

FCC TEST REPORT

REPORT NO.: RF130313C32F

MODEL NO.: DVS5P9, DVS5P8

FCC ID: RD2DS5P8001

RECEIVED: Feb. 06, 2014

TESTED: Feb. 17 ~ Mar. 04, 2014

ISSUED: Mar. 05, 2014

APPLICANT: DXG Technology Corp.

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ISSUED BY: Bureau Veritas Consumer Products Services
(H.K.) Ltd., Taoyuan Branch

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130313C32F	Original release.	Mar. 05, 2014



1. CERTIFICATION

PRODUCT: HD Action camera

MODEL NO.: DVS5P9, DVS5P8

APPLICANT: DXG Technology Corp.

TESTED: Feb. 17 ~ Mar. 04, 2014

TEST SAMPLE: ENGINEERING SAMPLE

STANDARDS: FCC Part 15, Subpart C (Section 15.249)

ANSI C63.10-2009

The above equipment (model: DVS5P9) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, 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 EMC characteristics under the conditions specified in this report.

PREPARED BY :

Suntee Liu / Specialist

, DATE : Mar. 05, 2014

APPROVED BY :

Ken Liu / Senior Manager

, DATE : Mar. 05, 2014

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.249)			
STANDARD PARAGRAPH	TEST TYPE	RESULT	REMARK
15.207	Conducted Emission Test	PASS	Meet the requirement of limit. Minimum passing margin is -24.55dB at 0.77195MHz.
15.209 15.249 15.249 (d)	Radiated Emission Test Band Edge Measurement Limit: 50dB less than the peak value of fundamental frequency or meet radiated emission limit in section 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.1dB at 9612.00MHz.

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	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emission	30MHz ~ 200MHz	3.19 dB
	200MHz ~1000MHz	3.21 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	HD Action camera
MODEL NO.	DVS5P9, DVS5P8
POWER SUPPLY	5Vdc (adapter) 3.7Vdc (battery)
MODULATION TYPE	GFSK
DATA RATE	250kbps/1Mbps/2Mbps
OPERATING FREQUENCY	2403 ~ 2477MHz
NUMBER OF CHANNEL	75
ANTENNA TYPE	Chip antenna with 0.5dBi gain
DATA CABLE	1m shielded HDMI cable without core 1m shielded USB cable with 2 cores
I/O PORT	Refer to user's manual
ACCESSORY DEVICES	Adapter, Battery

NOTE:

1. All models are listed as below.

Model	Difference
DVS5P9	with GFSK + 802.11bgn module (FCC ID:RD2DW101001)
DVS5P8	with GFSK module

* 2 models have been pre-tested, and DVS5P9 was the worst case for final test.

2. The EUT consumes power from following adapter.

Brand	FORGETIVE
Model	AMS47-0501000FU
Input Power	100-240Vac, 50/60Hz, 0.2A
Output Power	5Vdc, 1A

3. The EUT uses following battery.

Brand	FUJI ELECTRONICS(SHENZHEN) CO., LTD
Model	FJ-SLB-10A
Rating	3.7Vdc, 1130mAh, 4.18Wh

4. Adapter mode and battery mode have been pre-tested, and adapter mode was the worst case for final test.
5. The above EUT information is declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

75 channels are provided to this EUT:

CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
3	2403	23	2423	43	2443	63	2463
4	2404	24	2424	44	2444	64	2464
5	2405	25	2425	45	2445	65	2465
6	2406	26	2426	46	2446	66	2466
7	2407	27	2427	47	2447	67	2467
8	2408	28	2428	48	2448	68	2468
9	2409	29	2429	49	2449	69	2469
10	2410	30	2430	50	2450	70	2470
11	2411	31	2431	51	2451	71	2471
12	2412	32	2432	52	2452	72	2472
13	2413	33	2433	53	2453	73	2473
14	2414	34	2434	54	2454	74	2474
15	2415	35	2435	55	2455	75	2475
16	2416	36	2436	56	2456	76	2476
17	2417	37	2437	57	2457	77	2477
18	2418	38	2438	58	2458		
19	2419	39	2439	59	2459		
20	2420	40	2440	60	2460		
21	2421	41	2441	61	2461		
22	2422	42	2442	62	2462		

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	BM	
-	√	√	√	√	-

Where **RE<1G**: Radiated Emission below 1GHz **RE $\geq$ 1G**: Radiated Emission above 1GHz
PLC: Power Line Conducted Emission **BM**: Bandedge Measurement

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on Y-plane.

