



FCC TEST REPORT (15.247)

REPORT NO.: RF130204E07

MODEL NO.: N204B

FCC ID: NOIKBN204B

RECEIVED: Feb. 04, 2013

TESTED: Feb. 20 to 22, 2013

ISSUED: Mar. 05, 2013

APPLICANT: NETRONIX, INC.

ADDRESS: No. 945, Boai St., Jubei City, Hsin-Chu,302,Taiwan,
R.O.C.

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

LAB ADDRESS : No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,
R.O.C.

TEST LOCATION (1): No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,
R.O.C.

TEST LOCATION (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,
R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification



A D T

Table of Contents

RELEASE CONTROL RECORD	4
1. CERTIFICATION	5
2. SUMMARY OF TEST RESULTS	6
2.1 MEASUREMENT UNCERTAINTY	7
3. GENERAL INFORMATION	8
3.1 GENERAL DESCRIPTION OF EUT	8
3.2 DESCRIPTION OF TEST MODES	10
3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL	11
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS	13
3.4 DESCRIPTION OF SUPPORT UNITS.....	14
3.5 CONFIGURATION OF SYSTEM UNDER TEST.....	14
4. TEST TYPES AND RESULTS	15
4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT	15
4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT.....	15
4.1.2 TEST INSTRUMENTS.....	16
4.1.3 TEST PROCEDURES	17
4.1.4 DEVIATION FROM TEST STANDARD.....	17
4.1.5 TEST SETUP	18
4.1.6 EUT OPERATING CONDITIONS	18
4.1.7 TEST RESULTS	19
4.2 6dB BANDWIDTH MEASUREMENT	29
4.2.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT	29
4.2.2 TEST INSTRUMENTS.....	29
4.2.3 TEST PROCEDURE.....	29
4.2.4 DEVIATION FROM TEST STANDARD.....	29
4.2.5 TEST SETUP	29
4.2.6 EUT OPERATING CONDITIONS	29
4.2.7 TEST RESULTS	30
4.3 CONDUCTED OUTPUT POWER MEASUREMENT	31
4.3.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	31
4.3.2 INSTRUMENTS.....	31
4.3.3 TEST PROCEDURES	31
4.3.4 DEVIATION FROM TEST STANDARD.....	31
4.3.5 TEST SETUP	31
4.3.6 EUT OPERATING CONDITIONS	31
4.3.7 TEST RESULTS	32
4.4 POWER SPECTRAL DENSITY MEASUREMENT.....	34
4.4.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	34
4.4.2 TEST INSTRUMENTS.....	34
4.4.3 TEST PROCEDURE.....	34



A D T

4.4.4	DEVIATION FROM TEST STANDARD	34
4.4.5	TEST SETUP	34
4.4.6	EUT OPERATING CONDITION	34
4.4.7	TEST RESULTS	35
4.5	CONDUCTED OUT-BAND EMISSION MEASUREMENT	36
4.5.1	LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT	36
4.5.2	TEST INSTRUMENTS	36
4.5.3	TEST PROCEDURE	36
4.5.4	DEVIATION FROM TEST STANDARD	37
4.5.5	TEST SETUP	37
4.5.6	EUT OPERATING CONDITION	37
4.5.7	TEST RESULTS	37
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION	41
6.	INFORMATION ON THE TESTING LABORATORIES	42
7.	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	43



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130204E07	Original release	Mar. 05, 2013



A D T

1. CERTIFICATION

PRODUCT: 6.8"EBOOK READER DEVICE
BRAND NAME: KOBO
MODEL NO.: N204B
TEST SAMPLE: ENGINEERING SAMPLE
APPLICANT: NETRONIX, INC.
TESTED: Feb. 20 to 22, 2013
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10-2009

The above equipment (Model: N204B) 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 :  , **DATE:** Mar. 05, 2013
(Elsie Hsu, Specialist)

APPROVED BY :  , **DATE:** Mar. 05, 2013
(May Chen, Deputy Manager)



A D T

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE	RESULT	REMARK
15.207	AC Power Conducted Emission	NA	Not Applicable
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.6dB at 2390.00MHz & 4924.00MHz
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.



A D T

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:

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

Measurement	Value
Radiated emissions (30MHz-1GHz)	5.63 dB
Radiated emissions (1GHz-6GHz)	3.73 dB
Radiated emissions (6GHz-18GHz)	3.90 dB
Radiated emissions (18GHz-40GHz)	4.11 dB



A D T

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	6.8" EBOOK READER DEVICE
MODEL NO.	N204B
POWER SUPPLY	DC 3.7 ~ 4.2V from battery or DC 5V from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: Up to 11Mbps 802.11g: Up to 54Mbps 802.11n: Up to 72.2Mbps
OPERATING FREQUENCY	2.412 ~ 2.462GHz
NUMBER OF CHANNEL	11
MAXIMUM OUTPUT POWER	802.11b: 100.462mW 802.11g: 208.930 mW 802.11n (HT20): 208.930mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	Micro USB cable (shielded, 1m) × 1 Micro USB cable (shielded, 1.2m) × 1
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	Rechargeable battery x 1

NOTE:

1. There is one antenna provided to this EUT, please refer to the following table:

Brand	Model	Gain (dBi)	Antenna Type	Connecter Type
Cirocomm Technology Corp.	DCAK0014	2	Dielectric Chip Antenna	NA

2. The EUT must be supplied with a rechargeable battery as following table:

Brand	Model No.	Spec.
Micro Spring	SP305590	DC Output: 3.7~4.2V, 1500mAh



A D T

3. The EUT incorporates a SISO function without beam forming.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX/1RX
802.11g	1TX/1RX
802.11n (HT20)	1TX/1RX

4. The device WiFi function will be disabled automatically when the device is connected to the PC through USB cable.
5. When the EUT operating in 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 7.
6. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.



