

Variant FCC Test Report

Report No.: RF150401C19I-2

FCC ID: ZQAT30

Test Model: A0013

Received Date: Jun. 08, 2018

Test Date: Jul. 20, 2018

Issued Date: Jul. 27, 2018

Applicant: Nest Labs Inc

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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(R.O.C)

Test Location: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan
Hsien 333, Taiwan, R.O.C.

FCC Registration /
Designation Number: 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
RF150401C19I-2	Original Release	Jul. 27, 2018

1 Certificate of Conformity

Product: Nest Learning Thermostat

Test Model: A0013

Sample Status: Production Unit

Applicant: Nest Labs Inc

Test Date: Jul. 20, 2018

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10:2013

This report is issued as a supplementary report to BV ADT report no.: RF150401C19-3 R1. This report shall be used by combining with its original report.

Prepared by : Evonne Liu, **Date:** Jul. 27, 2018
Evonne Liu / Specialist

Approved by : Dylan Chiou, **Date:** Jul. 27, 2018
Dylan Chiou / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	N/A	Refer to Note
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -2.37 dB at 2483.52 MHz.
15.247(d)	Antenna Port Emission	N/A	Refer to Note
15.247(a)(2)	6 dB Bandwidth	N/A	Refer to Note
15.247(b)	Conducted power	N/A	Refer to Note
15.247(e)	Power Spectral Density	N/A	Refer to Note
15.203	Antenna Requirement	N/A	Refer to Note

Note: Only Radiated Emissions were performed for this report. Refer to original report for other test data.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Nest Learning Thermostat
Test Model	A0013
Status of EUT	Production Unit
Power Supply Rating	5.0Vdc (Adapter)
Modulation Type	O-QPSK
Modulation Technology	DSSS
Transfer Rate	250 kbps
Operating Frequency	2405 ~ 2475 MHz
Number of Channel	15
Antenna Type	Loop antenna with -0.3 dBi gain
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. This report is issued as a supplementary report to BV ADT report no. RF150401C19-3 R1. The difference compared with original report is adding material of baking painting. Therefore, only Radiated Emissions was verified and recorded in this report.
2. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	Nest	A0017	I/P: 100-240Vac, 50/60Hz, 0.35A O/P: 5Vdc, 2.5A
USB Cable	Nest	NA	2.0m shielded cable w/o core
Stand	Nest	Stand	--

3. This device has 3 configurations as below.

Mode	Description
A	Polish steel
B	Mirror black
C	Brushed brass

4. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

15 channels are provided to this EUT:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
11	2405	19	2445
12	2410	20	2450
13	2415	21	2455
14	2420	22	2460
15	2425	23	2465
16	2430	24	2470
17	2435	25	2475
18	2440		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To		Description
	RE $\geq$ 1G	RE<1G	
A	√	√	-
B	√	√	-
C	√	√	-

Where **RE $\geq$ 1G**: Radiated Emission above 1 GHz **RE<1G**: Radiated Emission below 1 GHz

NOTE: 1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane** for mode A, B, C.

Radiated Emission Test (Above 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type
A, B, C	11 to 25	25	DSSS	O-QPSK

Radiated Emission Test (Below 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type
A, B, C	11 to 25	25	DSSS	O-QPSK

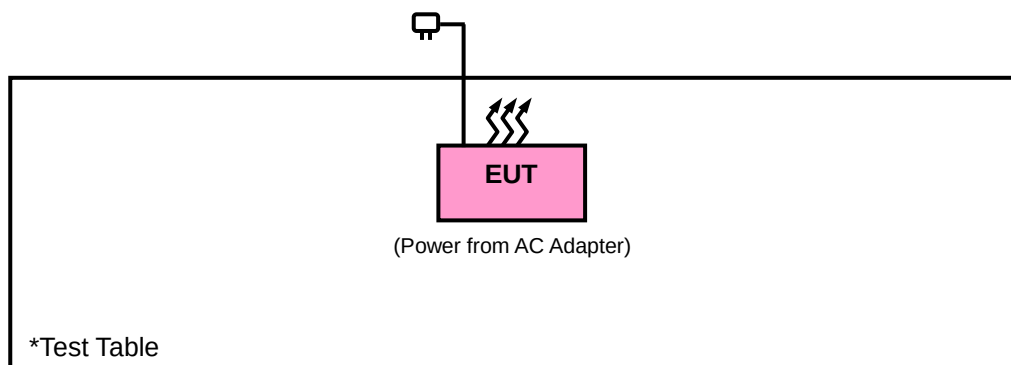
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE$\geq$1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyong Wang
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyong Wang

3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)