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 TYPE
-	3 to 77	3, 41, 77	GFSK

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 TYPE
-	3 to 77	41	GFSK

POWER LINE CONDUCTED EMISSION TEST:

- ☒ 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 TYPE
-	3 to 77	41	GFSK

BANDEDGE MEASUREMENT:

- ☒ 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 TYPE
-	3 to 77	3, 77	GFSK

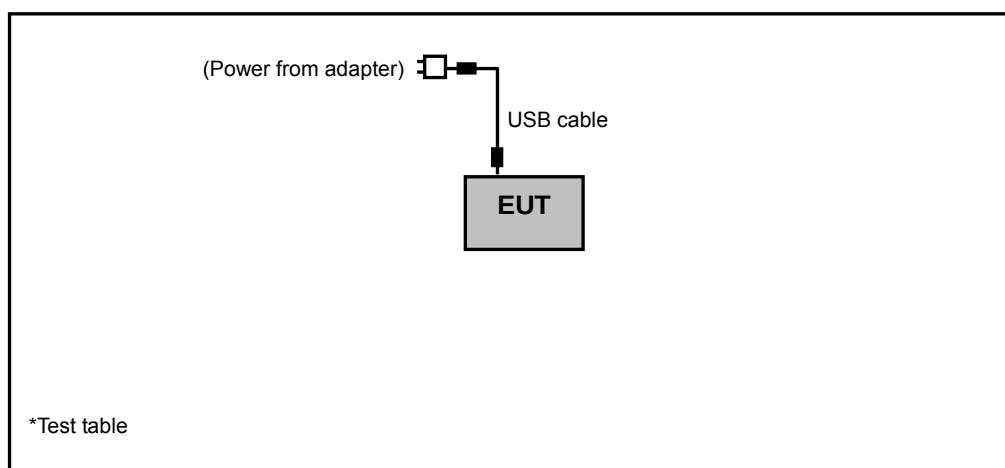
TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	25deg. C, 68%RH	120Vac, 60Hz	Sun Lin
RE<1G	25deg. C, 68%RH	120Vac, 60Hz	Sun Lin
PLC	25deg. C, 68%RH	120Vac, 60Hz	Sun Lin
BM	25deg. C, 68%RH	120Vac, 60Hz	Sun Lin

3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit.

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 (Section 15.249)

ANSI C63.10-2009

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

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION AND BAND EDGE MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION AND BAND EDGE MEASUREMENT

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
902 ~ 928 MHz	50	500
2400 ~ 2483.5 MHz	50	500
5725 ~ 5875 MHz	50	500
24 ~ 24.25 GHz	250	2500

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits as below table, whichever is the lesser attenuation

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009 ~ 0.490	$2400/F(\text{kHz})$	300
0.490 ~ 1.705	$24000/F(\text{kHz})$	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 1000MHz, 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 20dB 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	ESCS30	100289	Nov. 29, 2013	Nov. 28, 2014
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Feb. 11, 2014	Feb. 10, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Feb. 25, 2014	Feb. 24, 2015
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-209	Sep. 12, 2013	Sep. 11, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	148	Jul. 15, 2013	Jul. 14, 2014
Loop Antenna	HFH2-Z2	100070	Jan. 30, 2014	Jan. 29, 2015
Preamplifier Agilent	8449B	3008A01911	Aug. 22, 2013	Aug. 21, 2014
Preamplifier Agilent	8447D	2944A10638	Oct. 18, 2013	Oct. 17, 2014
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	248780/4 309222/4 274092/4	Aug. 26, 2013	Aug. 25, 2014
RF signal cable Worken	5D-FB	Cable-HYCH9-01	Aug. 11, 2013	Aug. 10, 2014
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	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 calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in HwaYa Chamber 9.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 215374.
6. The IC Site Registration No. is IC 7450F-9.

