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FCC TEST REPORT (15.247)

REPORT NO.: RF130328C30-2

MODEL NO.: M2M6270T

FCC ID: NKRM2M6270TDK

RECEIVED: Mar. 28, 2013

TESTED: Apr. 03, 2013 ~ Apr. 09, 2013

ISSUED: Apr. 23, 2013

APPLICANT: Wistron NeWeb Corporation

ADDRESS: 20 Park Avenue II, Hsinchu, Science Park,
Hsinchu 30076, Taiwan (R.O.C)

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

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist.,
New Taipei City, Taiwan (R.O.C)

TEST LOCATION: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei
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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130328C30-2	Original release	Apr. 23, 2013



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1. CERTIFICATION

PRODUCT: M2M Development Kit

MODEL NO.: M2M6270T

BRAND: Wistron NeWeb Corporation

APPLICANT: Wistron NeWeb Corporation

TESTED: Apr. 03, 2013 ~ Apr. 09, 2013

TEST SAMPLE: ENGINEERING SAMPLE

STANDARDS: FCC Part 15, Subpart C (Section 15.247)

ANSI C63.10-2009

The above equipment (model: M2M6270T) 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 : Evonne Liu , DATE : Apr. 23, 2013

Evonne Liu / Specialist

APPROVED BY : Sam Chen , DATE : Apr. 23, 2013

Sam Chen / Assistant Manager



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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	PASS	Meet the requirement of limit. Minimum passing margin is -20.35dB at 0.34922MHz.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -0.81dB at 2483.50MHz.
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 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.

2.1 MEASUREMENT UNCERTAINTY

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	M2M Development Kit
MODEL NO.	M2M6270T
POWER SUPPLY	5.2Vdc (adapter or host equipment) 3.7Vdc (battery)
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b:11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 65.0Mbps
OPERATING FREQUENCY	2412 ~ 2462MHz
NUMBER OF CHANNEL	11
OUTPUT POWER	179.061mW
ANTENNA TYPE	Fixed External antenna with 2.8dBi gain
ANTENNA CONNECTOR	NA
DATA CABLE	NA
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Refer to Note as below

NOTE:

1. The EUT provides one completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	1TX

2. The EUT contains following accessory devices.

ITEM	BRAND	MODEL	SPECIFICATION
AC adapter	Channel Well Technology	PSM08A-051	I/P: 100-240Vac, 350mA O/P: 5Vdc, 2000mA
Li-ion Battery	JMS	WNC-103450	Rating: 3.7Vdc, 1880mAh
Antenna 1 (2G/3G)	Joymax Technology	CAF-211XSAXX-156	--
Antenna 2 (WLAN)	Joymax Technology	ISF-121XSAXX-156	--
Antenna 3 (GPS)	Cirocomm Technology	SP03AB15923-0110 (03A61B600310120)	--

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



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3.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

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		



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3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

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	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n (20MHz)	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	1	OFDM	BPSK	6.0

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	1	OFDM	BPSK	6.0



BANDEDGE MEASUREMENT:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 11	DSSS	DBPSK	1.0
802.11g	1 to 11	1, 11	OFDM	BPSK	6.0
802.11n (20MHz)	1 to 11	1, 11	OFDM	BPSK	6.5

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	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

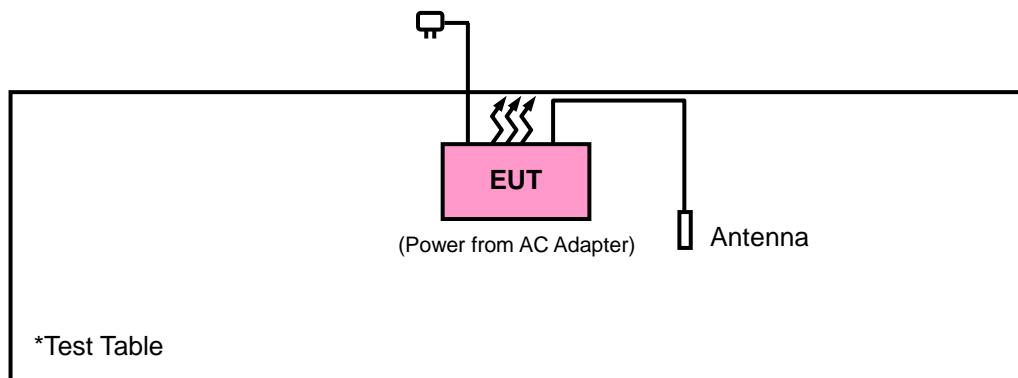
TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	25deg. C, 65%RH	120Vac, 60Hz	Johnson Liao
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Johnson Liao
PLC	20deg. C, 60%RH	120Vac, 60Hz	Felix Chen
APCM	25deg. C, 65%RH	120Vac, 60Hz	Howard Kao

3.3 DESCRIPTION OF SUPPORT UNITS

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

3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C (15.247)

ANSI C63.10-2009

KDB 558074 D01 DTS Meas Guidance v02

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



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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 (dB_{UV}/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.



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4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCI	100744	Apr. 19, 2012	Apr. 18, 2013
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 17, 2012	Dec. 16, 2013
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Mar. 25, 2013	Mar. 24, 2014
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Jan. 07, 2013	Jan. 06, 2014
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 25, 2012	Dec. 24, 2013
Loop Antenna	HFH2-Z2	100070	Jan. 31, 2012	Jan. 30, 2014
Preamplifier EMCI	EMC 012645	980115	Dec. 28, 2012	Dec. 27, 2013
Preamplifier EMCI	EMC 184045	980116	Dec. 28, 2012	Dec. 27, 2013
Preamplifier EMCI	EMC 330H	980112	Dec. 28, 2012	Dec. 27, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4	Oct. 19, 2012	Oct. 18, 2013
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 19, 2012	Oct. 18, 2013
RF signal cable Worken	RG-213	NA	Dec. 29, 2012	Dec. 28, 2013
Software	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in HwaYa Chamber 10.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 690701.
6. The IC Site Registration No. is IC 7450F-10.



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4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Height of receiving 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

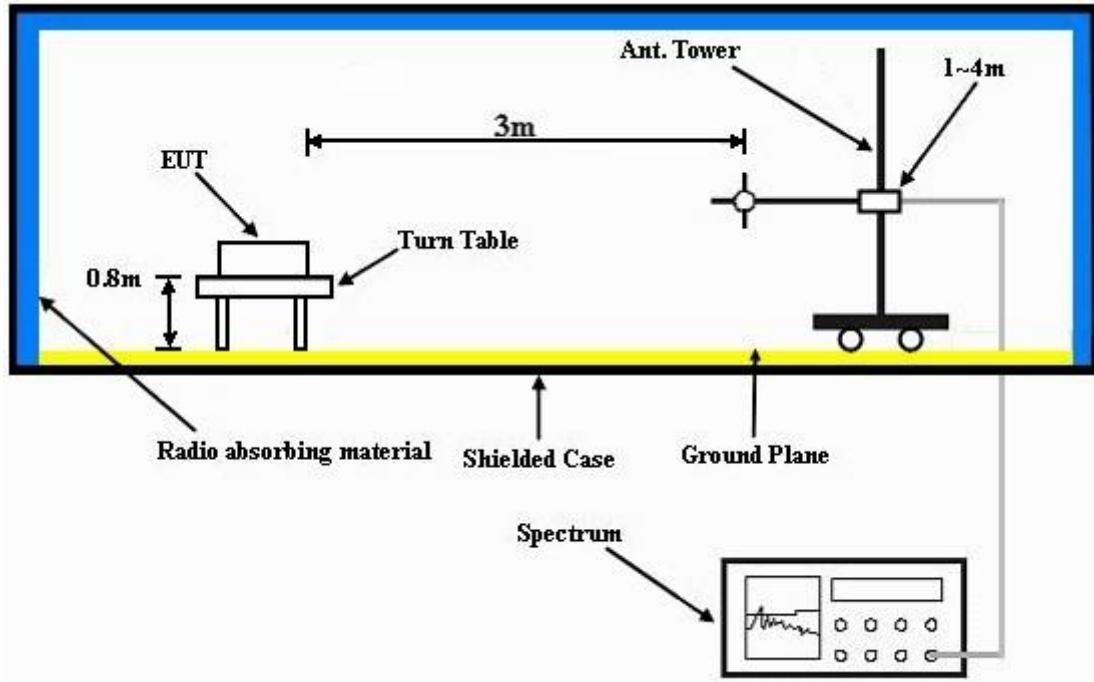
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz 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 attached file (Test Setup Photo).

4.1.6 EUT OPERATING CONDITIONS

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



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4.1.7 TEST RESULTS

ABOVE 1GHz WORST-CASE DATA

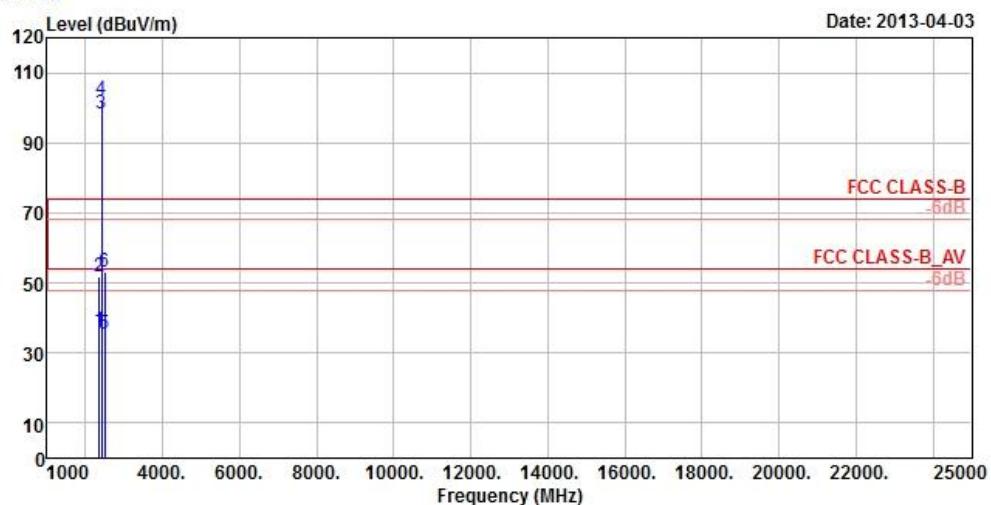
802.11b



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

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Data: 19



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m HORIZONTAL
Brand/Model: M2M6270T
Remark : 11B TX CH01
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : 1M
Power : 1C

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2356.00	36.17	42.03	54.00	-17.83	26.81	4.82	37.49	134	58 Average
2	2356.00	51.73	57.59	74.00	-22.27	26.81	4.82	37.49	134	58 Peak
3 pp	2412.00	98.11	103.80			26.96	4.87	37.52	134	58 Average
4 pk	2412.00	102.29	107.98			26.96	4.87	37.52	134	58 Peak
5	2496.00	35.22	40.33	54.00	-18.78	27.20	4.94	37.25	134	58 Average
6	2496.00	52.96	58.07	74.00	-21.04	27.20	4.94	37.25	134	58 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