558074 D01 DTS Meas Guidance v04

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F (kHz)	300
0.490 ~ 1.705	24000/F (kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Oct. 17, 2017	Oct. 16, 2018
Spectrum Analyzer Agilent	N9010A	MY52220207	Dec. 07, 2017	Dec. 06, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Dec. 12, 2017	Dec. 11, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Dec. 11, 2017	Dec. 10, 2018
HORN Antenna SCHWARZBECK	9120D	209	Dec. 13, 2017	Dec. 12, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 01, 2017	Nov. 30, 2018
Fixed Attenuator Mini-Circuits	BW-N4W5+	PAD-ATT4-01	Jan. 29, 2018	Jan. 28, 2019
Loop Antenna	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier EMCI	EMC001340	980201	Nov. 01, 2017	Oct. 31, 2018
Preamplifier EMCI	EMC 012645	980115	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 184045	980116	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 330H	980112	Oct. 20, 2017	Oct. 19, 2018
Power Meter Anritsu	ML2495A	1012010	Aug. 15, 2017	Aug. 14, 2018
Power Sensor Anritsu	MA2411B	1315050	Aug. 15, 2017	Aug. 14, 2018
RF Coaxial Cable	8D-FB	Cable-RF3-04	Oct. 19, 2017	Oct. 18, 2018
RF signal cable HUBER+SUHNER	SUCOFLEX 104	230129/4	Oct. 19, 2017	Oct. 18, 2018
RF signal cable HUBER+SUHNER	SUCOFLEX 104	250723/4	Oct. 19, 2017	Oct. 18, 2018
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is IC7450F-10.

4.1.3 Test Procedures

For Radiated Emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Both Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

For Radiated Emission above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

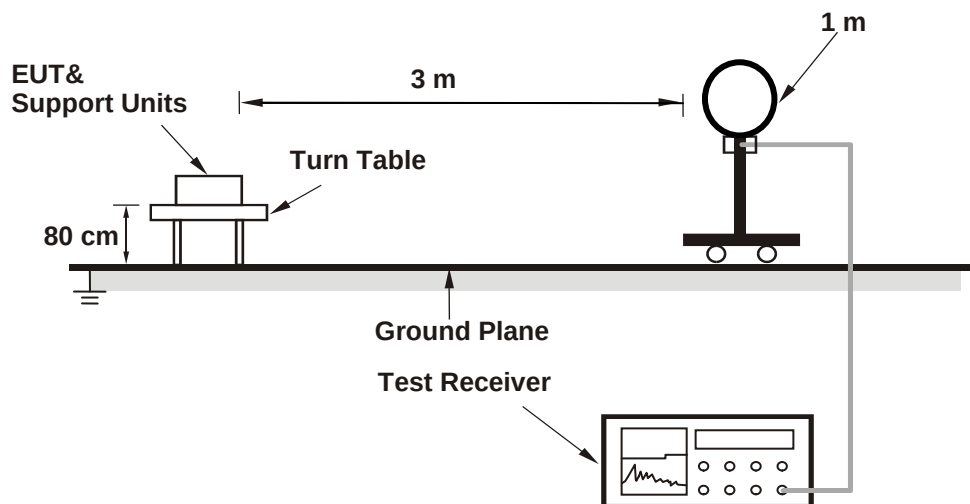
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz. (RBW = 1 MHz, VBW = 1 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

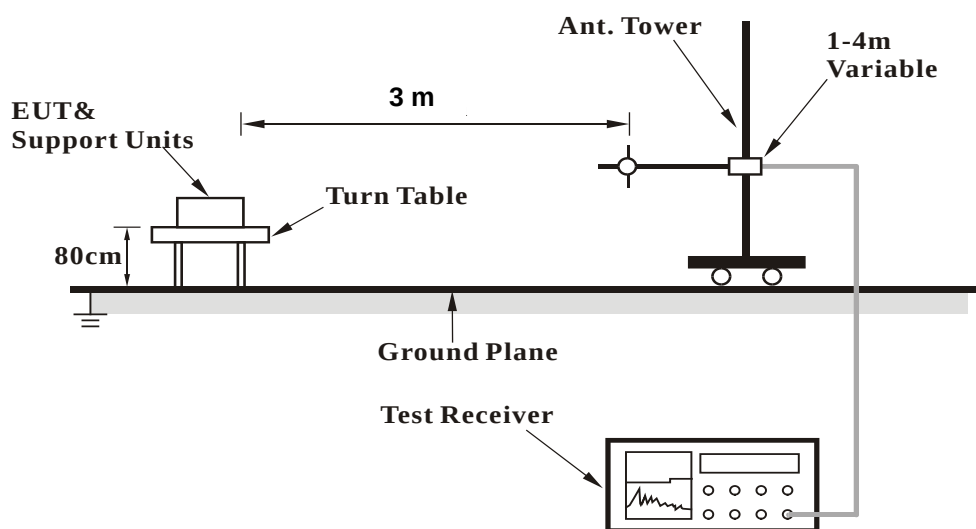
No deviation.

