FCC Test Report

Report No.:	RF161208E07
FCC ID:	ZMYDSL2401HN2E1C
Test Model:	DSL-2401HN2-E1C
Received Date:	Dec. 08, 2016
Test Date:	Dec. 19 to 30, 2016
Issued Date:	Mar. 24, 2017
Applicant:	MitraStar Technology Corporation
Address:	1-1# Minshan Road,Wuxi New Wu District Jiangsu, China
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (1):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

Testing Laboratory
2022

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Release Control Record

Issue No.	Description	Date Issued
RF161208E07	Original release.	Mar. 24, 2017

1 Certificate of Conformity

Product:	VDSL VOIP
Brand:	MitraStar
Test Model:	DSL-2401HN2-E1C
Sample Status:	ENGINEERING SAMPLE
Applicant:	MitraStar Technology Corporation
Test Date:	Dec. 19 to 30, 2016
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) ANSI C63.10: 2013

The above equipment 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 : Cindy Hsin , **Date:** Mar. 24, 2017

Cindy Hsin / Specialist

Approved by : , **Date:** Mar. 24, 2017

May Chen / Manager

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 -8.64dB at 0.62656MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.4dB at 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	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	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.83 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.34 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.41 dB
	6GHz ~ 18GHz	3.49 dB
	18GHz ~ 40GHz	3.30 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	VDSL VOIP
Brand	MitraStar
Test Model	DSL-2401HN2-E1C
Sample Status	ENGINEERING SAMPLE
Power Supply Rating	DC12V from power adapter
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 150Mbps
Operating Frequency	2.412 ~ 2.462GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7
Output Power	575.232 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x1 Splitter x 1 (Mode name : JL02-GJ1-ADSL-600)
Data Cable Supplied	Ethernet cable (unshielded, 1.5m) x 1 DSL cable (unshielded, 1.5m) x 1

Note:

1. The EUT must be supplied with a power adapter and following different models could be chosen:

No	Brand	Model No.	Spec.
1	FRECOM	F12L30-120100SPAU	Input: 100-240Vac, 50/60Hz, 0.3A Output: 12Vdc, 1A DC output cable (Unshielded, 1500±30mm)
2	MOSO	MSP-C1000IC12.0-12B-US	Input: 100-240Vac, 50/60Hz, 0.5A Output: 12Vdc, 1A DC output cable (Unshielded, 1500+50mm)
For Spurious Emissions test, the EUT was pre-tested with adapter 1 & 2, the worst case was found in adapter 1. Therefore only the test data of the adapter 1 was recorded in this report.			

2. The antennas provided to the EUT, please refer to the following table:

Antenna No.	Chain No.	Antenna Gain(dBi)	Frequency range (GHz ~ GHz)	Antenna Type	Connecter Type	Cable Length (mm)
1	Chain 0	2.46	2.4~2.4835	Dipole	NA	177.7
2	Chain 1	2.36	2.4~2.4835		NA	42.7

3. The EUT incorporates a MIMO function.

MODULATION MODE	DATA RATE (MCS)	TX & RX CONFIGURATION	
802.11b	1 ~ 11Mbps	1TX Fixed Chain 0	1RX
802.11g	6 ~ 54Mbps	1TX Fixed Chain 0	1RX
802.11n (HT20)	MCS 0~7	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX

4. The power setting are list as below:

Modulation Mode	Frequency (MHz)	Power Setting
802.11b	2412	20
	2437	20
	2462	20
802.11g	2412	20
	2437	20
	2462	20
802.11n(HT20)	2412	20
	2437	20
	2462	1E
802.11n(HT40)	2422	17
	2437	1F
	2452	19

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

3.2 Description of Test Modes

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		

7 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
1	√	√	√	√	Adapter 1
2	-	-	√	-	Adapter 2

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

E: 1.
The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **Y-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
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

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)
802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

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)
802.11n (HT20)	1 to 11	6	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
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

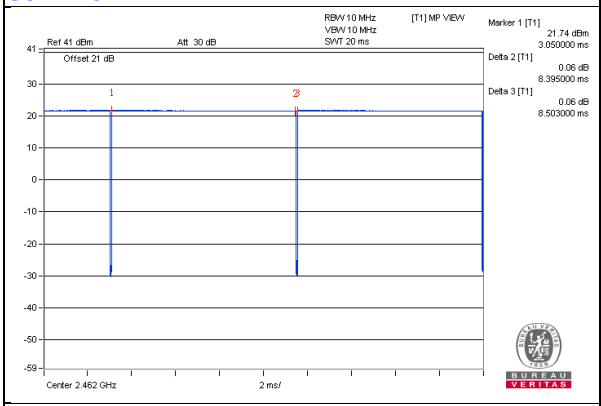
Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	24deg. C, 69%RH	120Vac, 60Hz	Andy Ho
RE<1G	25deg. C, 69%RH	120Vac, 60Hz	Andy Ho
PLC	25deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	24deg. C, 62%RH	120Vac, 60Hz	Anderson Chen

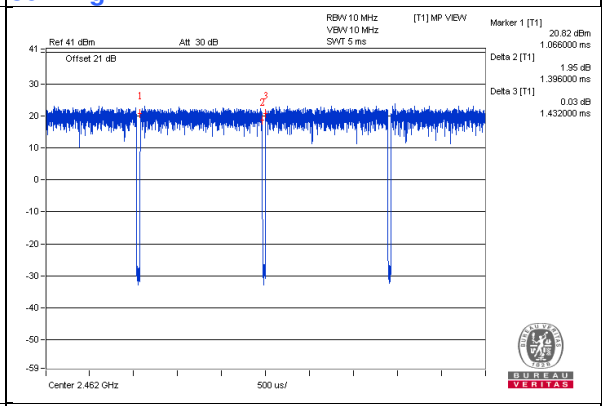
3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.
Duty cycle of test signal is < 98 %, duty factor shall be considered
802.11b: Duty cycle = 8.395/8.503 = 0.987
802.11g: Duty cycle = 1.396/1.432 = 0.975, Duty factor = 10 * log(1/0.975) = 0.11
802.11n (HT20): Duty cycle = 1.305/1.387 = 0.941, Duty factor = 10 * log(1/0.941) = 0.26
802.11n (HT40): Duty cycle = 0.648/0.747 = 0.867, Duty factor = 10 * log(1/0.867) = 0.62

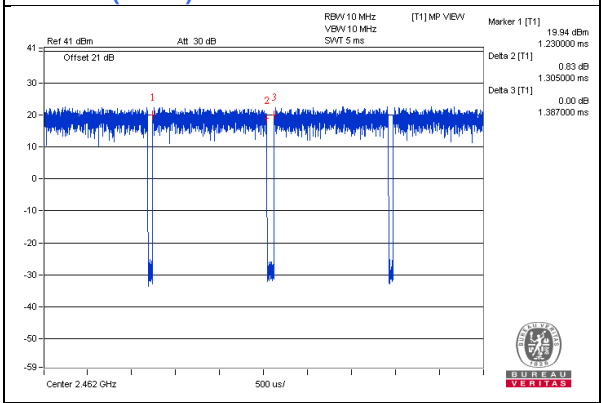
802.11b



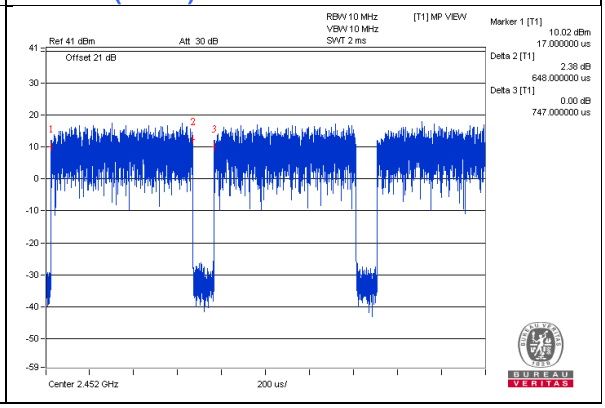
802.11g



802.11n (HT20)



802.11n (HT40)



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.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab

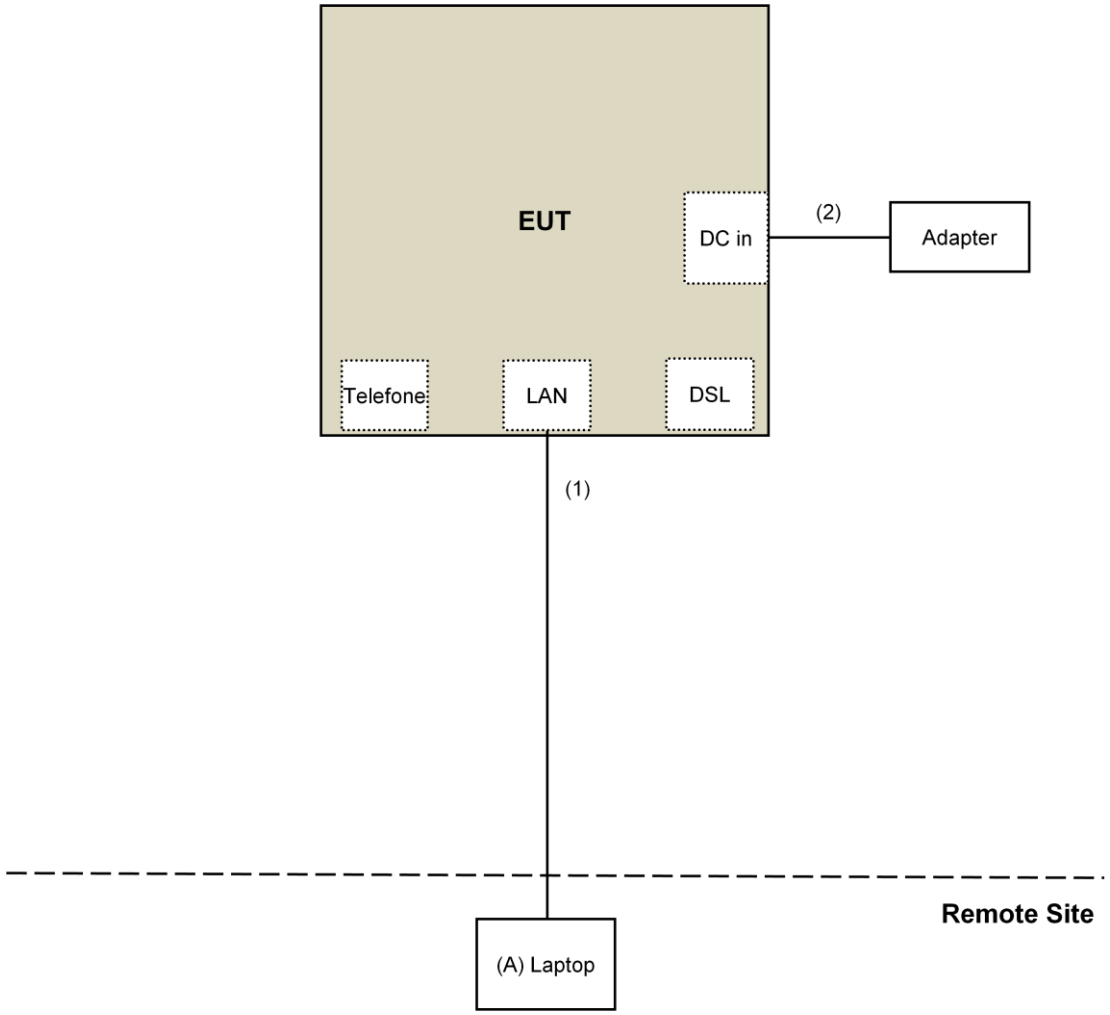
Note:

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.	RJ-45 Cable	1	10	No	0	Provided by Lab
2.	DC Cable	1	1.5	No	0	Supplied by client

Note: The core(s) is(are) originally attached to the cable(s).

3.4.1 Configuration of System under Test



Note: The test configuration was defined by the applicant requirement.

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 v03r05
KDB 662911 D01 Multiple Transmitter Output v02r01
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 Keysight	N9038A	MY54450088	July 20, 2016	July 19, 2017
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 18, 2016	Jan. 17, 2017
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 10, 2016	Nov. 09, 2017
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Jan. 04, 2016	Jan. 03, 2017
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 02, 2016	Apr. 01, 2017
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 05, 2016	Oct. 04, 2017
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Jan. 19, 2016	Jan. 18, 2017
Pre-Amplifier Agilent	8449B	3008A01922	Sep. 18, 2016	Sep. 17, 2017
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	150318 150323 150324	Mar. 30, 2016	Mar. 29, 2017
Pre-Amplifier EMCI	EMC184045	980143	Jan. 15, 2016	Jan. 14, 2017
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Jan. 08, 2016	Jan. 07, 2017
RF Cable	SUCOFLEX 102	36432/2 36441/2	Jan. 16, 2016	Jan. 15, 2017
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208410	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP02	NA	NA
Spectrum Analyzer R&S	FSV40	100964	June 28, 2016	June 27, 2017
Power meter Anritsu	ML2495A	0824006	May 26, 2016	May 25, 2017
Power sensor Anritsu	MA2411B	0738172	May 26, 2016	May 25, 2017

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 above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 4.
4. The FCC Site Registration No. is 292998
5. The CANADA Site Registration No. is 20331-2
6 Loop antenna was used for all emissions below 30 MHz.
7. Tested Date: Dec. 19 to 30, 2016

4.1.3 Test Procedures

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Both X and Y axes of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

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

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 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:

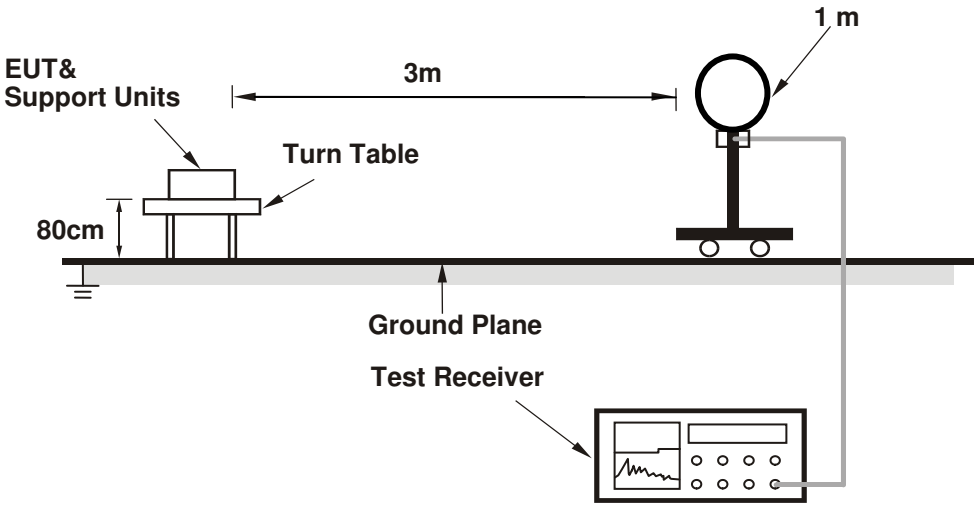
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) 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

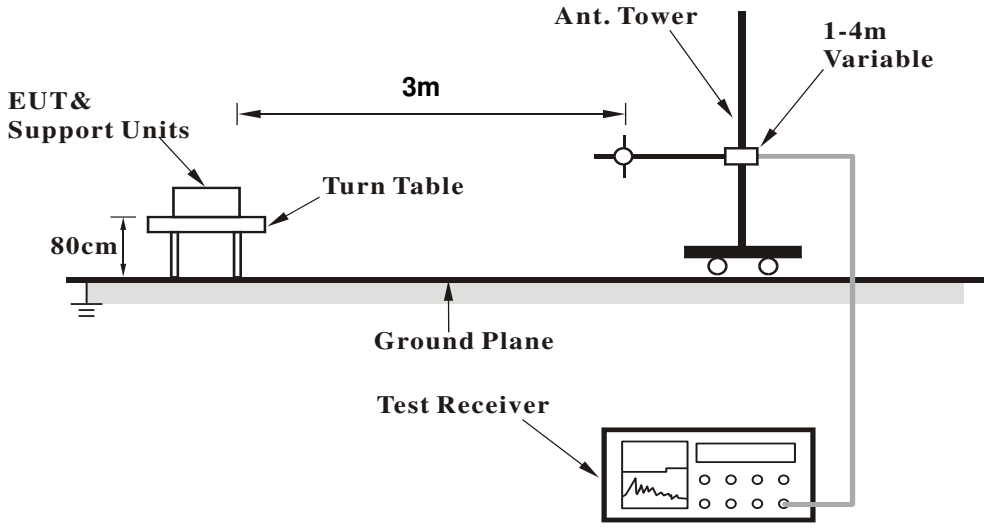
No deviation.

4.1.5 Test Setup

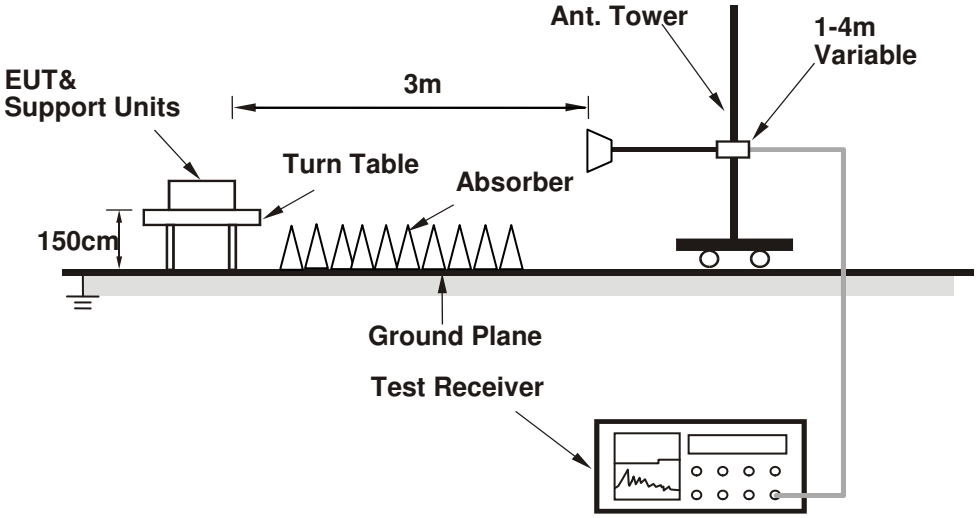
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

a. Connected the EUT with the Laptop which is placed on remote site.
b. Contorlling software (QATool Dbg.exe , V0.0.0.71) has been activated to set the EUT on specific status.

4.1.7 Test Results

Above 1GHz Data:

802.11b

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

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	48.5 PK	74.0	-25.5	2.93 H	43	52.2	-3.7
2	2390.00	39.4 AV	54.0	-14.6	2.93 H	43	43.1	-3.7
3	*2412.00	96.5 PK			2.93 H	43	100.2	-3.7
4	*2412.00	93.9 AV			2.93 H	43	97.6	-3.7
5	4824.00	46.3 PK	74.0	-27.7	2.25 H	217	44.1	2.2
6	4824.00	42.5 AV	54.0	-11.5	2.25 H	217	40.3	2.2
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	54.6 PK	74.0	-19.4	1.20 V	338	58.3	-3.7
2	2390.00	44.2 AV	54.0	-9.8	1.20 V	338	47.9	-3.7
3	*2412.00	108.9 PK			1.20 V	338	112.6	-3.7
4	*2412.00	106.4 AV			1.20 V	338	110.1	-3.7
5	4824.00	45.6 PK	74.0	-28.4	1.16 V	212	43.4	2.2
6	4824.00	41.2 AV	54.0	-12.8	1.16 V	212	39.0	2.2

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	2390.00	49.0 PK	74.0	-25.0	2.88 H	38	52.7	-3.7
2	2390.00	38.3 AV	54.0	-15.7	2.88 H	38	42.0	-3.7
3	*2437.00	96.1 PK			2.88 H	38	99.7	-3.6
4	*2437.00	93.6 AV			2.88 H	38	97.2	-3.6
5	2483.50	46.6 PK	74.0	-27.4	2.88 H	38	50.2	-3.6
6	2483.50	40.3 AV	54.0	-13.7	2.88 H	38	43.9	-3.6
7	4874.00	46.9 PK	74.0	-27.1	2.24 H	225	44.5	2.4
8	4874.00	42.9 AV	54.0	-11.1	2.24 H	225	40.5	2.4
9	7311.00	48.7 PK	74.0	-25.3	1.59 H	210	40.0	8.7
10	7311.00	35.7 AV	54.0	-18.3	1.59 H	210	27.0	8.7
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	55.1 PK	74.0	-18.9	1.40 V	336	58.8	-3.7
2	2390.00	45.4 AV	54.0	-8.6	1.40 V	336	49.1	-3.7
3	*2437.00	108.5 PK			1.40 V	336	112.1	-3.6
4	*2437.00	106.1 AV			1.40 V	336	109.7	-3.6
5	2483.50	52.7 PK	74.0	-21.3	1.40 V	336	56.3	-3.6
6	2483.50	42.3 AV	54.0	-11.7	1.40 V	336	45.9	-3.6
7	4874.00	47.8 PK	74.0	-26.2	1.96 V	209	45.4	2.4
8	4874.00	44.2 AV	54.0	-9.8	1.96 V	209	41.8	2.4
9	7311.00	47.5 PK	74.0	-26.5	1.51 V	224	38.8	8.7
10	7311.00	35.2 AV	54.0	-18.8	1.51 V	224	26.5	8.7

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	96.5 PK			2.92 H	31	100.0	-3.5
2	*2462.00	93.9 AV			2.92 H	31	97.4	-3.5
3	2483.50	47.4 PK	74.0	-26.6	2.92 H	31	51.0	-3.6
4	2483.50	35.0 AV	54.0	-19.0	2.92 H	31	38.6	-3.6
5	4924.00	47.4 PK	74.0	-26.6	2.22 H	229	44.9	2.5
6	4924.00	43.2 AV	54.0	-10.8	2.22 H	229	40.7	2.5
7	7386.00	48.1 PK	74.0	-25.9	1.53 H	212	39.0	9.1
8	7386.00	35.3 AV	54.0	-18.7	1.53 H	212	26.2	9.1
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	108.9 PK			1.14 V	336	112.4	-3.5
2	*2462.00	106.4 AV			1.14 V	336	109.9	-3.5
3	2483.50	53.5 PK	74.0	-20.5	1.14 V	336	57.1	-3.6
4	2483.50	43.1 AV	54.0	-10.9	1.14 V	336	46.7	-3.6
5	4924.00	49.4 PK	74.0	-24.6	2.10 V	210	46.9	2.5
6	4924.00	46.1 AV	54.0	-7.9	2.10 V	210	43.6	2.5
7	7386.00	47.8 PK	74.0	-26.2	1.50 V	221	38.7	9.1
8	7386.00	35.2 AV	54.0	-18.8	1.50 V	221	26.1	9.1

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	58.2 PK	74.0	-15.8	2.92 H	26	61.9	-3.7
2	2390.00	41.3 AV	54.0	-12.7	2.92 H	26	45.0	-3.7
3	*2412.00	98.0 PK			2.92 H	26	101.7	-3.7
4	*2412.00	87.3 AV			2.92 H	26	91.0	-3.7
5	4824.00	47.7 PK	74.0	-26.3	2.24 H	222	45.5	2.2
6	4824.00	43.7 AV	54.0	-10.3	2.24 H	222	41.5	2.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	64.3 PK	74.0	-9.7	1.14 V	337	68.0	-3.7
2	2390.00	49.4 AV	54.0	-4.6	1.14 V	337	53.1	-3.7
3	*2412.00	110.4 PK			1.14 V	337	114.1	-3.7
4	*2412.00	99.8 AV			1.14 V	337	103.5	-3.7
5	4824.00	49.7 PK	74.0	-24.3	2.07 V	223	47.5	2.2
6	4824.00	46.2 AV	54.0	-7.8	2.07 V	223	44.0	2.2

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	2390.00	51.4 PK	74.0	-22.6	2.91 H	29	55.1	-3.7
2	2390.00	38.4 AV	54.0	-15.6	2.91 H	29	42.1	-3.7
3	*2437.00	101.9 PK			2.91 H	29	105.5	-3.6
4	*2437.00	93.0 AV			2.91 H	29	96.6	-3.6
5	2483.50	50.3 PK	74.0	-23.7	2.91 H	29	53.9	-3.6
6	2483.50	40.1 AV	54.0	-13.9	2.91 H	29	43.7	-3.6
7	4874.00	47.3 PK	74.0	-26.7	2.21 H	228	44.9	2.4
8	4874.00	42.9 AV	54.0	-11.1	2.21 H	228	40.5	2.4
9	7311.00	48.5 PK	74.0	-25.5	1.53 H	198	39.8	8.7
10	7311.00	35.6 AV	54.0	-18.4	1.53 H	198	26.9	8.7
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	57.5 PK	74.0	-16.5	1.41 V	333	61.2	-3.7
2	2390.00	43.9 AV	54.0	-10.1	1.41 V	333	47.6	-3.7
3	*2437.00	110.0 PK			1.41 V	333	113.6	-3.6
4	*2437.00	99.1 AV			1.41 V	333	102.7	-3.6
5	2483.50	55.4 PK	74.0	-18.6	1.41 V	333	59.0	-3.6
6	2483.50	42.4 AV	54.0	-11.6	1.41 V	333	46.0	-3.6
7	4874.00	49.1 PK	74.0	-24.9	2.13 V	215	46.7	2.4
8	4874.00	45.6 AV	54.0	-8.4	2.13 V	215	43.2	2.4
9	7311.00	47.8 PK	74.0	-26.2	1.45 V	233	39.1	8.7
10	7311.00	35.0 AV	54.0	-19.0	1.45 V	233	26.3	8.7

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	97.7 PK			2.87 H	17	101.2	-3.5
2	*2462.00	87.2 AV			2.87 H	17	90.7	-3.5
3	2483.50	57.4 PK	74.0	-16.6	2.87 H	17	61.0	-3.6
4	2483.50	40.6 AV	54.0	-13.4	2.87 H	17	44.2	-3.6
5	4924.00	47.8 PK	74.0	-26.2	2.23 H	244	45.3	2.5
6	4924.00	43.4 AV	54.0	-10.6	2.23 H	244	40.9	2.5
7	7386.00	48.6 PK	74.0	-25.4	1.59 H	212	39.5	9.1
8	7386.00	35.5 AV	54.0	-18.5	1.59 H	212	26.4	9.1
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	110.1 PK			1.11 V	332	113.6	-3.5
2	*2462.00	99.7 AV			1.11 V	332	103.2	-3.5
3	2483.50	63.5 PK	74.0	-10.5	1.11 V	332	67.1	-3.6
4	2483.50	48.7 AV	54.0	-5.3	1.11 V	332	52.3	-3.6
5	4924.00	49.1 PK	74.0	-24.9	2.09 V	226	46.6	2.5
6	4924.00	45.4 AV	54.0	-8.6	2.09 V	226	42.9	2.5
7	7386.00	47.7 PK	74.0	-26.3	1.46 V	231	38.6	9.1
8	7386.00	34.9 AV	54.0	-19.1	1.46 V	231	25.8	9.1

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	61.9 PK	74.0	-12.1	2.89 H	28	65.6	-3.7
2	2390.00	49.3 AV	54.0	-4.7	2.89 H	28	53.0	-3.7
3	*2412.00	104.6 PK			2.89 H	28	108.3	-3.7
4	*2412.00	94.1 AV			2.89 H	28	97.8	-3.7
5	4824.00	48.3 PK	74.0	-25.7	2.23 H	257	46.1	2.2
6	4824.00	43.7 AV	54.0	-10.3	2.23 H	257	41.5	2.2
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	67.6 PK	74.0	-6.4	1.81 V	360	71.3	-3.7
2	**2390.00**	**53.6 AV**	**54.0**	**-0.4**	**1.81 V**	**360**	**57.3**	**-3.7**
3	*2412.00	110.2 PK			1.81 V	360	113.9	-3.7
4	*2412.00	101.5 AV			1.81 V	360	105.2	-3.7
5	4824.00	49.2 PK	74.0	-24.8	2.11 V	228	47.0	2.2
6	4824.00	45.4 AV	54.0	-8.6	2.11 V	228	43.2	2.2

