

FCC Test Report

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Test Model: ED0Q02

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Release Control Record

Issue No.	Description	Date Issued
RF151112E10	Original release.	Jan. 14, 2016

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	PASS	Meet the requirement of limit. Minimum passing margin is -20.07dB at 4.28125MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 4824.00MHz & 2390.00MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex(MHF) not a standard connector.

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) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.86 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.37 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.65 dB
	6GHz ~ 18GHz	3.88 dB
	18GHz ~ 40GHz	4.11 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	13.3"EBOOK READER DEVICE
Brand	Netronix
Test Model	ED0Q02
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	3.7Vdc from battery or 5Vdc from USB interface
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 65Mbps
Operating Frequency	2.412 ~ 2.462GHz
Number of Channel	11
Output Power	123.88mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Rechargeable battery x 1 Touth Pen x 1(Brand: Waltop , Model:BFP-P09)
Data Cable Supplied	USB to Micro USB cable (Shielded, 1m) x 1

Note:

1. The antenna provided to the EUT, please refer to the following table:

Brand	Model	Gain (dBi) (Including cable loss)	Antenna Type	Connector Type	Cable Length (mm)	Frequency range (GHz to GHz)
Walsin	RFPCA491005EMAB101	3.86	PCB	i-pex(MHF)	50	2.4~2.5

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

Brand	Model No.	Spec.
SPRINGPOWER TECHNOLOGY	SP 285083	DC Output: 3.7V, 1500mAh

3. The EUT incorporates a SISO function.

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	1TX	1RX
802.11g	6 ~ 54Mbps	1TX	1RX
802.11n (HT20)	MCS 0~7	1TX	1RX

4. The EUT was pre-tested in chamber under the following modes:

Pre-test Mode	Description
Mode A	With USB adapter mode
Mode B	With battery mode

The worse radiated emission was found in **Mode A**. Therefore only the test data of the modes were recorded in this report.

5. The USB port of the EUT is only for charging the rechargeable battery. And the EUT has WiFi function under charging mode.

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

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 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
	RE \geq 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE \geq 1G: Radiated Emission above 1GHz & Bandedge Measurement
 RE<1G: Radiated Emission below 1GHz
 PLC: Power Line Conducted Emission
 APCM: Antenna Port Conducted Measurement

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

Radiated Emission Test (Above 1GHz):

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

Radiated Emission Test (Below 1GHz):

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

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.

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

Antenna Port Conducted Measurement:

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- 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(System)	TESTED BY
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Weiwei Lo
RE<1G	25deg. C, 70%RH	120Vac, 60Hz	Weiwei Lo
PLC	26deg. C, 68%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

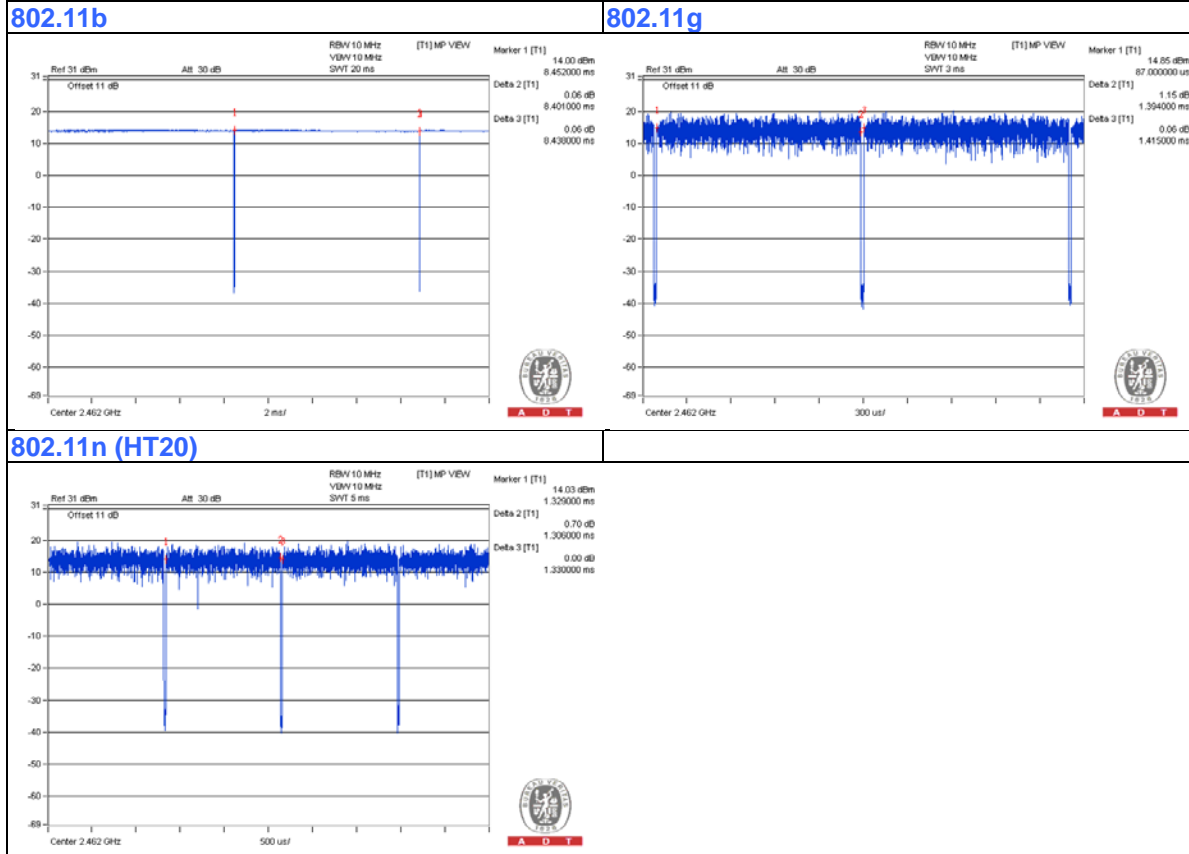
3.3 Duty Cycle of Test Signal

If duty cycle of test signal is $\geq 98\%$, duty factor is not required.

802.11b: Duty cycle = $8.401\text{ ms}/8.438\text{ ms} = 0.996$

802.11g: Duty cycle = $1.394\text{ ms}/1.415\text{ ms} = 0.985$

802.11n (HT20): Duty cycle = $1.306\text{ ms}/1.33\text{ ms} = 0.982$



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.

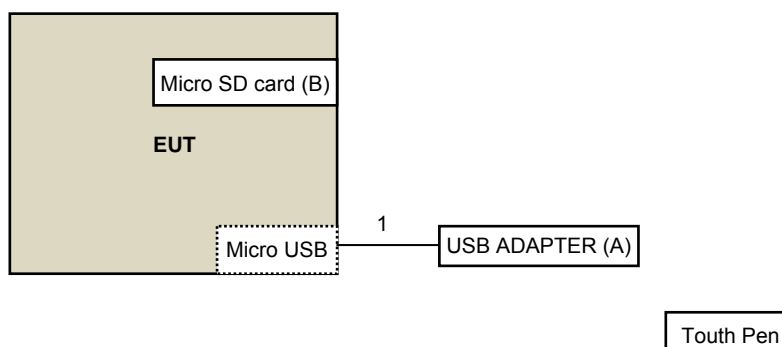
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	USB ADAPTER	ASUS	AD876320	NA	NA	Provided by Lab
B.	Micro SD card	Transcend	2GB	NA	NA	Provided by Lab

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB to Micro USB	1	1	Yes	0	Supplied by Client

3.4.1 Configuration of System under Test



3.5 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)
KDB 558074 D01 DTS Meas Guidance v03r04
ANSI C63.10-2013

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.

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.