4.1.5 Test Set Up

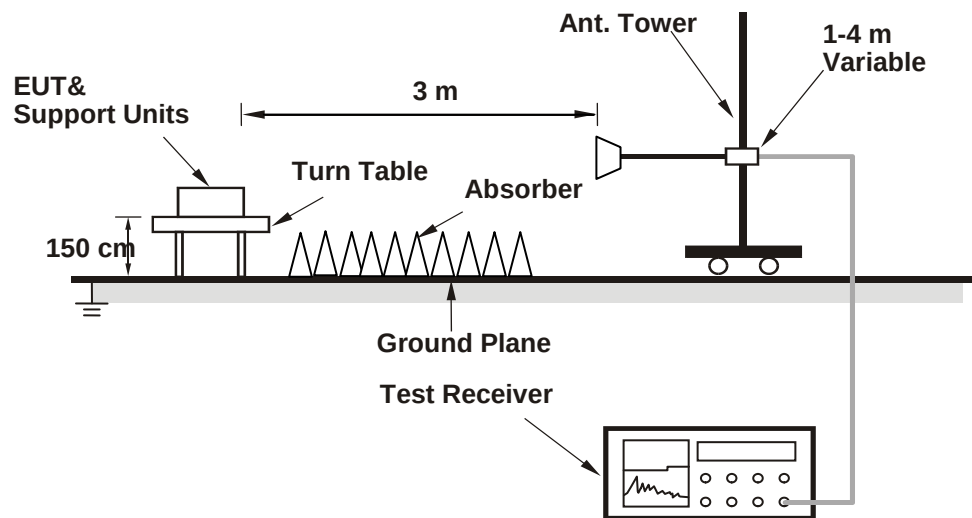
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

- Placed the EUT on a testing table.
- Use the software to control the EUT under transmission condition continuously at specific channel frequency.

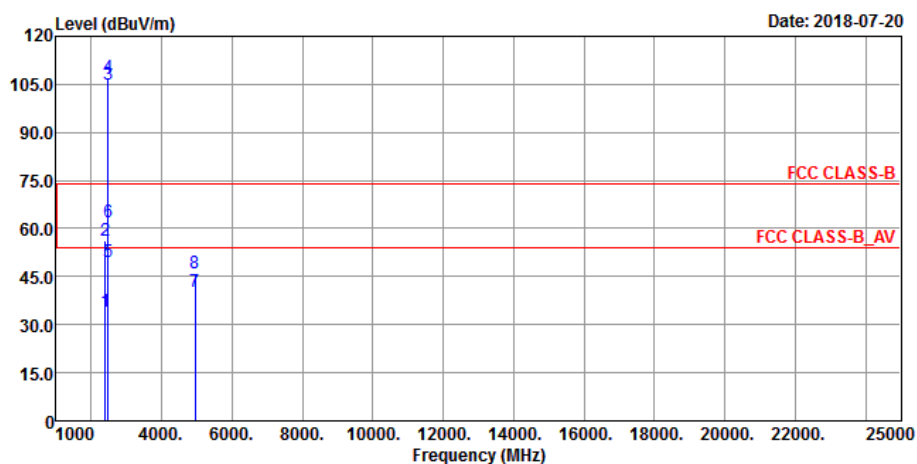
4.1.7 Test Results

Above 1 GHz Data :

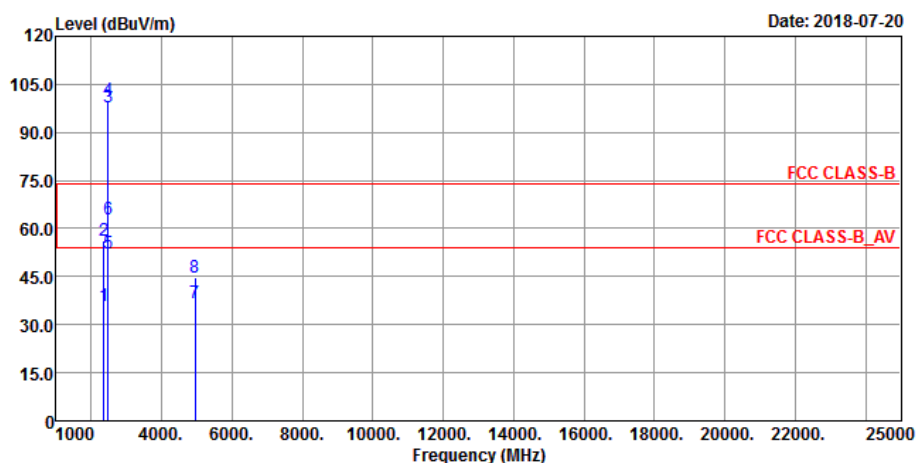
Mode A

EUT Test Condition		Measurement Detail	
Channel	Channel 25	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyong Wang