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	2390.00	50.5 PK	74.0	-23.5	2.87 H	24	54.2	-3.7
2	2390.00	40.8 AV	54.0	-13.2	2.87 H	24	44.5	-3.7
3	*2437.00	105.2 PK			2.87 H	24	108.8	-3.6
4	*2437.00	94.7 AV			2.87 H	24	98.3	-3.6
5	2483.50	49.6 PK	74.0	-24.4	2.87 H	24	53.2	-3.6
6	2483.50	39.9 AV	54.0	-14.1	2.87 H	24	43.5	-3.6
7	4874.00	53.6 PK	74.0	-20.4	1.01 H	147	51.2	2.4
8	4874.00	42.3 AV	54.0	-11.7	1.01 H	147	39.9	2.4
9	7311.00	51.9 PK	74.0	-22.1	1.38 H	262	43.2	8.7
10	7311.00	38.5 AV	54.0	-15.5	1.38 H	262	29.8	8.7
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	56.2 PK	74.0	-17.8	1.00 V	355	59.9	-3.7
2	2390.00	45.1 AV	54.0	-8.9	1.00 V	355	48.8	-3.7
3	*2437.00	110.8 PK			1.00 V	355	114.4	-3.6
4	*2437.00	102.1 AV			1.00 V	355	105.7	-3.6
5	2483.50	55.3 PK	74.0	-18.7	1.00 V	355	58.9	-3.6
6	2483.50	44.2 AV	54.0	-9.8	1.00 V	355	47.8	-3.6
7	4874.00	54.0 PK	74.0	-20.0	2.84 V	164	51.6	2.4
8	4874.00	42.2 AV	54.0	-11.8	2.84 V	164	39.8	2.4
9	7311.00	52.7 PK	74.0	-21.3	3.79 V	176	44.0	8.7
10	7311.00	40.0 AV	54.0	-14.0	3.79 V	176	31.3	8.7

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.9 PK			1.56 H	315	109.4	-3.5
2	*2462.00	94.9 AV			1.56 H	315	98.4	-3.5
3	2483.50	63.7 PK	74.0	-10.3	1.56 H	315	67.3	-3.6
4	2483.50	48.9 AV	54.0	-5.1	1.56 H	315	52.5	-3.6
5	4924.00	53.4 PK	74.0	-20.6	1.01 H	151	50.9	2.5
6	4924.00	42.1 AV	54.0	-11.9	1.01 H	151	39.6	2.5
7	7386.00	51.4 PK	74.0	-22.6	1.36 H	268	42.3	9.1
8	7386.00	38.3 AV	54.0	-15.7	1.36 H	268	29.2	9.1
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	111.5 PK			1.86 V	181	115.0	-3.5
2	*2462.00	102.3 AV			1.86 V	181	105.8	-3.5
3	2483.50	69.4 PK	74.0	-4.6	1.86 V	181	73.0	-3.6
4	2483.50	53.2 AV	54.0	-0.8	1.86 V	181	56.8	-3.6
5	4924.00	54.3 PK	74.0	-19.7	2.79 V	155	51.8	2.5
6	4924.00	42.4 AV	54.0	-11.6	2.79 V	155	39.9	2.5
7	7386.00	53.0 PK	74.0	-21.0	3.77 V	178	43.9	9.1
8	7386.00	40.2 AV	54.0	-13.8	3.77 V	178	31.1	9.1

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 (HT40)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	61.2 PK	74.0	-12.8	1.54 H	327	64.9	-3.7
2	2390.00	49.1 AV	54.0	-4.9	1.54 H	327	52.8	-3.7
3	*2422.00	99.4 PK			1.54 H	327	103.0	-3.6
4	*2422.00	89.6 AV			1.54 H	327	93.2	-3.6
5	4844.00	53.0 PK	74.0	-21.0	1.03 H	138	50.7	2.3
6	4844.00	41.7 AV	54.0	-12.3	1.03 H	138	39.4	2.3
7	7266.00	51.4 PK	74.0	-22.6	1.37 H	283	42.6	8.8
8	7266.00	38.5 AV	54.0	-15.5	1.37 H	283	29.7	8.8
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	66.9 PK	74.0	-7.1	1.82 V	299	70.6	-3.7
2	2390.00	53.4 AV	54.0	-0.6	1.82 V	299	57.1	-3.7
3	*2422.00	105.0 PK			1.82 V	299	108.6	-3.6
4	*2422.00	97.0 AV			1.82 V	299	100.6	-3.6
5	4844.00	54.0 PK	74.0	-20.0	2.78 V	165	51.7	2.3
6	4844.00	42.2 AV	54.0	-11.8	2.78 V	165	39.9	2.3
7	7266.00	52.6 PK	74.0	-21.4	3.73 V	181	43.8	8.8
8	7266.00	40.1 AV	54.0	-13.9	3.73 V	181	31.3	8.8

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	60.5 PK	74.0	-13.5	1.60 H	340	64.2	-3.7
2	2390.00	48.9 AV	54.0	-5.1	1.60 H	340	52.6	-3.7
3	*2437.00	103.3 PK			1.60 H	340	106.9	-3.6
4	*2437.00	92.7 AV			1.60 H	340	96.3	-3.6
5	2483.50	56.6 PK	74.0	-17.4	1.60 H	340	60.2	-3.6
6	2483.50	42.0 AV	54.0	-12.0	1.60 H	340	45.6	-3.6
7	4874.00	52.9 PK	74.0	-21.1	1.05 H	139	50.5	2.4
8	4874.00	41.7 AV	54.0	-12.3	1.05 H	139	39.3	2.4
9	7311.00	51.3 PK	74.0	-22.7	1.34 H	286	42.6	8.7
10	7311.00	38.4 AV	54.0	-15.6	1.34 H	286	29.7	8.7
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	66.2 PK	74.0	-7.8	1.68 V	183	69.9	-3.7
2	2390.00	53.2 AV	54.0	-0.8	1.68 V	183	56.9	-3.7
3	*2437.00	108.9 PK			1.68 V	183	112.5	-3.6
4	*2437.00	100.1 AV			1.68 V	183	103.7	-3.6
5	2483.50	62.3 PK	74.0	-11.7	1.68 V	183	65.9	-3.6
6	2483.50	46.3 AV	54.0	-7.7	1.68 V	183	49.9	-3.6
7	4874.00	53.5 PK	74.0	-20.5	2.75 V	174	51.1	2.4
8	4874.00	41.8 AV	54.0	-12.2	2.75 V	174	39.4	2.4
9	7311.00	52.5 PK	74.0	-21.5	3.69 V	172	43.8	8.7
10	7311.00	39.9 AV	54.0	-14.1	3.69 V	172	31.2	8.7

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 9	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	*2452.00	99.8 PK			1.64 H	337	103.4	-3.6
2	*2452.00	90.0 AV			1.64 H	337	93.6	-3.6
3	2483.50	59.5 PK	74.0	-14.5	1.64 H	337	63.1	-3.6
4	2483.50	48.8 AV	54.0	-5.2	1.64 H	337	52.4	-3.6
5	4904.00	53.7 PK	74.0	-20.3	1.10 H	140	51.2	2.5
6	4904.00	42.2 AV	54.0	-11.8	1.10 H	140	39.7	2.5
7	7356.00	51.3 PK	74.0	-22.7	1.30 H	292	42.4	8.9
8	7356.00	38.2 AV	54.0	-15.8	1.30 H	292	29.3	8.9
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	*2452.00	105.4 PK			1.12 V	295	109.0	-3.6
2	*2452.00	97.4 AV			1.12 V	295	101.0	-3.6
3	2483.50	65.2 PK	74.0	-8.8	1.12 V	295	68.8	-3.6
4	2483.50	53.1 AV	54.0	-0.9	1.12 V	295	56.7	-3.6
5	4904.00	53.5 PK	74.0	-20.5	2.79 V	190	51.0	2.5
6	4904.00	41.8 AV	54.0	-12.2	2.79 V	190	39.3	2.5
7	7356.00	52.4 PK	74.0	-21.6	3.65 V	172	43.5	8.9
8	7356.00	39.5 AV	54.0	-14.5	3.65 V	172	30.6	8.9

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:

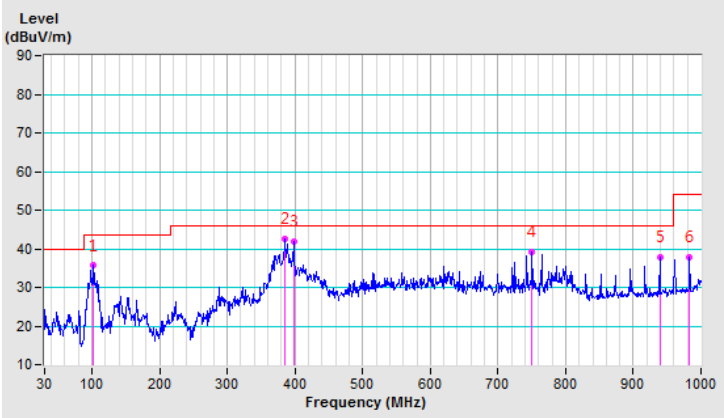
802.11n (HT20)

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 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	101.90	35.6 QP	43.5	-7.9	2.00 H	97	47.9	-12.3
2	**385.89**	**42.7 QP**	**46.0**	**-3.3**	**1.00 H**	**55**	**48.2**	**-5.5**
3	397.85	41.8 QP	46.0	-4.2	1.50 H	360	46.9	-5.1
4	750.01	39.3 QP	46.0	-6.7	1.00 H	0	37.1	2.2
5	939.35	37.9 QP	46.0	-8.1	1.50 H	134	33.2	4.7
6	983.05	37.9 QP	54.0	-16.1	1.50 H	245	32.9	5.0

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

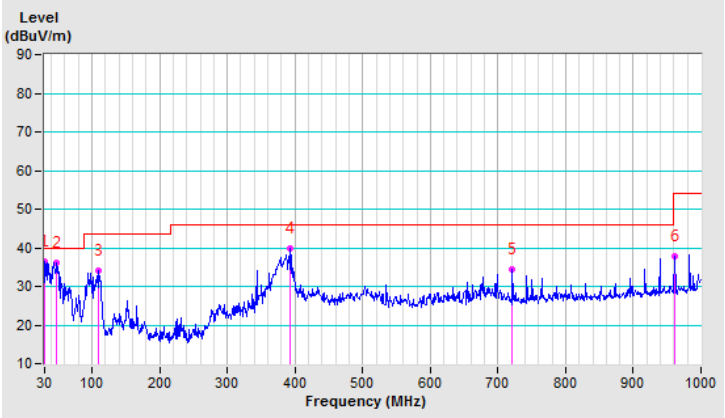


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	30.65	36.5 QP	40.0	-3.5	1.00 V	360	46.2	-9.7
2	47.80	36.2 QP	40.0	-3.8	1.00 V	152	44.2	-8.0
3	108.81	34.0 QP	43.5	-9.5	1.00 V	354	45.2	-11.2
4	393.56	39.9 QP	46.0	-6.1	1.50 V	0	45.2	-5.3
5	720.91	34.4 QP	46.0	-11.6	2.00 V	116	33.0	1.4
6	961.20	37.8 QP	54.0	-16.2	1.00 V	103	33.0	4.8

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	847124/029	Oct. 24, 2016	Oct. 23, 2017
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 26, 2016	Oct. 25, 2017
RF Cable	5D-FB	COCCAB-001	Sep. 30, 2016	Sep. 29, 2017
10 dB PAD Mini-Circuits	HAT-10+	CONATT-004	June 20, 2016	June 19, 2017
Software BVADT	BVADT_Cond_ V7.3.7.4	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. 1.
3 Tested Date:Dec. 30, 2016

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.