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210105	July 24, 2015	July 23, 2016
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 11, 2015	Nov. 10, 2016
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 06, 2015	Feb. 05, 2016
RF Cable	8D-FB	CHGCAB-001 -1 CHGCAB-001 -2	Oct. 03, 2015	Oct. 02, 2016
	RF-141	CHGCAB-004	Oct. 03, 2015	Oct. 02, 2016
Horn_Antenna AISI	AIH.8018	000032009111 0	Feb. 09, 2015	Feb. 08, 2016
Pre-Amplifier Agilent	8449B	3008A02578	June 23, 2015	June 22, 2016
RF Cable	NA	131205 131216 131217 SNMY23684/ 4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	June 26, 2015	June 25, 2016
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Feb. 05, 2015	Feb. 04, 2016
RF Cable	NA	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Spectrum Analyzer R&S	FSP 40	100036	Jan. 22, 2015	Jan. 21, 2016
Power meter Anritsu	ML2495A	0824006	May 25, 2015	May 24, 2016
Power sensor Anritsu	MA2411B	0738172	May 25, 2015	May 24, 2016

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 966 Chamber No. G.
3. The FCC Site Registration No. is 966073.
4. The VCCI Site Registration No. is G-137.
5. The CANADA Site Registration No. is IC 7450H-2.
6. Tested Date: Nov. 17 to Dec. 01, 2015

4.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) 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 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:

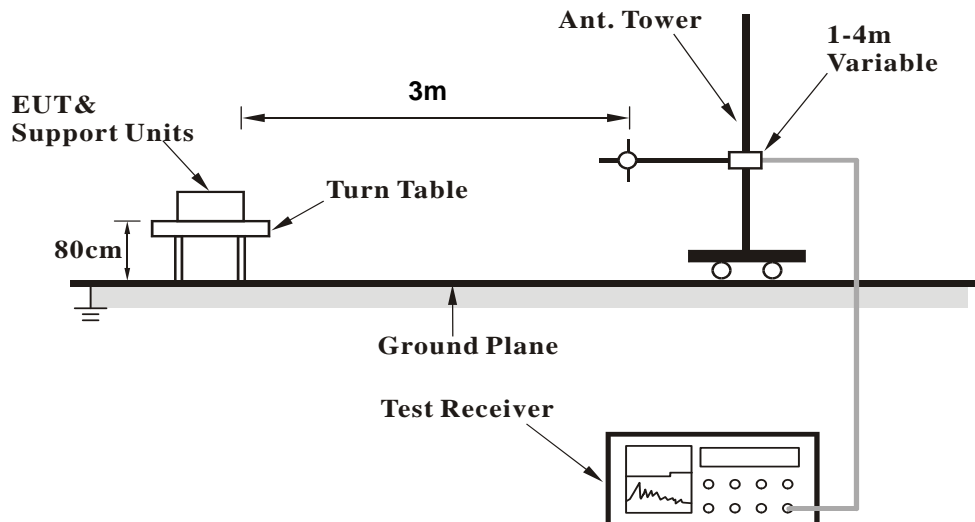
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

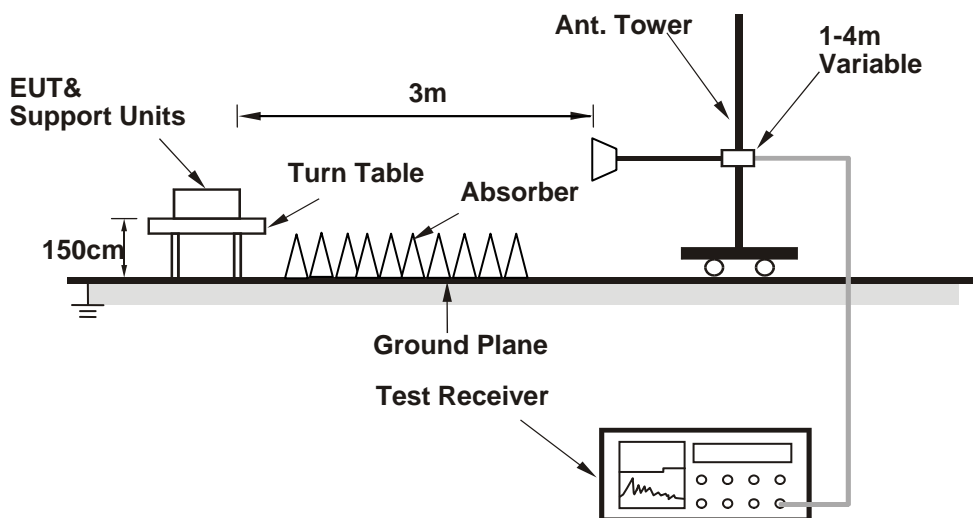
No deviation.

4.1.5 Test Setup

<Frequency Range below 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

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

4.1.7 Test Results

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	2390.00	55.4 PK	74.0	-18.6	1.25 H	225	56.83	-1.43
2	2390.00	48.8 AV	54.0	-5.2	1.25 H	225	50.23	-1.43
3	*2412.00	105.4 PK			1.25 H	225	106.78	-1.38
4	*2412.00	102.3 AV			1.25 H	225	103.68	-1.38
5	4824.00	56.3 PK	74.0	-17.7	1.02 H	29	49.21	7.09
6	4824.00	53.9 AV	54.0	-0.1	1.02 H	29	46.81	7.09

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	51.4 PK	74.0	-22.6	2.03 V	17	52.83	-1.43
2	2390.00	43.1 AV	54.0	-10.9	2.03 V	17	44.53	-1.43
3	*2412.00	102.1 PK			2.03 V	17	103.48	-1.38
4	*2412.00	99.7 AV			2.03 V	17	101.08	-1.38
5	4824.00	56.0 PK	74.0	-18.0	1.58 V	181	48.91	7.09
6	4824.00	53.2 AV	54.0	-0.8	1.58 V	181	46.11	7.09

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
5. " * ": Fundamental frequency.



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	105.9 PK			1.10 H	211	107.22	-1.32
2	*2437.00	103.1 AV			1.10 H	211	104.42	-1.32
3	4874.00	56.0 PK	74.0	-18.0	1.05 H	27	48.75	7.25
4	4874.00	53.8 AV	54.0	-0.2	1.05 H	27	46.55	7.25
5	7311.00	55.0 PK	74.0	-19.0	1.05 H	27	40.55	14.45
6	7311.00	42.2 AV	54.0	-11.8	1.05 H	27	27.75	14.45

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	103.0 PK			2.03 V	7	104.32	-1.32
2	*2437.00	100.3 AV			2.03 V	7	101.62	-1.32
3	4874.00	54.9 PK	74.0	-19.1	1.34 V	357	47.65	7.25
4	4874.00	51.7 AV	54.0	-2.3	1.34 V	357	44.45	7.25
5	7311.00	55.4 PK	74.0	-18.6	1.34 V	357	40.95	14.45
6	7311.00	42.2 AV	54.0	-11.8	1.34 V	357	27.75	14.45

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
5. " * ": Fundamental frequency.