A D T

3.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		



3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	OB	
-	-	√	√	√	√	-

Where **PLC**: Power Line Conducted Emission **RE < 1G**: Radiated Emission below 1GHz
RE ≥ 1G: Radiated Emission above 1GHz **APCM**: Antenna Port Conducted Measurement
OB: Conducted Out-Band Emission Measurement

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

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5



A D T

ANTENNA PORT CONDUCTED 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

CONDUCTED OUT-BAND EMISSION 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE<1G	23deg. C, 67%RH	DC 3.7V	Robert Cheng
RE ³ 1G	24deg. C, 66%RH	DC 3.7V	Robert Cheng
APCM	25deg. C, 60%RH	DC 3.7V	Robert Cheng
OB	25deg. C, 60%RH	DC 3.7V	Robert Cheng



3.3 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 v02

ANSI C63.10-2009

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

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



A D T

3.4 DESCRIPTION OF SUPPORT UNITS

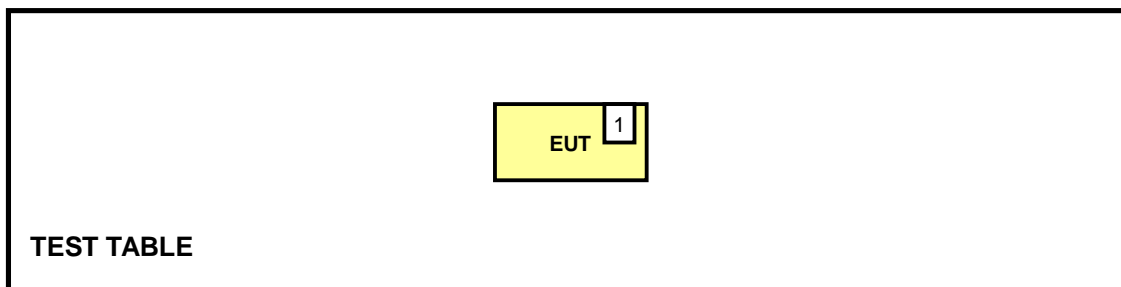
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	SD Card	Transcend	2G	BE09311114401 G	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

NOTE: All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST



Note: The support unit is SD Card.

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 20dB 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 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.



A D T

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250254	July 09, 2012	July 08, 2013
Pre-Selector Agilent	N9039A	MY46520311	July 09, 2012	July 08, 2013
Signal Generator Agilent	N5181A	MY49060517	July 09, 2012	July 08, 2013
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A02578	June 26, 2012	June 25, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Apr. 09, 2012	Apr. 08, 2013
Horn_Antenna AISI	AIH.8018	0000320091110	Nov. 19, 2012	Nov. 18, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-201 RF104-203 RF104-204	Dec. 25, 2012	Dec. 24, 2013
RF Cable	NA	CHGCAB_001	Oct. 06, 2012	Oct. 05, 2013
Software	ADT_Radiated _V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: Feb. 20 to 22, 2013

4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meters chamber room 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 detect 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.

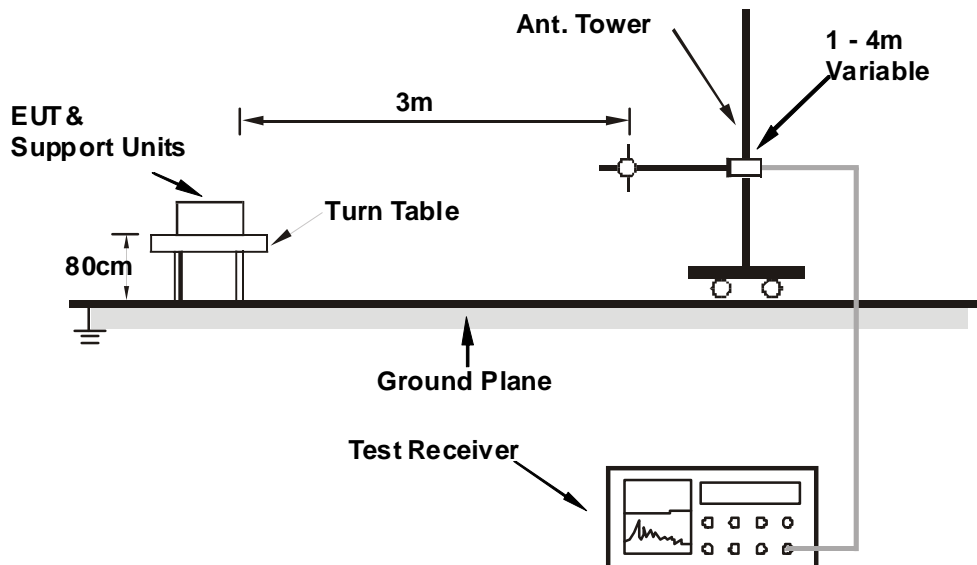
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
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 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.
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 SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. Controlling software (HyperTerminal paste command) has been activated to set the EUT under transmission/receiving condition continuously.