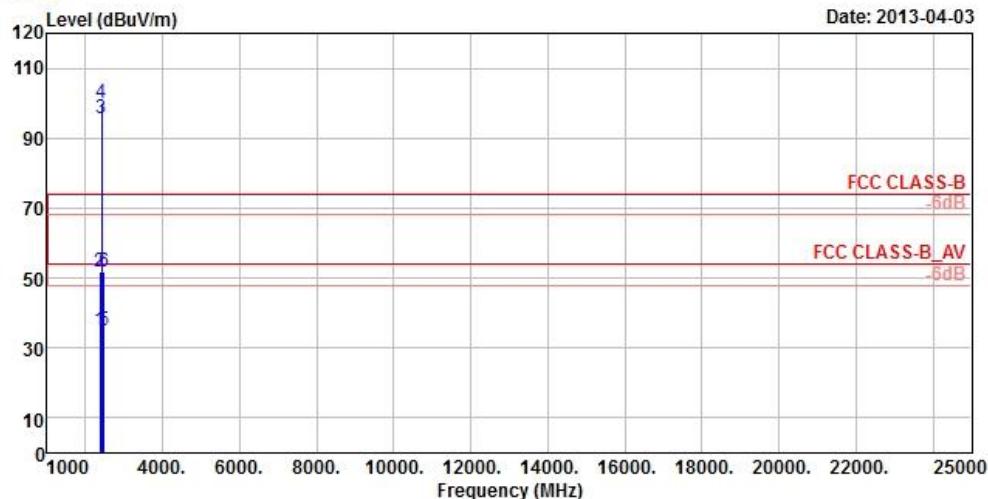
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Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

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Data: 20



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m VERTICAL
Brand/Model: M2M6270T
Remark : 11B TX CH01
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : 1M
Power : 1C

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2380.00	35.19	40.98	54.00	-18.81	26.86	4.85	37.50	123	210 Average
2	2380.00	51.77	57.56	74.00	-22.23	26.86	4.85	37.50	123	210 Peak
3 pp	2412.00	95.78	101.47			26.96	4.87	37.52	123	210 Average
4 pk	2412.00	99.90	105.59			26.96	4.87	37.52	123	210 Peak
5	2484.00	34.77	40.02	54.00	-19.23	27.15	4.92	37.32	123	210 Average
6	2484.00	51.66	56.91	74.00	-22.34	27.15	4.92	37.32	123	210 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



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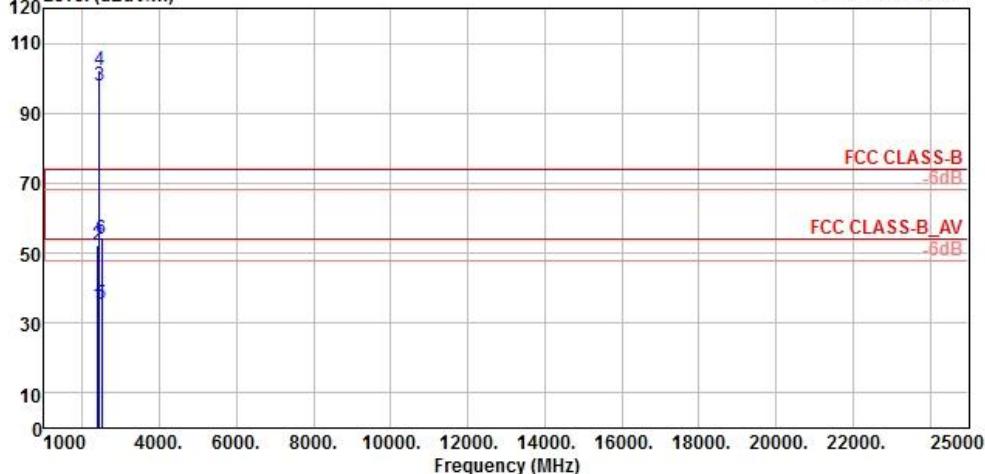
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Data: 19

Level (dBuV/m)

Date: 2013-04-03



Site : 966 Chamber 5

Condition : FCC CLASS-B 3m HORIZONTAL

Brand/Model: M2M6270T

Remark : 11B TX CH06

Tested by : Johnson Liao

Temprature : 25°C

Humidity : 65%

Rate : 1M

Power : 1C

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2384.00	34.97	40.76	54.00	-19.03	26.86	4.85	37.50	134	59 Average
2	2384.00	52.21	58.00	74.00	-21.79	26.86	4.85	37.50	134	59 Peak
3 pp	2437.00	97.67	103.18			27.06	4.89	37.46	134	59 Average
4 pk	2437.00	102.17	107.68			27.06	4.89	37.46	134	59 Peak
5	2488.00	35.42	40.62	54.00	-18.58	27.20	4.92	37.32	134	59 Average
6	2488.00	54.14	59.34	74.00	-19.86	27.20	4.92	37.32	134	59 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



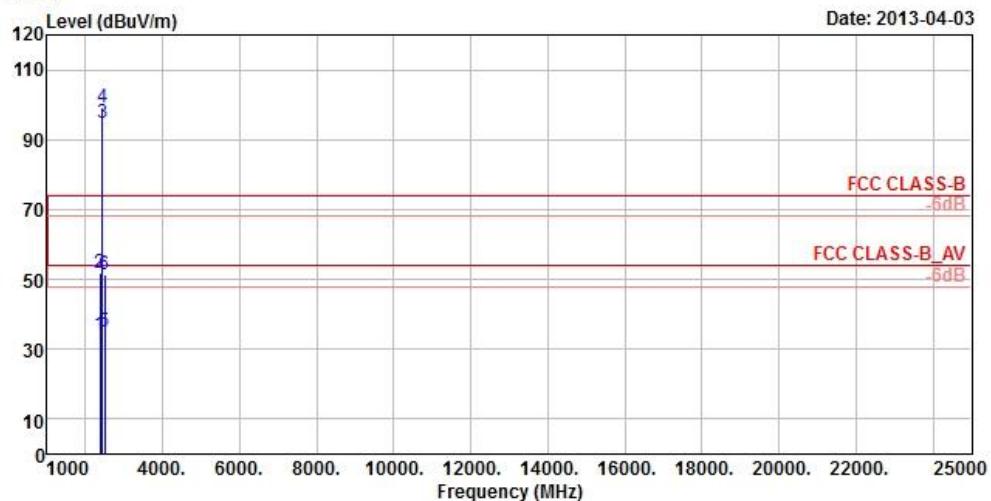
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Data: 20



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m VERTICAL
Brand/Model: M2M6270T
Remark : 11B TX CH06
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : 1M
Power : 1C

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Freq	Level	Line	Limit	Factor	Loss	Factor	cm	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2376.00	34.31	40.10	54.00	-19.69	26.86	4.85	37.50	119	213 Average
2	2376.00	51.81	57.60	74.00	-22.19	26.86	4.85	37.50	119	213 Peak
3 pp	2437.00	94.92	100.43			27.06	4.89	37.46	119	213 Average
4 pk	2437.00	99.22	104.73			27.06	4.89	37.46	119	213 Peak
5	2488.00	35.15	40.35	54.00	-18.85	27.20	4.92	37.32	119	213 Average
6	2488.00	51.57	56.77	74.00	-22.43	27.20	4.92	37.32	119	213 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



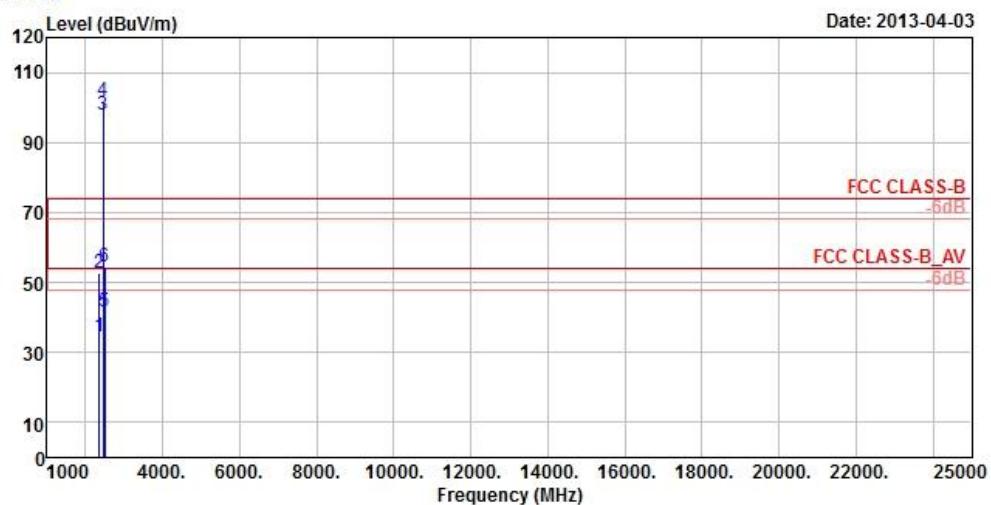
A D T



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 19



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m HORIZONTAL
Brand/Model: M2M6270T
Remark : 11B TX CH11
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : 1M
Power : 1C

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2348.00	34.55	40.45	54.00	-19.45	26.77	4.82	37.49	130	58 Average
2	2348.00	52.48	58.38	74.00	-21.52	26.77	4.82	37.49	130	58 Peak
3 pp	2462.00	97.83	103.21			27.10	4.91	37.39	130	58 Average
4 pk	2462.00	102.06	107.44			27.10	4.91	37.39	130	58 Peak
5	2486.00	41.78	47.03	54.00	-12.22	27.15	4.92	37.32	130	58 Average
6	2486.00	54.66	59.91	74.00	-19.34	27.15	4.92	37.32	130	58 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



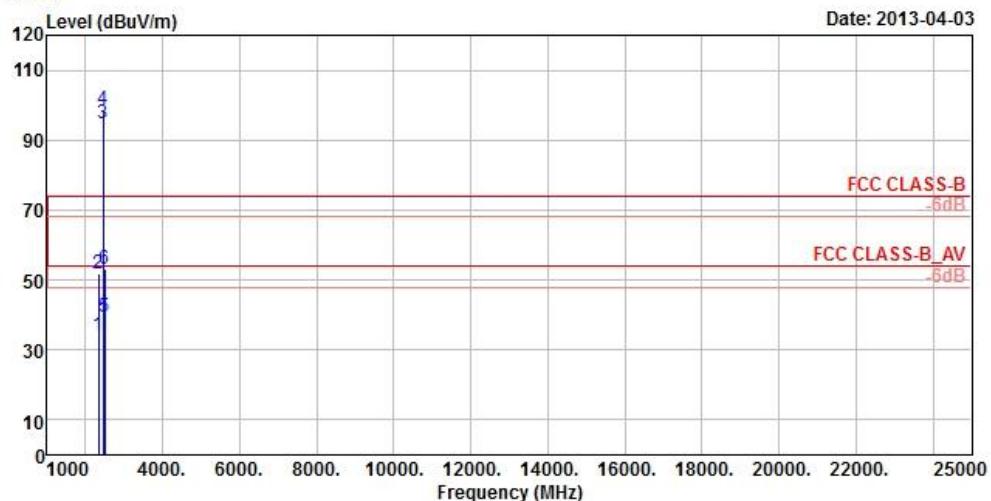
A D T



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 20



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m VERTICAL
Brand/Model: M2M6270T
Remark : 11B TX CH11
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : 1M
Power : 1C