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2384	34.18	41.3	54	-19.82	26.86	3.52	37.5	100	56	Average
2384	56.28	63.4	74	-17.72	26.86	3.52	37.5	100	56	Peak
2475	105	111.57			27.15	3.6	37.32	100	56	Average
2475	107.19	113.76			27.15	3.6	37.32	100	56	Peak
2484	49.76	56.33	54	-4.24	27.15	3.6	37.32	100	56	Average
2484	62.19	68.76	74	-11.81	27.15	3.6	37.32	100	56	Peak
4950	40.14	56.2	54	-13.86	31.14	5.84	53.04	125	90	Average
4950	45.96	62.02	74	-28.04	31.14	5.84	53.04	125	90	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2352	36.02	43.2	54	-17.98	26.81	3.5	37.49	114	2	Average
2352	56.38	63.56	74	-17.62	26.81	3.5	37.49	114	2	Peak
2475	97.8	104.37			27.15	3.6	37.32	114	2	Average
2475	99.92	106.49			27.15	3.6	37.32	114	2	Peak
2484	52.25	58.82	54	-1.75	27.15	3.6	37.32	114	2	Average
2484	62.95	69.52	74	-11.05	27.15	3.6	37.32	114	2	Peak
4950	36.92	52.98	54	-17.08	31.14	5.84	53.04	100	350	Average
4950	44.54	60.6	74	-29.46	31.14	5.84	53.04	100	350	Peak

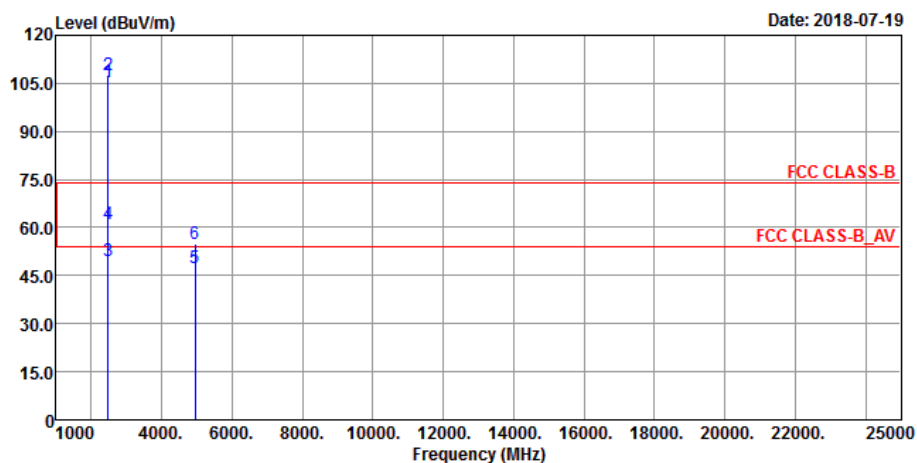
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
2. 2475 MHz: Fundamental frequency.

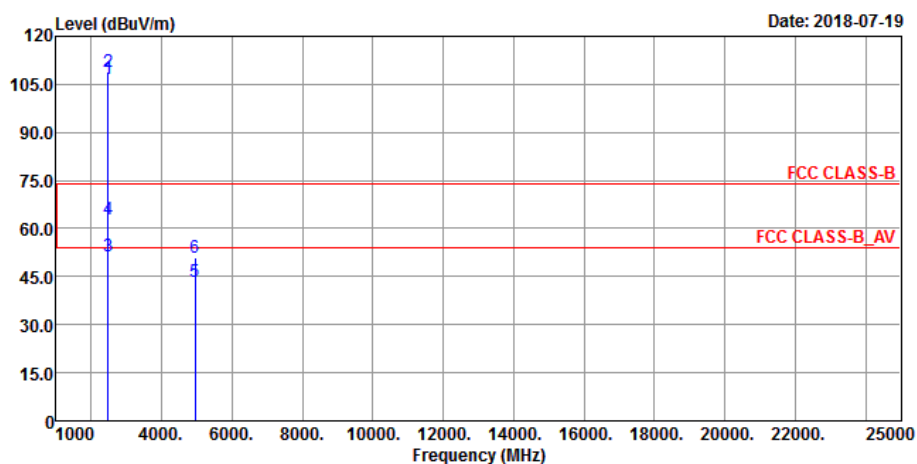
Mode B

EUT Test Condition		Measurement Detail	
Channel	Channel 25	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyoung Wang