4.1.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11g

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

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	34.38	27.6 QP	40.0	-12.4	1.50 H	1	14.60	13.01
2	47.41	27.3 QP	40.0	-12.7	2.00 H	249	13.19	14.14
3	62.45	30.1 QP	40.0	-9.9	1.50 H	158	16.68	13.40
4	72.51	27.0 QP	40.0	-13.1	1.00 H	1	15.06	11.89
5	93.00	25.5 QP	43.5	-18.0	2.00 H	27	16.54	8.98
6	122.01	35.0 QP	43.5	-8.5	1.50 H	360	22.30	12.71

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	37.82	29.0 QP	40.0	-11.1	1.00 V	360	15.45	13.50
2	57.71	26.7 QP	40.0	-13.3	2.00 V	208	12.98	13.75
3	68.84	28.7 QP	40.0	-11.3	2.00 V	343	15.93	12.75
4	109.22	31.0 QP	43.5	-12.5	2.00 V	195	19.90	11.12
5	119.53	30.2 QP	43.5	-13.3	2.00 V	209	17.71	12.51
6	140.25	26.9 QP	43.5	-16.6	1.50 V	48	12.98	13.96

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.



A D T

ABOVE 1GHz DATA

802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	2332.00	60.9 PK	74.0	-13.1	1.14 H	215	29.15	31.75
2	2332.00	48.8 AV	54.0	-5.2	1.14 H	215	17.05	31.75
3	2360.00	59.2 PK	74.0	-14.8	1.14 H	153	27.34	31.86
4	2360.00	47.9 AV	54.0	-6.1	1.14 H	153	16.04	31.86
5	2383.00	61.1 PK	74.0	-12.9	1.12 H	217	29.15	31.95
6	2383.00	52.1 AV	54.0	-1.9	1.12 H	217	20.15	31.95
7	*2412.00	106.1 PK			1.11 H	220	74.05	32.05
8	*2412.00	103.8 AV			1.11 H	220	71.75	32.05
9	4824.00	54.2 PK	74.0	-19.8	1.00 H	186	14.62	39.58
10	4824.00	48.8 AV	54.0	-5.2	1.00 H	186	9.22	39.58

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	2383.00	56.6 PK	74.0	-17.4	1.09 V	229	24.65	31.95
2	2383.00	46.0 AV	54.0	-8.0	1.09 V	229	14.05	31.95
3	*2412.00	100.3 PK			1.09 V	229	68.25	32.05
4	*2412.00	98.0 AV			1.09 V	229	65.95	32.05
5	4824.00	56.8 PK	74.0	-17.2	1.00 V	184	17.22	39.58
6	4824.00	53.2 AV	54.0	-0.8	1.00 V	184	13.62	39.58

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.



A D T

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	*2437.00	105.7 PK			1.15 H	233	73.58	32.12
2	*2437.00	103.6 AV			1.15 H	233	71.48	32.12
3	4874.00	53.2 PK	74.0	-20.8	1.00 H	183	13.50	39.70
4	4874.00	48.4 AV	54.0	-5.6	1.00 H	183	8.70	39.70
5	7311.00	56.8 PK	74.0	-17.2	1.00 H	360	9.21	47.59
6	7311.00	43.4 AV	54.0	-10.6	1.00 H	360	-4.19	47.59

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	*2437.00	99.9 PK			1.13 V	225	67.78	32.12
2	*2437.00	97.6 AV			1.13 V	225	65.48	32.12
3	4874.00	57.0 PK	74.0	-17.0	1.28 V	186	17.30	39.70
4	4874.00	53.3 AV	54.0	-0.7	1.28 V	186	13.60	39.70
5	7311.00	56.9 PK	74.0	-17.1	1.00 V	101	9.31	47.59
6	7311.00	44.0 AV	54.0	-10.0	1.00 V	101	-3.59	47.59

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.



A D T

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	*2462.00	102.2 PK			1.10 H	200	70.02	32.18
2	*2462.00	100.7 AV			1.10 H	200	68.52	32.18
3	2483.50	57.3 PK	74.0	-16.7	1.10 H	200	25.06	32.24
4	2483.50	45.0 AV	54.0	-9.0	1.10 H	200	12.76	32.24
5	4924.00	53.5 PK	74.0	-20.5	1.00 H	196	13.66	39.84
6	4924.00	48.4 AV	54.0	-5.6	1.00 H	196	8.56	39.84
7	7386.00	56.9 PK	74.0	-17.1	1.00 H	360	9.38	47.52
8	7386.00	43.6 AV	54.0	-10.4	1.00 H	360	-3.92	47.52

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	*2462.00	97.0 PK			1.09 V	229	64.82	32.18
2	*2462.00	94.7 AV			1.09 V	229	62.52	32.18
3	2483.50	56.1 PK	74.0	-17.9	1.09 V	229	23.86	32.24
4	2483.50	43.8 AV	54.0	-10.2	1.09 V	229	11.56	32.24
5	4924.00	56.4 PK	74.0	-17.6	1.64 V	19	16.56	39.84
6	4924.00	53.4 AV	54.0	-0.6	1.64 V	19	13.56	39.84
7	7386.00	56.5 PK	74.0	-17.5	1.00 V	92	8.98	47.52
8	7386.00	43.6 AV	54.0	-10.4	1.00 V	92	-3.92	47.52

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.