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Freq	Level	Line	Limit	Factor	Loss	Factor	cm	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2326.00	34.00	39.96	54.00	-20.00	26.72	4.79	37.47	117	213 Average
2	2326.00	51.84	57.80	74.00	-22.16	26.72	4.79	37.47	117	213 Peak
3 pp	2462.00	94.55	99.93			27.10	4.91	37.39	117	213 Average
4 pk	2462.00	98.82	104.20			27.10	4.91	37.39	117	213 Peak
5	2490.00	39.32	44.52	54.00	-14.68	27.20	4.92	37.32	117	213 Average
6	2490.00	52.96	58.16	74.00	-21.04	27.20	4.92	37.32	117	213 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



A D T

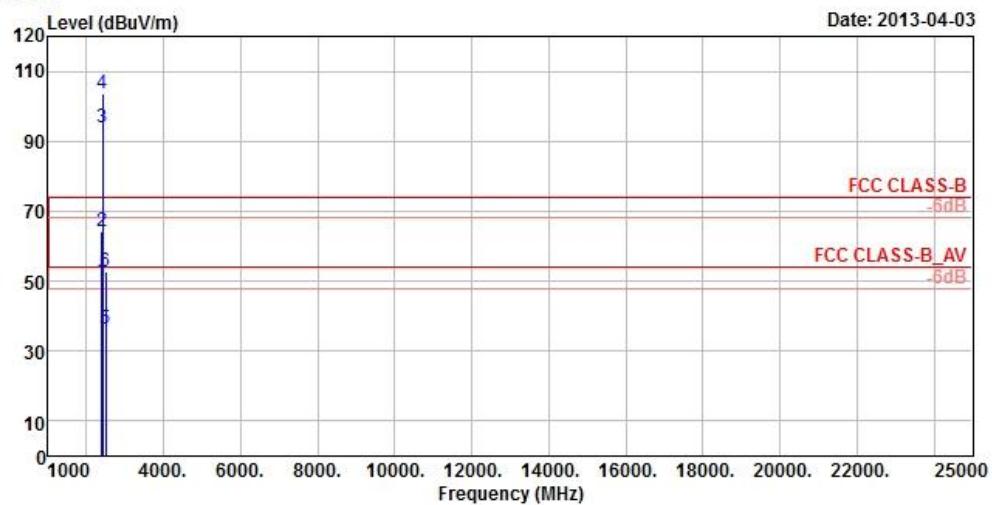
802.11g



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 21



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m HORIZONTAL
Brand/Model: M2M6270T
Remark : 11G TX CH01
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : 6M
Power : 1B

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1 !	2389.00	50.01	55.75	54.00	-3.99	26.91	4.85	37.50	105	57 Average
2	2389.00	64.42	70.16	74.00	-9.58	26.91	4.85	37.50	105	57 Peak
3 pp	2412.00	94.05	99.74			26.96	4.87	37.52	105	57 Average
4 pk	2412.00	103.73	109.42			26.96	4.87	37.52	105	57 Peak
5	2500.00	36.28	41.39	54.00	-17.72	27.20	4.94	37.25	105	57 Average
6	2500.00	52.73	57.84	74.00	-21.27	27.20	4.94	37.25	105	57 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



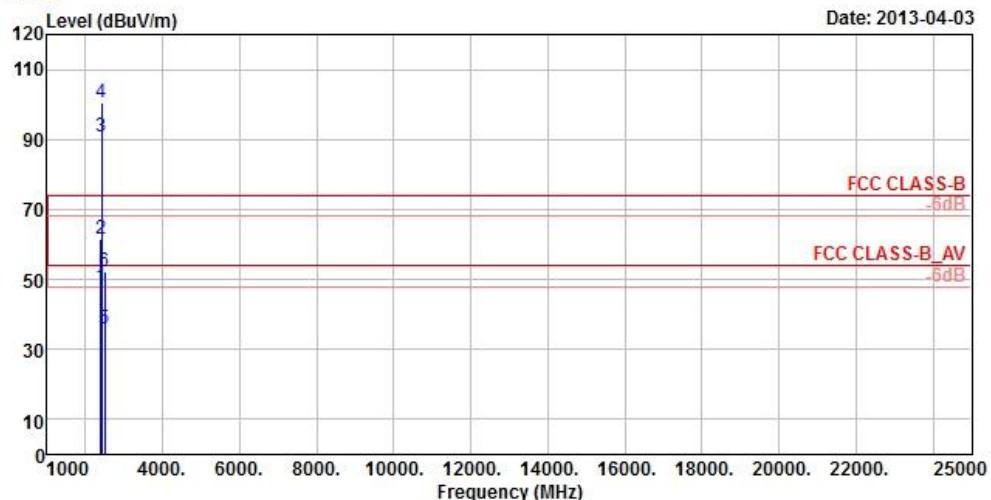
A D T



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 22



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m VERTICAL
Brand/Model: M2M6270T
Remark : 11G TX CH01
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : 6M
Power : 1B

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2389.00	47.99	53.73	54.00	-6.01	26.91	4.85	37.50	122	210 Average
2	2389.00	61.46	67.20	74.00	-12.54	26.91	4.85	37.50	122	210 Peak
3 pp	2412.00	90.86	96.55			26.96	4.87	37.52	122	210 Average
4 pk	2412.00	100.55	106.24			26.96	4.87	37.52	122	210 Peak
5	2492.00	35.88	40.99	54.00	-18.12	27.20	4.94	37.25	122	210 Average
6	2492.00	52.26	57.37	74.00	-21.74	27.20	4.94	37.25	122	210 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



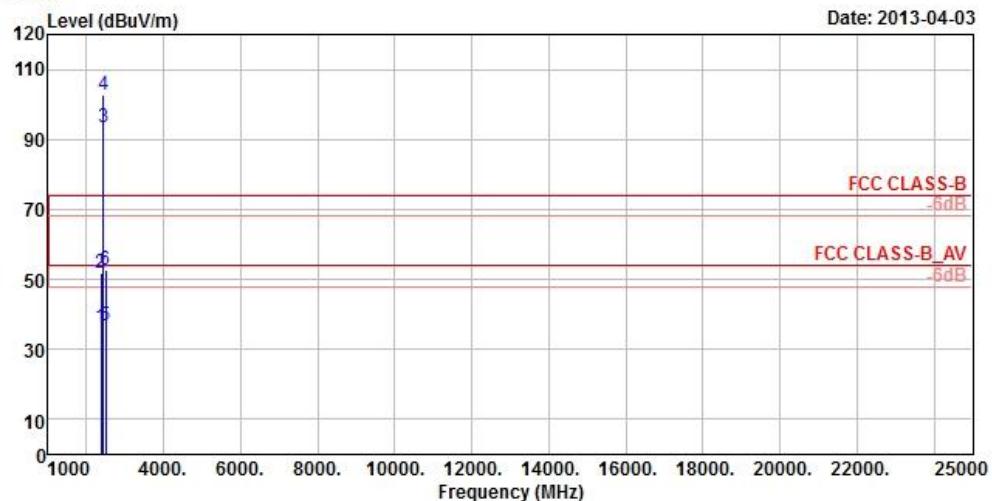
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Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 19



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m HORIZONTAL
Brand/Model: M2M6270T
Remark : 11G TX CH06
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : 6M
Power : 1B

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor			
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2382.00	36.22	42.01	54.00	-17.78	26.86	4.85	37.50	126	56 Average
2	2382.00	51.83	57.62	74.00	-22.17	26.86	4.85	37.50	126	56 Peak
3 pp	2437.00	93.53	99.04			27.06	4.89	37.46	126	56 Average
4 pk	2437.00	102.93	108.44			27.06	4.89	37.46	126	56 Peak
5	2488.00	36.91	42.11	54.00	-17.09	27.20	4.92	37.32	126	56 Average
6	2488.00	52.75	57.95	74.00	-21.25	27.20	4.92	37.32	126	56 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



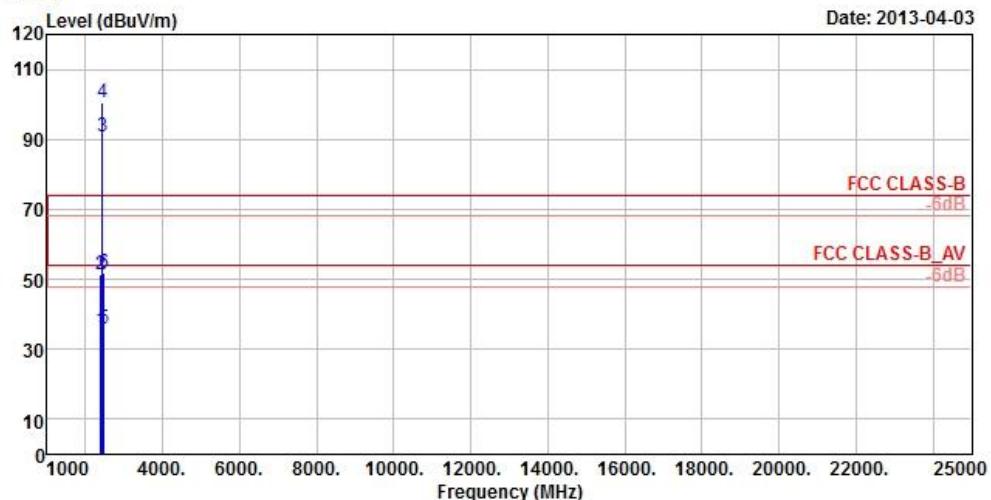
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Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 20



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m VERTICAL
Brand/Model: M2M6270T
Remark : 11G TX CH06
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : 6M
Power : 1B

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2388.00	35.54	41.28	54.00	-18.46	26.91	4.85	37.50	122	212 Average
2	2388.00	51.33	57.07	74.00	-22.67	26.91	4.85	37.50	122	212 Peak
3 pp	2437.00	90.81	96.32			27.06	4.89	37.46	122	212 Average
4 pk	2437.00	100.46	105.97			27.06	4.89	37.46	122	212 Peak
5	2484.00	35.95	41.20	54.00	-18.05	27.15	4.92	37.32	122	212 Average
6	2484.00	51.89	57.14	74.00	-22.11	27.15	4.92	37.32	122	212 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