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	106.5 PK			1.12 H	203	107.76	-1.26
2	*2462.00	103.5 AV			1.12 H	203	104.76	-1.26
3	2483.50	55.6 PK	74.0	-18.4	1.12 H	203	56.81	-1.21
4	2483.50	48.1 AV	54.0	-5.9	1.12 H	203	49.31	-1.21
5	4924.00	55.6 PK	74.0	-18.4	1.11 H	181	48.15	7.45
6	4924.00	53.5 AV	54.0	-0.5	1.11 H	181	46.05	7.45
7	7386.00	55.0 PK	74.0	-19.0	1.11 H	181	40.48	14.52
8	7386.00	42.2 AV	54.0	-11.8	1.11 H	181	27.68	14.52

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	102.3 PK			2.03 V	5	103.56	-1.26
2	*2462.00	99.9 AV			2.03 V	5	101.16	-1.26
3	2483.50	52.2 PK	74.0	-21.8	2.03 V	5	53.41	-1.21
4	2483.50	43.6 AV	54.0	-10.4	2.03 V	5	44.81	-1.21
5	4924.00	54.8 PK	74.0	-19.2	1.36 V	354	47.35	7.45
6	4924.00	51.9 AV	54.0	-2.1	1.36 V	354	44.45	7.45
7	7386.00	55.1 PK	74.0	-18.9	1.35 V	360	40.58	14.52
8	7386.00	42.2 AV	54.0	-11.8	1.35 V	360	27.68	14.52

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

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	72.0 PK	74.0	-2.0	1.66 H	229	73.43	-1.43
2	2390.00	53.9 AV	54.0	-0.1	1.66 H	229	55.33	-1.43
3	*2412.00	105.8 PK			1.66 H	229	107.18	-1.38
4	*2412.00	94.6 AV			1.66 H	229	95.98	-1.38
5	4824.00	51.0 PK	74.0	-23.0	1.62 H	30	43.91	7.09
6	4824.00	40.1 AV	54.0	-13.9	1.62 H	30	33.01	7.09

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	66.5 PK	74.0	-7.5	1.87 V	9	67.93	-1.43
2	2390.00	49.0 AV	54.0	-5.0	1.87 V	9	50.43	-1.43
3	*2412.00	101.5 PK			1.87 V	9	102.88	-1.38
4	*2412.00	90.2 AV			1.87 V	9	91.58	-1.38
5	4824.00	50.2 PK	74.0	-23.8	1.61 V	319	43.11	7.09
6	4824.00	39.8 AV	54.0	-14.2	1.61 V	319	32.71	7.09

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
5. " * ": Fundamental frequency.

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	51.3 PK	74.0	-22.7	1.37 H	228	52.97	-1.67
2	2320.00	40.9 AV	54.0	-13.1	1.37 H	228	42.57	-1.67
3	2390.00	57.6 PK	74.0	-16.4	1.37 H	228	59.03	-1.43
4	2390.00	43.5 AV	54.0	-10.5	1.37 H	228	44.93	-1.43
5	*2437.00	110.3 PK			1.37 H	228	111.62	-1.32
6	*2437.00	99.4 AV			1.37 H	228	100.72	-1.32
7	2483.50	55.8 PK	74.0	-18.2	1.37 H	228	57.01	-1.21
8	2483.50	41.4 AV	54.0	-12.6	1.37 H	228	42.61	-1.21
9	4874.00	54.2 PK	74.0	-19.8	1.66 H	28	46.95	7.25
10	4874.00	43.2 AV	54.0	-10.8	1.66 H	28	35.95	7.25
11	7311.00	55.1 PK	74.0	-18.9	1.66 H	28	40.65	14.45
12	7311.00	43.9 AV	54.0	-10.1	1.66 H	28	29.45	14.45

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	105.7 PK			1.87 V	18	107.02	-1.32
2	*2437.00	94.6 AV			1.87 V	18	95.92	-1.32
3	4874.00	52.9 PK	74.0	-21.1	1.66 V	319	45.65	7.25
4	4874.00	41.5 AV	54.0	-12.5	1.66 V	319	34.25	7.25
5	7311.00	54.9 PK	74.0	-19.1	1.66 V	319	40.45	14.45
6	7311.00	44.0 AV	54.0	-10.0	1.66 V	319	29.55	14.45

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
5. " * ": Fundamental frequency.

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	107.7 PK			1.70 H	186	108.96	-1.26
2	*2462.00	96.4 AV			1.70 H	186	97.66	-1.26
3	2483.50	71.5 PK	74.0	-2.5	1.70 H	187	72.71	-1.21
4	2483.50	53.6 AV	54.0	-0.4	1.70 H	187	54.81	-1.21
5	4924.00	50.4 PK	74.0	-23.6	1.58 H	39	42.95	7.45
6	4924.00	39.7 AV	54.0	-14.3	1.58 H	39	32.25	7.45
7	7386.00	55.1 PK	74.0	-18.9	1.65 H	40	40.58	14.52
8	7386.00	44.1 AV	54.0	-9.9	1.65 H	40	29.58	14.52

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	102.4 PK			1.86 V	24	103.66	-1.26
2	*2462.00	91.0 AV			1.86 V	24	92.26	-1.26
3	2483.50	66.9 PK	74.0	-7.1	1.86 V	24	68.11	-1.21
4	2483.50	49.1 AV	54.0	-4.9	1.86 V	24	50.31	-1.21
5	4924.00	50.3 PK	74.0	-23.7	1.56 V	318	42.85	7.45
6	4924.00	40.2 AV	54.0	-13.8	1.56 V	318	32.75	7.45
7	7386.00	55.0 PK	74.0	-19.0	1.68 V	321	40.48	14.52
8	7386.00	44.2 AV	54.0	-9.8	1.68 V	321	29.68	14.52

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

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	73.7 PK	74.0	-0.3	1.88 H	229	75.13	-1.43
2	2390.00	53.6 AV	54.0	-0.4	1.88 H	229	55.03	-1.43
3	*2412.00	105.7 PK			1.88 H	229	107.08	-1.38
4	*2412.00	94.1 AV			1.88 H	229	95.48	-1.38
5	4824.00	49.7 PK	74.0	-24.3	1.56 H	49	42.61	7.09
6	4824.00	39.2 AV	54.0	-14.8	1.56 H	49	32.11	7.09

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	67.0 PK	74.0	-7.0	1.91 V	12	68.43	-1.43
2	2390.00	49.4 AV	54.0	-4.6	1.91 V	12	50.83	-1.43
3	*2412.00	101.8 PK			1.91 V	12	103.18	-1.38
4	*2412.00	90.4 AV			1.91 V	12	91.78	-1.38
5	4824.00	50.8 PK	74.0	-23.2	1.57 V	316	43.71	7.09
6	4824.00	40.2 AV	54.0	-13.8	1.57 V	316	33.11	7.09

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
5. " * ": Fundamental frequency.

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	2319.00	46.8 PK	74.0	-27.2	1.63 H	227	48.47	-1.67
2	2319.00	41.5 AV	54.0	-12.5	1.63 H	227	43.17	-1.67
3	2390.00	62.4 PK	74.0	-11.6	1.63 H	227	63.83	-1.43
4	2390.00	45.1 AV	54.0	-8.9	1.63 H	227	46.53	-1.43
5	*2437.00	110.5 PK			1.63 H	227	111.82	-1.32
6	*2437.00	99.2 AV			1.63 H	227	100.52	-1.32
7	2483.50	57.8 PK	74.0	-16.2	1.63 H	227	59.01	-1.21
8	2483.50	42.6 AV	54.0	-11.4	1.63 H	227	43.81	-1.21
9	4874.00	54.5 PK	74.0	-19.5	1.72 H	36	47.25	7.25
10	4874.00	43.6 AV	54.0	-10.4	1.72 H	36	36.35	7.25
11	7311.00	55.1 PK	74.0	-18.9	1.72 H	36	40.65	14.45
12	7311.00	43.8 AV	54.0	-10.2	1.72 H	36	29.35	14.45

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	106.1 PK			1.91 V	22	107.42	-1.32
2	*2437.00	94.8 AV			1.91 V	22	96.12	-1.32
3	4874.00	52.4 PK	74.0	-21.6	1.71 V	308	45.15	7.25
4	4874.00	41.3 AV	54.0	-12.7	1.71 V	308	34.05	7.25
5	7311.00	54.7 PK	74.0	-19.3	1.71 V	308	40.25	14.45
6	7311.00	43.5 AV	54.0	-10.5	1.71 V	308	29.05	14.45

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
5. " * ": Fundamental frequency.