A D T

802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	70.1 PK	74.0	-3.9	1.13 H	145	38.12	31.98
2	2390.00	53.1 AV	54.0	-0.9	1.13 H	145	21.12	31.98
3	*2412.00	105.7 PK			1.12 H	142	73.65	32.05
4	*2412.00	95.1 AV			1.12 H	142	63.05	32.05
5	4824.00	48.0 PK	74.0	-26.0	1.00 H	322	8.42	39.58
6	4824.00	35.2 AV	54.0	-18.8	1.00 H	322	-4.38	39.58
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	63.9 PK	74.0	-10.1	1.08 V	51	31.92	31.98
2	2390.00	50.7 AV	54.0	-3.3	1.08 V	51	18.72	31.98
3	*2412.00	100.9 PK			1.00 V	230	68.85	32.05
4	*2412.00	90.1 AV			1.00 V	230	58.05	32.05
5	4824.00	47.8 PK	74.0	-26.2	1.00 V	336	8.22	39.58
6	4824.00	35.6 AV	54.0	-18.4	1.00 V	336	-3.98	39.58

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.



A D T

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	2320.00	58.4 PK	74.0	-15.6	1.16 H	213	26.69	31.71
2	2320.00	46.7 AV	54.0	-7.3	1.16 H	213	14.99	31.71
3	2390.00	59.1 PK	74.0	-14.9	1.11 H	141	27.12	31.98
4	2390.00	45.7 AV	54.0	-8.3	1.11 H	141	13.72	31.98
5	*2437.00	109.3 PK			1.11 H	141	77.18	32.12
6	*2437.00	99.0 AV			1.11 H	141	66.88	32.12
7	2483.50	57.4 PK	74.0	-16.6	1.16 H	213	25.16	32.24
8	2483.50	44.9 AV	54.0	-9.1	1.16 H	213	12.66	32.24
9	4874.00	47.2 PK	74.0	-26.8	1.05 H	326	7.50	39.70
10	4874.00	35.0 AV	54.0	-19.0	1.05 H	326	-4.70	39.70
11	7311.00	53.0 PK	74.0	-21.0	1.01 H	159	5.41	47.59
12	7311.00	40.9 AV	54.0	-13.1	1.01 H	159	-6.69	47.59

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	*2437.00	105.1 PK			1.00 V	231	72.98	32.12
2	*2437.00	93.9 AV			1.00 V	231	61.78	32.12
3	4874.00	48.2 PK	74.0	-25.8	1.06 V	360	8.50	39.70
4	4874.00	36.0 AV	54.0	-18.0	1.06 V	360	-3.70	39.70
5	7311.00	52.5 PK	74.0	-21.5	1.00 V	214	4.91	47.59
6	7311.00	40.6 AV	54.0	-13.4	1.00 V	214	-6.99	47.59

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.



A D T

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	*2462.00	107.6 PK			1.07 H	220	75.42	32.18
2	*2462.00	97.6 AV			1.07 H	220	65.42	32.18
3	2483.50	72.7 PK	74.0	-1.3	1.06 H	220	40.46	32.24
4	2483.50	52.6 AV	54.0	-1.4	1.06 H	220	20.36	32.24
5	4924.00	47.3 PK	74.0	-26.7	1.05 H	329	7.46	39.84
6	4924.00	35.1 AV	54.0	-18.9	1.05 H	329	-4.74	39.84
7	7386.00	52.8 PK	74.0	-21.2	1.10 H	167	5.28	47.52
8	7386.00	40.4 AV	54.0	-13.6	1.10 H	167	-7.12	47.52

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	*2462.00	102.6 PK			1.02 V	230	70.42	32.18
2	*2462.00	92.7 AV			1.02 V	230	60.52	32.18
3	2483.50	62.1 PK	74.0	-11.9	1.02 V	230	29.86	32.24
4	2483.50	49.3 AV	54.0	-4.7	1.02 V	230	17.06	32.24
5	4924.00	48.2 PK	74.0	-25.8	1.12 V	348	8.36	39.84
6	4924.00	35.4 AV	54.0	-18.6	1.12 V	348	-4.44	39.84
7	7386.00	51.4 PK	74.0	-22.6	1.06 V	231	3.88	47.52
8	7386.00	39.9 AV	54.0	-14.1	1.06 V	231	-7.62	47.52

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.



A D T

802.11n (HT20)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	70.0 PK	74.0	-4.0	1.13 H	218	38.02	31.98
2	2390.00	53.4 AV	54.0	-0.6	1.13 H	218	21.42	31.98
3	*2412.00	104.9 PK			1.11 H	221	72.85	32.05
4	*2412.00	94.3 AV			1.11 H	221	62.25	32.05
5	4824.00	47.0 PK	74.0	-27.0	1.00 H	313	7.42	39.58
6	4824.00	36.1 AV	54.0	-17.9	1.00 H	313	-3.48	39.58
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	64.0 PK	74.0	-10.0	1.02 V	231	32.02	31.98
2	2390.00	50.7 AV	54.0	-3.3	1.02 V	231	18.72	31.98
3	*2412.00	99.8 PK			1.02 V	231	67.75	32.05
4	*2412.00	89.9 AV			1.02 V	231	57.85	32.05
5	4824.00	46.7 PK	74.0	-27.3	1.04 V	340	7.12	39.58
6	4824.00	36.0 AV	54.0	-18.0	1.04 V	340	-3.58	39.58

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.