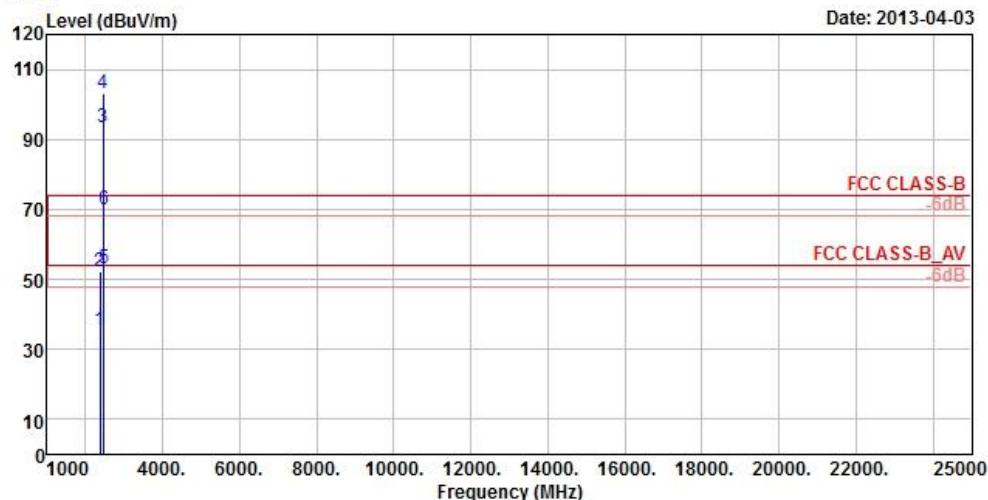
A D T



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 21



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m HORIZONTAL
Brand/Model: M2M6270T
Remark : 11G TX CH11
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Plane : Y
Rate : 6M
Power : 1B

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2366.00	35.43	41.27	54.00	-18.57	26.81	4.85	37.50	103	57 Average
2	2366.00	52.05	57.89	74.00	-21.95	26.81	4.85	37.50	103	57 Peak
3 pp	2462.00	93.24	98.62			27.10	4.91	37.39	103	57 Average
4 pk	2462.00	103.06	108.44			27.10	4.91	37.39	103	57 Peak
5 !	2483.50	53.19	58.44	54.00	-0.81	27.15	4.92	37.32	103	57 Average
6 !	2483.50	70.15	75.40	74.00	-3.85	27.15	4.92	37.32	103	57 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



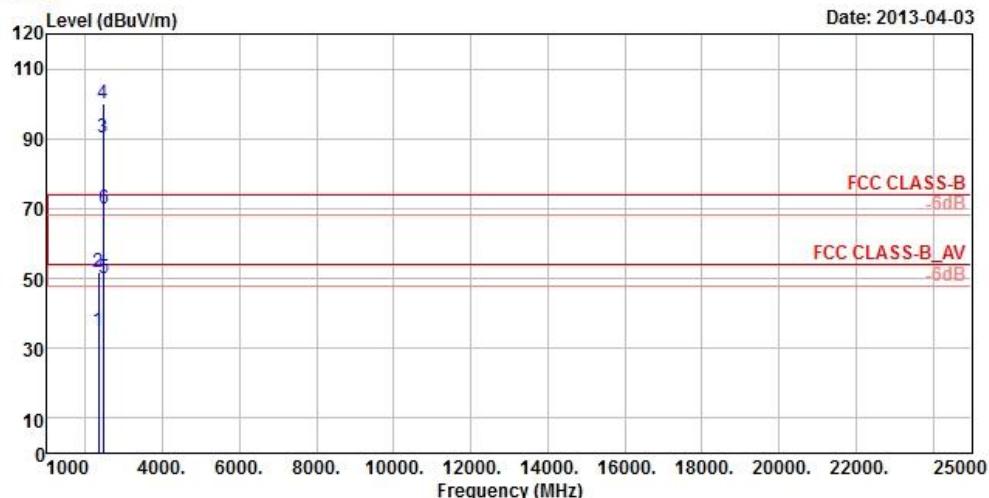
A D T



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 22



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m VERTICAL
Brand/Model: M2M6270T
Remark : 11G TX CH11
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Plane : Y
Rate : 6M
Power : 1B

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2324.00	34.82	40.78	54.00	-19.18	26.72	4.79	37.47	119	215 Average
2	2324.00	51.92	57.88	74.00	-22.08	26.72	4.79	37.47	119	215 Peak
3 pp	2462.00	90.20	95.58			27.10	4.91	37.39	119	215 Average
4 pk	2462.00	100.06	105.44			27.10	4.91	37.39	119	215 Peak
5 !	2483.50	49.83	55.08	54.00	-4.17	27.15	4.92	37.32	119	215 Average
6 !	2483.50	69.74	74.99	74.00	-4.26	27.15	4.92	37.32	119	215 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



A D T

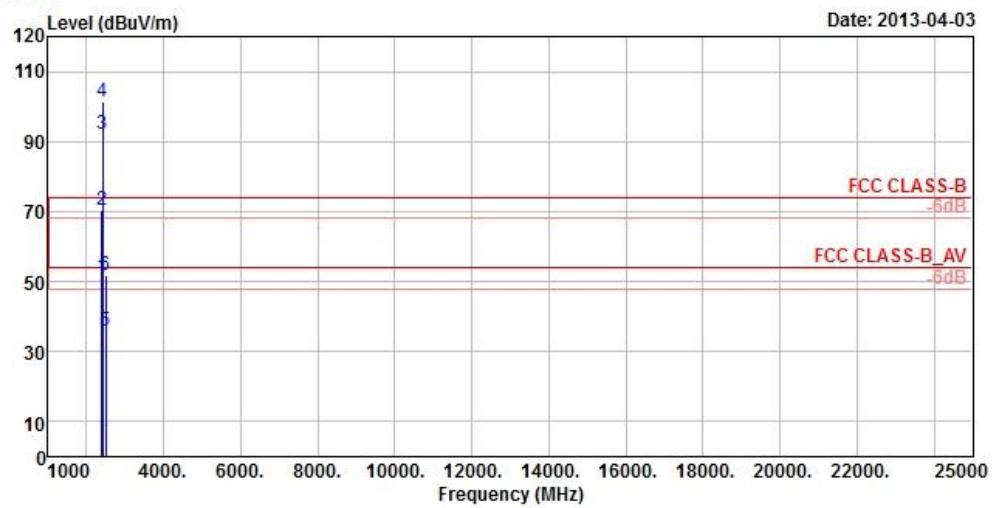
802.11n (20MHz)



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 21



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m HORIZONTAL
Brand/Model: M2M6270T
Remark : 11N HT20 CH01
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Plane : Y
Rate : MCS0
Power : 17

Freq	Level	Read	Limit	OverAntenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit Factor	Loss Factor	dB	dB	cm	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg
1 !	2390.00	51.22	56.96	54.00	-2.78	26.91	4.87	37.52	105 58 Average
2 !	2390.00	70.49	76.23	74.00	-3.51	26.91	4.87	37.52	105 58 Peak
3 pp	2412.00	91.91	97.60			26.96	4.87	37.52	105 58 Average
4 pk	2412.00	101.28	106.97			26.96	4.87	37.52	105 58 Peak
5	2500.00	36.07	41.18	54.00	-17.93	27.20	4.94	37.25	105 58 Average
6	2500.00	51.70	56.81	74.00	-22.30	27.20	4.94	37.25	105 58 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



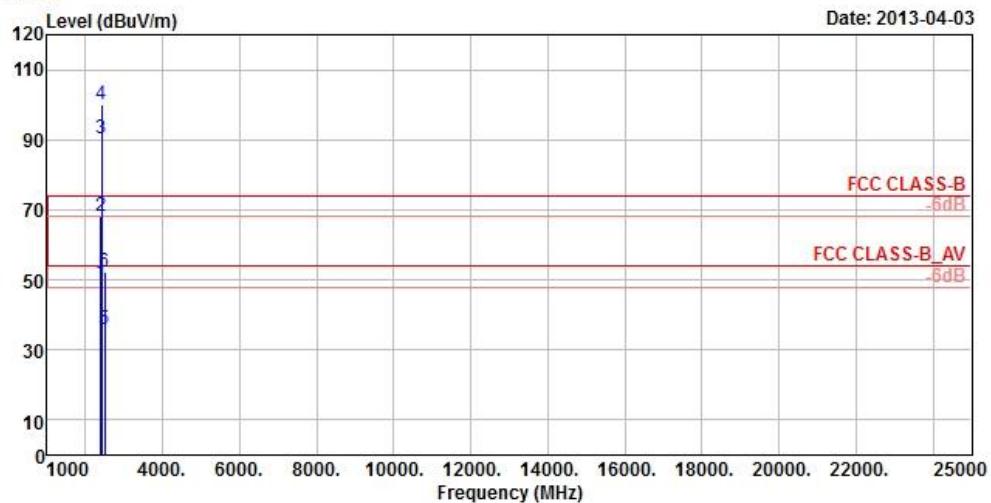
A D T



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 22



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m VERTICAL
Brand/Model: M2M6270T
Remark : 11N HT20 CH01
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : MCS0
Power : 17

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor			
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1 !	2390.00	49.13	54.87	54.00	-4.87	26.91	4.87	37.52	121	209 Average
2 !	2390.00	68.40	74.14	74.00	-5.60	26.91	4.87	37.52	121	209 Peak
3 pp	2412.00	90.42	96.11			26.96	4.87	37.52	121	209 Average
4 pk	2412.00	99.96	105.65			26.96	4.87	37.52	121	209 Peak
5	2490.00	35.80	41.00	54.00	-18.20	27.20	4.92	37.32	121	209 Average
6	2490.00	52.06	57.26	74.00	-21.94	27.20	4.92	37.32	121	209 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



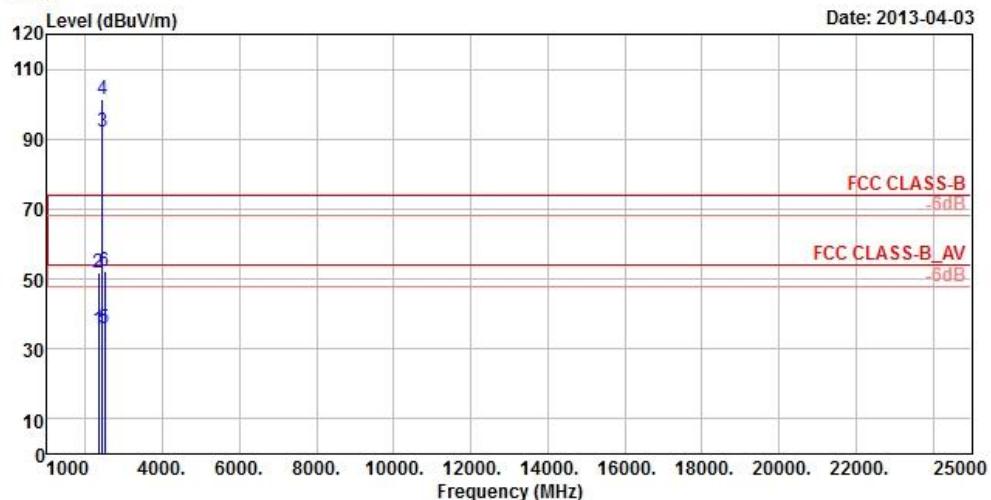
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Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 19