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			1.56 H	229	108.86	-1.26
2	*2462.00	96.1 AV			1.56 H	229	97.37	-1.26
3	2483.50	71.9 PK	74.0	-2.1	1.56 H	229	73.11	-1.21
4	2483.50	53.7 AV	54.0	-0.3	1.56 H	229	54.91	-1.21
5	4924.00	50.5 PK	74.0	-23.5	1.64 H	25	43.05	7.45
6	4924.00	39.7 AV	54.0	-14.3	1.64 H	25	32.25	7.45
7	7386.00	54.7 PK	74.0	-19.3	1.62 H	40	40.18	14.52
8	7386.00	43.6 AV	54.0	-10.4	1.62 H	40	29.08	14.52

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	102.4 PK			1.89 V	38	103.66	-1.26
2	*2462.00	91.3 AV			1.89 V	38	92.56	-1.26
3	2483.50	66.6 PK	74.0	-7.4	1.89 V	38	67.81	-1.21
4	2483.50	48.6 AV	54.0	-5.4	1.89 V	38	49.81	-1.21
5	4924.00	50.1 PK	74.0	-23.9	1.61 V	321	42.65	7.45
6	4924.00	40.0 AV	54.0	-14.0	1.61 V	321	32.55	7.45
7	7386.00	54.4 PK	74.0	-19.6	1.67 V	307	39.88	14.52
8	7386.00	43.7 AV	54.0	-10.3	1.67 V	307	29.18	14.52

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) – Pre-Amplifier 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 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	95.16	33.7 QP	43.5	-9.8	1.50 H	0	46.88	-13.14
2	184.86	27.0 QP	43.5	-16.5	2.00 H	64	36.72	-9.75
3	299.35	24.0 QP	46.0	-22.0	1.50 H	117	30.71	-6.72
4	617.89	26.7 QP	46.0	-19.3	1.00 H	306	25.15	1.56
5	816.77	30.8 QP	46.0	-15.2	2.00 H	319	25.87	4.89
6	942.63	32.7 QP	46.0	-13.3	2.00 H	360	25.93	6.80

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	31.58	29.1 QP	40.0	-11.0	1.50 V	311	38.45	-9.40
2	359.12	22.3 QP	46.0	-23.7	2.00 V	320	27.53	-5.21
3	503.75	24.8 QP	46.0	-21.2	1.00 V	241	26.27	-1.45
4	627.01	27.3 QP	46.0	-18.7	1.50 V	360	25.69	1.57
5	747.61	29.6 QP	46.0	-16.4	1.50 V	147	25.67	3.94
6	933.41	31.3 QP	46.0	-14.8	2.00 V	272	24.46	6.79

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 (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	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.

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	100375	May 06, 2015	May 05, 2016
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 01, 2015	Aug. 31, 2016
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 11, 2015	June 10, 2016
RF Cable	5D-FB	COCCAB-001	Mar. 09, 2015	Mar. 08, 2016
50 ohms Terminator	N/A	EMC-03	Sep. 23, 2015	Sep. 22, 2016
50 ohms Terminator	N/A	EMC-02	Oct. 01, 2015	Sep. 30, 2016
Software BVADT	BVADT_Cond_ V7.3.7.3	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Nov. 17, 2015

4.2.3 Test Procedures

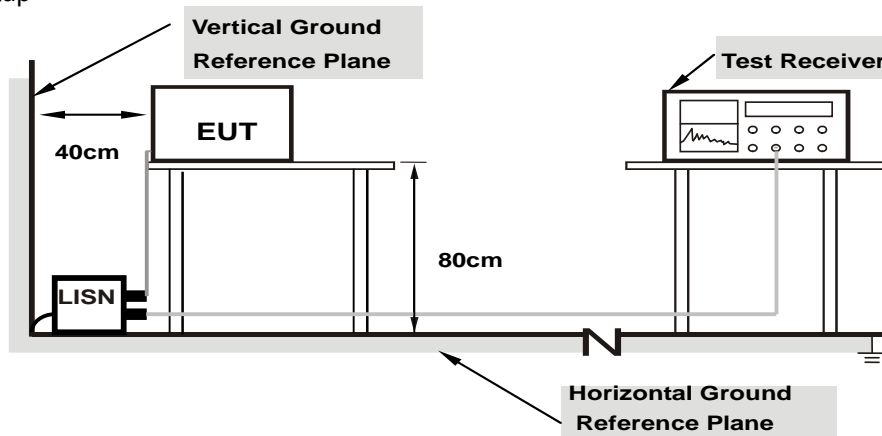
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

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.

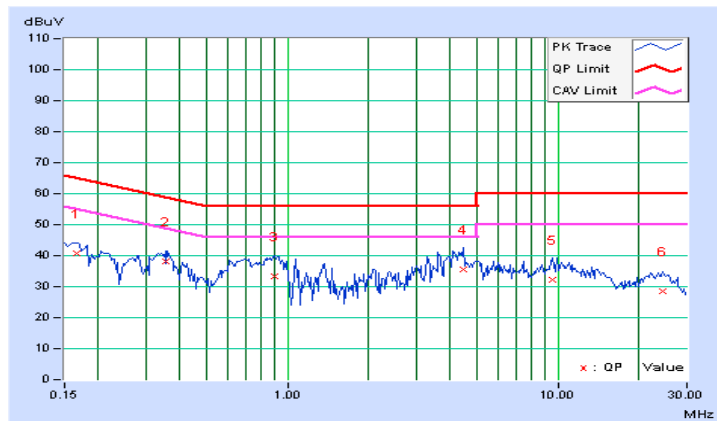
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	10.37	30.34	19.53	40.71	29.90	65.18	55.18	-24.47	-25.28
2	0.35313	10.36	27.89	16.18	38.25	26.54	58.89	48.89	-20.64	-22.35
3	0.89609	10.33	23.02	9.83	33.35	20.16	56.00	46.00	-22.65	-25.84
4	4.49219	10.61	25.06	12.54	35.67	23.15	56.00	46.00	-20.33	-22.85
5	9.56641	10.88	21.30	11.43	32.18	22.31	60.00	50.00	-27.82	-27.69
6	24.33984	11.55	17.11	5.33	28.66	16.88	60.00	50.00	-31.34	-33.12

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

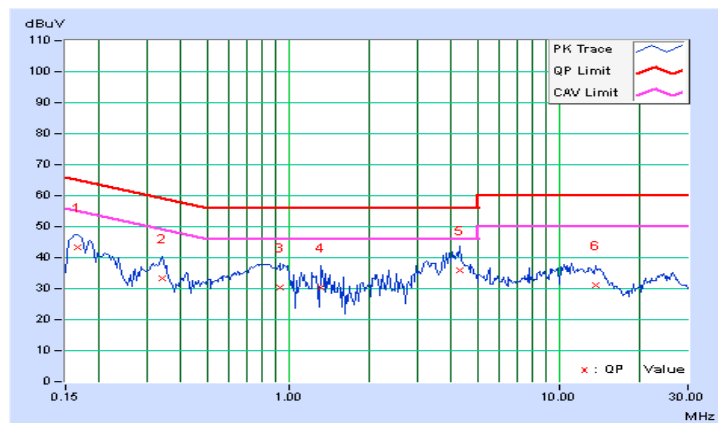


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	10.38	33.11	17.83	43.49	28.21	65.18	55.18	-21.68	-26.96
2	0.34141	10.41	22.94	11.24	33.35	21.65	59.17	49.17	-25.82	-27.52
3	0.93125	10.38	19.98	5.75	30.36	16.13	56.00	46.00	-25.64	-29.87
4	1.31641	10.40	20.11	5.47	30.51	15.87	56.00	46.00	-25.49	-30.13
5	4.28125	10.69	25.24	11.52	35.93	22.21	56.00	46.00	-20.07	-23.79
6	13.64063	11.15	19.78	10.08	30.93	21.23	60.00	50.00	-29.07	-28.77