A D T

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	2320.03	57.5 PK	74.0	-16.5	1.16 H	145	25.79	31.71
2	2320.03	45.8 AV	54.0	-8.2	1.16 H	145	14.09	31.71
3	2390.00	59.4 PK	74.0	-14.6	1.11 H	140	27.42	31.98
4	2390.00	45.9 AV	54.0	-8.1	1.11 H	140	13.92	31.98
5	*2437.00	108.7 PK			1.11 H	140	76.58	32.12
6	*2437.00	98.8 AV			1.11 H	140	66.68	32.12
7	2483.50	57.0 PK	74.0	-17.0	1.16 H	145	24.76	32.24
8	2483.50	45.2 AV	54.0	-8.8	1.16 H	145	12.96	32.24
9	4874.00	47.2 PK	74.0	-26.8	1.04 H	321	7.50	39.70
10	4874.00	36.4 AV	54.0	-17.6	1.04 H	321	-3.30	39.70
11	7311.00	51.4 PK	74.0	-22.6	1.03 H	156	3.81	47.59
12	7311.00	40.7 AV	54.0	-13.3	1.03 H	156	-6.89	47.59

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	*2437.00	104.1 PK			1.04 V	230	71.98	32.12
2	*2437.00	94.2 AV			1.04 V	230	62.08	32.12
3	4874.00	47.7 PK	74.0	-26.3	1.02 V	323	8.00	39.70
4	4874.00	36.4 AV	54.0	-17.6	1.02 V	323	-3.30	39.70
5	7311.00	52.4 PK	74.0	-21.6	1.00 V	227	4.81	47.59
6	7311.00	40.9 AV	54.0	-13.1	1.00 V	227	-6.69	47.59

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.



A D T

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	*2462.00	105.8 PK			1.11 H	139	73.62	32.18
2	*2462.00	95.8 AV			1.11 H	139	63.62	32.18
3	2483.50	72.1 PK	74.0	-1.9	1.09 H	139	39.86	32.24
4	2483.50	51.6 AV	54.0	-2.4	1.09 H	139	19.36	32.24
5	4924.00	47.4 PK	74.0	-26.6	1.00 H	316	7.56	39.84
6	4924.00	36.4 AV	54.0	-17.6	1.00 H	316	-3.44	39.84
7	7386.00	51.4 PK	74.0	-22.6	1.04 H	145	3.88	47.52
8	7386.00	40.7 AV	54.0	-13.3	1.04 H	145	-6.82	47.52

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	*2462.00	101.1 PK			1.02 V	229	68.92	32.18
2	*2462.00	91.3 AV			1.02 V	229	59.12	32.18
3	2483.50	61.2 PK	74.0	-12.8	1.02 V	229	28.96	32.24
4	2483.50	48.7 AV	54.0	-5.3	1.02 V	229	16.46	32.24
5	4924.00	47.8 PK	74.0	-26.2	1.00 V	347	7.96	39.84
6	4924.00	37.1 AV	54.0	-16.9	1.00 V	347	-2.74	39.84
7	7386.00	52.1 PK	74.0	-21.9	1.00 V	226	4.58	47.52
8	7386.00	40.2 AV	54.0	-13.8	1.00 V	226	-7.32	47.52

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.

4.2 6dB BANDWIDTH MEASUREMENT

4.2.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

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. Tested date : Feb. 21, 2013

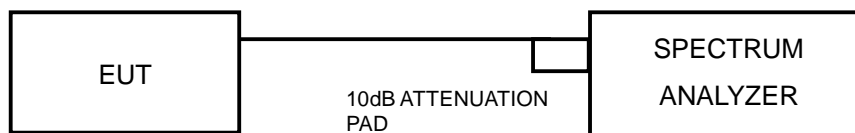
4.2.3 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = approximately 1% of the emission bandwidth
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
3. Trace mode = max hold.
4. Sweep = auto couple.
5. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



4.2.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



A D T

4.2.7 TEST RESULTS

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	7.52	0.5	PASS
6	2437	8.48	0.5	PASS
11	2462	7.84	0.5	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	15.53	0.5	PASS
6	2437	15.09	0.5	PASS
11	2462	15.37	0.5	PASS

802.11n (HT20)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.16	0.5	PASS
6	2437	15.93	0.5	PASS
11	2462	15.07	0.5	PASS

4.3 CONDUCTED OUTPUT POWER MEASUREMENT

4.3.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

4.3.2 INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter	ML2495A	0824006	May 10, 2012	May 09, 2013
Power Sensor	MA2411B	0738172	May 10, 2012	May 09, 2013

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. Tested date : Feb. 21, 2013

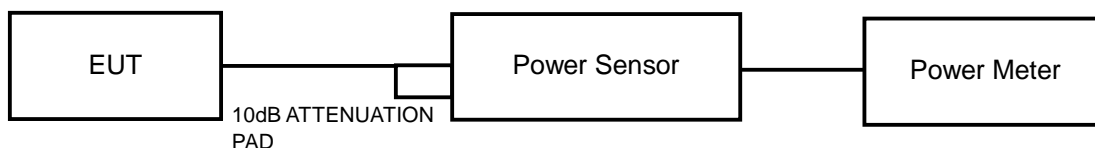
4.3.3 TEST PROCEDURES

The peak / average power sensor were used on the output port of the EUT. A power meter was used to read the response of the peak / average power sensor. Record the power level.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