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m HORIZONTAL
Brand/Model: M2M6270T
Remark : 11N HT20 CH06
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : MCS0
Power : 17

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2332.00	35.34	41.30	54.00	-18.66	26.72	4.79	37.47	135	59 Average
2	2332.00	51.70	57.66	74.00	-22.30	26.72	4.79	37.47	135	59 Peak
3 pp	2437.00	92.14	97.65			27.06	4.89	37.46	135	59 Average
4 pk	2437.00	101.56	107.07			27.06	4.89	37.46	135	59 Peak
5	2488.00	35.98	41.18	54.00	-18.02	27.20	4.92	37.32	135	59 Average
6	2488.00	52.05	57.25	74.00	-21.95	27.20	4.92	37.32	135	59 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



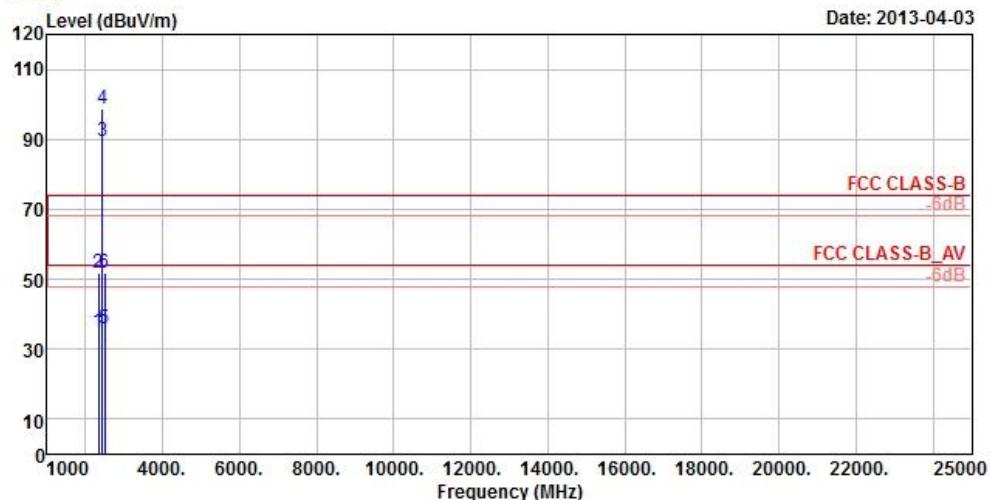
A D T



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 20



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m VERTICAL
Brand/Model: M2M6270T
Remark : 11N HT20 CH06
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : MCS0
Power : 17

Freq	Level	Read	Limit	Over	Antenna	Cable	Preampl	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2338.00	35.10	41.01	54.00	-18.90	26.77	4.79	37.47	118	211 Average
2	2338.00	51.69	57.60	74.00	-22.31	26.77	4.79	37.47	118	211 Peak
3 pp	2437.00	89.63	95.14			27.06	4.89	37.46	118	211 Average
4 pk	2437.00	98.92	104.43			27.06	4.89	37.46	118	211 Peak
5	2494.00	35.91	41.02	54.00	-18.09	27.20	4.94	37.25	118	211 Average
6	2494.00	51.59	56.70	74.00	-22.41	27.20	4.94	37.25	118	211 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



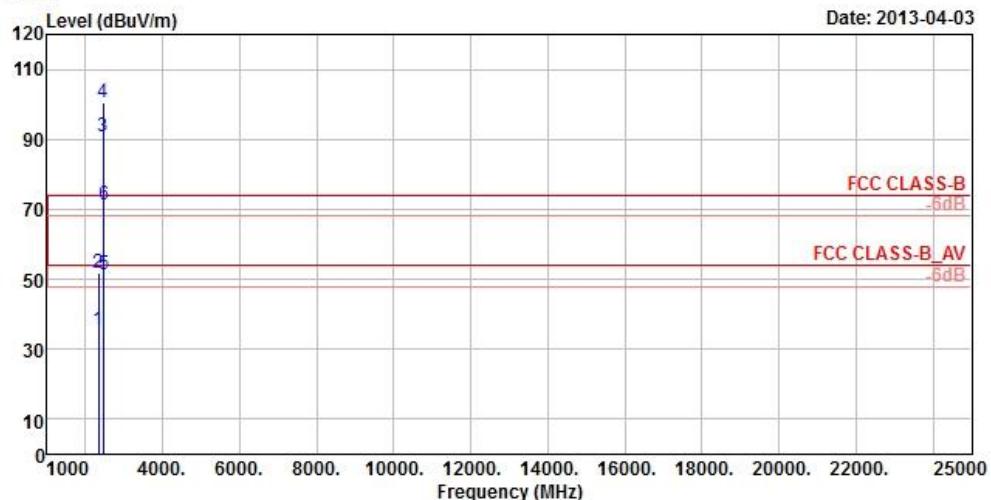
A D T



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 21



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m HORIZONTAL
Brand/Model: M2M6270T
Remark : 11N_HT20 CH11
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : MCS0
Power : 17

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2332.00	35.22	41.18	54.00	-18.78	26.72	4.79	37.47	105	58 Average
2	2332.00	51.62	57.58	74.00	-22.38	26.72	4.79	37.47	105	58 Peak
3 pp	2462.00	90.95	96.33			27.10	4.91	37.39	105	58 Average
4 pk	2462.00	100.73	106.11			27.10	4.91	37.39	105	58 Peak
5 !	2483.50	51.27	56.52	54.00	-2.73	27.15	4.92	37.32	105	58 Average
6 !	2483.50	71.18	76.43	74.00	-2.82	27.15	4.92	37.32	105	58 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



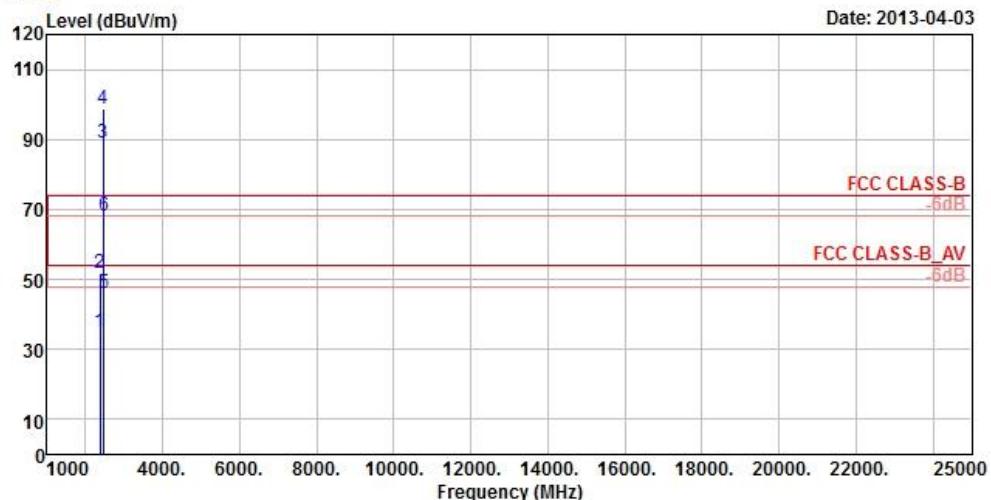
A D T



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 22



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m VERTICAL
Brand/Model: M2M6270T
Remark : 11N_HT20 CH11
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%
Rate : MCS0
Power : 17

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		Level	Line	Limit	Factor	Loss	Factor	cm	deg	
MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	dB	cm	deg	
1	2372.00	35.19	40.98	54.00	-18.81	26.86	4.85	37.50	124	210 Average
2	2372.00	51.61	57.40	74.00	-22.39	26.86	4.85	37.50	124	210 Peak
3 pp	2462.00	89.02	94.40			27.10	4.91	37.39	124	210 Average
4 pk	2462.00	98.74	104.12			27.10	4.91	37.39	124	210 Peak
5	2484.00	46.09	51.34	54.00	-7.91	27.15	4.92	37.32	124	210 Average
6 !	2484.00	68.25	73.50	74.00	-5.75	27.15	4.92	37.32	124	210 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



A D T

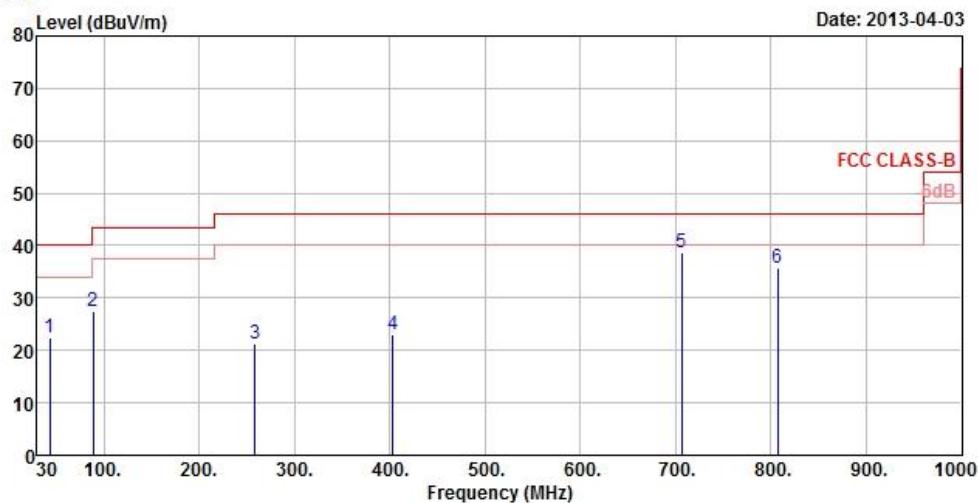
BELOW 1GHz WORST-CASE DATA: 802.11g



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m HORIZONTAL
Brand/Model: M2M6270T
Remark : WIFI LF
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%

Freq	Level	Read	Limit	Over	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
		MHz	dBuV/m	dBuV	Line	Limit Factor	dB/m	dB	cm	
1	43.23	22.42	39.23	40.00	-17.58	13.59	0.71	31.11	110	254 Peak
2	89.13	27.44	50.05	43.50	-16.06	8.28	1.02	31.91	103	146 Peak
3	258.96	21.31	39.57	46.00	-24.69	11.74	1.86	31.86	112	305 Peak
4	402.90	23.09	37.36	46.00	-22.91	15.39	2.43	32.09	104	294 Peak
5 pp	706.00	38.74	46.15	46.00	-7.26	20.90	3.45	31.76	115	263 Peak
6	806.80	35.65	41.06	46.00	-10.35	22.32	3.71	31.44	102	151 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