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2475	104.92	110.29			27.53	4.42	37.32	146	24	Average
2475	107.03	112.4			27.53	4.42	37.32	146	24	Peak
2483.6	49.56	54.92	54	-4.44	27.53	4.43	37.32	146	24	Average
2483.6	61.22	66.58	74	-12.78	27.53	4.43	37.32	146	24	Peak
4950	48.55	63.21	54	-5.45	31.37	6.89	52.92	127	234	Average
4950	54.82	69.48	74	-19.18	31.37	6.89	52.92	127	234	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2475	106.98	112.35			27.53	4.42	37.32	156	154	Average
2475	109.13	114.5			27.53	4.42	37.32	156	154	Peak
2483.52	51.63	56.99	54	-2.37	27.53	4.43	37.32	156	154	Average
2483.52	63.31	68.67	74	-10.69	27.53	4.43	37.32	156	154	Peak
4950	45.38	60.04	54	-8.62	31.37	6.89	52.92	106	48	Average
4950	49.81	64.47	74	-24.19	31.37	6.89	52.92	106	48	Peak

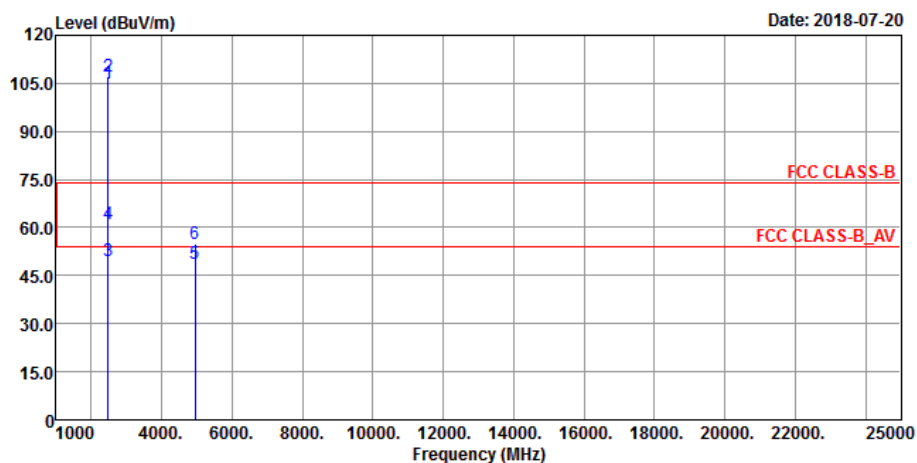
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2475 MHz: Fundamental frequency.

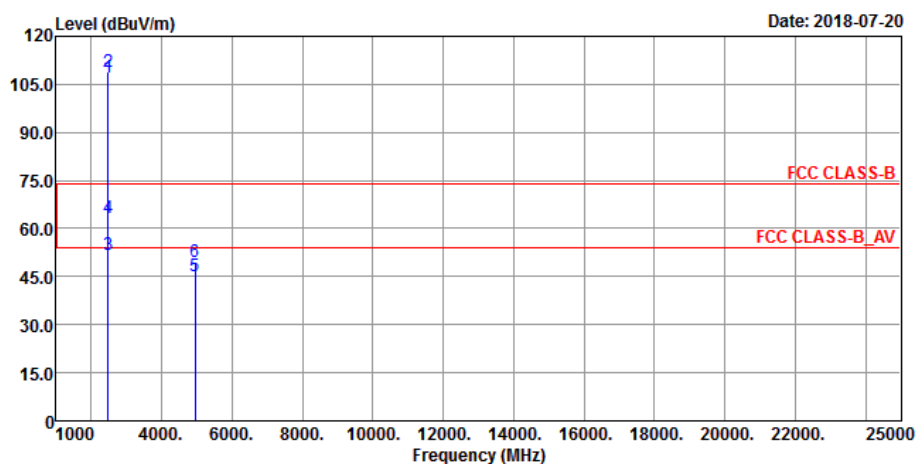
Mode C

EUT Test Condition		Measurement Detail	
Channel	Channel 25	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyoung Wang