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

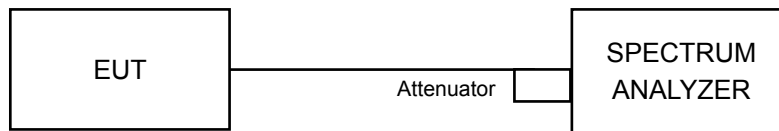


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

- a. Set resolution bandwidth (RBW) = 100kHz
- b. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. 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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	8.07	0.5	PASS
6	2437	8.11	0.5	PASS
11	2462	8.07	0.5	PASS

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	15.18	0.5	PASS
6	2437	15.50	0.5	PASS
11	2462	15.17	0.5	PASS

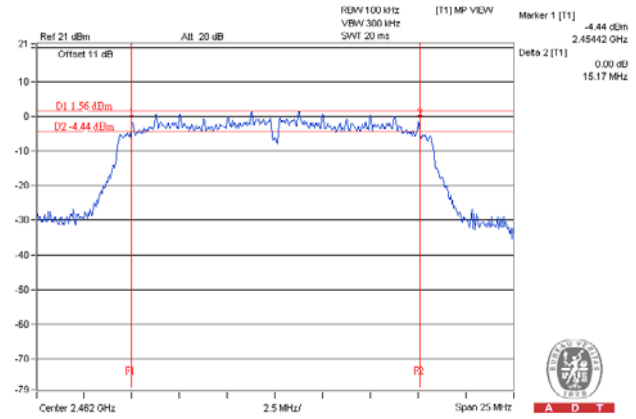
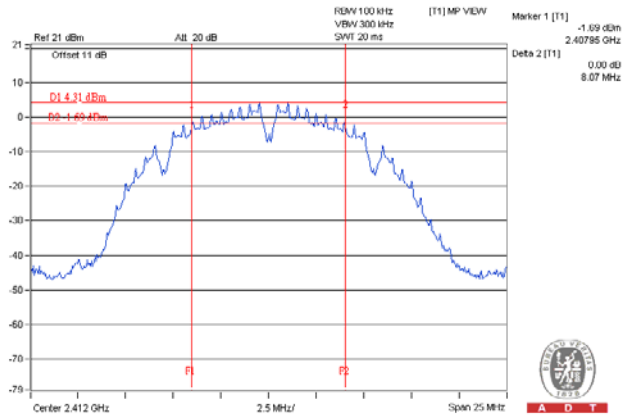
802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	15.98	0.5	Pass
6	2437	15.17	0.5	Pass
11	2462	16.02	0.5	Pass

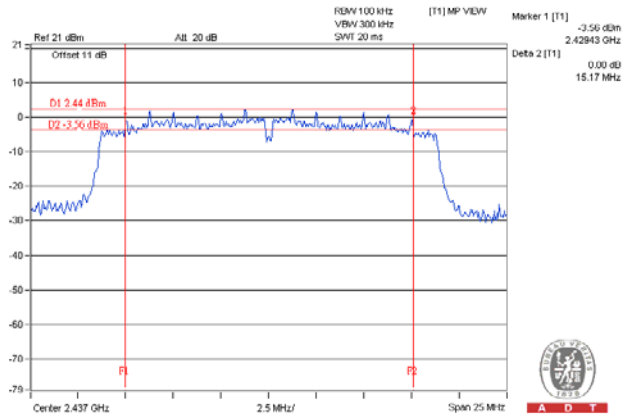
Spectrum Plot of Worst Value

802.11b / CH 1

802.11g / CH 11



802.11n (HT20) / CH 6

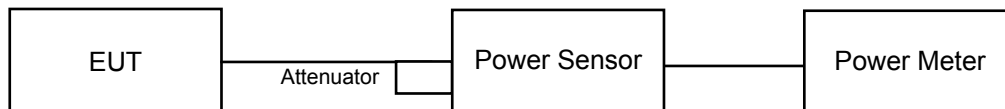


4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

A peak / average power sensor was 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.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

FOR PEAK POWER

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	35.4	15.49	30	Pass
6	2437	30.974	14.91	30	Pass
11	2462	29.58	14.71	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	106.414	20.27	30	Pass
6	2437	123.88	20.93	30	Pass
11	2462	90.365	19.56	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	103.276	20.14	30	Pass
6	2437	120.504	20.81	30	Pass
11	2462	83.56	19.22	30	Pass

FOR AVERAGE POWER**802.11b**

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	17.458	12.42
6	2437	16.255	12.11
11	2462	14.757	11.69

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	20.893	13.20
6	2437	22.909	13.60
11	2462	19.409	12.88

802.11n (HT20)

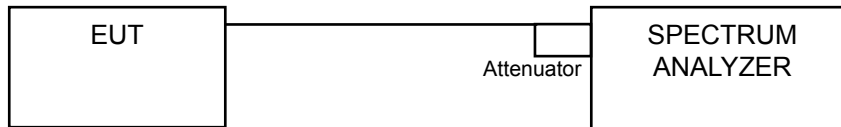
Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	20.417	13.10
6	2437	22.542	13.53
11	2462	17.498	12.43

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

- a. Set analyzer center frequency to DTS channel center frequency.
- b. Set the span to 1.5 times the DTS bandwidth.
- c. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d. Set the VBW $\geq 3 \times \text{RBW}$.
- e. Detector = peak.
- f. Sweep time = auto couple.
- g. Trace mode = max hold.
- h. Allow trace to fully stabilize.
- i. Use the peak marker function to determine the maximum amplitude level within the RBW.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-10.30	8	Pass
6	2437	-10.28	8	Pass
11	2462	-10.54	8	Pass

802.11g

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-12.66	8	Pass
6	2437	-12.36	8	Pass
11	2462	-12.55	8	Pass

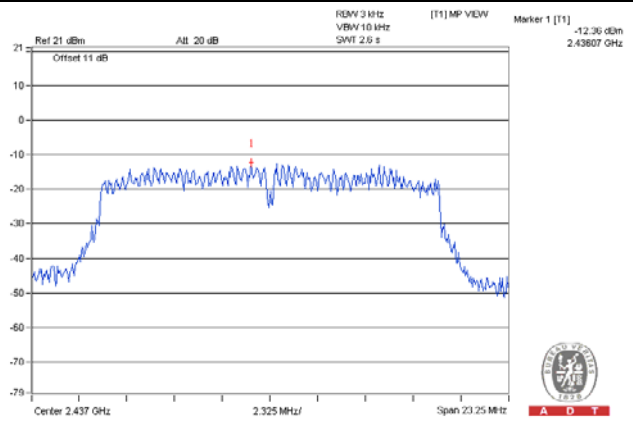
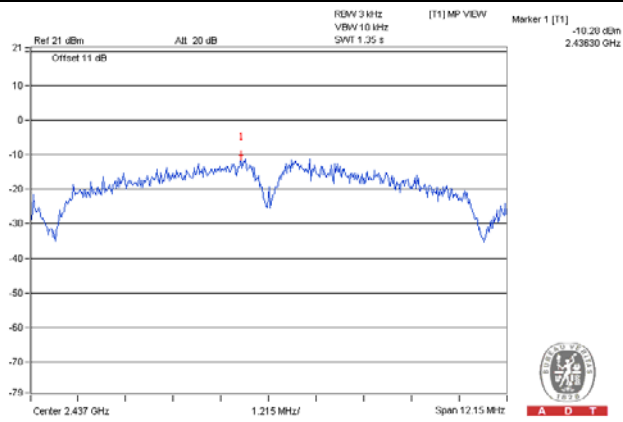
802.11n (HT20)