A D T

4.3.7 TEST RESULTS

FOR PEAK POWER

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	100.462	20.02	30	PASS
6	2437	91.411	19.61	30	PASS
11	2462	67.764	18.31	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	186.209	22.70	30	PASS
6	2437	208.930	23.20	30	PASS
11	2462	158.489	22.00	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	138.038	21.40	30	PASS
6	2437	208.930	23.20	30	PASS
11	2462	154.882	21.90	30	PASS



A D T

FOR AVERAGE POWER

802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	51.286	17.10
6	2437	47.206	16.74
11	2462	34.198	15.34

802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	24.547	13.90
6	2437	63.096	18.00
11	2462	35.481	15.50

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	19.055	12.80
6	2437	61.660	17.90
11	2462	26.915	14.30

4.4 POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

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. Tested date : Feb. 21, 2013

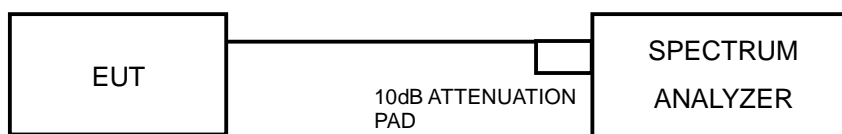
4.4.3 TEST PROCEDURE

1. Set the RBW = 3 kHz, VBW =10 kHz, Detector = peak.
2. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
3. Use the peak marker function to determine the maximum amplitude level.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITION

Same as Item 4.3.6



A D T

4.4.7 TEST RESULTS

802.11b

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-5.00	8	PASS
6	2437	-5.58	8	PASS
11	2462	-6.90	8	PASS

802.11g

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.05	8	PASS
6	2437	-7.12	8	PASS
11	2462	-9.43	8	PASS

802.11n (HT20)

Channel	FREQUENCY (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-12.80	8	PASS
6	2437	-8.96	8	PASS
11	2462	-11.47	8	PASS

4.5 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.5.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below 20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP40	100036	Jan. 21, 2013	Jan. 20, 2014

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. Tested date : Feb. 21, 2013

4.5.3 TEST PROCEDURE

Measurement Procedure - Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

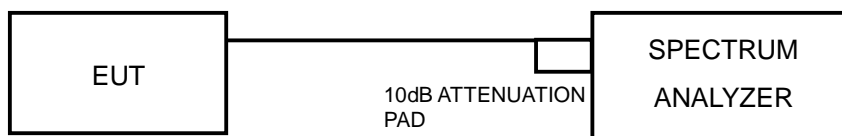
Measurement Procedure –Unwanted Emission Level

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.5.7 TEST RESULTS

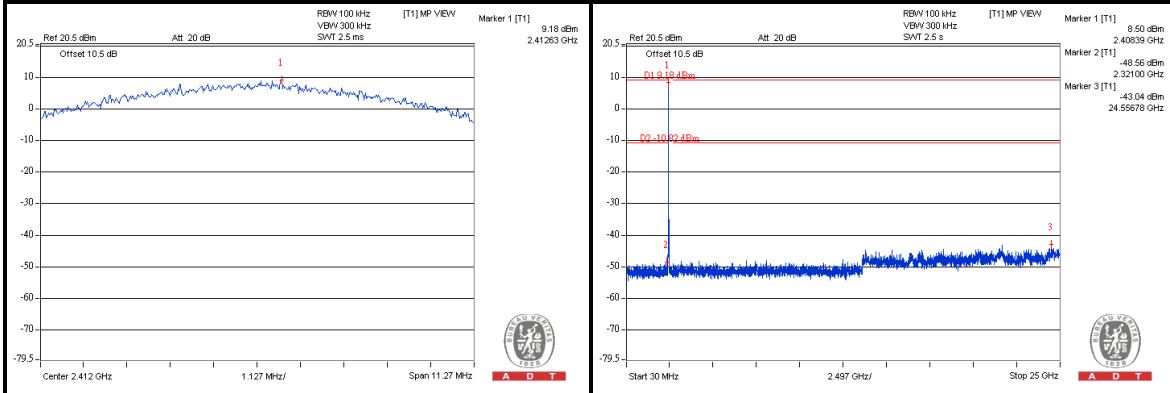
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