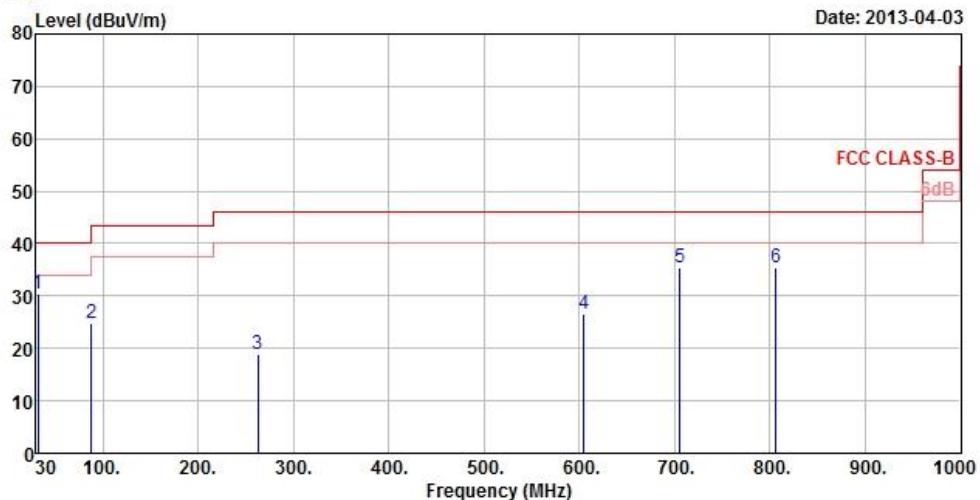
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Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

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Data: 6



Site : 966 Chamber 5
Condition : FCC CLASS-B 3m VERTICAL
Brand/Model: M2M6270T
Remark : WIFI LF
Tested by : Johnson Liao
Temprature : 25°C
Humidity : 65%

Freq	Read Level	Limit Line	OverAntenna		Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
			MHz	dBuV/m	dBuV	dBuV/m			
1 pp	31.89	30.39	48.62	40.00	-9.61	12.30	0.58	31.11	124 218 Peak
2	88.32	24.78	47.37	43.50	-18.72	8.27	1.01	31.87	107 85 Peak
3	262.47	18.88	37.05	46.00	-27.12	11.85	1.88	31.90	110 137 Peak
4	604.50	26.44	35.86	46.00	-19.56	19.66	3.10	32.18	113 63 Peak
5	705.30	35.36	42.78	46.00	-10.64	20.89	3.45	31.76	104 197 Peak
6	806.10	35.55	40.98	46.00	-10.45	22.30	3.71	31.44	103 313 Peak

NOTE: Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor



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4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

NOTE:

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 09, 2012	Nov. 08, 2013
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 28, 2012	Dec. 27, 2013
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 21, 2012	Dec. 20, 2013
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Jul. 06, 2012	Jul. 05, 2013
Software ADT	BV ADT_Cond_V7.3.7.3	NA	NA	NA

NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-2047.



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4.2.3 TEST PROCEDURES

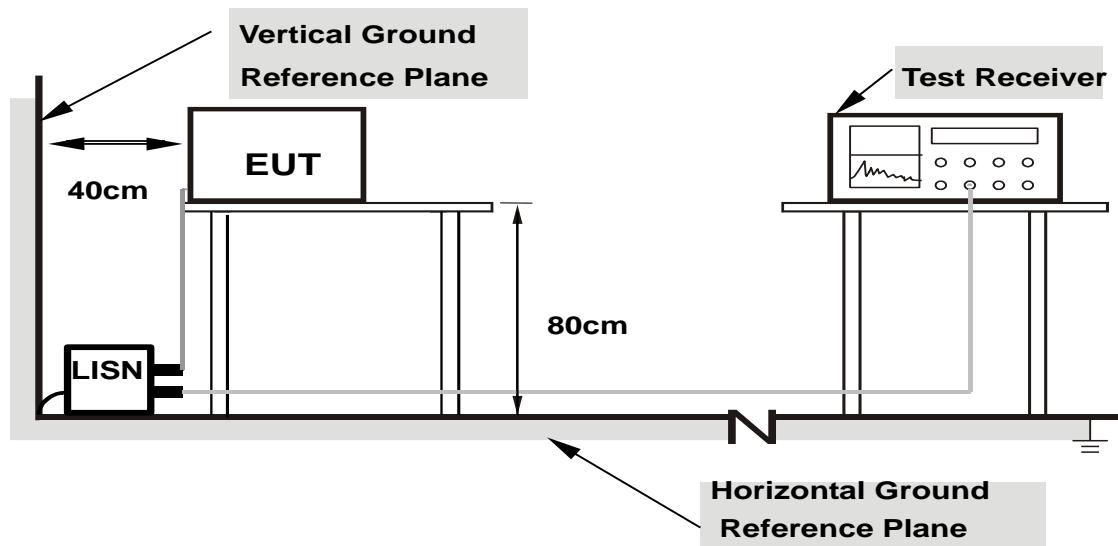
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



Note:

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

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

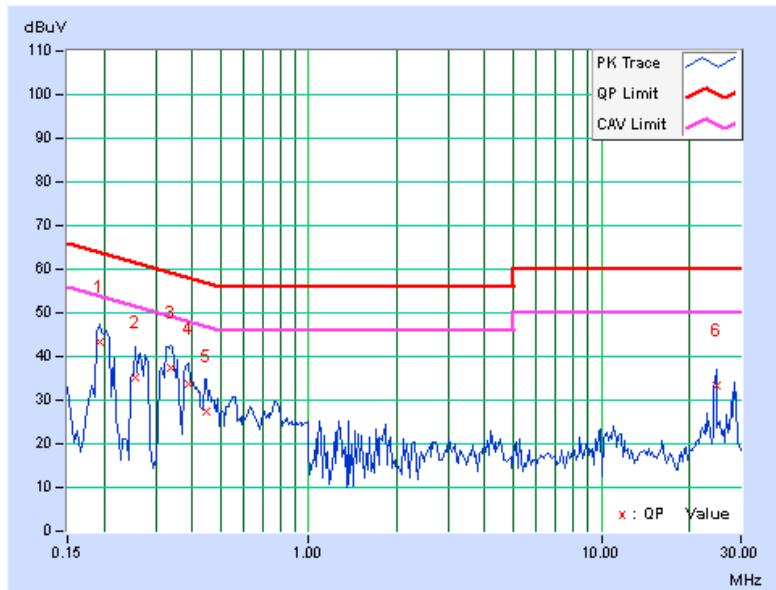
CONDUCTED WORST-CASE DATA : 802.11g

PHASE	Line 1		6dB BANDWIDTH		9kHz	
-------	--------	--	---------------	--	------	--

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]	Q.P.	[dB (uV)]	Q.P.	AV.	Q.P.	AV.	Q.P.
1	0.19297	0.20	43.11	25.15	43.31	25.35	63.91	53.91	-20.60	-28.56
2	0.25547	0.21	35.13	15.54	35.34	15.75	61.58	51.58	-26.24	-35.83
3	0.33750	0.21	37.38	21.81	37.59	22.02	59.26	49.26	-21.67	-27.24
4	0.38828	0.22	33.47	21.32	33.69	21.54	58.10	48.10	-24.41	-26.56
5	0.44688	0.23	27.21	14.76	27.44	14.99	56.93	46.93	-29.50	-31.95
6	24.76817	0.69	32.71	17.64	33.40	18.33	60.00	50.00	-26.60	-31.67

REMARKS:

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

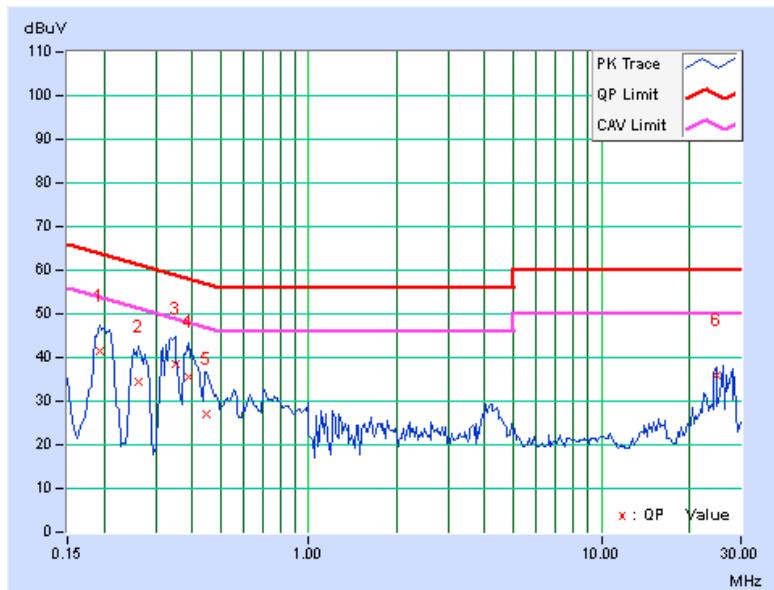


PHASE	Line 2	6dB BANDWIDTH	9kHz
-------	--------	---------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19297	0.19	41.41	30.50	41.60	30.69	63.91	53.91	-22.31	-23.22
2	0.26328	0.22	34.08	23.07	34.30	23.29	61.33	51.33	-27.03	-28.04
3	0.34922	0.25	38.38	24.00	38.63	24.25	58.98	48.98	-20.35	-24.73
4	0.38828	0.27	35.36	25.78	35.63	26.05	58.10	48.10	-22.48	-22.06
5	0.44688	0.27	26.90	11.57	27.17	11.84	56.93	46.93	-29.76	-35.09
6	24.76953	0.78	35.04	26.94	35.82	27.72	60.00	50.00	-24.18	-22.28

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.

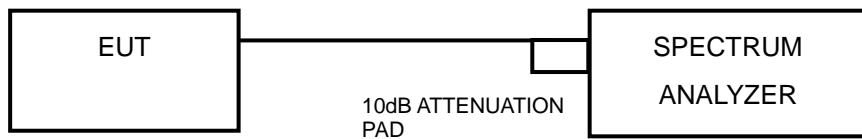


4.3 6dB BANDWIDTH MEASUREMENT

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) = approximately 1% of the emission bandwidth
- 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.