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-12.91	8	Pass
6	2437	-11.24	8	Pass
11	2462	-13.71	8	Pass

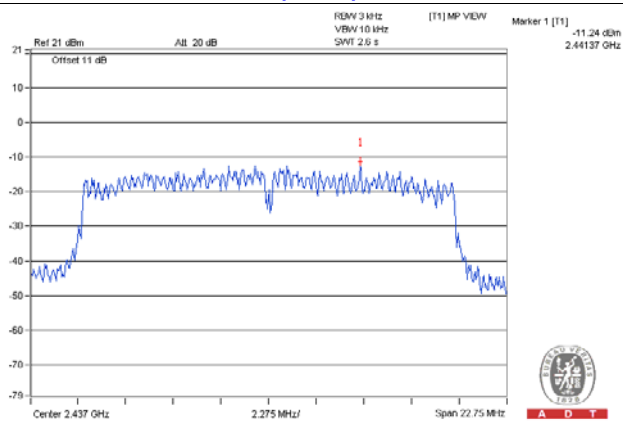
Spectrum Plot of Worst Value

802.11b / CH 6

802.11g / CH 6



802.11n (HT20) / CH 6

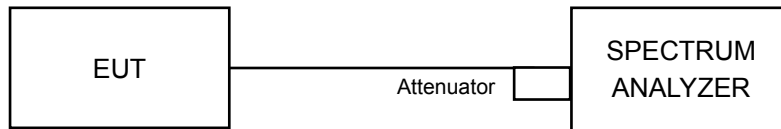


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

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 OOB

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

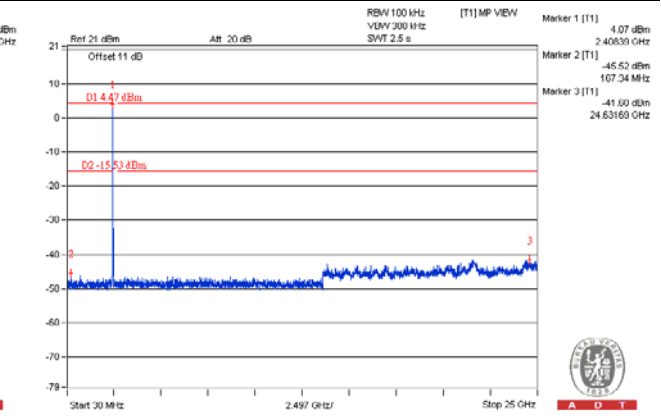
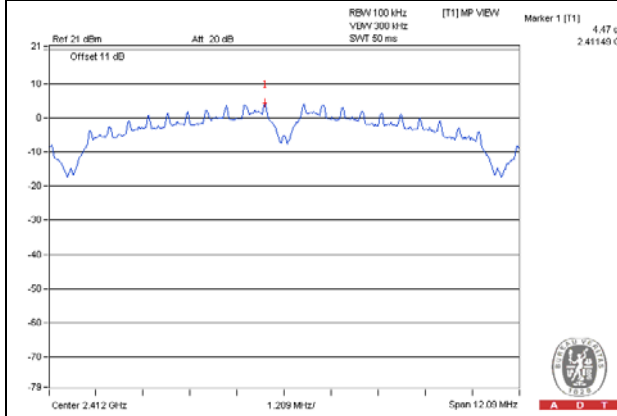
Same as Item 4.3.6

4.6.7 Test Results

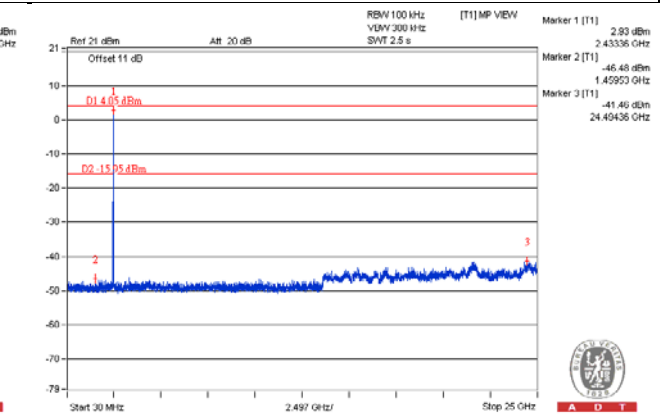
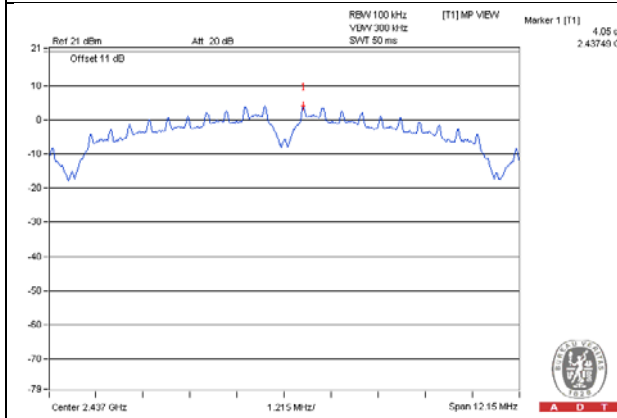
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

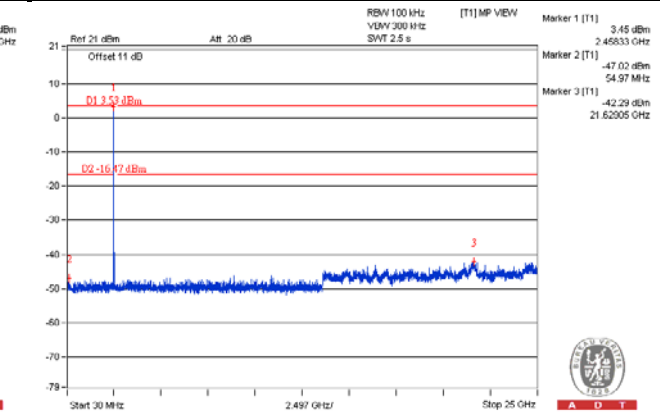
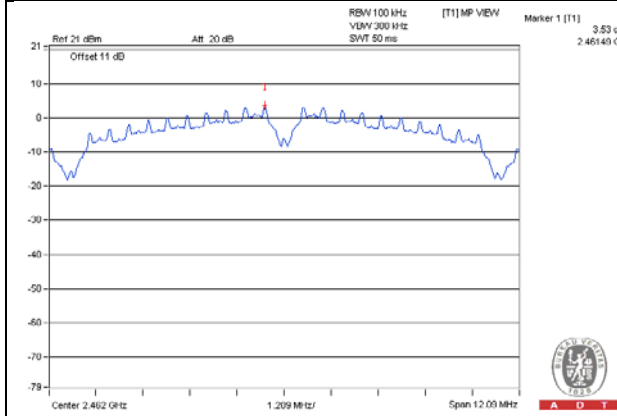
CH 1