4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. 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 antenna is a broadband antenna, and its height 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

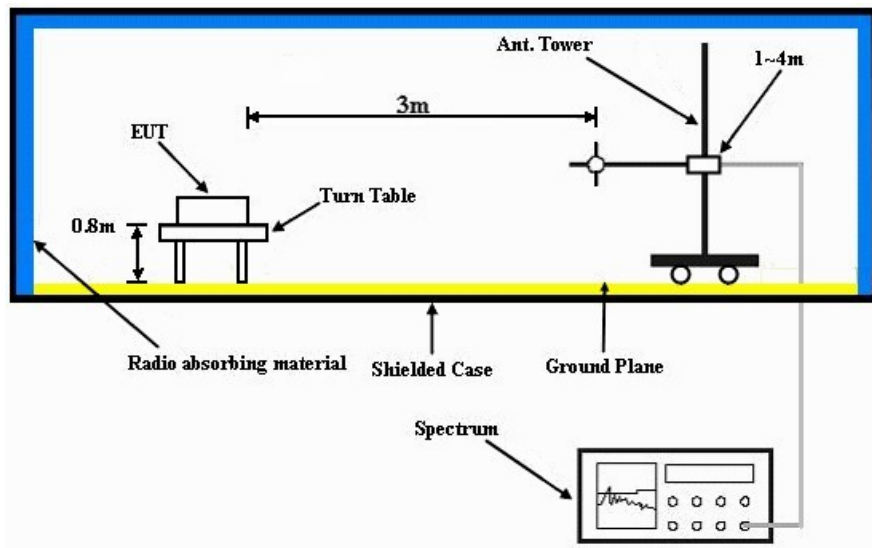
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

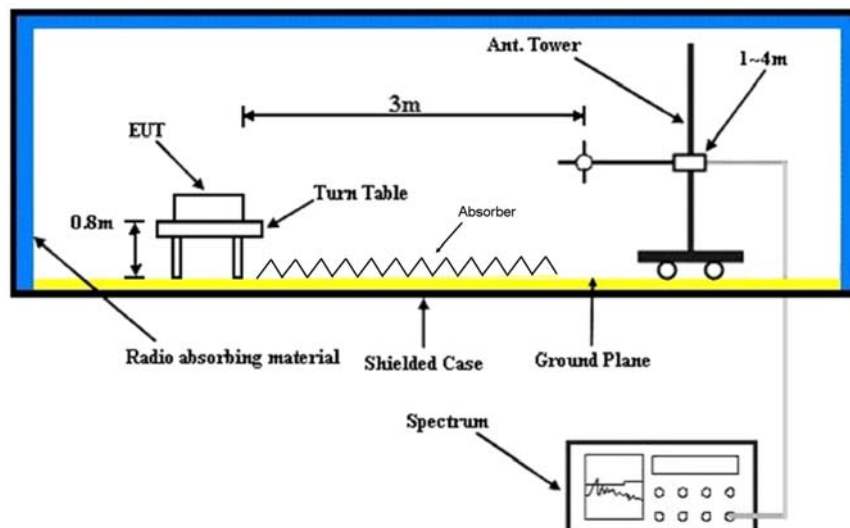
No deviation.

