHz (1,000 MHz to 18,000 MHz)	3 m
Radiated emission test above 1 GHz (18,000 MHz to 30,000 MHz)	1 m

5. Test of Conducted Emission

5.1. Limit

Frequency (MHz)	QP Limit (dBuV)	AV Limit (dBuV)
0.15~0.5	66~56	56~46
0.5~5	56	46
5~30	60	50

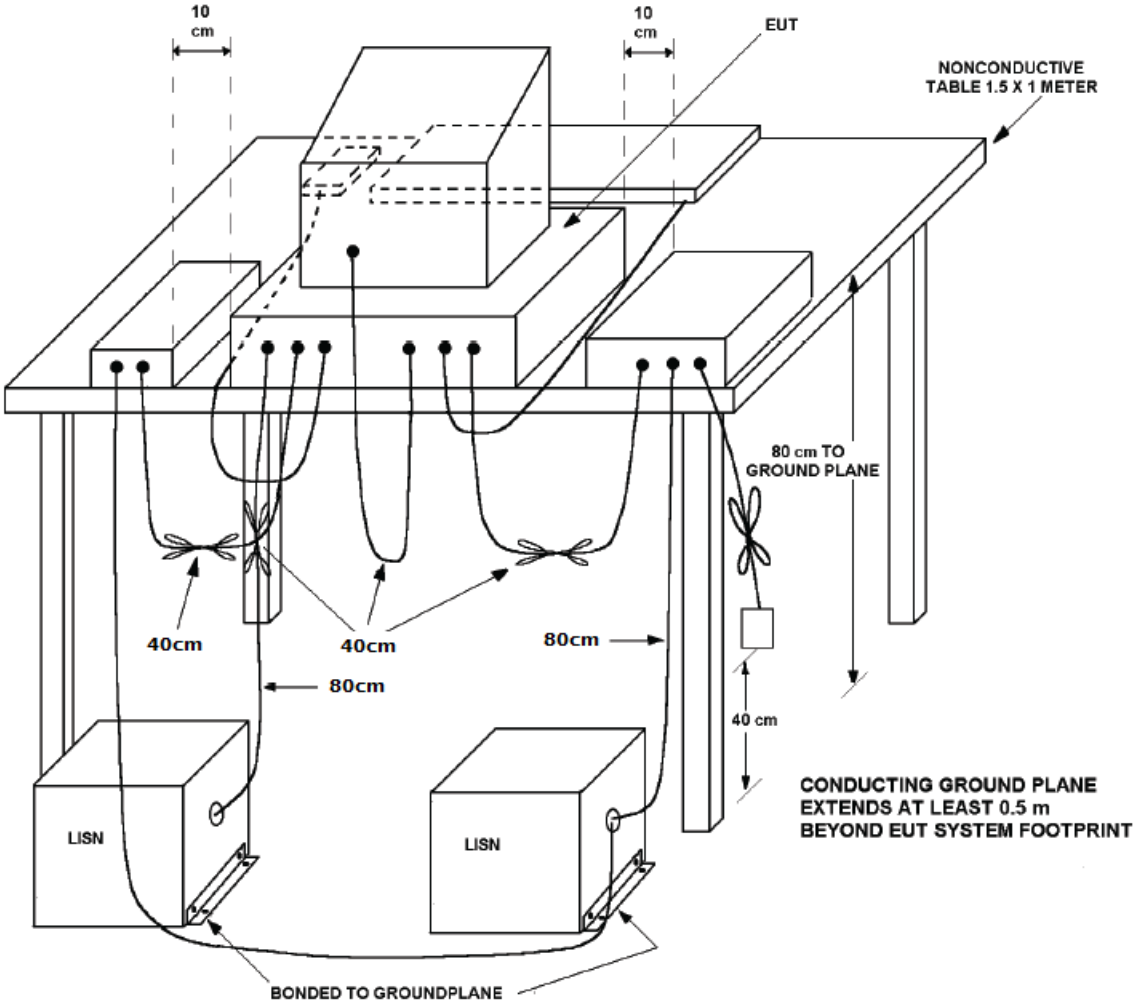
5.2. Description of Major Test Instruments