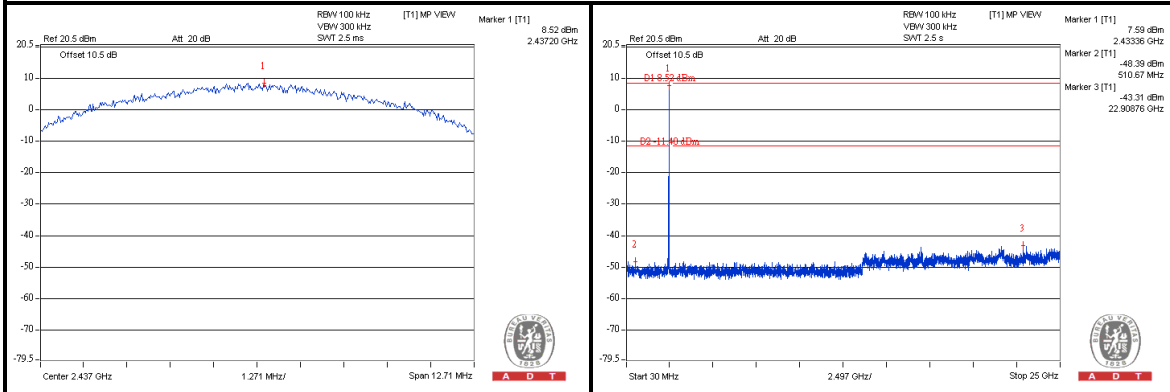
A D T

802.11b

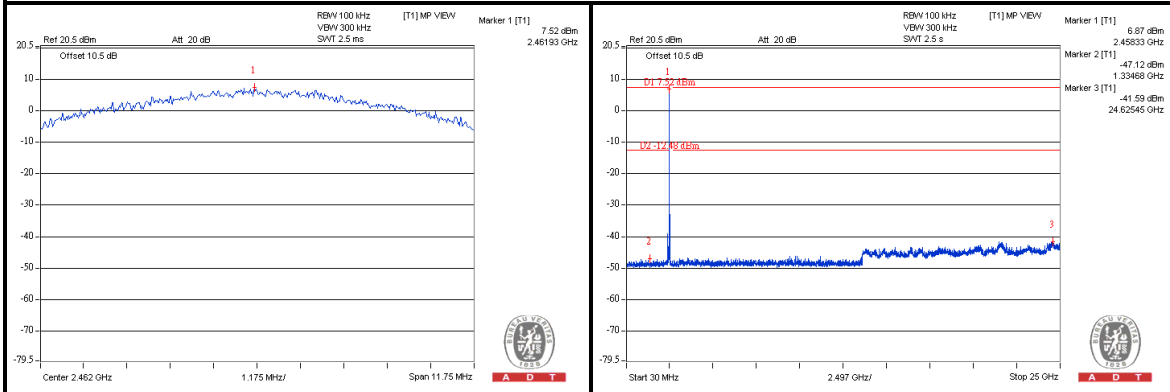
CH 1



CH 6



CH 11

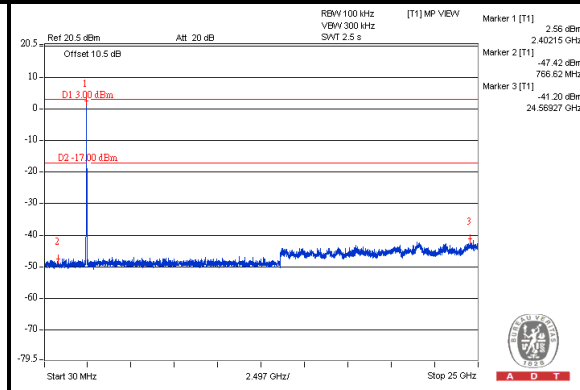
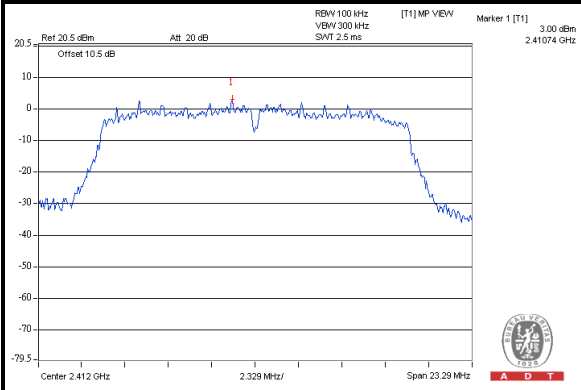




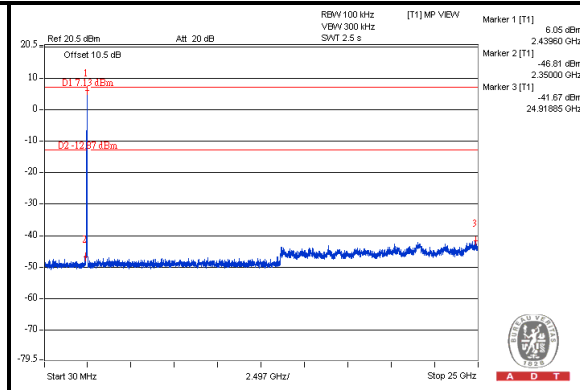
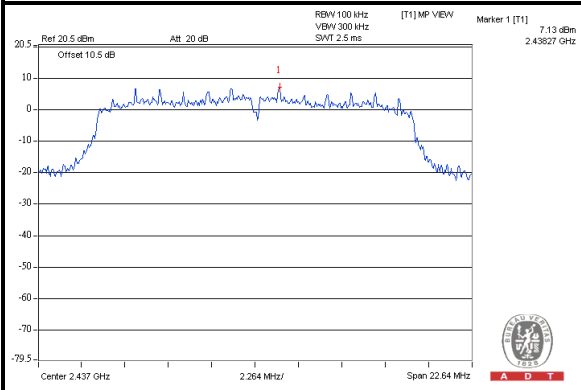
A D T