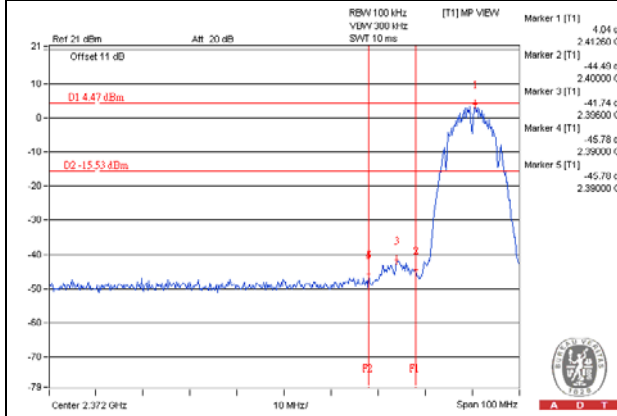
CH 6



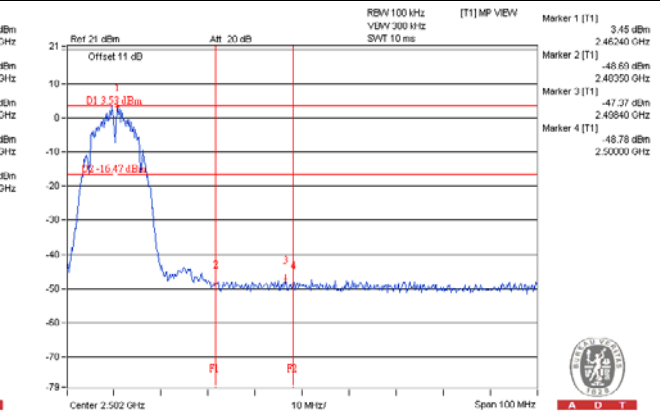
CH 11



CH 1 Band edge

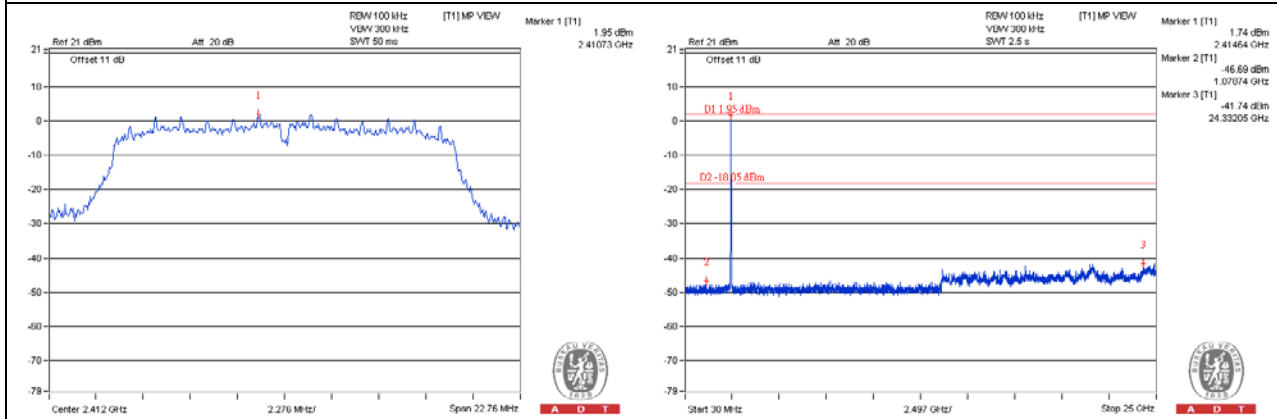


CH 11 Band edge

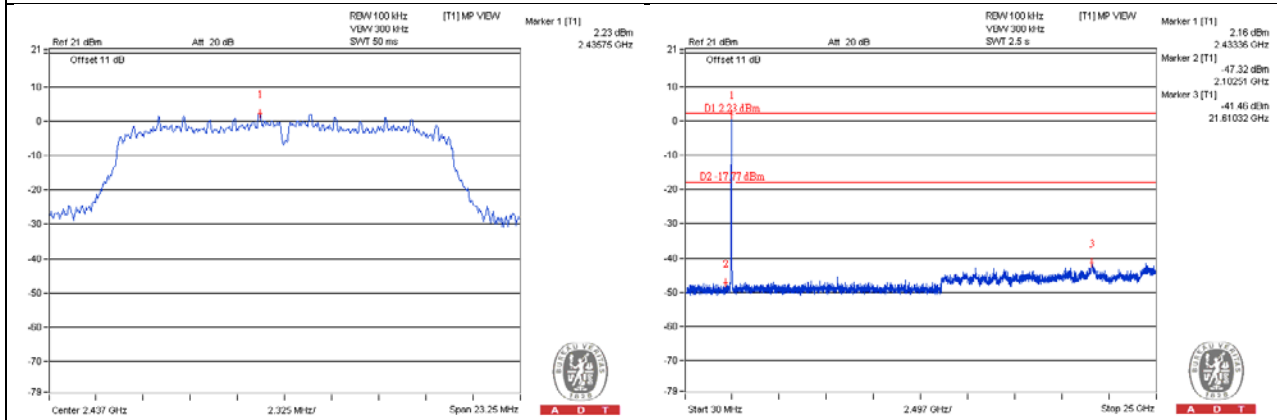


802.11g

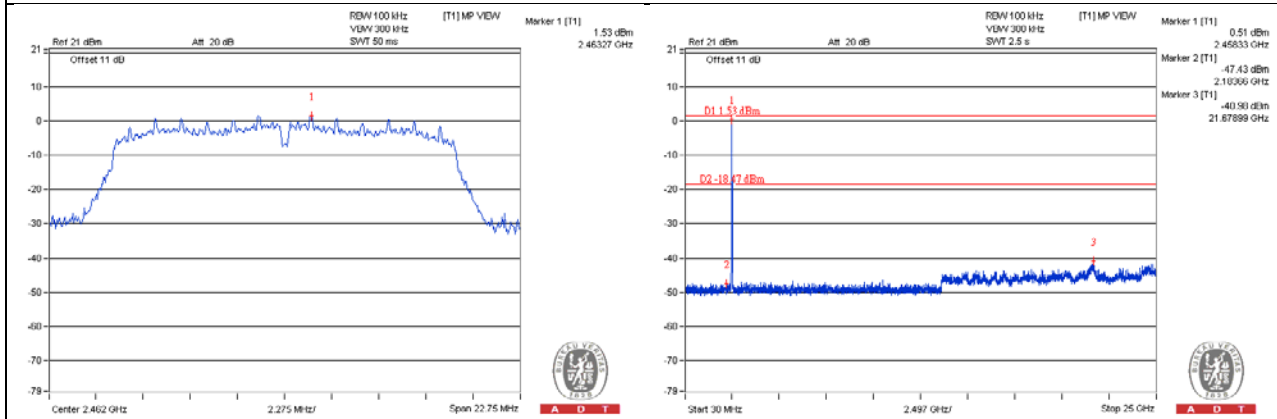
CH 1



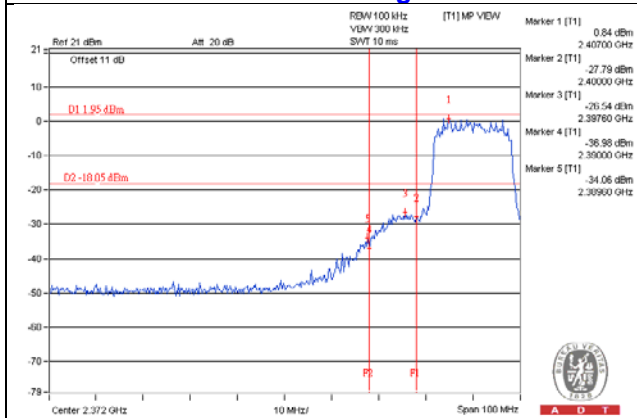
CH 6



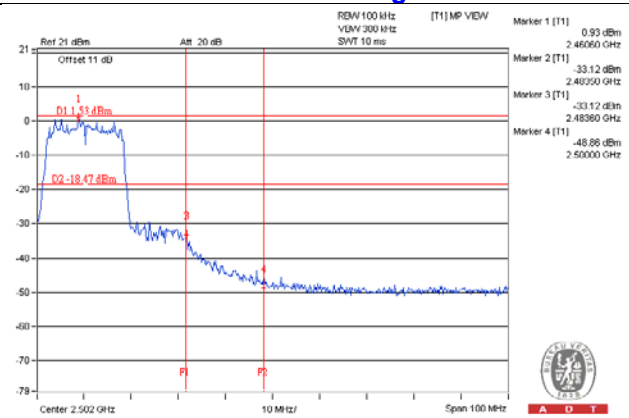
CH 11



CH 1 Band edge

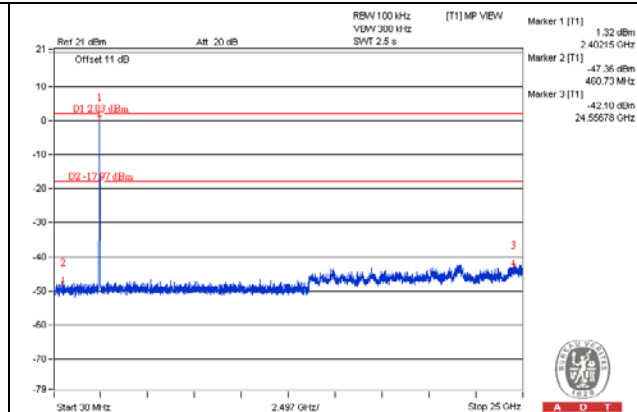
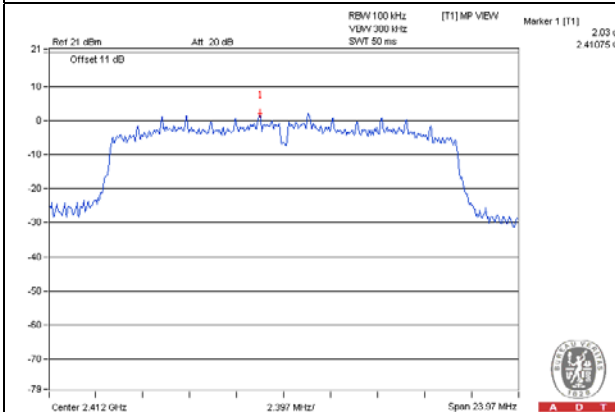


CH 11 Band edge