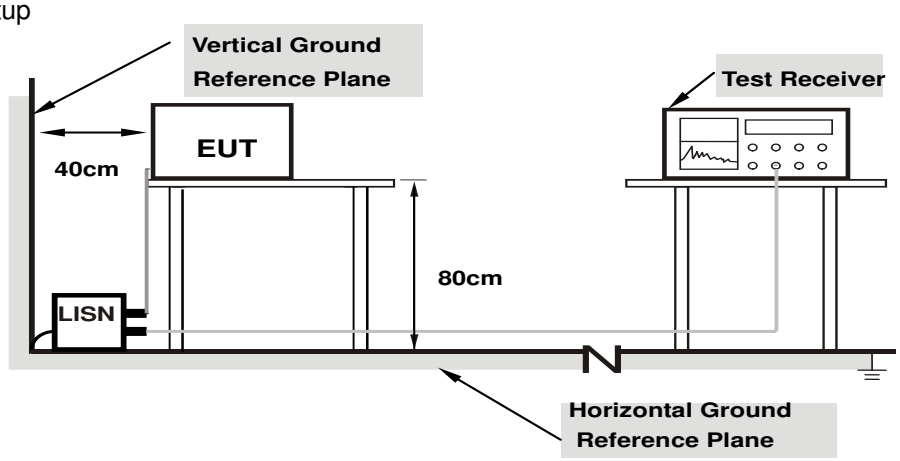
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

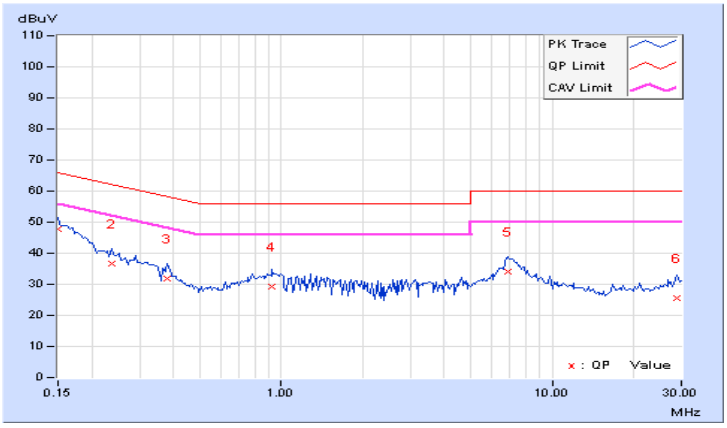
4.2.7 Test Results (Mode 1)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15000	10.20	37.47	18.20	47.67	28.40	66.00	56.00	-18.33	-27.60
2	0.23594	10.21	26.31	14.12	36.52	24.33	62.24	52.24	-25.72	-27.91
3	0.38047	10.24	21.66	13.11	31.90	23.35	58.27	48.27	-26.37	-24.92
4	0.92734	10.29	18.99	11.09	29.28	21.38	56.00	46.00	-26.72	-24.62
5	6.91406	10.51	23.74	18.54	34.25	29.05	60.00	50.00	-25.75	-20.95
6	28.93359	11.83	13.90	8.80	25.73	20.63	60.00	50.00	-34.27	-29.37

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

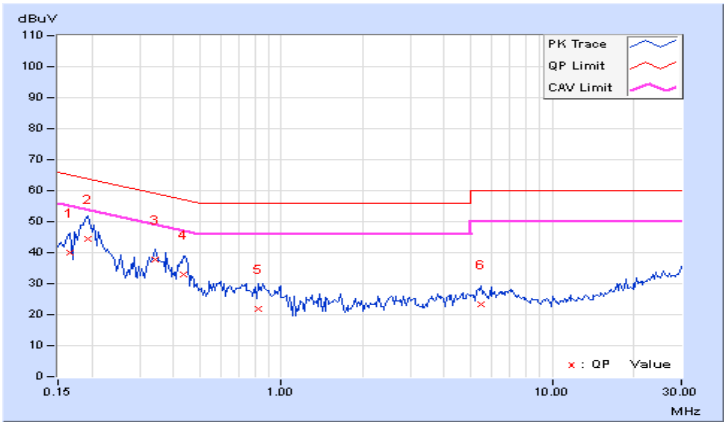


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15000	10.19	34.15	18.68	44.34	28.87	66.00	56.00	-21.66	-27.13
2	0.22812	10.18	28.82	11.98	39.00	22.16	62.52	52.52	-23.52	-30.36
3	0.37266	10.23	24.93	14.75	35.16	24.98	58.44	48.44	-23.28	-23.46
4	0.95078	10.26	13.44	7.22	23.70	17.48	56.00	46.00	-32.30	-28.52
5	6.96484	10.42	22.25	17.91	32.67	28.33	60.00	50.00	-27.33	-21.67
6	17.19531	11.22	14.02	8.62	25.24	19.84	60.00	50.00	-34.76	-30.16

Remarks:

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



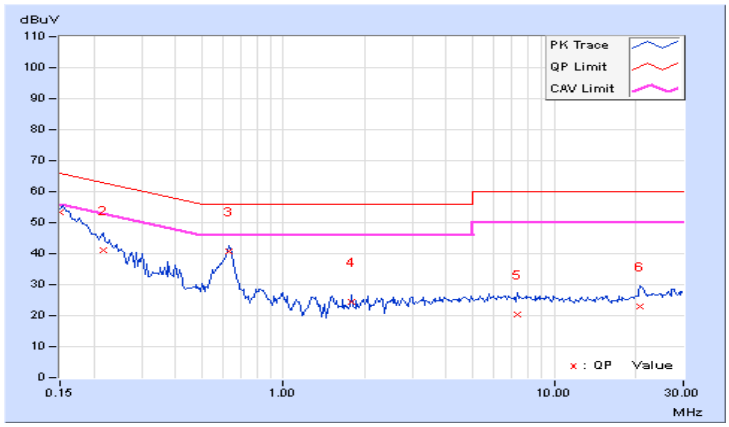
4.2.8 Test Results (Mode 2)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15000	10.20	43.29	27.62	53.49	37.82	66.00	56.00	-12.51	-18.18
2	0.21641	10.20	31.04	17.51	41.24	27.71	62.96	52.96	-21.72	-25.25
3	**0.62656**	**10.26**	**30.52**	**27.10**	**40.78**	**37.36**	**56.00**	**46.00**	**-15.22**	**-8.64**
4	1.77734	10.29	14.25	10.22	24.54	20.51	56.00	46.00	-31.46	-25.49
5	7.31641	10.54	9.73	4.07	20.27	14.61	60.00	50.00	-39.73	-35.39
6	20.83203	11.71	11.18	7.48	22.89	19.19	60.00	50.00	-37.11	-30.81

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

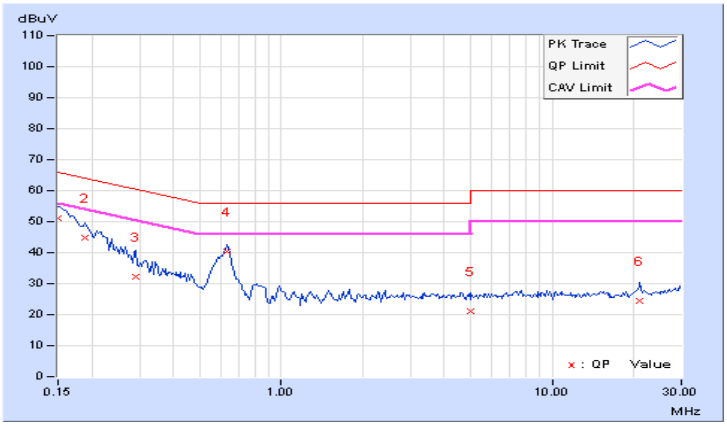


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.15000	10.19	40.79	27.60	50.98	37.79	66.00	56.00	-15.02	-18.21
2	0.18906	10.17	34.51	20.38	44.68	30.55	64.08	54.08	-19.40	-23.53
3	0.29063	10.20	22.17	11.64	32.37	21.84	60.51	50.51	-28.14	-28.67
4	0.63047	10.25	30.30	26.76	40.55	37.01	56.00	46.00	-15.45	-8.99
5	5.00000	10.29	11.00	5.20	21.29	15.49	56.00	46.00	-34.71	-30.51
6	20.98828	11.38	13.24	7.86	24.62	19.24	60.00	50.00	-35.38	-30.76

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

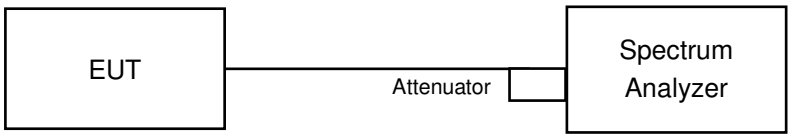


4.3 6dB Bandwidth Measurement

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) ≥ 3 x 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 fromTest 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	9.60	0.5	PASS
6	2437	9.13	0.5	PASS
11	2462	9.62	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	15.13	0.5	PASS
11	2462	15.18	0.5	PASS

802.11n (HT20)

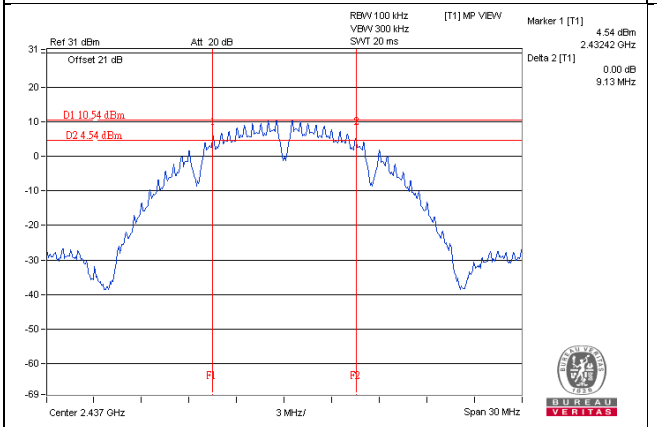
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.16	15.16	0.5	PASS
6	2437	15.18	15.16	0.5	PASS
11	2462	15.10	15.15	0.5	PASS

802.11n (HT40)

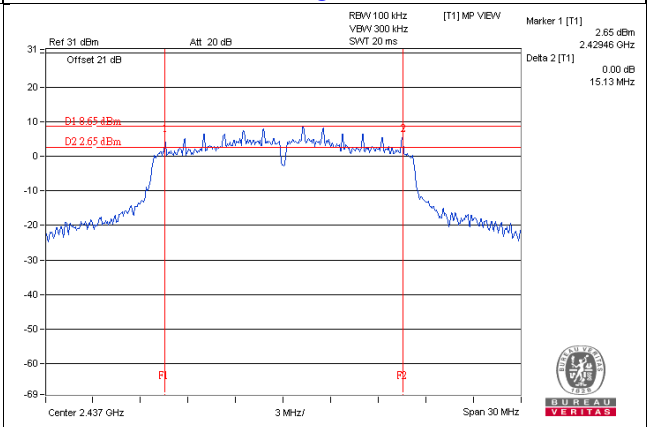
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.17	35.14	0.5	Pass
6	2437	35.12	35.11	0.5	Pass
9	2452	35.23	35.11	0.5	Pass

Spectrum Plot of Worst Value

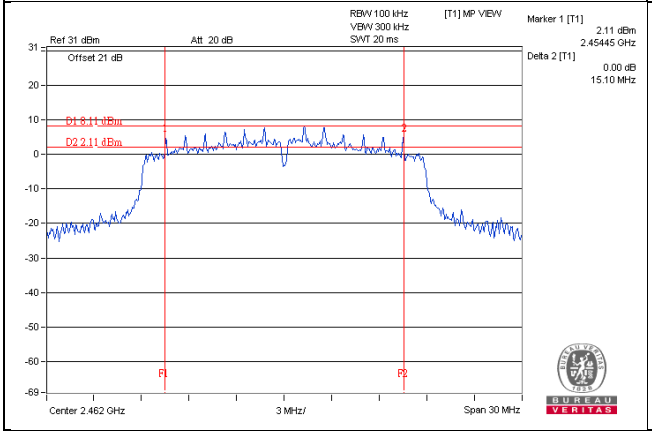
802.11b / CH 6



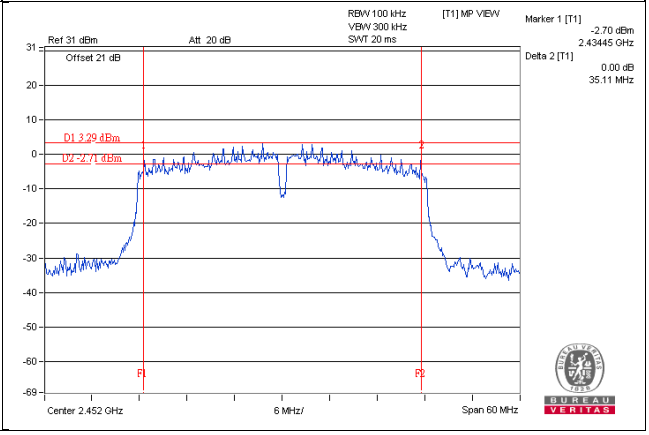
802.11g / CH 6



802.11n (HT20) / Chain 0 : CH 11

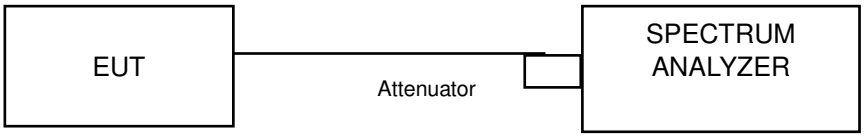


802.11n (HT40) / Chain 1 : CH9



4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

4.4.4 Deviation from Test Standard

No deviation.

4.4.5 EUT Operating Conditions

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

4.4.6 Test Results

802.11b

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
1	2412	14.40
6	2437	14.52
11	2462	14.64

802.11g

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
1	2412	16.92
6	2437	16.92
11	2462	17.16

802.11n (HT20)

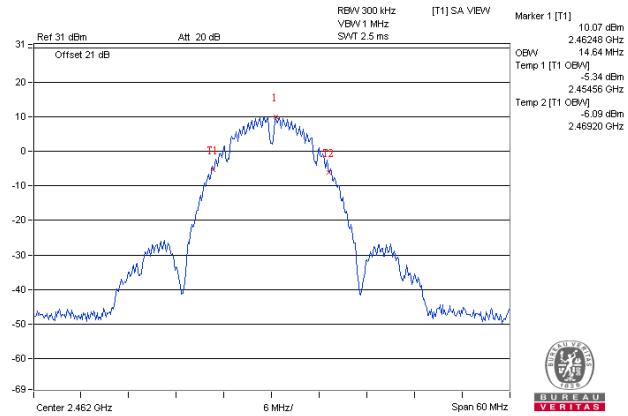
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
1	2412	17.76	17.64
6	2437	18.00	17.64
11	2462	17.88	17.64

802.11n (HT40)

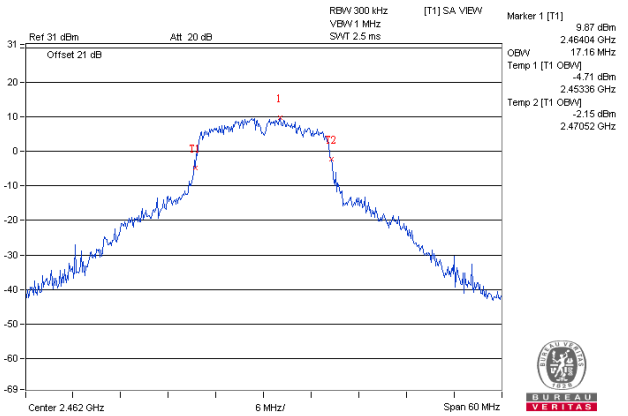
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
3	2422	36.00	36.24
6	2437	36.48	36.24
9	2452	36.24	36.24