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4.3.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	10.12	0.5	PASS
6	2437	10.13	0.5	PASS
11	2462	10.15	0.5	PASS

802.11g

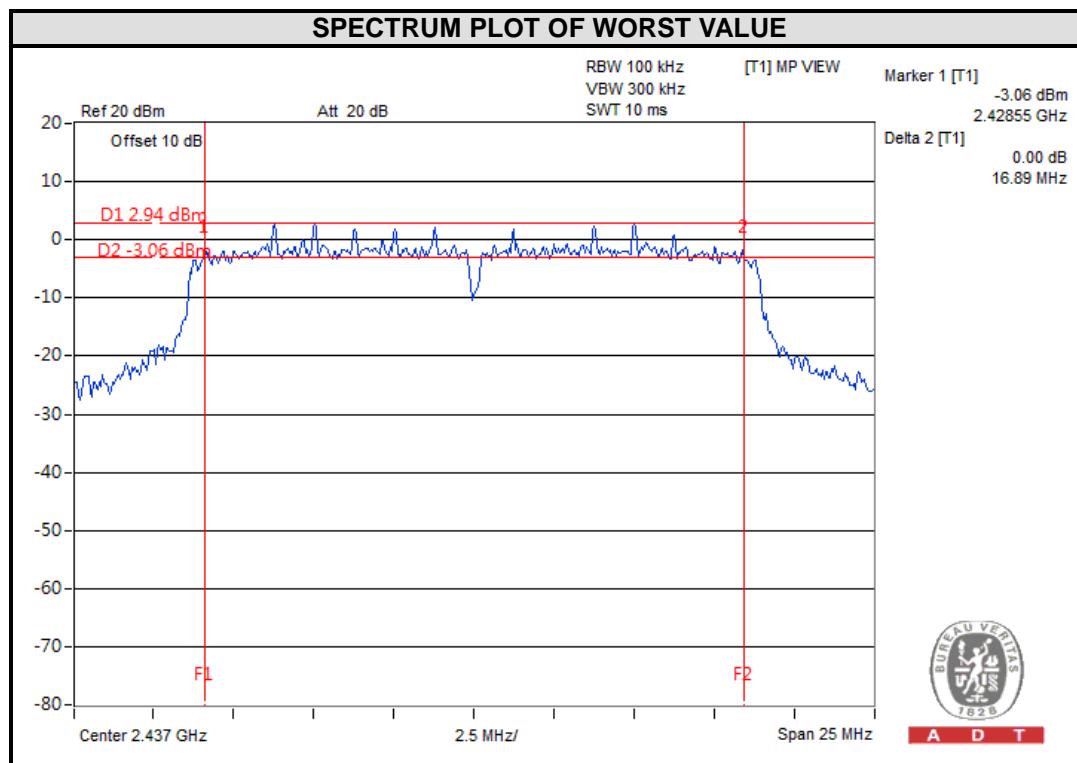
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.32	0.5	PASS
6	2437	16.32	0.5	PASS
11	2462	16.08	0.5	PASS



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802.11n (20MHz)

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.84	0.5	PASS
6	2437	16.89	0.5	PASS
11	2462	16.88	0.5	PASS

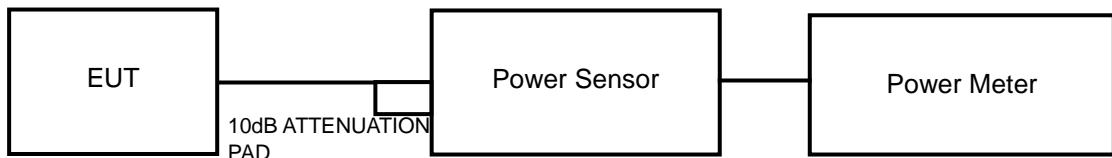


4.4 CONDUCTED OUTPUT POWER

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

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.



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4.4.7 TEST RESULTS

802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	52.000	17.16	30	PASS
6	2437	58.210	17.65	30	PASS
11	2462	54.576	17.37	30	PASS

802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	179.061	22.53	30	PASS
6	2437	165.959	22.2	30	PASS
11	2462	155.955	21.93	30	PASS

802.11n (20MHz)

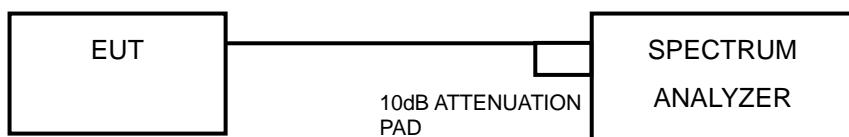
CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	131.826	21.2	30	PASS
6	2437	131.522	21.19	30	PASS
11	2462	119.124	20.76	30	PASS

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 the RBW = 3 kHz, VBW = 10 kHz, Detector = peak.
- b. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
- c. Use the peak marker function to determine the maximum power density level in the EBW.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



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4.5.7 TEST RESULTS

802.11b

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.33	8	PASS
6	2437	-11.09	8	PASS
11	2462	-11.81	8	PASS

802.11g

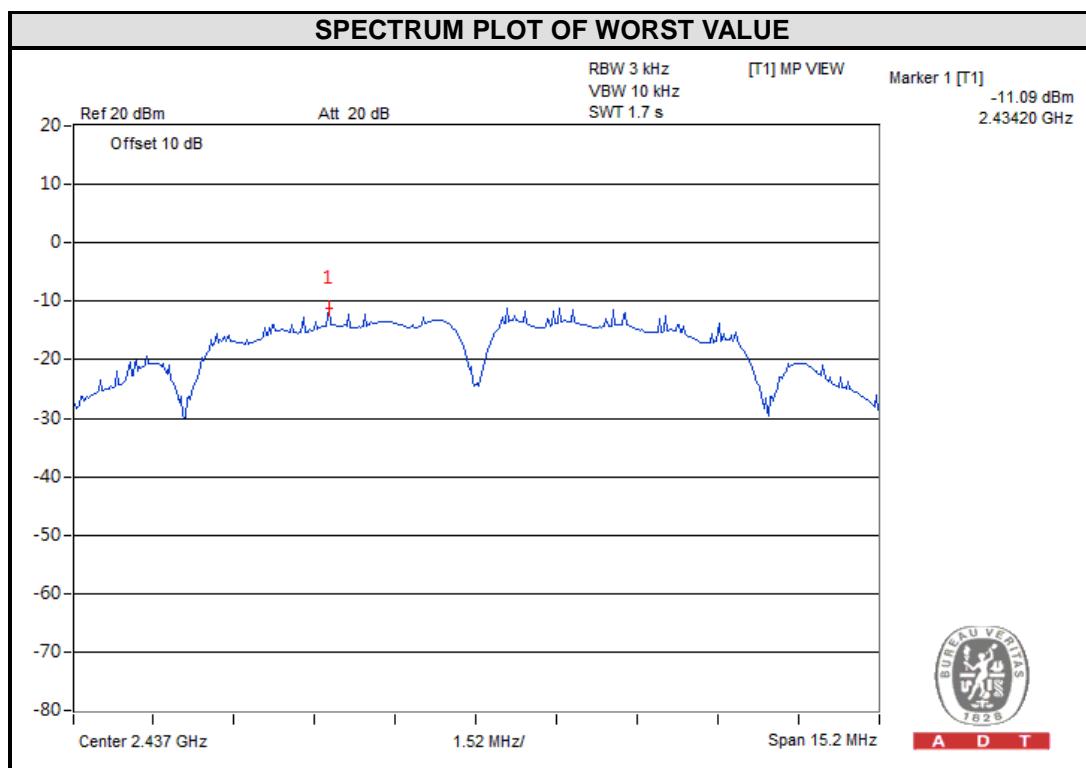
Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-11.48	8	PASS
6	2437	-11.39	8	PASS
11	2462	-12.45	8	PASS



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802.11n (20MHz)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2412	-12.87	8	PASS
6	2437	-12.51	8	PASS
11	2462	-13.57	8	PASS





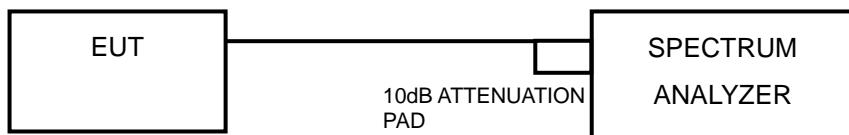
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4.6 CONDUCTED OUT OF BAND EMISSION MEASUREMENT

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 ≥ 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.



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MEASUREMENT PROCEDURE OOB

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.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.7 TEST RESULTS

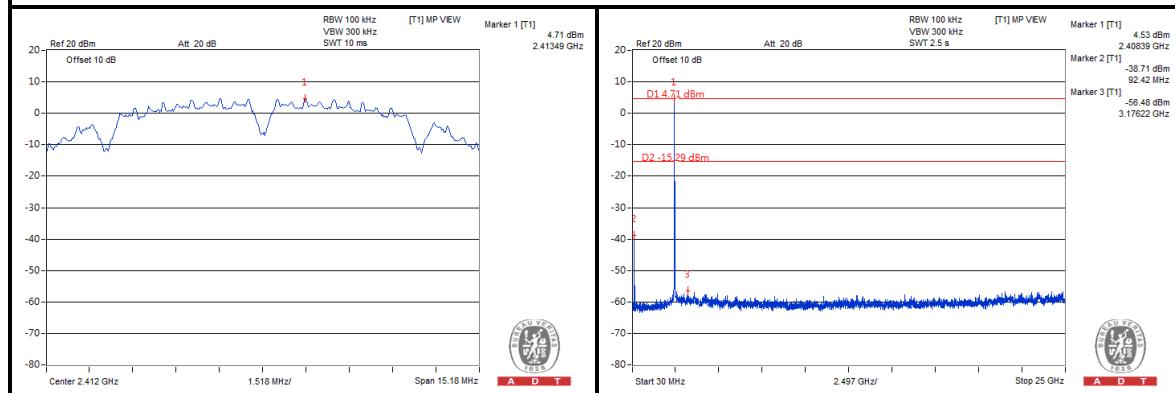
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.