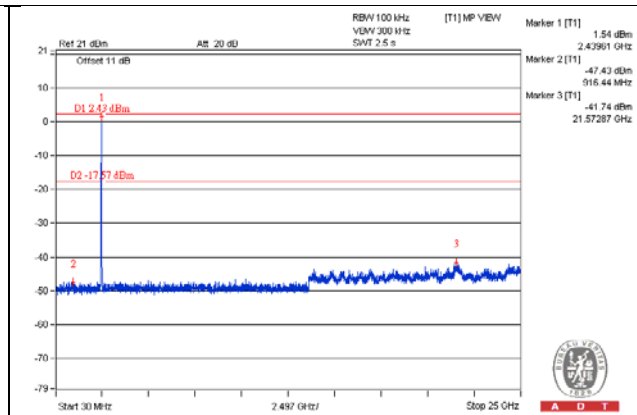
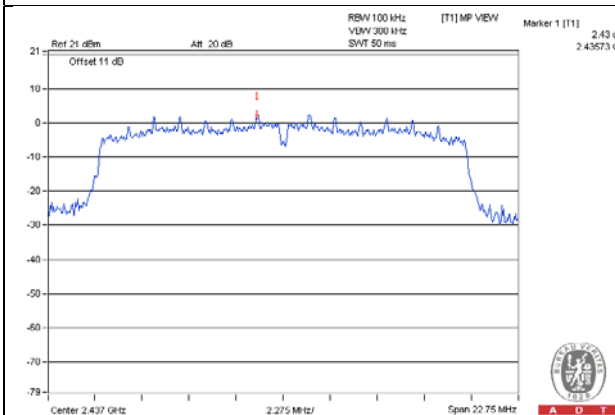


802.11n (HT20)

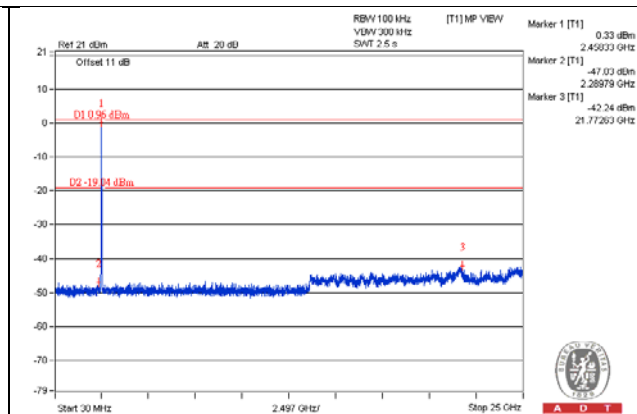
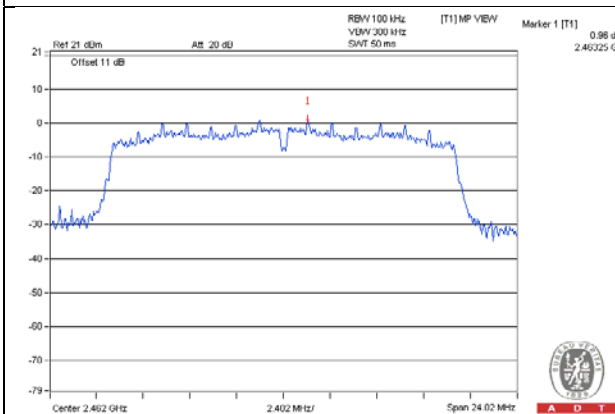
CH 1



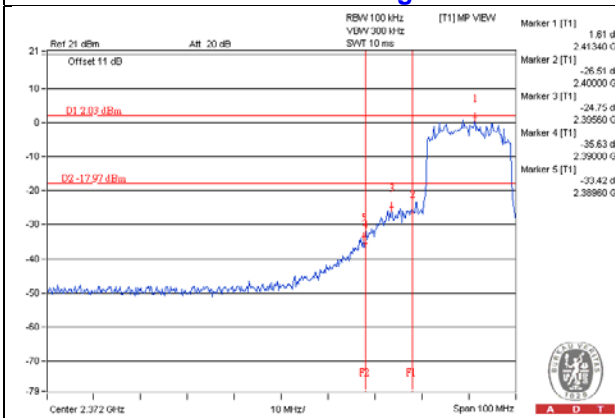
CH 6



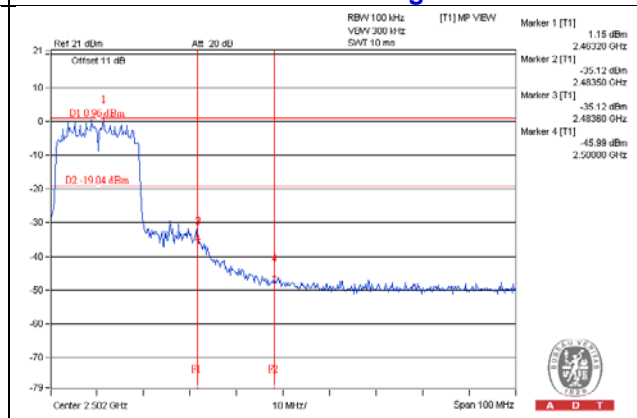
CH 11



CH 1 Band edge



CH 11 Band edge



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 accredited and approved 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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