Test Receiver	Agilent N9038A
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

5.3. Test Procedures

a. 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.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connect to the other LISN.
d. The LISN provides 50 Ω coupling impedance for the measuring instrument.
e. The FCC states that a 50 Ω, 50 uH LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

5.4. Typical Test Setup Layout of Conducted Emission

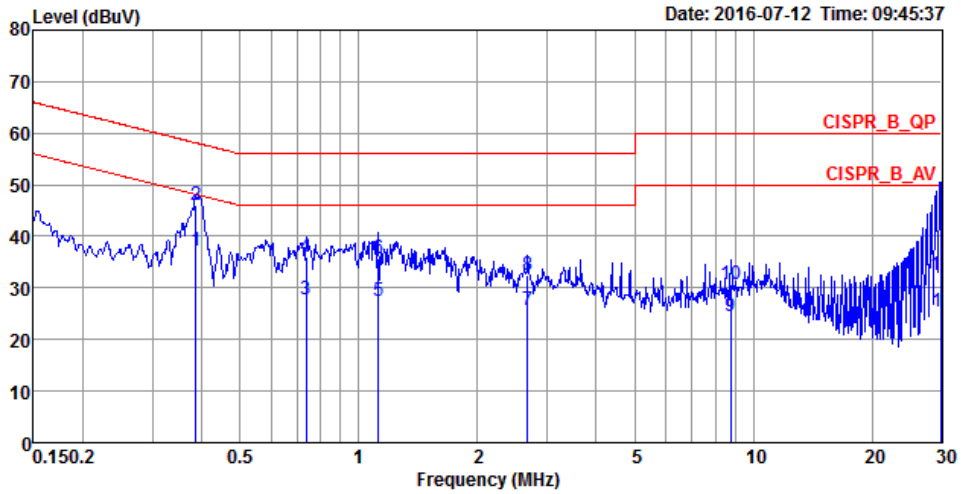


5.5. Test Result of AC Power Ports

Temperature	22℃	**Humidity**	63%
Test Engineer	GN Hou	**Frequency Range**	0.15 MHz to 30 MHz
Test Mode	Mode 1		

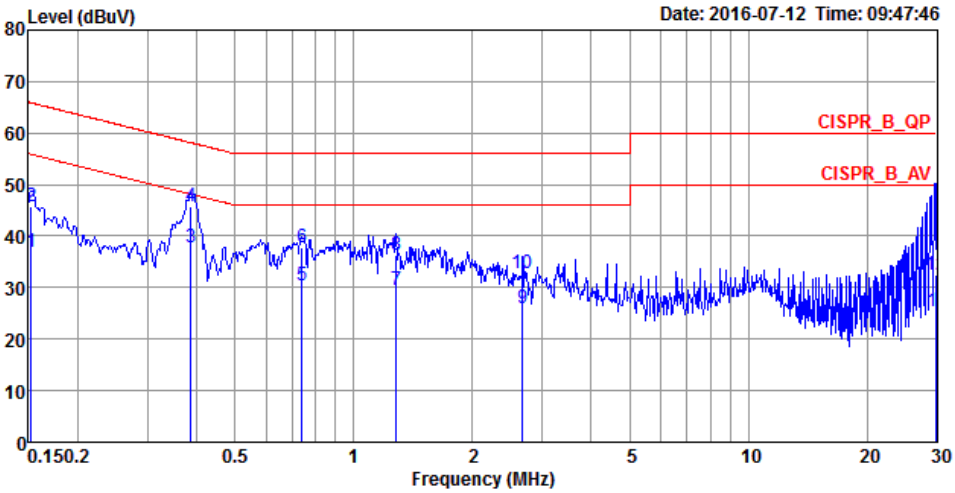
- Corrected Reading (dBuV) = LISN Factor + Cable Loss + Read Level = Level
- Margin = - Limit + (Read Level + LISN Factor + Cable Loss)
- All emissions not reported here are more than 10 dB below the prescribed limit.
- The test was passed at the minimum margin that marked by a frame in the following table