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2475	105.23	110.6			27.53	4.42	37.32	100	140	Average
2475	107.46	112.83			27.53	4.42	37.32	100	140	Peak
2483.52	49.72	55.08	54	-4.28	27.53	4.43	37.32	100	140	Average
2483.52	61.18	66.54	74	-12.82	27.53	4.43	37.32	100	140	Peak
4950	47.34	62	54	-6.66	31.37	6.89	52.92	132	142	Average
4950	54.69	69.35	74	-19.31	31.37	6.89	52.92	132	142	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2475	106.69	112.06			27.53	4.42	37.32	156	5	Average
2475	108.97	114.34			27.53	4.42	37.32	156	5	Peak
2483.52	51.43	56.79	54	-2.57	27.53	4.43	37.32	156	5	Average
2483.52	62.69	68.05	74	-11.31	27.53	4.43	37.32	156	5	Peak
4950	43.36	58.02	54	-10.64	31.37	6.89	52.92	100	37	Average
4950	50.82	65.48	74	-23.18	31.37	6.89	52.92	100	37	Peak

Remarks:

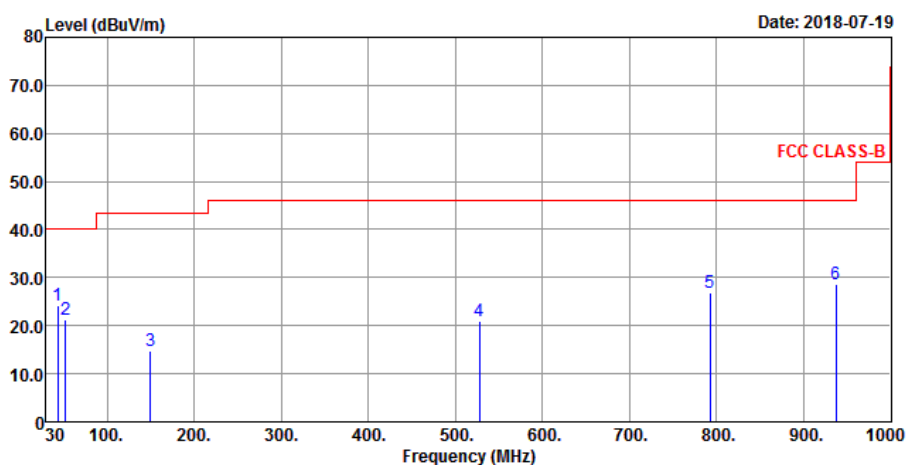
- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value
- 2475 MHz: Fundamental frequency.

Below 1 GHz Worst-Case Data:

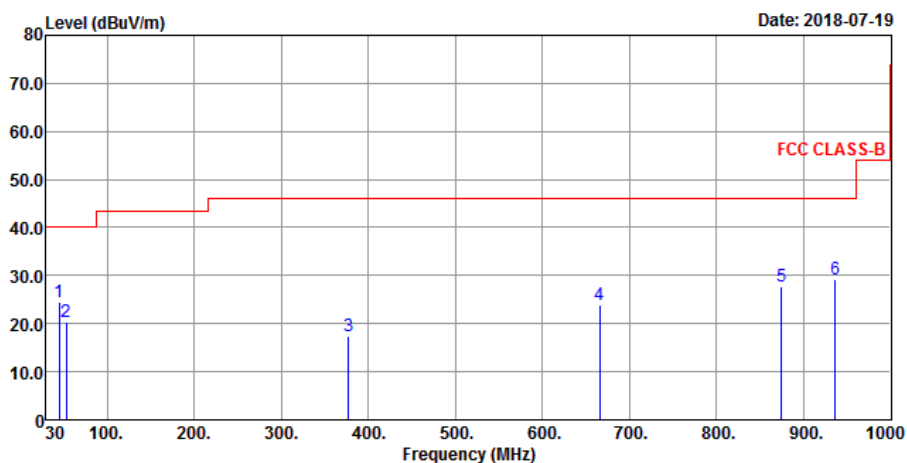
Mode A

EUT Test Condition		Measurement Detail	
Channel	Channel 25	Frequency Range	Below 1000 MHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyoung Wang