Spectrum Plot of Worst Value

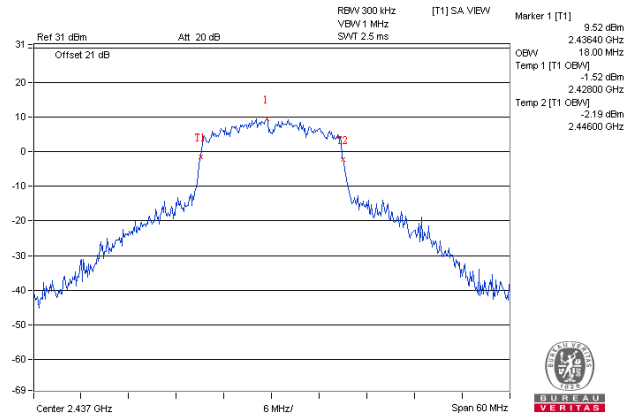
802.11b / CH11



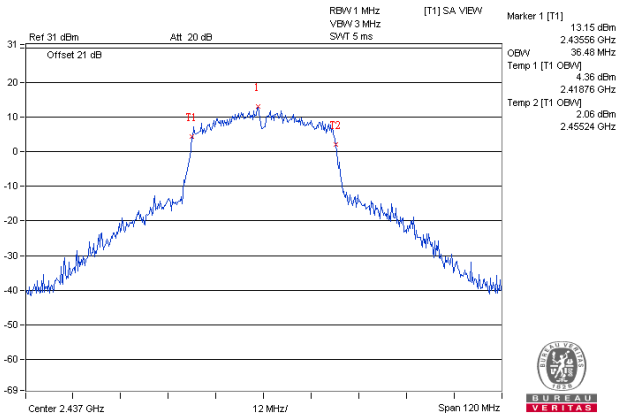
802.11g / CH11



802.11n (HT20) / Chain 0 : CH6



802.11n (HT40) / Chain 0 : CH6



4.5 Conducted Output Power Measurement

4.5.1 Limits of Conducted Output Power Measurement

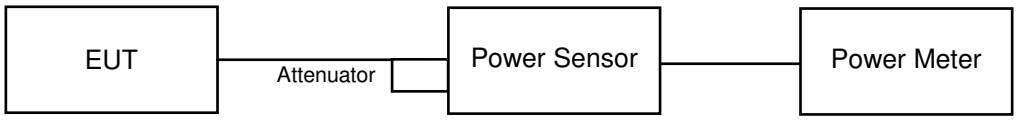
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

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 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.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as Item 4.3.6.

4.5.7 Test Results

FOR PEAK POWER

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	136.773	21.36	30	Pass
6	2437	142.561	21.54	30	Pass
11	2462	134.276	21.28	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	263.633	24.21	30	Pass
6	2437	289.734	24.62	30	Pass
11	2462	287.74	24.59	30	Pass

802.11n (HT20)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	24.42	24.75	575.232	27.60	30	Pass
6	2437	24.52	24.61	572.207	27.58	30	Pass
11	2462	23.29	23.71	448.267	26.52	30	Pass

802.11n (HT40)

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	21.85	21.55	295.998	24.71	30	Pass
6	2437	23.79	23.88	483.675	26.85	30	Pass
9	2452	21.65	21.83	298.623	24.75	30	Pass

FOR AVERAGE POWER

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	84.723	19.28
6	2437	88.308	19.46
11	2462	85.901	19.34

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	67.92	18.32
6	2437	72.111	18.58
11	2462	70.307	18.47

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	18.10	18.71	138.867	21.43
6	2437	18.62	18.67	146.399	21.66
11	2462	17.61	17.32	111.628	20.48

802.11n (HT40)

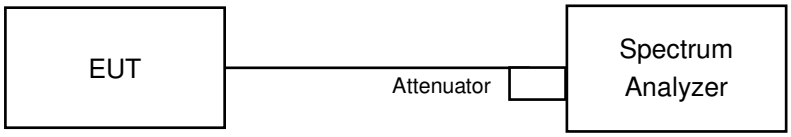
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	13.97	14.07	50.473	17.03
6	2437	18.50	18.09	135.212	21.31
9	2452	15.50	15.18	68.442	18.35

4.6 Power Spectral Density Measurement

4.6.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

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

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 kHz ≤ RBW ≤ 100 kHz.
d. Set the VBW ≥ 3 × RBW.
e. Detector = peak.
f. Sweep time = auto couple.
g. Trace mode = max hold.
h. Allow trace to fully stabilize. H, I
i. Use the peak marker function to determine the maximum amplitude level within the RBW.

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

802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-3.67	8.00	Pass
6	2437	-4.37	8.00	Pass
11	2462	-5.40	8.00	Pass

802.11g

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-8.84	8.00	Pass
6	2437	-7.74	8.00	Pass
11	2462	-8.06	8.00	Pass

802.11n (HT20)

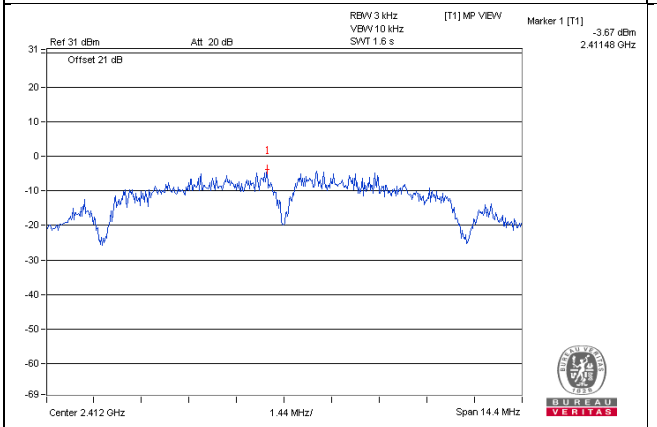
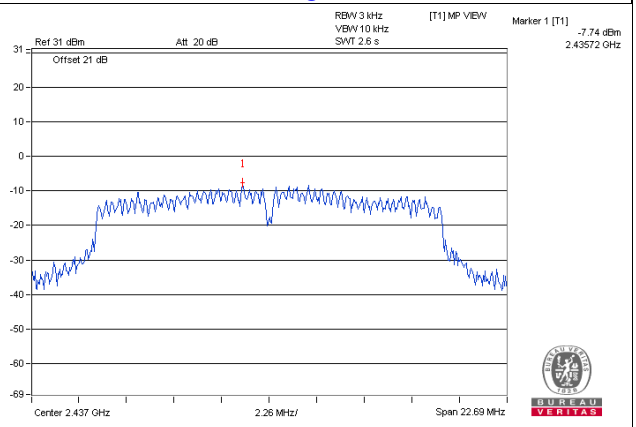
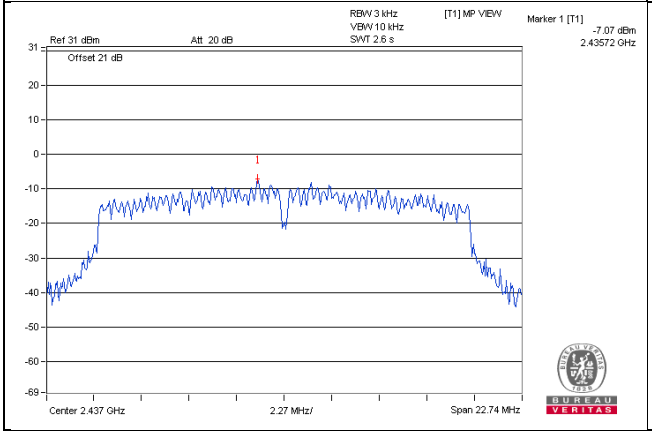
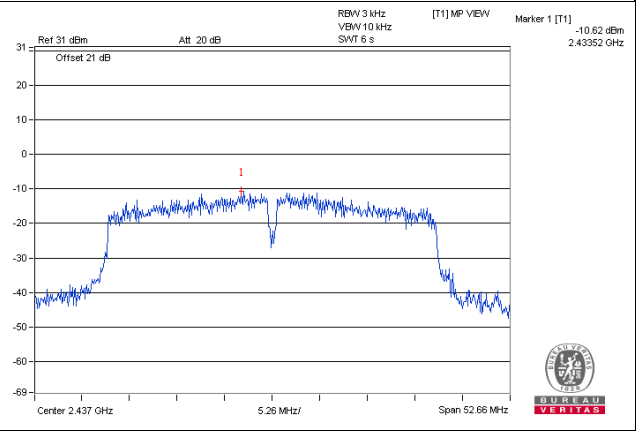
TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	1	2412	-8.55	3.01	-5.54	8.00	Pass
	6	2437	-8.25	3.01	-5.24	8.00	Pass
	11	2462	-9.04	3.01	-6.03	8.00	Pass
1	1	2412	-7.62	3.01	-4.61	8.00	Pass
	6	2437	-7.07	3.01	-4.06	8.00	Pass
	11	2462	-8.80	3.01	-5.79	8.00	Pass

NOTE: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 5.42dBi < 6dBi , so the power density limit shall not be reduced.

802.11n (HT40)

TX chain	Channel	Freq. (MHz)	PSD (dBm/3kHz)	10 log (N=2) dB	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	3	2422	-14.51	3.01	-11.50	8.00	Pass
	6	2437	-10.78	3.01	-7.77	8.00	Pass
	9	2452	-13.10	3.01	-10.09	8.00	Pass
1	3	2422	-14.33	3.01	-11.32	8.00	Pass
	6	2437	-10.62	3.01	-7.61	8.00	Pass
	9	2452	-12.94	3.01	-9.93	8.00	Pass

NOTE: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 5.42dBi < 6dBi , so the power density limit shall not be reduced.

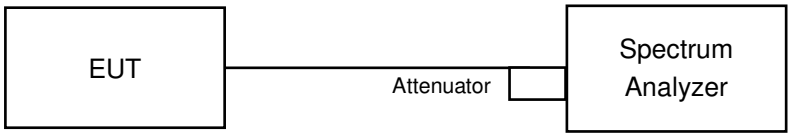
Spectrum Plot of Worst Value	
802.11b / CH1	**802.11g / CH6**
	
802.11n (HT20) / Chain 1 : CH6	**802.11n (HT40) / Chain 1 : CH6**
	

4.7 Conducted Out of Band Emission Measurement

4.7.1 Limits of Conducted Out of Band Emission Measurement

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

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 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 within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 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.

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

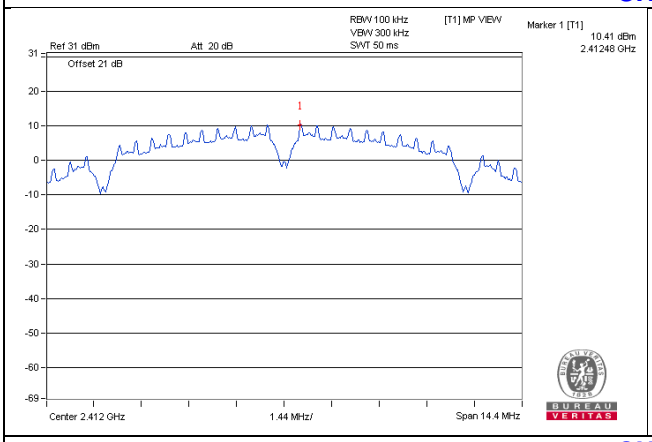
Same as Item 4.3.6

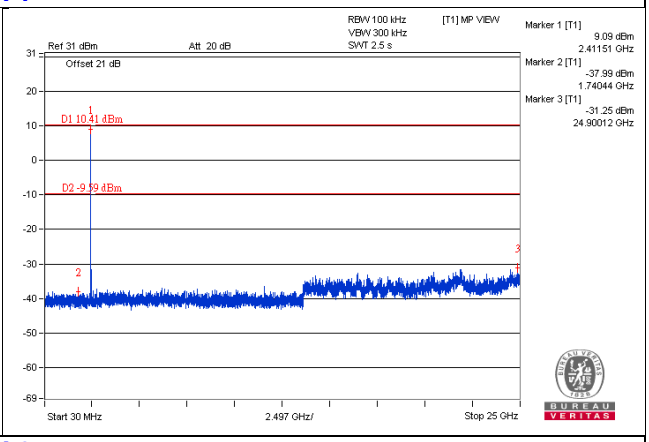
4.7.7 Test Results

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dBoffset below D1. It shows compliance with the requirement.

