FCC Test Report

Report No.:	RF170109E09B
FCC ID:	2ALIE-FWR531X
Test Model:	FWR5-3105SFP
Series Model:	FWR5-3105SFPxxxxxxxxxxx
Received Date:	Jan. 09, 2017
Test Date:	Jan. 25 to Feb. 15, 2017
Issued Date:	July 19, 2017
Applicant:	Connection Technology System Inc
Address:	18F-6, No.79, Sec.1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)
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
RF170109E09B	Original release.	July 19, 2017

1 Certificate of Conformity

Product:	Wireless Home Gateway
Brand:	CTS
Test Model:	FWR5-3105SFP
Series Model:	FWR5-3105SFPxxxxxxxxxxx
Sample Status:	ENGINEERING SAMPLE
Applicant:	Connection Technology System Inc
Test Date:	Jan. 25 to Feb. 15, 2017
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 : _____ , **Date:** July 19, 2017

Wendy Wu / Specialist

Approved by : _____ , **Date:** July 19, 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 -6.84dB at 0.34922MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 2483.50MHz, 2390.00MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex(MHF) not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.83 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.36 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.47 dB
	6GHz ~ 18GHz	3.75 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	Wireless Home Gateway
Brand	CTS
Test Model	FWR5-3105SFP
Series Model	FWR5-3105SFPxxxxxxxxxxx
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 12V from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	**2.4GHz:** 2.412 ~ 2.462GHz **5GHz:** 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	**2.4GHz:** 502.463mW **5.18 ~ 5.24GHz:** 55.918mW **5.745 ~ 5.825GHz:** 59.365mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. All models are listed as below.

Brand	Model	Difference
CTS	FWR5-3105SFP	for marketing requirement (x can be 0-9, A-Z, a-z, "- ", or blank for marketing)
	FWR5-3105SFPxxxxxxxxxxx	

From the above models, model: **FWR5-3105SFP** was selected as representative model for the test and its data was recorded in this report.

2. Simultaneously transmission condition.

Condition	Technology	
1	WLAN 2.4GHz	WLAN 5GHz

3. The EUT must be supplied with a power adapter as following table:

Brand	Model No.	Spec.
UMEC	UP0251M-12PA	Input: 100-240Vac, 0.6A, 50/60Hz Output: 12V, 2.1A DC output cable(unshielded, 1.8m)

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

Antenna No.	Brand	Antenna Net. Gain(dBi)	Frequency range (GHz)	Antenna Type	Connecter Type	Cable Length (mm)
1	Master Wave	5.14	2.4~2.4835	Dipole	i-pex(MHF)	190
		5.56	5.15~5.85			
2	Master Wave	5.14	2.4~2.4835	Dipole	i-pex(MHF)	190
		5.56	5.15~5.85			

5. The EUT incorporates a MIMO function.

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	2TX	2RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11ac (VHT20)	MCS0~8 Nss=1	2TX	2RX
	MCS0~8 Nss=2	2TX	2RX
802.11ac (VHT40)	MCS0~9 Nss=1	2TX	2RX
	MCS0~9 Nss=2	2TX	2RX
802.11ac (VHT80)	MCS0~9 Nss=1	2TX	2RX
	MCS0~9 Nss=2	2TX	2RX

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

3.2 Description of Test Modes

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

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

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	
-	√	√	√	√	-

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

NOTE: The EUT had been pre-tested on the positioned of each 2axis. The worst case was found when positioned on **X-plane**.