Line



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.3872	37.20	-10.92	48.12	27.26	9.92	0.02	LINE	Average
2	0.3872	45.91	-12.21	58.12	35.97	9.92	0.02	LINE	QP
3	0.7352	27.88	-18.12	46.00	17.46	9.93	0.49	LINE	Average
4	0.7352	36.08	-19.92	56.00	25.66	9.93	0.49	LINE	QP
5	1.1233	27.59	-18.41	46.00	17.02	9.94	0.63	LINE	Average
6	1.1233	35.67	-20.33	56.00	25.10	9.94	0.63	LINE	QP
7	2.6783	25.79	-20.21	46.00	15.75	9.97	0.07	LINE	Average
8	2.6783	32.51	-23.49	56.00	22.47	9.97	0.07	LINE	QP
9	8.7757	24.38	-25.62	50.00	14.12	10.12	0.14	LINE	Average
10	8.7757	30.62	-29.38	60.00	20.36	10.12	0.14	LINE	QP
11	30.0000	25.40	-24.60	50.00	14.51	10.57	0.32	LINE	Average
12	30.0000	32.44	-27.56	60.00	21.55	10.57	0.32	LINE	QP

Neutral



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1524	36.97	-18.90	55.87	26.79	10.02	0.16	NEUTRAL	Average
2	0.1524	45.80	-20.07	65.87	35.62	10.02	0.16	NEUTRAL	QP
3	0.3872	37.93	-10.19	48.12	27.99	9.92	0.02	NEUTRAL	Average
4	0.3872	45.76	-12.36	58.12	35.82	9.92	0.02	NEUTRAL	QP
5	0.7391	30.30	-15.70	46.00	19.88	9.93	0.49	NEUTRAL	Average
6	0.7391	37.89	-18.11	56.00	27.47	9.93	0.49	NEUTRAL	QP
7	1.2824	29.61	-16.39	46.00	19.16	9.95	0.50	NEUTRAL	Average
8	1.2824	36.17	-19.83	56.00	25.72	9.95	0.50	NEUTRAL	QP
9	2.6783	25.98	-20.02	46.00	15.94	9.97	0.07	NEUTRAL	Average
10	2.6783	32.65	-23.35	56.00	22.61	9.97	0.07	NEUTRAL	QP
11	30.0000	25.38	-24.62	50.00	14.49	10.57	0.32	NEUTRAL	Average
12	30.0000	32.39	-27.61	60.00	21.50	10.57	0.32	NEUTRAL	QP

6. Test of Radiated Emission

6.1. Limit

Radiated Emission below 1 GHz test at 3 m:

Frequency (MHz)	QP (dBuV/m)
30~88	40
88~216	43.5
216~960	46
Above 960	54

Radiated Emission 1~18 GHz test at 3 m:

Frequency (MHz)	PK (dBuV/m)	AV (dBuV/m)
1,000 to 18,000	74	54

Radiated Emission 18~30 GHz test at 1 m:

Frequency (MHz)	PK (dBuV/m)	AV (dBuV/m)
18,000 to 30,000	83.54	63.54

6.2. Description of Major Test Instruments

6.2.1. 30 MHz ~ 1,000 MHz

Receiver Parameter	Setting
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

6.2.2. Above 1 GHz

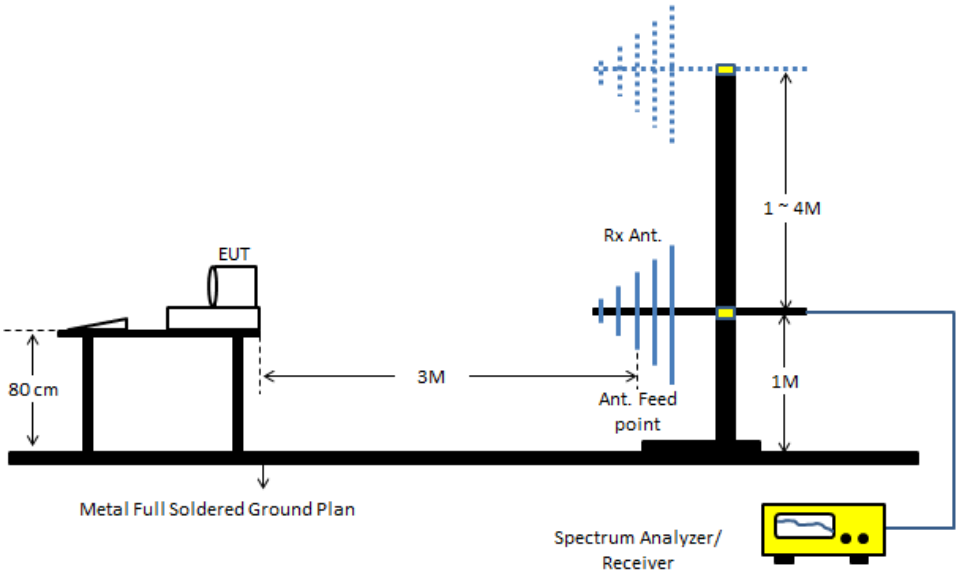
Spectrum Parameter	Setting
Start Frequency	1000 MHz
Stop Frequency	5th harmonic of highest frequency
RBW / VBW	1 MHz / 3MHz for Peak ; 1 MHz / 1Hz for Average