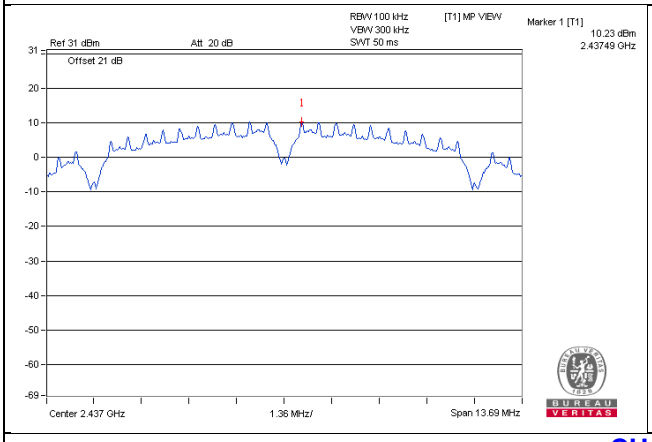
802.11b :

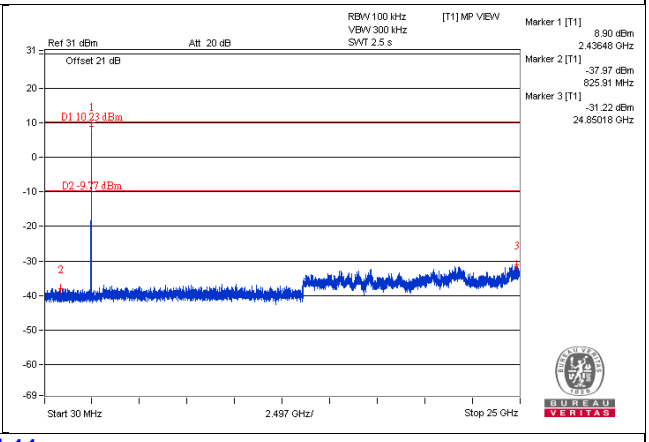
CH 1



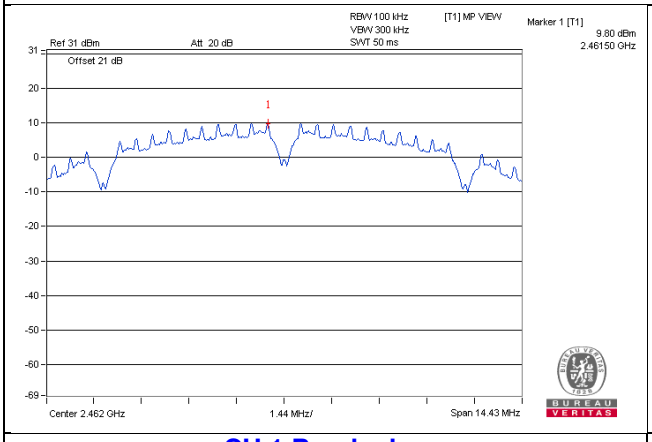


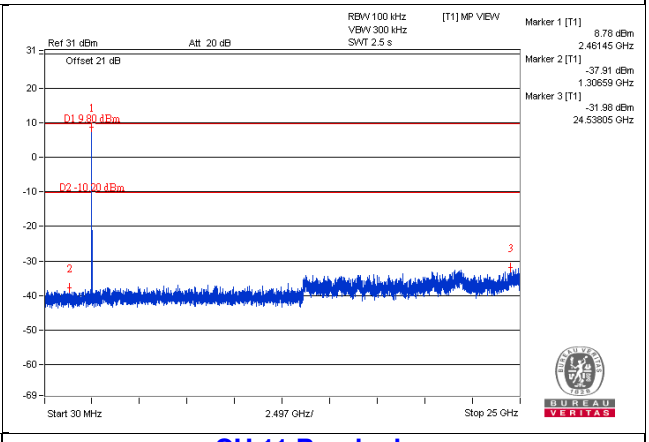
CH 6



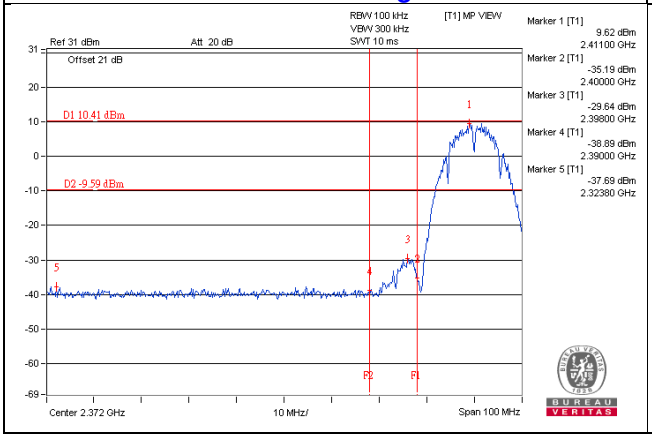


CH 11

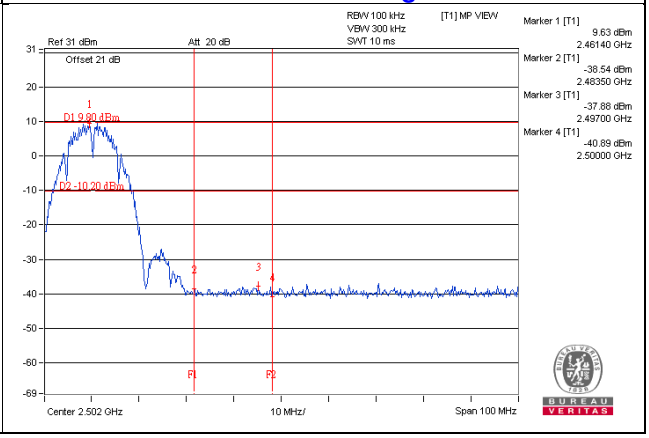




CH 1 Band edge

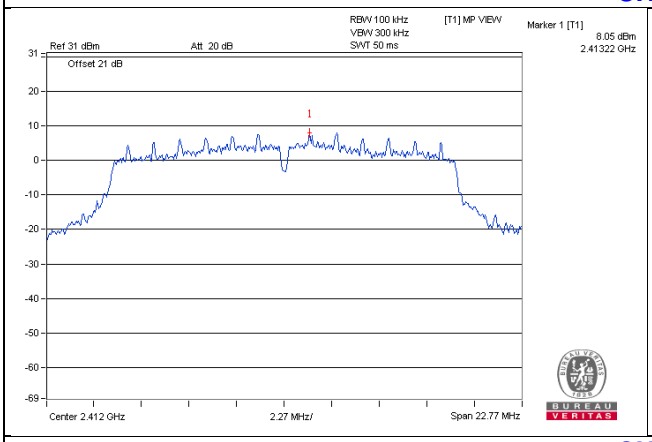


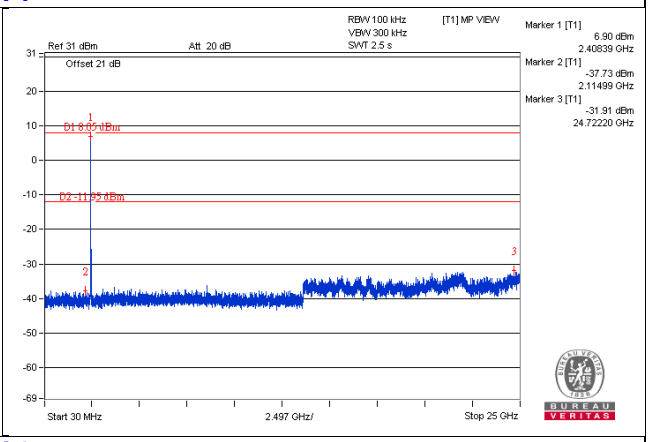
CH 11 Band edge



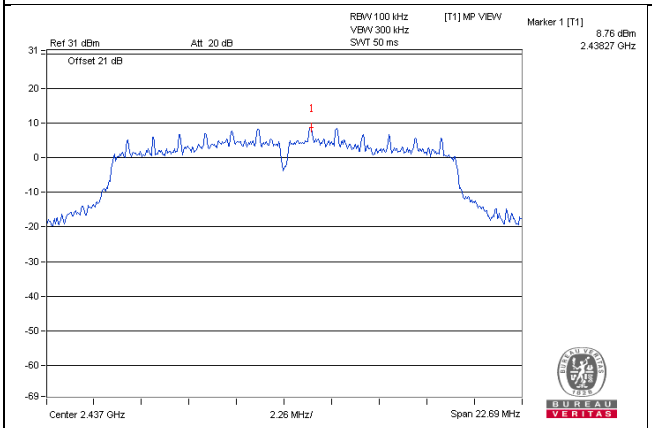
802.11g :