Radiated Emission Test (Above 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

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

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

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

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Test Condition:

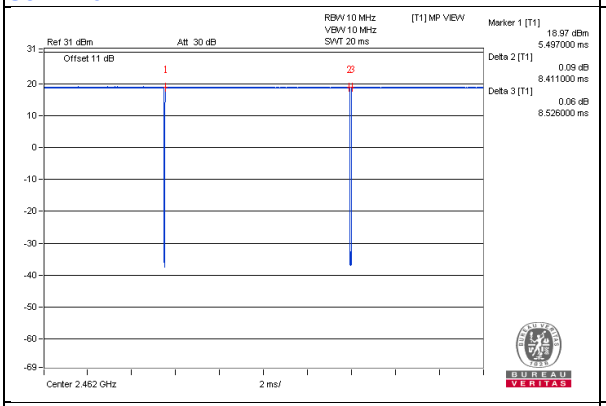
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	22deg. C, 63%RH	120Vac, 60Hz	Terry Huang
RE<1G	25deg. C, 64%RH	120Vac, 60Hz	Jyunchun Lin
PLC	24deg. C, 65%RH	120Vac, 60Hz	Jyunchun Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

3.3 Duty Cycle of Test Signal

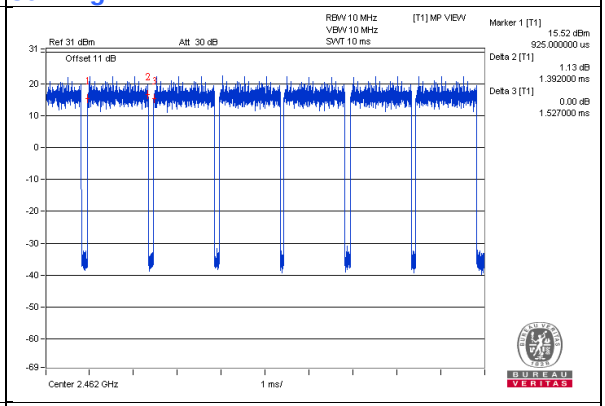
If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 8.411/8.526 = 0.987,
802.11g: Duty cycle = 1.392/1.527 = 0.912, Duty factor = 10 * log(1/0.912) = 0.4
802.11n (HT20): Duty cycle = 1.306/1.415 = 0.923, Duty factor = 10 * log(1/0.923) = 0.35
802.11n (HT40): Duty cycle = 0.646/0.791 = 0.817, Duty factor = 10 * log(1/0.817) = 0.88

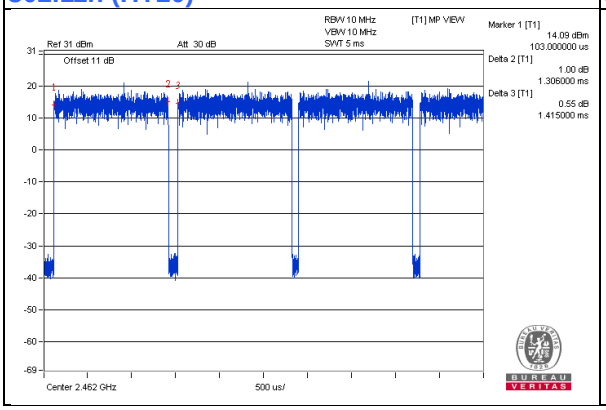
802.11b



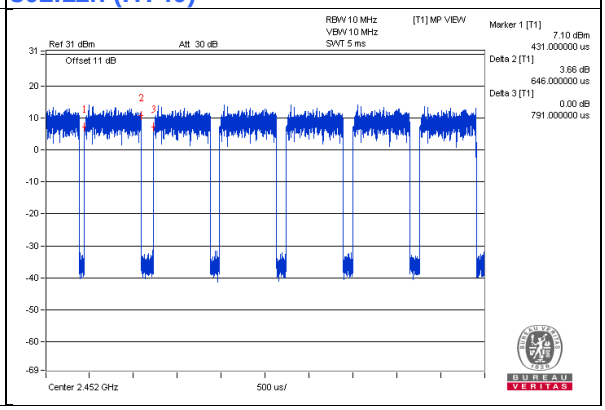
802.11g



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.