802.11g

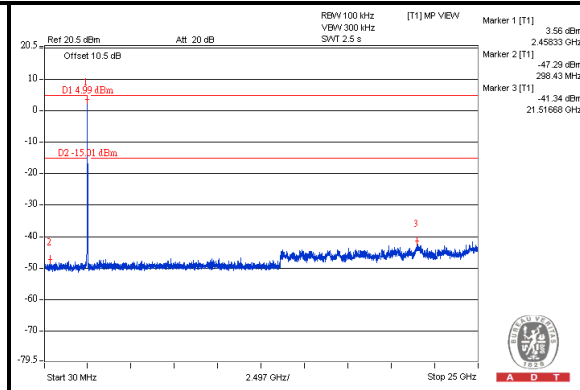
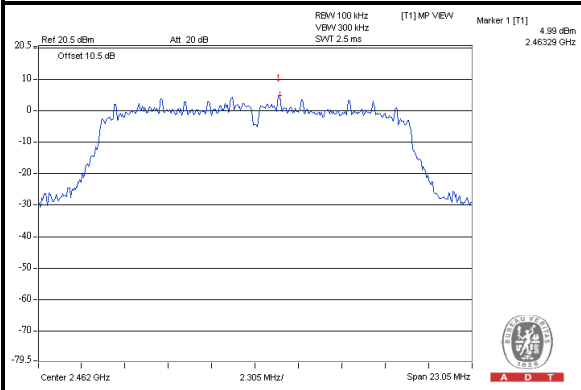
CH 1



CH 6



CH 11

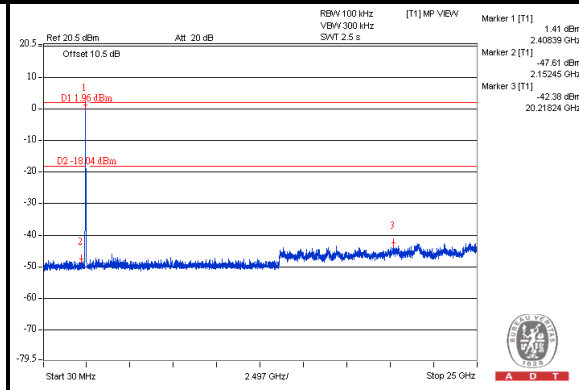
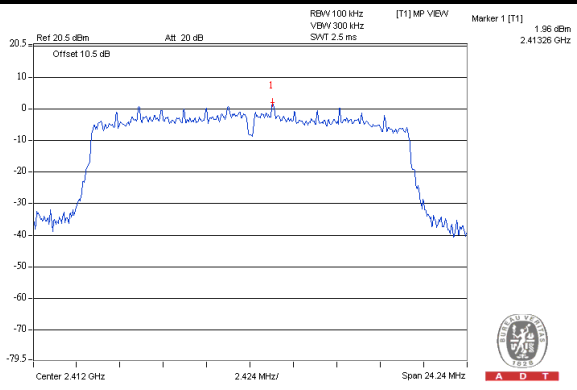




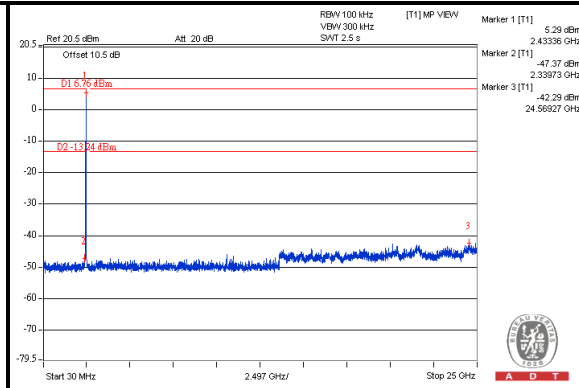
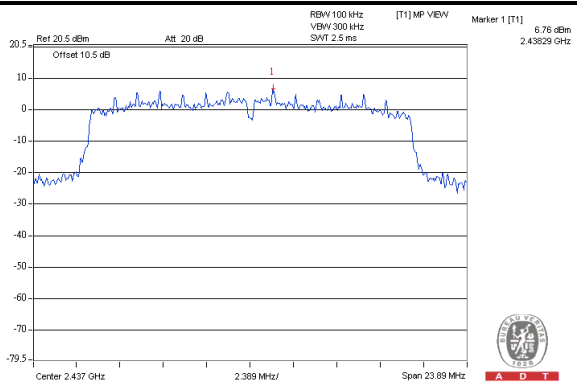
A D T

802.11n (HT20)

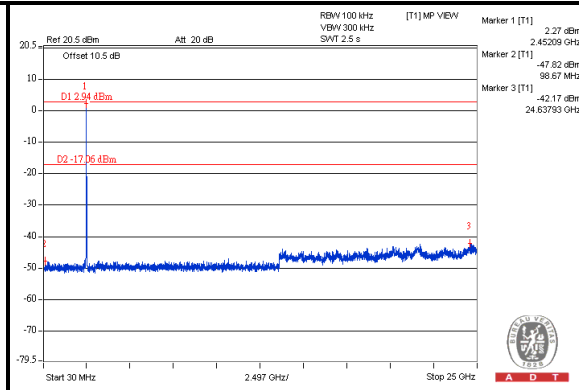
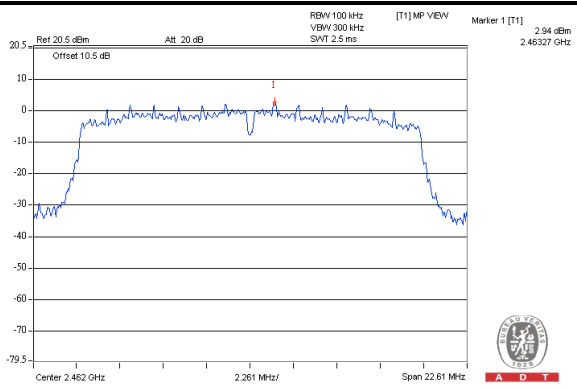
CH 1



CH 6



CH 11





A D T

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:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3270892

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.



A D T

7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

--- END ---