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
43.58	24.31	41.33	40	-15.69	13.59	0.5	31.11	152	214	Peak
52.31	21.24	39.26	40	-18.76	12.76	0.54	31.32	165	295	Peak
149.31	14.71	32.66	43.5	-28.79	12.68	0.98	31.61	184	147	Peak
527.61	20.87	31.97	46	-25.13	17.95	2.62	31.67	109	251	Peak
792.42	26.8	32.45	46	-19.2	22.12	3.64	31.41	265	284	Peak
936.95	28.7	32.76	46	-17.3	23.72	4.17	31.95	132	265	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
44.55	24.55	41.58	40	-15.45	13.6	0.51	31.14	132	256	Peak
53.28	20.42	38.54	40	-19.58	12.66	0.55	31.33	195	284	Peak
377.26	17.43	32.58	46	-28.57	14.8	1.99	31.94	164	145	Peak
665.35	24.05	32.36	46	-21.95	20.4	3.16	31.87	135	214	Peak
874.87	27.85	32.7	46	-18.15	23.19	3.95	31.99	164	185	Peak
935.98	29.37	33.44	46	-16.63	23.71	4.17	31.95	174	125	Peak

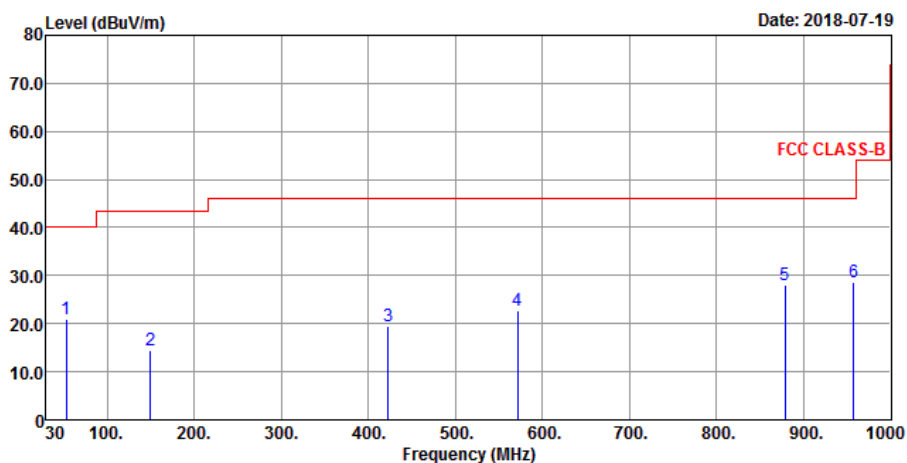
Remarks:

- Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value

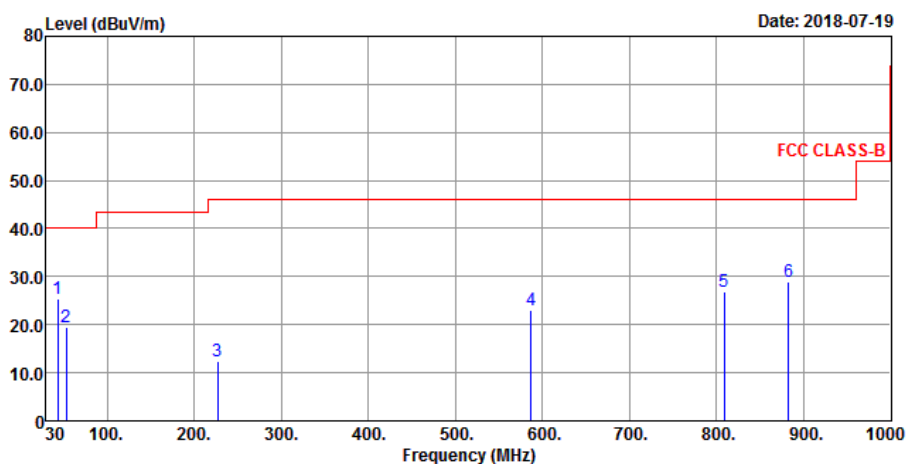
Mode B

EUT Test Condition		Measurement Detail	
Channel	Channel 25	Frequency Range	Below 1000 MHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyoung Wang

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
53.28	17.86	35.98	40	-22.14	12.66	0.55	31.33	152	111	Peak
155.13	15.35	33.37	43.5	-28.15	12.72	1	31.74	136	251	Peak
212.36	11.4	31.83	43.5	-32.1	9.89	1.29	31.61	152	214	Peak
511.12	20.73	32.18	46	-25.27	17.57	2.57	31.59	211	147	Peak
670.2	24.48	32.65	46	-21.52	20.46	3.18	31.81	250	121	Peak
798.24	26.78	32.33	46	-19.22	22.2	3.67	31.42	132	256	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
62.01	18.6	37.75	40	-21.4	11.71	0.59	31.45	195	258	Peak
127	13.84	33.37	43.5	-29.66	11.48	0.88	31.89	145	125	Peak
150.28	13.79	31.71	43.5	-29.71	12.71	0.98	31.61	132	256	Peak
239.52	12.89	32.2	46	-33.11	11.03	1.44	31.78	165	214	Peak
691.54	24.79	32.64	46	-21.21	20.71	3.27	31.83	158	241	Peak
936.95	28.6	32.66	46	-17.4	23.72	4.17	31.95	132	256	Peak