4.1.5 TEST SETUP

Frequency range 30MHz~1GHz



Frequency range above 1GHz



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

4.1.6 EUT OPERATING CONDITIONS

Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

ABOVE 1GHz DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	47.9 PK	74.0	-26.1	2.04 H	76	52.50	-4.60
2	2390.00	36.6 AV	54.0	-17.4	2.04 H	76	41.20	-4.60
3	2400.00	32.2 PK	74.0	-41.8	2.04 H	76	-0.20	32.40
4	2400.00	31.0 AV	54.0	-23.0	2.04 H	76	-1.40	32.40
5	*2403.00	78.0 PK	114.0	-36.0	2.04 H	76	45.60	32.40
6	*2403.00	76.8 AV	94.0	-17.2	2.04 H	76	44.40	32.40
7	4806.00	53.1 PK	74.0	-20.9	1.01 H	55	51.20	1.90
8	4806.00	44.1 AV	54.0	-9.9	1.01 H	55	42.20	1.90
9	7209.00	53.1 PK	74.0	-20.9	1.22 H	196	45.50	7.60
10	7209.00	42.2 AV	54.0	-11.8	1.22 H	196	34.60	7.60
11	9612.00	61.8 PK	74.0	-12.2	1.39 H	65	50.10	11.70
12	9612.00	47.5 AV	54.0	-6.5	1.39 H	65	35.80	11.70
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	42.2 PK	74.0	-31.8	1.46 V	60	46.80	-4.60
2	2390.00	30.0 AV	54.0	-24.0	1.46 V	60	34.60	-4.60
3	2400.00	37.6 PK	74.0	-36.4	1.46 V	60	5.20	32.40
4	2400.00	36.0 AV	54.0	-18.0	1.46 V	60	3.60	32.40
5	*2403.00	80.4 PK	114.0	-33.6	1.46 V	60	48.00	32.40
6	*2403.00	78.8 AV	94.0	-15.2	1.46 V	60	46.40	32.40
7	4806.00	53.8 PK	74.0	-20.2	1.08 V	332	51.90	1.90
8	4806.00	50.4 AV	54.0	-3.6	1.08 V	332	48.50	1.90
9	7209.00	53.3 PK	74.0	-20.7	1.28 V	277	45.70	7.60
10	7209.00	40.2 AV	54.0	-13.8	1.28 V	277	32.60	7.60
11	9612.00	61.9 PK	74.0	-12.1	1.00 V	19	50.20	11.70
12	9612.00	52.9 AV	54.0	-1.1	1.00 V	19	41.20	11.70

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 41	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	81.5 PK	114.0	-32.5	1.27 H	77	49.00	32.50
2	*2441.00	80.7 AV	94.0	-13.3	1.27 H	77	48.20	32.50
3	4882.00	48.9 PK	74.0	-25.1	1.14 H	60	46.90	2.00
4	4882.00	43.5 AV	54.0	-10.5	1.14 H	60	41.50	2.00
5	7323.00	53.2 PK	74.0	-20.8	1.28 H	204	45.20	8.00
6	7323.00	42.4 AV	54.0	-11.6	1.28 H	204	34.40	8.00
7	9764.00	60.9 PK	74.0	-13.1	1.46 H	282	48.80	12.10
8	9764.00	47.8 AV	54.0	-6.2	1.46 H	282	35.70	12.10
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2441.00	83.4 PK	114.0	-30.6	1.47 V	45	50.90	32.50
2	*2441.00	83.0 AV	94.0	-11.0	1.47 V	45	50.50	32.50
3	4882.00	47.9 PK	74.0	-26.1	1.47 V	327	45.90	2.00
4	4882.00	36.5 AV	54.0	-17.5	1.47 V	327	34.50	2.00
5	7323.00	53.2 PK	74.0	-20.8	1.34 V	289	45.20	8.00
6	7323.00	40.2 AV	54.0	-13.8	1.34 V	289	32.20	8.00
7	9764.00	58.9 PK	74.0	-15.1	1.02 V	22	46.80	12.10
8	9764.00	46.8 AV	54.0	-7.2	1.02 V	22	34.70	12.10