6.3. Test Procedures

a. The EUT was placed on a rotatable table top 0.8 meter above ground.
b. The EUT was set 3m (below 1GHz) / 3m (1GHz-18GHz) / 1m (18GHz-30GHz) meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
c. The table was rotated 360 degrees to determine the position of the highest radiation.
d. 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.
e. 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 turn table (from 0 degree to 360 degrees) to find the maximum reading.
f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

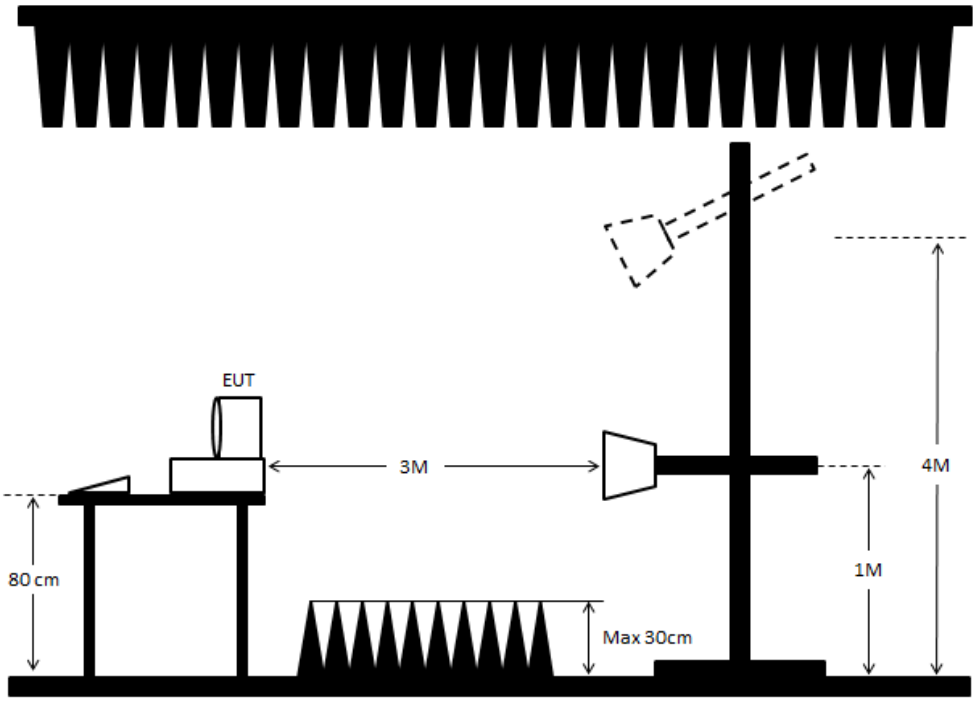
6.4. Typical Test Setup Layout of Radiated Emission

<Below 1 GHz>:

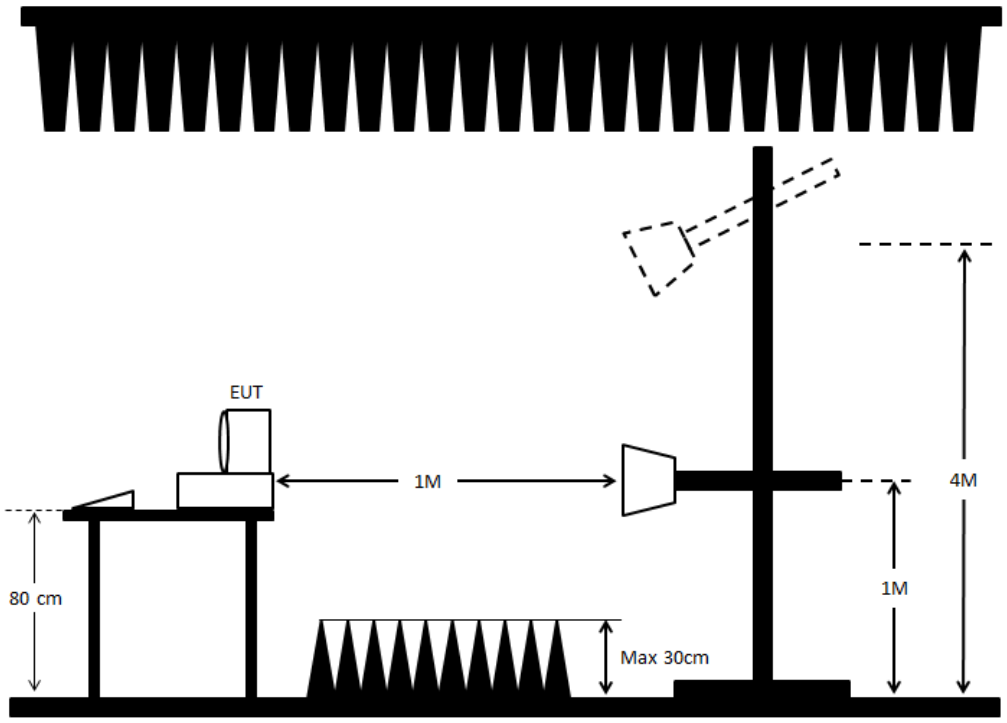


<Above 1 GHz>:

1,000~18,000 MHz



18,000~30,000 MHz

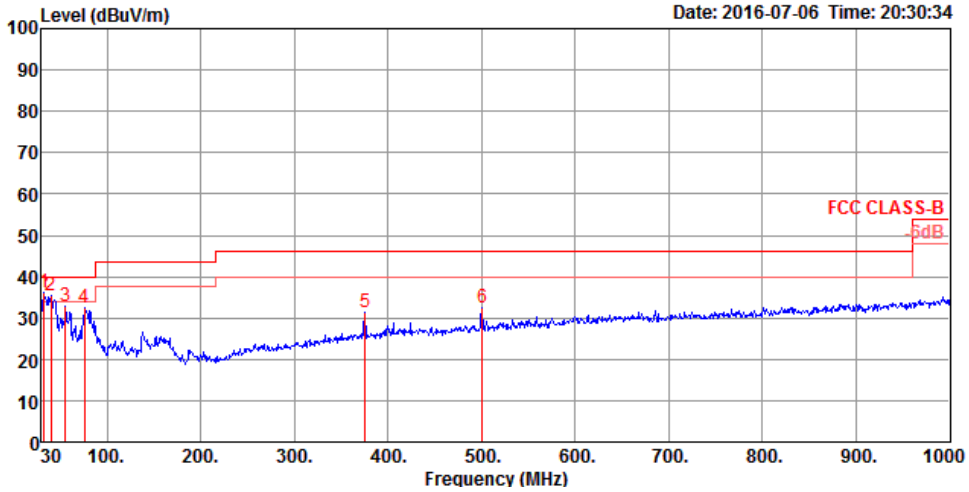


6.5. Test Result of Radiated Emission below 1 GHz

Temperature	22℃	**Humidity**	54%
Test Engineer	John Tang	**Frequency Range**	30 MHz to 1,000 MHz
Test Mode	Mode 3		