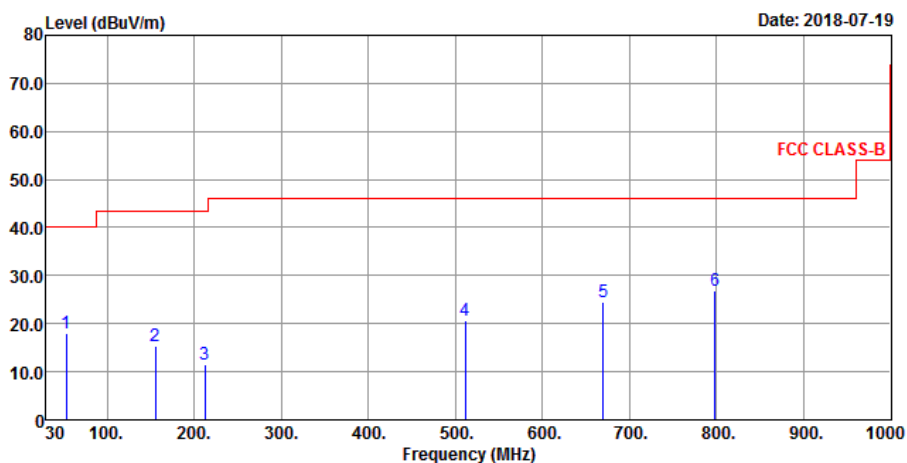
Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value

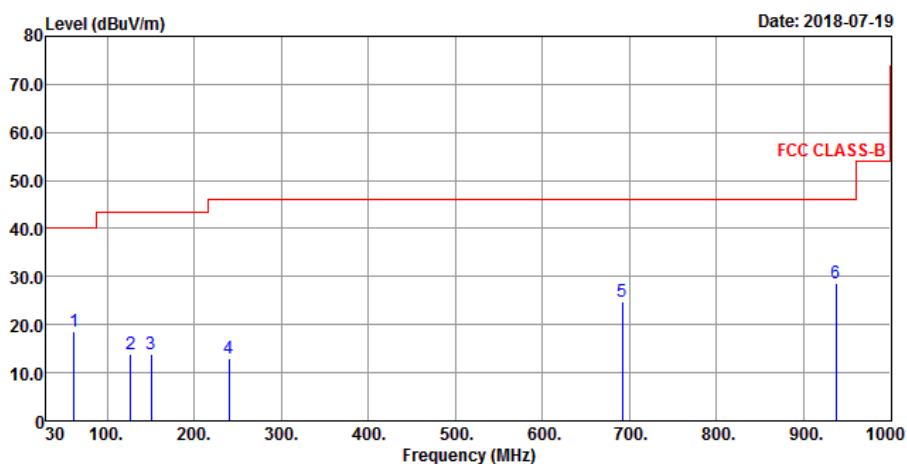
Mode C

EUT Test Condition		Measurement Detail	
Channel	Channel 25	Frequency Range	Below 1000 MHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Jisyoung Wang

Horizontal



Vertical



Antennal Polarity & Test Distance: Horizontal at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
53.28	21.09	39.21	40	-18.91	12.66	0.55	31.33	165	231	Peak
149.31	14.56	32.51	43.5	-28.94	12.68	0.98	31.61	165	285	Peak
422.85	19.47	33.56	46	-26.53	15.79	2.16	32.04	132	251	Peak
571.26	22.84	33.19	46	-23.16	18.95	2.78	32.08	147	185	Peak
878.75	27.96	32.74	46	-18.04	23.24	3.96	31.98	132	265	Peak
957.32	28.51	32.31	46	-17.49	23.83	4.27	31.9	102	231	Peak
Antennal Polarity & Test Distance: Vertical at 3 m										
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
43.58	25.25	42.27	40	-14.75	13.59	0.5	31.11	152	265	Peak
53.28	19.48	37.6	40	-20.52	12.66	0.55	31.33	132	265	Peak
226.91	12.31	32.27	46	-33.69	10.5	1.36	31.82	102	251	Peak
586.78	22.91	32.9	46	-23.09	19.3	2.84	32.13	152	147	Peak
808.91	26.97	32.37	46	-19.03	22.34	3.71	31.45	132	251	Peak
882.63	29.02	33.74	46	-16.98	23.29	3.97	31.98	211	185	Peak

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
Margin value = Emission level – Limit value

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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