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * ”: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 77	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2477.00	83.6 PK	114.0	-30.4	1.28 H	82	50.90	32.70
2	*2477.00	82.2 AV	94.0	-11.8	1.28 H	82	49.50	32.70
3	2483.50	42.3 PK	74.0	-31.7	1.28 H	82	9.50	32.80
4	2483.50	40.9 AV	54.0	-13.1	1.28 H	82	8.10	32.80
5	4954.00	49.3 PK	74.0	-24.7	1.21 H	68	47.20	2.10
6	4954.00	44.0 AV	54.0	-10.0	1.21 H	68	41.90	2.10
7	7431.00	52.9 PK	74.0	-21.1	1.22 H	195	44.80	8.10
8	7431.00	42.2 AV	54.0	-11.8	1.22 H	195	34.10	8.10
9	9908.00	59.1 PK	74.0	-14.9	1.37 H	88	46.30	12.80
10	9908.00	47.2 AV	54.0	-6.8	1.37 H	88	34.40	12.80
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2477.00	88.8 PK	114.0	-25.2	1.38 V	57	56.10	32.70
2	*2477.00	87.5 AV	94.0	-6.5	1.38 V	57	54.80	32.70
3	2483.50	39.4 PK	74.0	-34.6	1.37 V	57	6.60	32.80
4	2483.50	38.2 AV	54.0	-15.8	1.37 V	57	5.40	32.80
5	4954.00	47.2 PK	74.0	-26.8	1.08 V	62	45.10	2.10
6	4954.00	37.6 AV	54.0	-16.4	1.08 V	62	35.50	2.10
7	7431.00	54.0 PK	74.0	-20.0	1.29 V	296	45.90	8.10
8	7431.00	40.5 AV	54.0	-13.5	1.29 V	296	32.40	8.10
9	9908.00	58.5 PK	74.0	-15.5	1.02 V	24	45.70	12.80
10	9908.00	47.6 AV	54.0	-6.4	1.02 V	24	34.80	12.80

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “ * “: Fundamental frequency.

BELOW 1GHz WORST-CASE DATA

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 41	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Sun Lin

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	34.2 QP	40.0	-5.8	1.99 H	202	50.10	-15.90
2	404.63	31.5 QP	46.0	-14.5	1.99 H	237	41.40	-9.90
3	480.80	40.7 QP	46.0	-5.3	1.49 H	193	48.90	-8.20
4	600.50	38.4 QP	46.0	-7.6	1.24 H	204	44.40	-6.00
5	839.89	36.9 QP	46.0	-9.1	1.49 H	227	38.50	-1.60
6	863.21	44.5 QP	46.0	-1.5	1.49 H	214	45.50	-1.00
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	32.51	37.5 QP	40.0	-2.5	1.04 V	296	54.20	-16.70
2	398.41	32.8 QP	46.0	-13.2	1.00 V	214	43.10	-10.30
3	480.80	40.3 QP	46.0	-5.7	1.49 V	189	48.50	-8.20
4	600.50	37.4 QP	46.0	-8.6	1.24 V	189	43.40	-6.00
5	839.89	39.8 QP	46.0	-6.2	1.24 V	184	41.40	-1.60
6	863.21	43.5 QP	46.0	-2.5	1.24 V	169	44.50	-1.00

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
– Pre-Amplifier Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Nov. 29, 2013	Nov. 28, 2014
RF signal cable Woken	5D-FB	Cable-HYC01-01	Dec. 27, 2013	Dec. 26, 2014
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Feb. 13, 2014	Feb. 12, 2015
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 17, 2013	Jul. 16, 2014
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

- Notes: 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 Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

4.2.3 TEST PROCEDURES

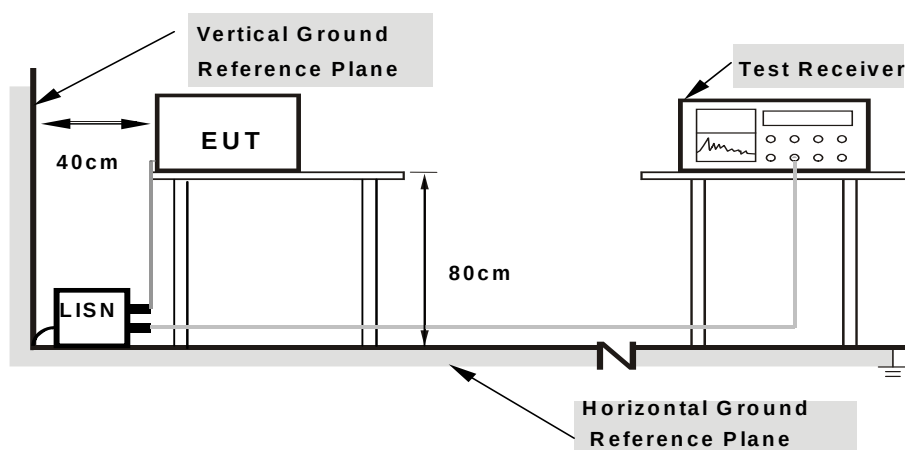
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