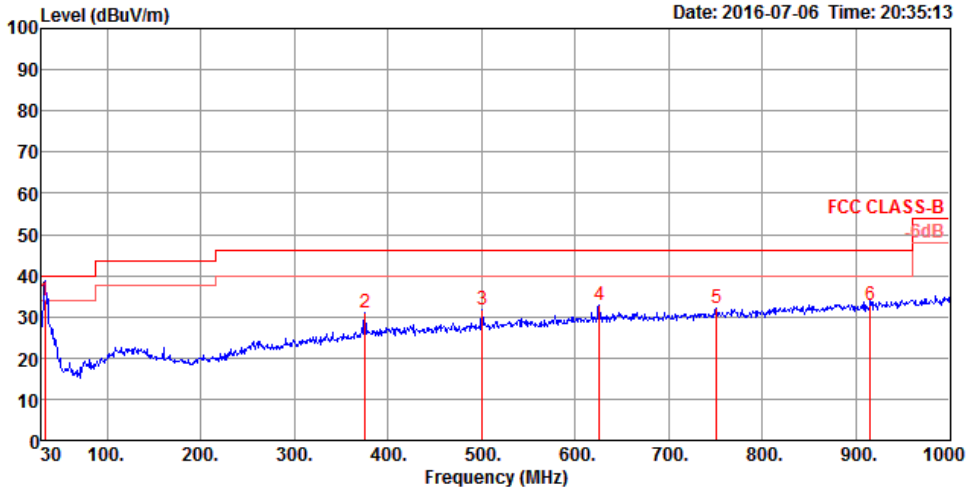
- Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
- Margin = - Limit + (Read Level + Antenna Factor + Cable Loss - Preamp Factor)
- The test was passed at the minimum margin that marked by the frame in the following test record

Vertical 30 MHz to 1,000 MHz



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	32.91	36.12	40.00	-3.88	43.77	0.51	24.24	32.40	125	221	Peak	VERTICAL
2	39.70	35.37	40.00	-4.63	46.88	0.54	20.36	32.41	100	124	Peak	VERTICAL
3	55.22	32.80	40.00	-7.20	50.31	0.65	14.25	32.41	200	278	Peak	VERTICAL
4	75.59	32.40	40.00	-7.60	50.74	0.75	13.31	32.40	100	172	Peak	VERTICAL
5	375.32	31.36	46.00	-14.64	39.93	1.67	22.08	32.32	150	202	Peak	VERTICAL
6	500.45	32.57	46.00	-13.43	38.95	1.94	24.03	32.35	100	138	Peak	VERTICAL

Horizontal 30 MHz to 1,000 MHz



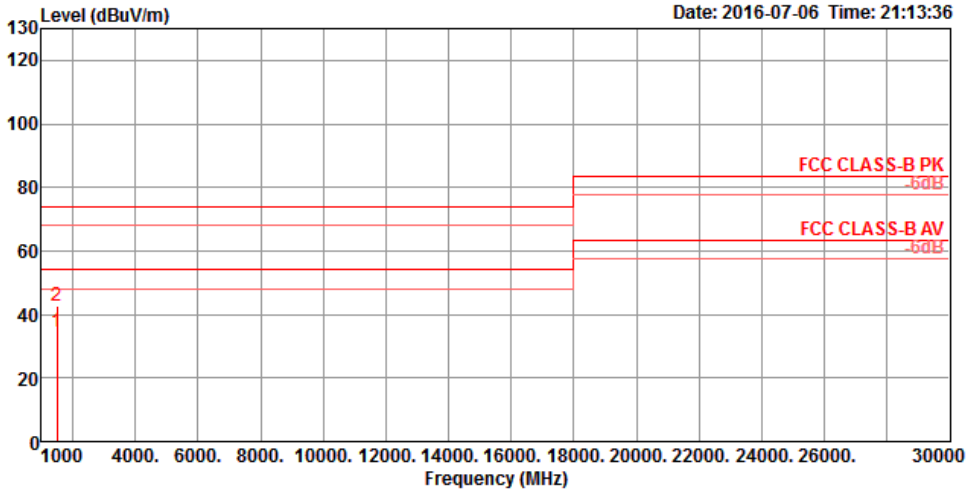
	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	33.88	33.78	40.00	-6.22	41.90	0.51	23.77	32.40	100	161	QP	HORIZONTAL
2	375.32	30.96	46.00	-15.04	39.53	1.67	22.08	32.32	150	72	Peak	HORIZONTAL
3	500.45	31.63	46.00	-14.37	38.01	1.94	24.03	32.35	100	276	Peak	HORIZONTAL
4	625.58	32.82	46.00	-13.18	37.29	2.16	25.77	32.40	100	241	Peak	HORIZONTAL
5	750.71	32.15	46.00	-13.85	35.68	2.37	26.40	32.30	125	14	Peak	HORIZONTAL
6	915.61	33.01	46.00	-12.99	34.16	2.60	27.83	31.58	125	229	Peak	HORIZONTAL