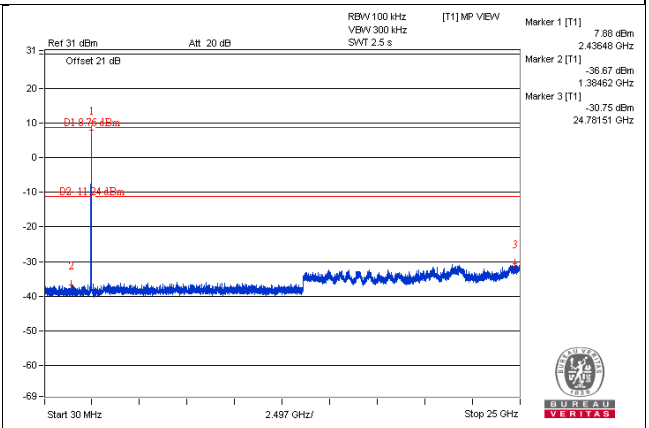
CH 1



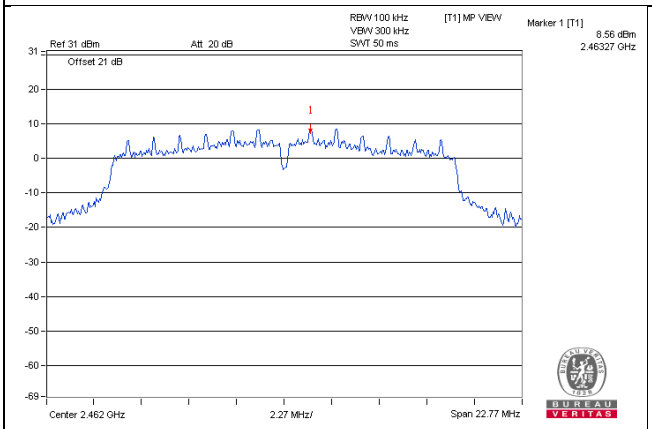


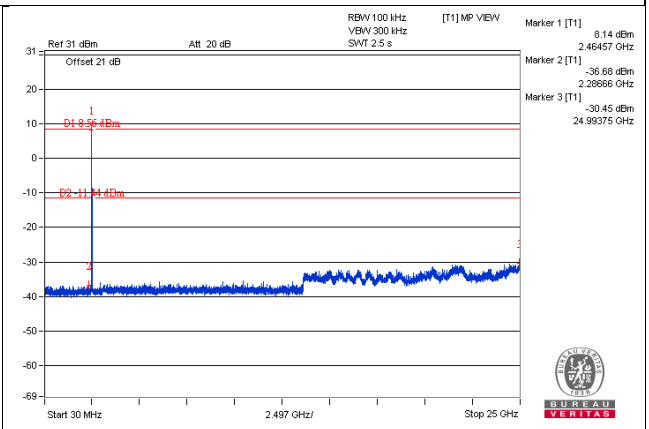
CH 6



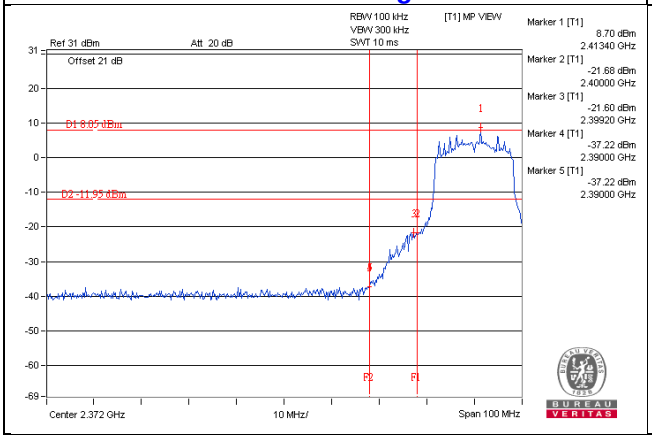


CH 11

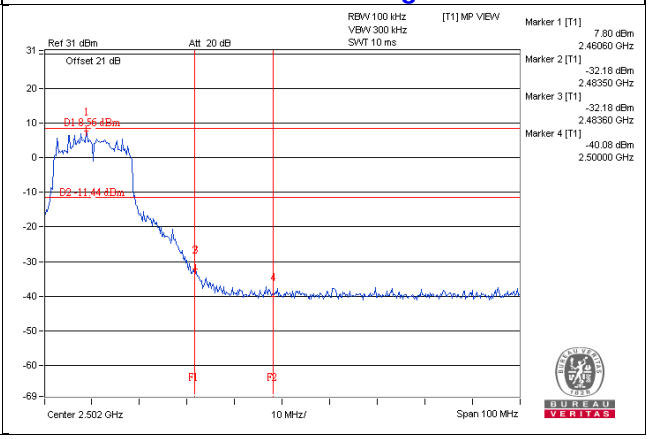




CH 1 Band edge

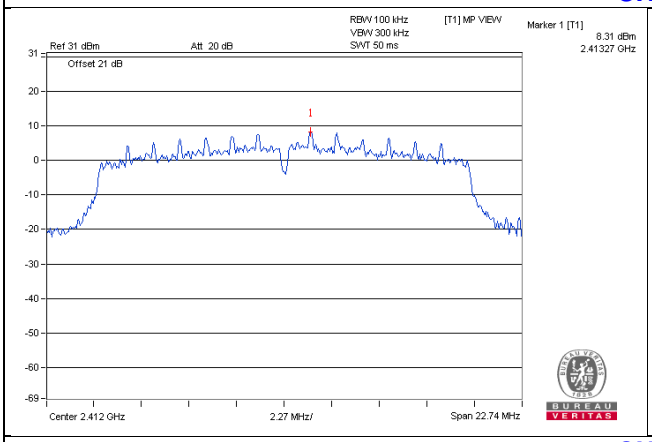


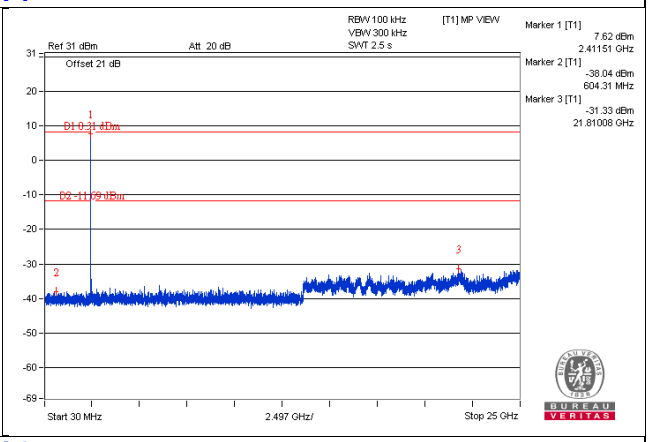
CH 11 Band edge



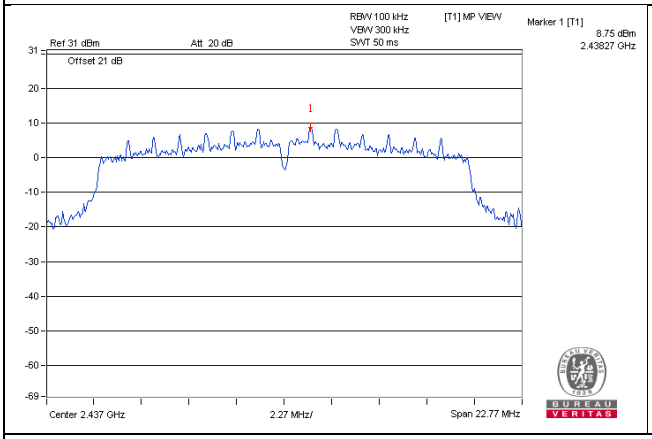
802.11n (HT20) : Chain 0

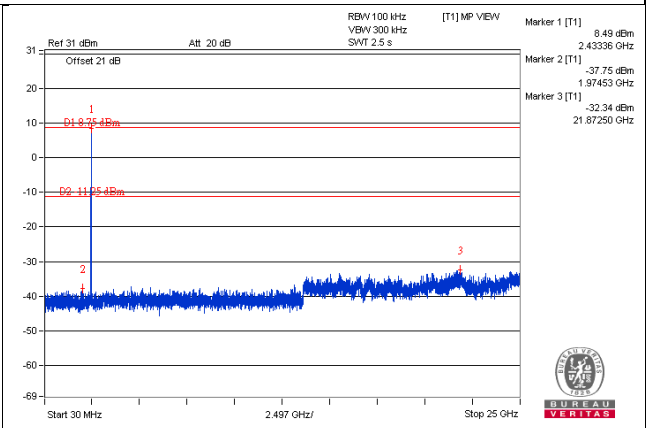
CH 1



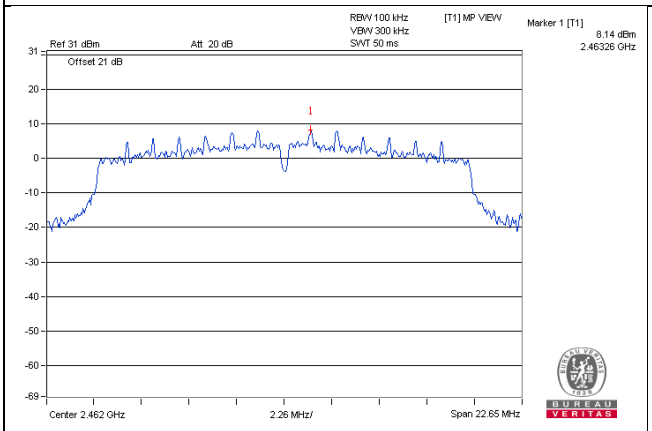


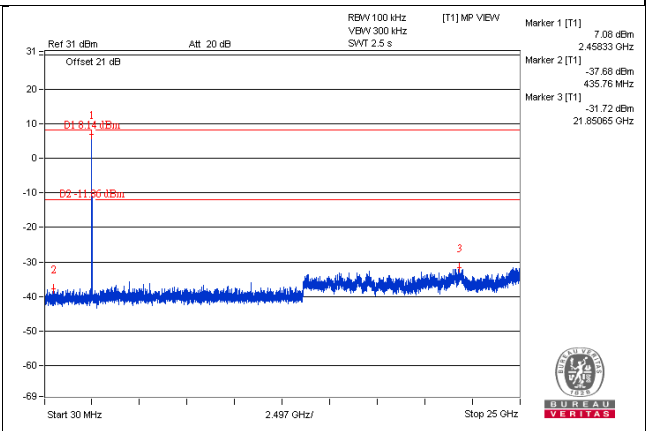
CH 6



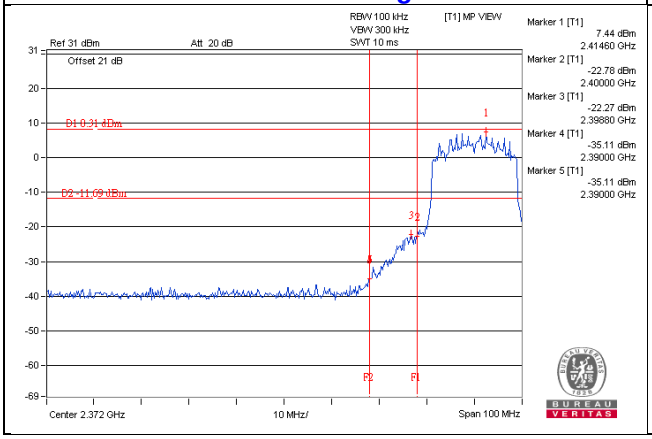


CH 11

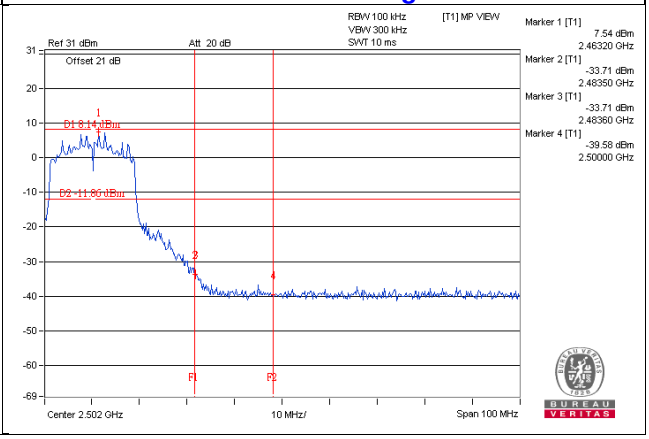




CH 1 Band edge

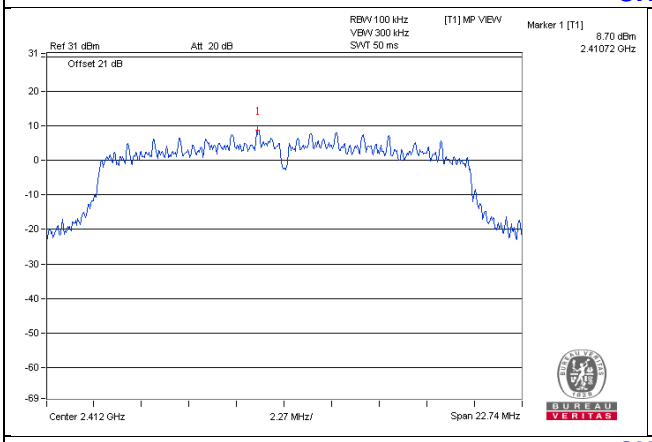


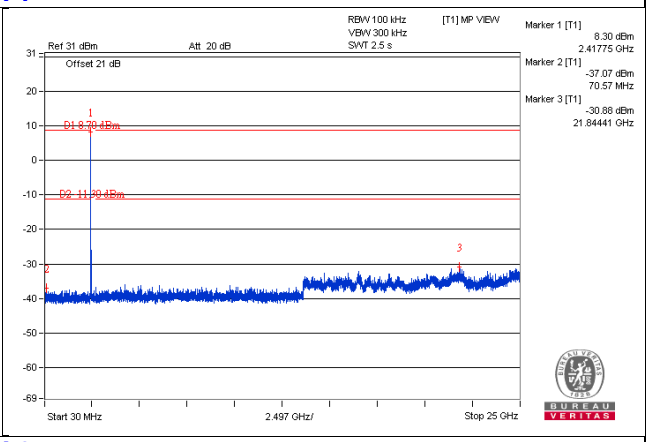
CH 11 Band edge



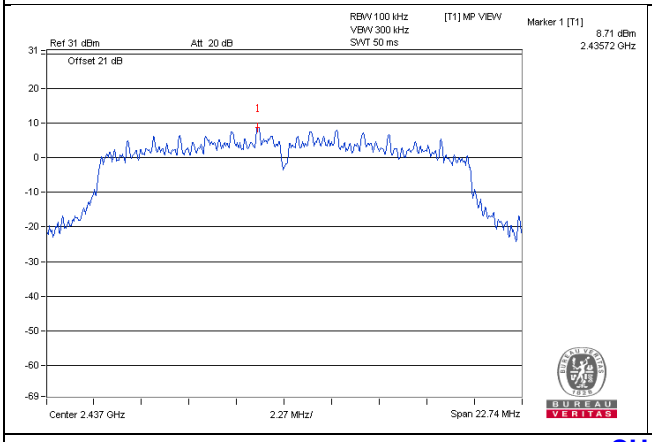
Chain 1

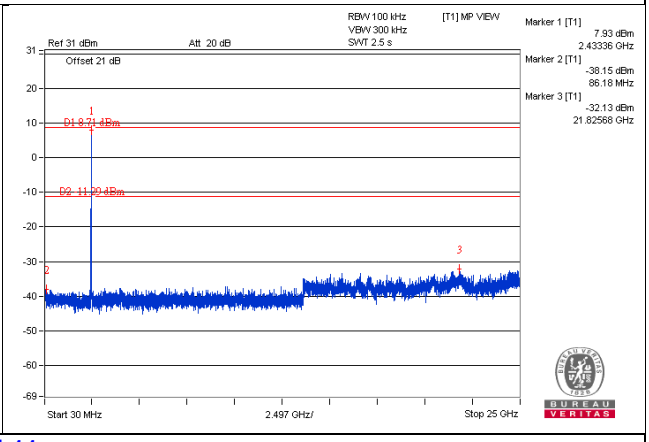
CH 1



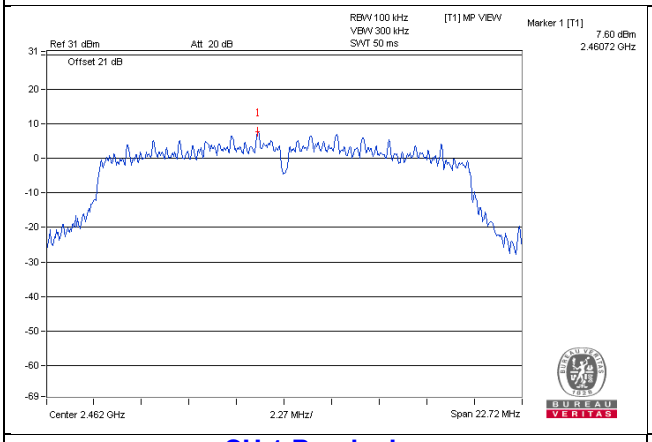


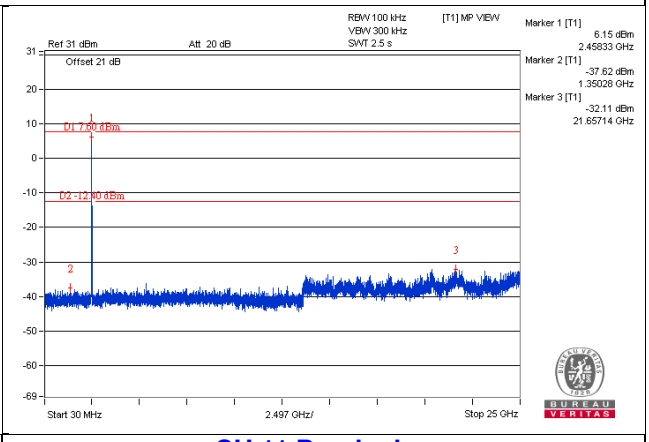
CH 6



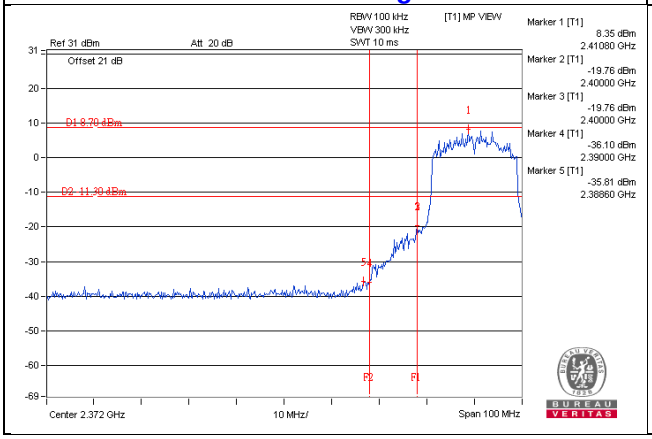


CH 11

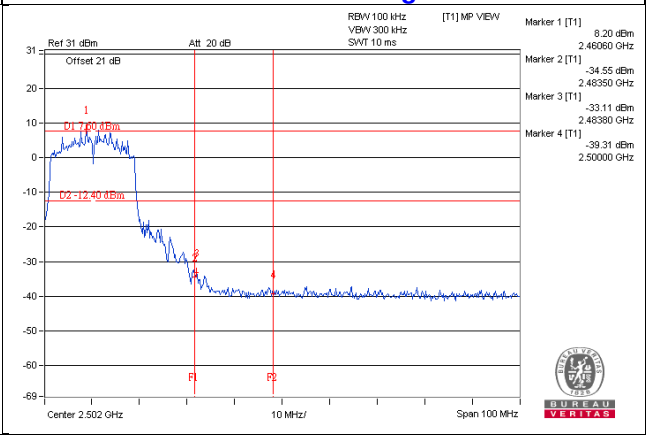