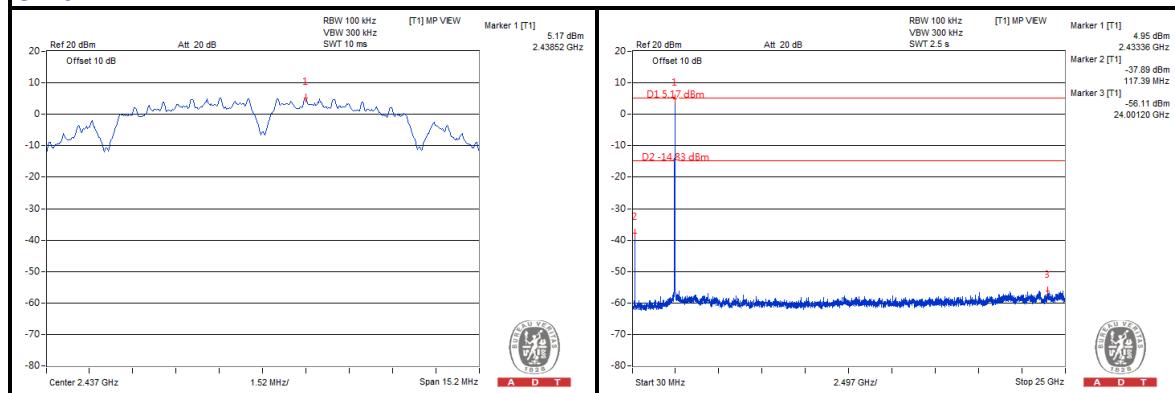
A D T

802.11b

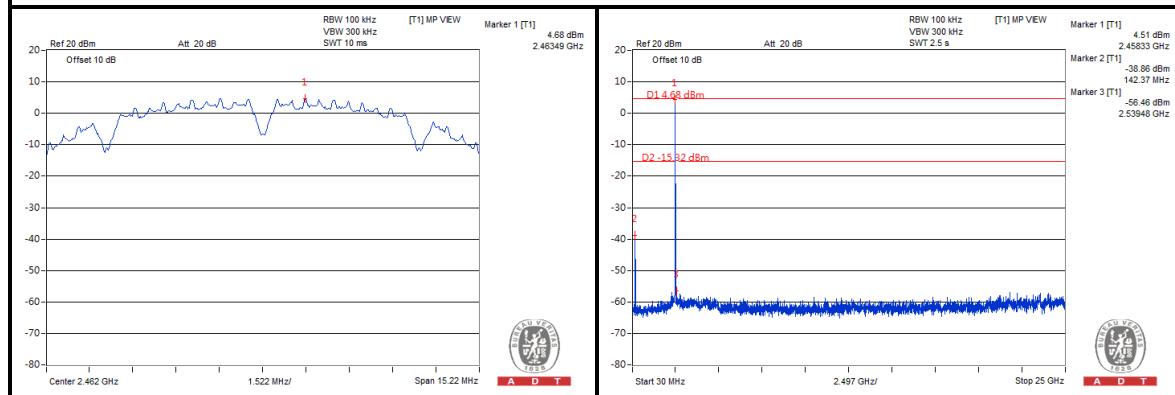
CH 1



CH 6



CH 11

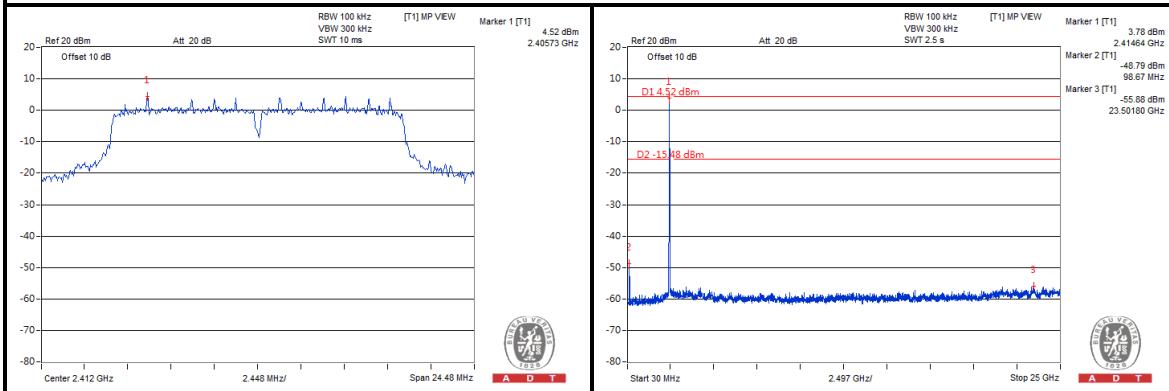




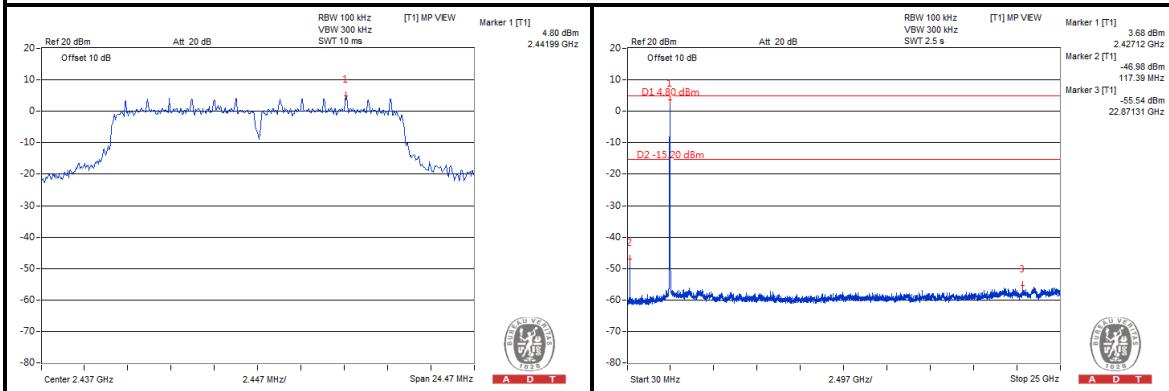
A D T

802.11g

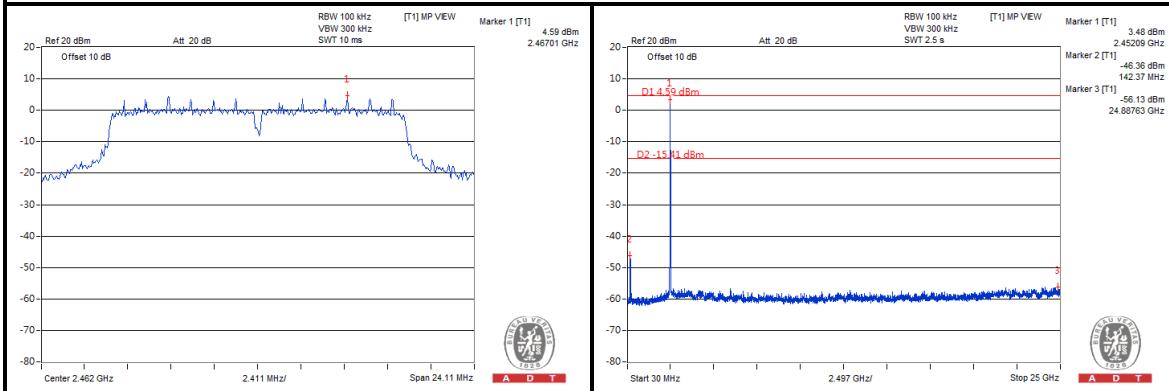
CH 1



CH 6



CH 11

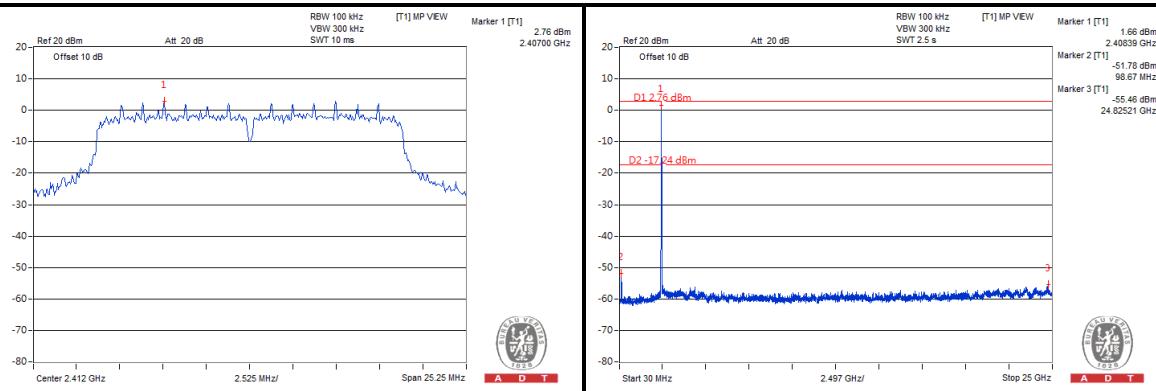




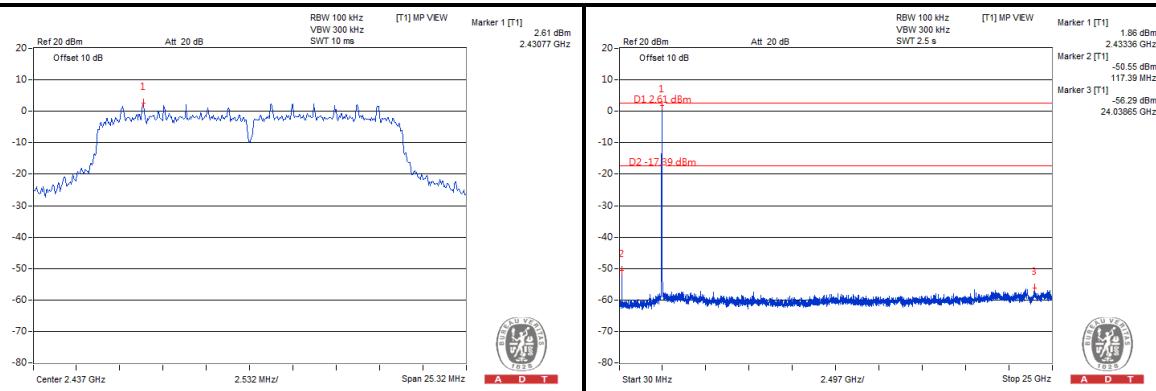
A D T

802.11n (20MHz)

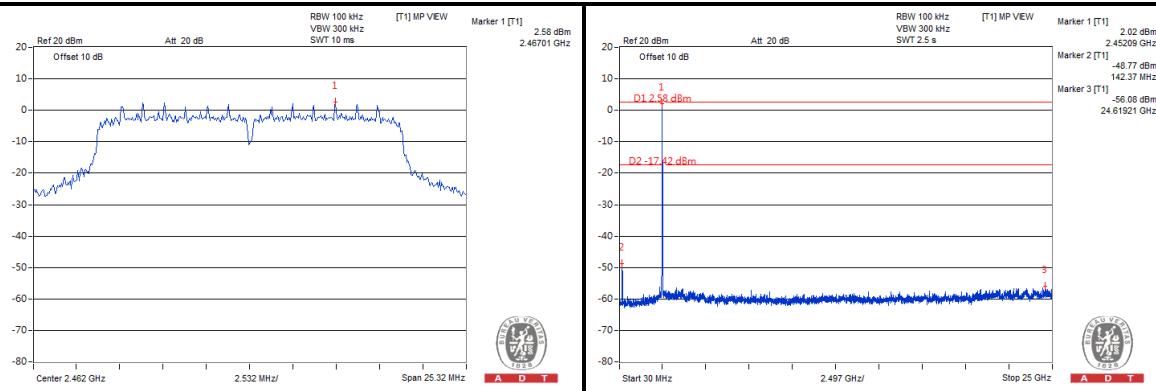
CH 1



CH 6



CH 11





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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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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: 886-2-26051924

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.



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

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

---END---