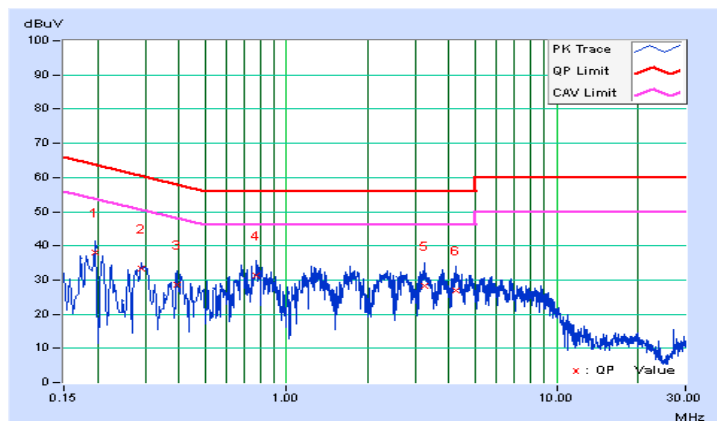
CONDUCTED WORST-CASE DATA :

PHASE	Line 1	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19692	0.09	38.02	24.27	38.11	24.36	63.74	53.74	-25.63	-29.38
2	0.29043	0.10	33.39	22.59	33.49	22.69	60.51	50.51	-27.02	-27.82
3	0.39242	0.11	28.67	18.88	28.78	18.99	58.01	48.01	-29.23	-29.02
4	0.77195	0.17	31.28	18.67	31.45	18.84	56.00	46.00	-24.55	-27.16
5	3.24281	0.26	28.08	17.29	28.34	17.55	56.00	46.00	-27.66	-28.45
6	4.25550	0.27	26.71	15.57	26.98	15.84	56.00	46.00	-29.02	-30.16

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.

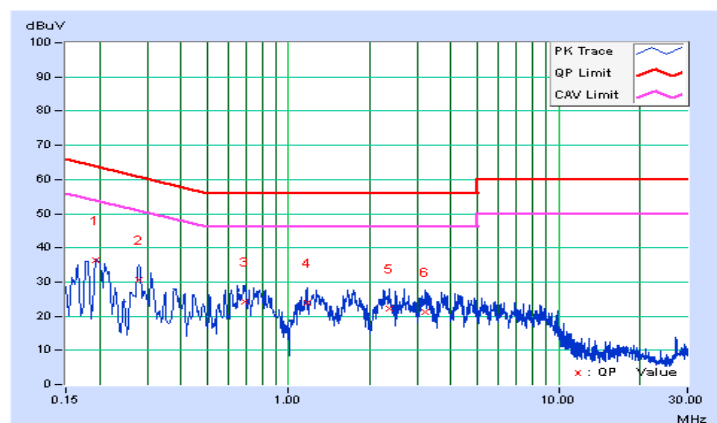


PHASE	Line 2	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19305	0.08	36.14	20.55	36.22	20.63	63.90	53.90	-27.68	-33.27
2	0.27918	0.12	30.59	16.71	30.71	16.83	60.84	50.84	-30.13	-34.01
3	0.68564	0.19	24.15	14.72	24.34	14.91	56.00	46.00	-31.66	-31.09
4	1.17056	0.22	23.58	12.92	23.80	13.14	56.00	46.00	-32.20	-32.86
5	2.37088	0.23	22.02	12.55	22.25	12.78	56.00	46.00	-33.75	-33.22
6	3.20371	0.24	20.98	11.76	21.22	12.00	56.00	46.00	-34.78	-34.00

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. 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 accredited and approved according to ISO/IEC 17025.

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

Linko EMC/RF Lab

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Tel: 886-3-5935343

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Tel: 886-3-3183232

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Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

7. APPENDIX A – MODIFICATION RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

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