CH 1 Band edge

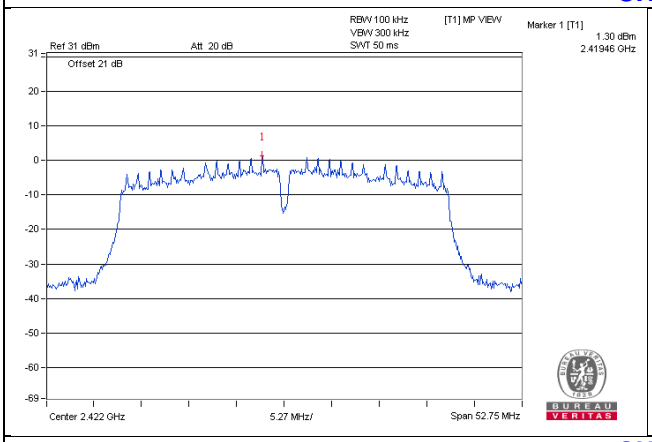


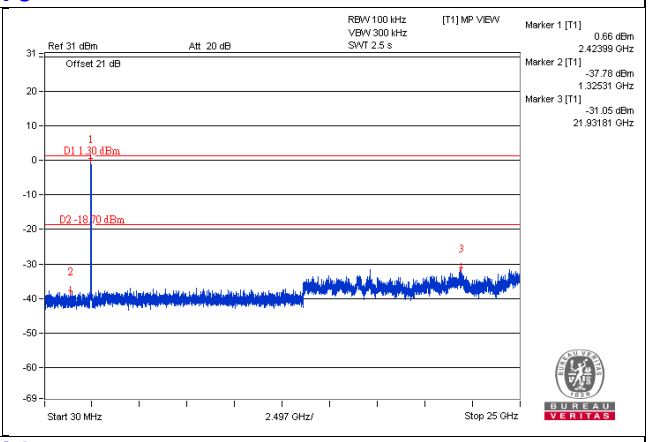
CH 11 Band edge



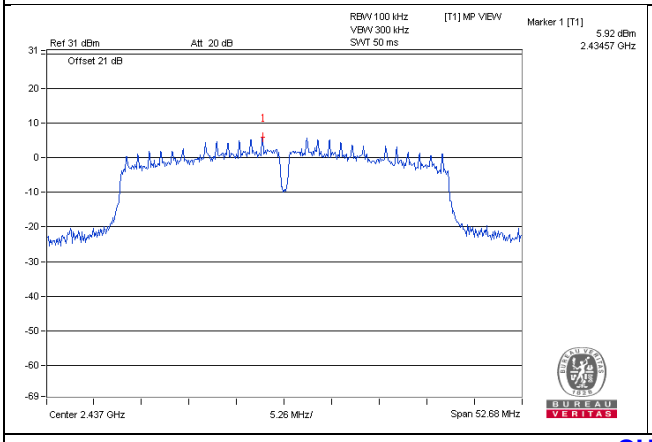
802.11n (HT40) : Chain 0

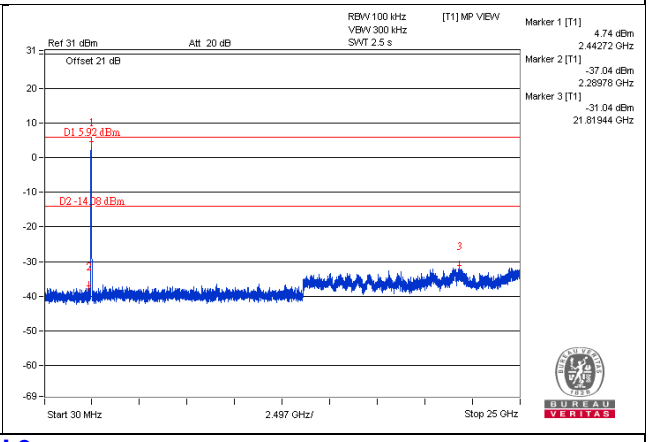
CH 3



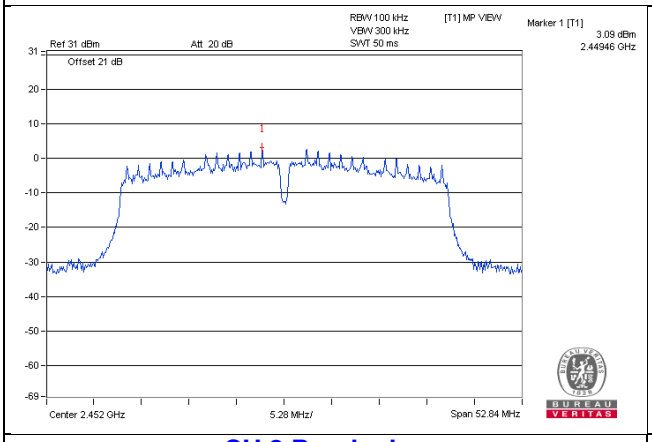


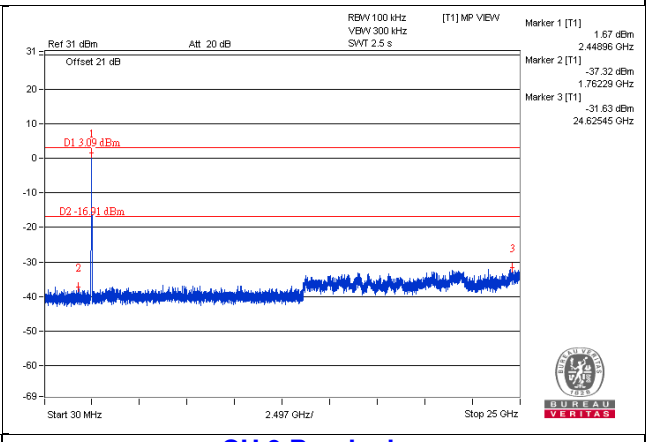
CH 6



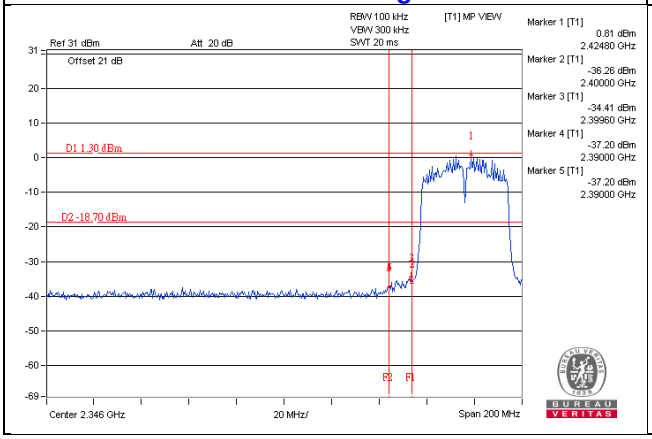


CH 9

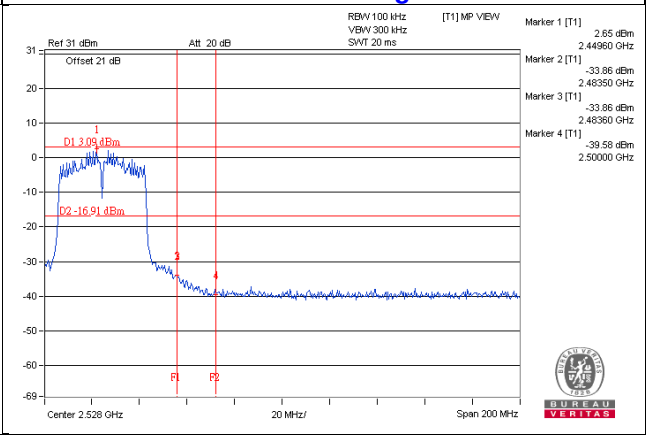




CH 3 Band edge

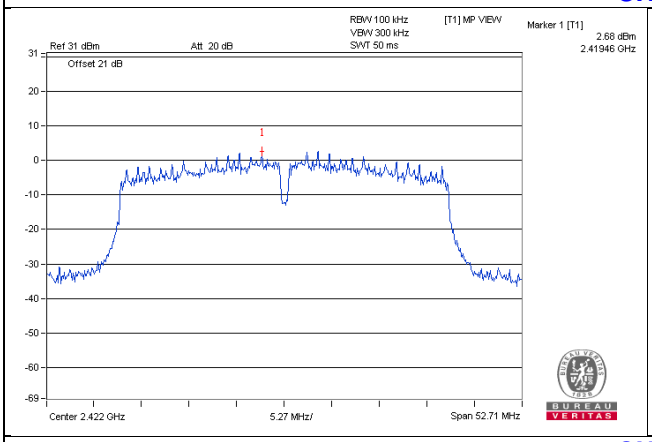


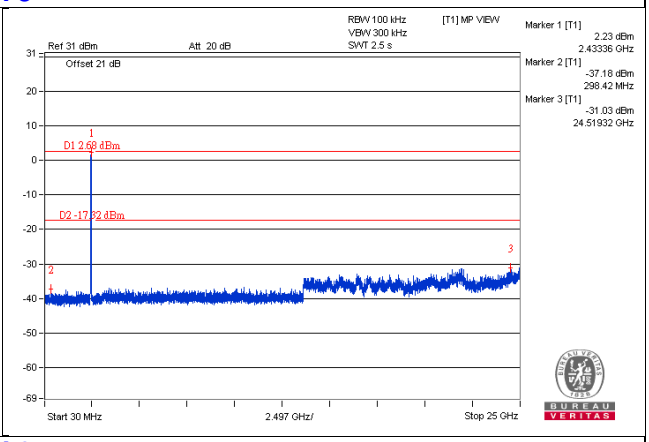
CH 9 Band edge



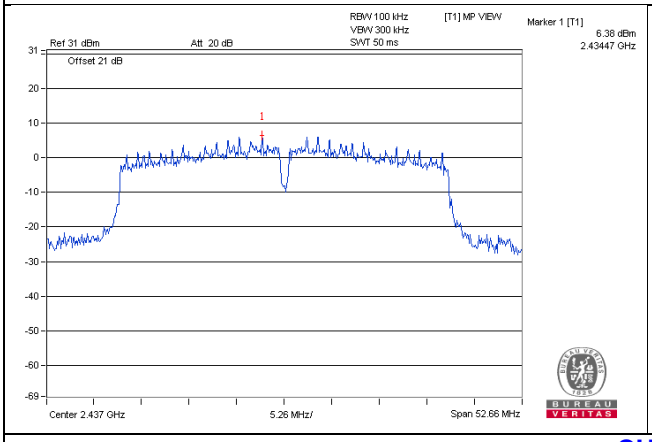
Chain 1

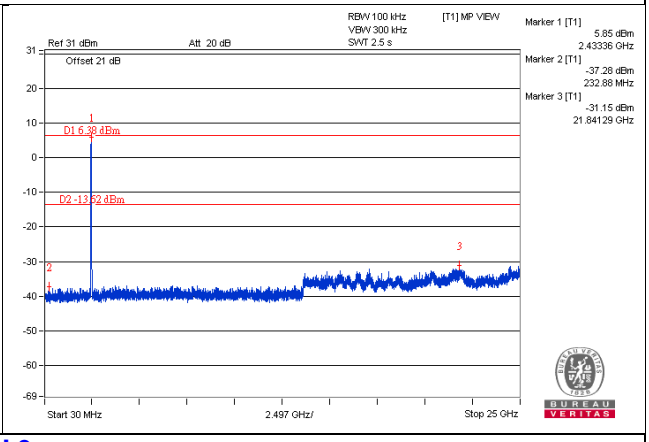
CH 3



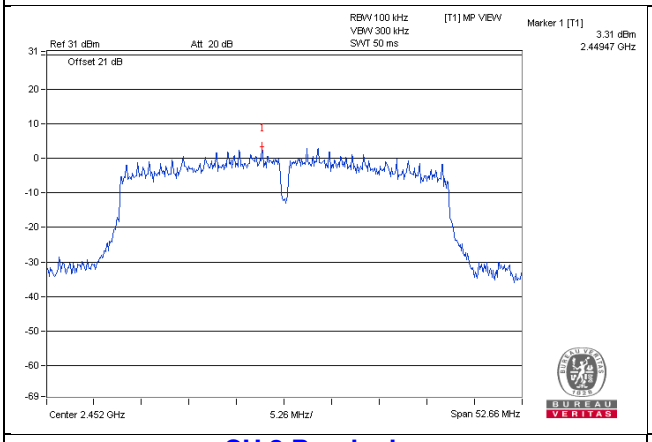


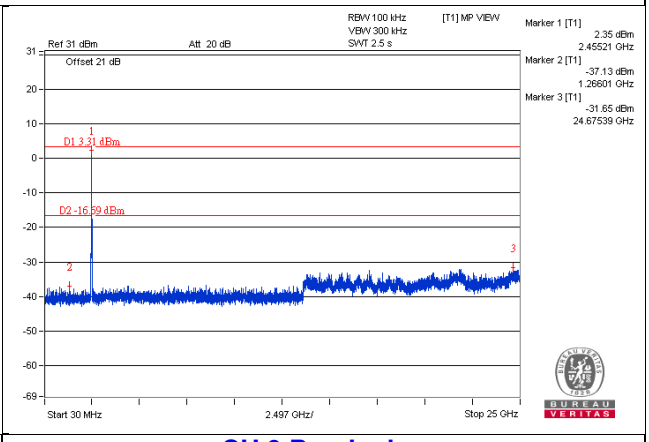
CH 6



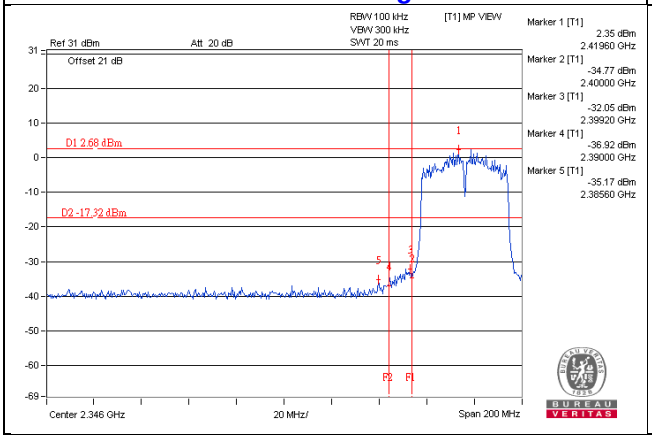


CH 9

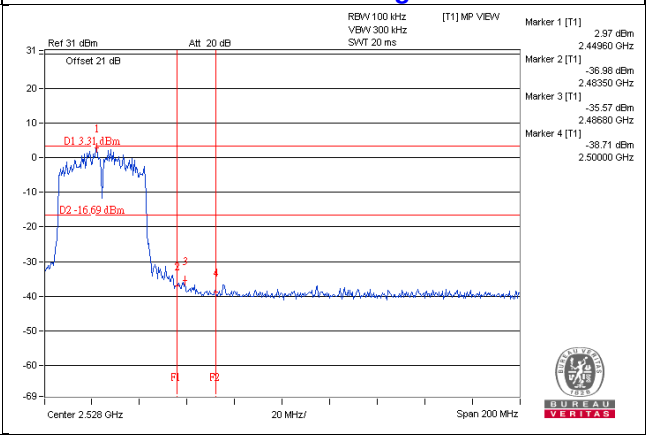




CH 3 Band edge



CH 9 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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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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