6.6. Test Result of Radiated Emission above 1 GHz

Temperature	22℃	**Humidity**	54%
Test Engineer	John Tang	**Frequency Range**	1,000 MHz to 30,000 MHz
Test Mode	Mode 3		

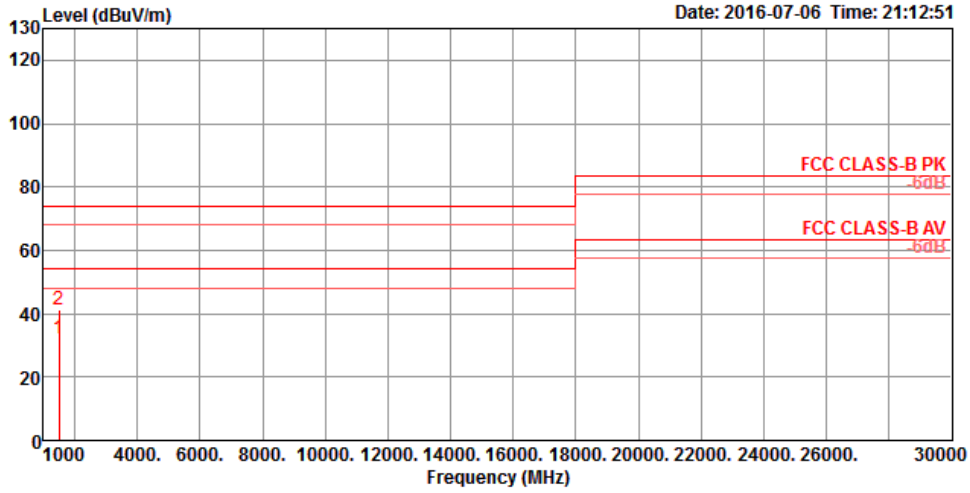
- Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
- Margin = - Limit + (Read Level + Antenna Factor + Cable Loss - Preamp Factor)
- The test was passed at the minimum margin that marked by the frame in the following test record

Vertical 1,000 MHz to 30,000 MHz



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	1483.24	34.44	54.00	-19.56	37.58	4.38	25.37	32.89	124	56	Average	VERTICAL
2	1483.74	42.51	74.00	-31.49	45.65	4.38	25.37	32.89	124	56	Peak	VERTICAL

Horizontal 1,000 MHz to 30,000 MHz



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	1483.55	32.29	54.00	-21.71	35.43	4.38	25.37	32.89	103	224	Average	HORIZONTAL
2	1484.52	41.29	74.00	-32.71	44.43	4.38	25.37	32.89	103	224	Peak	HORIZONTAL

7. List of Measuring Equipment Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 27, 2016	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 08, 2015	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 23, 2015	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 24, 2016	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	TESEQ	CBL6112D	37880	20MHz ~ 2GHz	Sep. 03, 2015	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Mar. 15, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 16, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-l0-7	N/A	N/A	Radiation (03CH01-CB)

※ Calibration Interval of instruments listed above is one year.

※ N.C.R. means Non-Calibration required.

8. Uncertainty of Test Site

Test Items	Uncertainty	Remark
Conducted Emissions	3.2 dB	Confidence levels of 95%
Radiated Emissions below 1GHz	3.6 dB	Confidence levels of 95%
Radiated Emissions 1GHz ~ 18GHz	3.7 dB	Confidence levels of 95%
Radiated Emissions 18GHz ~ 40GHz	3.5 dB	Confidence levels of 95%