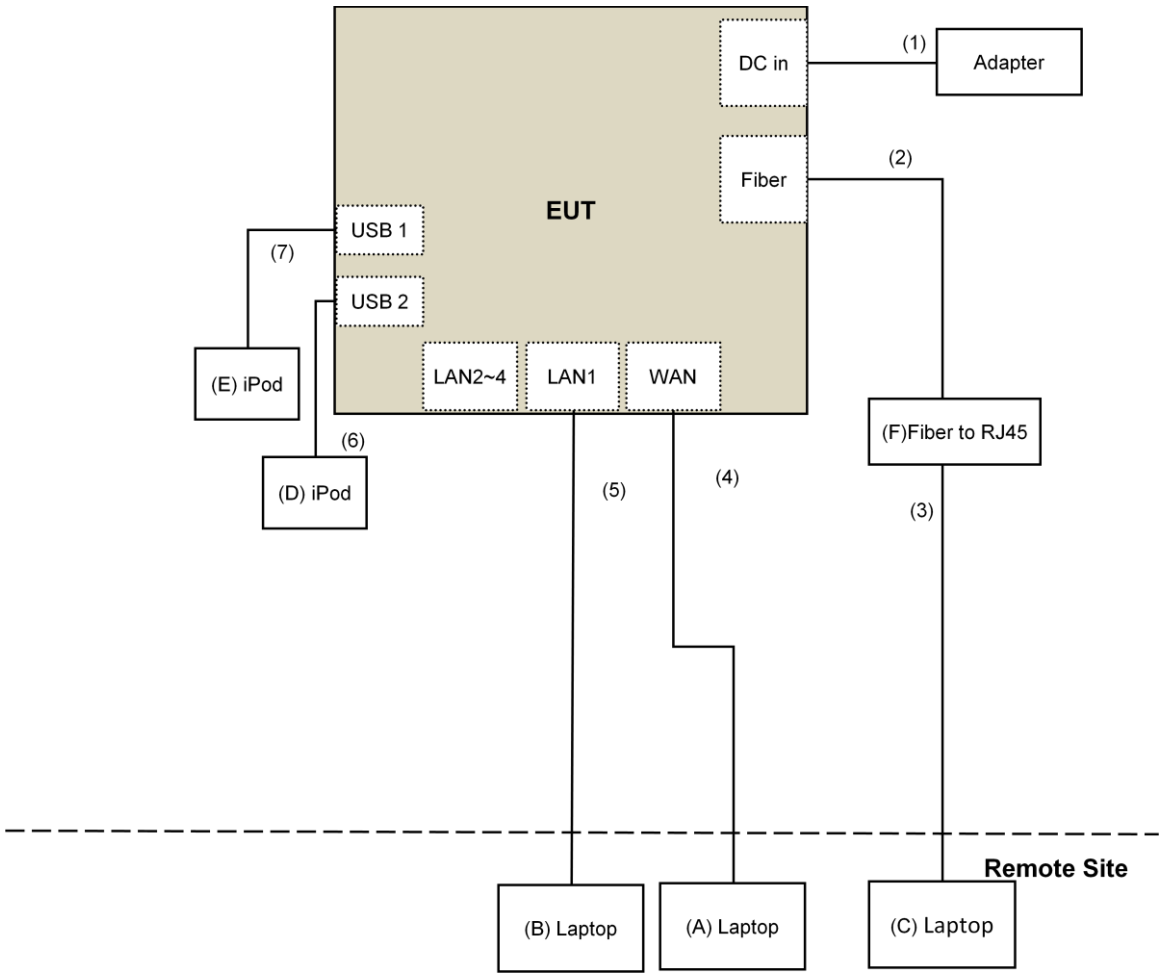
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
B.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
C.	Laptop	DELL	E5440	6FC7F12	FCC DoC	Provided by Lab
D.	iPod	Apple	MD778TA/A	CC4JG680F4T1	NA	Provided by Lab
E.	iPod	Apple	MD778TA/A	CC4JL03FF4T1	NA	Provided by Lab
F.	Fiber to RJ45	NA	NA	NA	NA	Supplied by client

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Items E~F acted as communication partners to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.8	No	0	Supplied by client
2.	Fiber Cable	1	0.3	No	0	Supplied by client
3.	RJ-45 Cable	1	10	No	0	Provided by Lab
4.	RJ-45 Cable	1	10	No	0	Provided by Lab
5.	RJ-45 Cable	1	10	No	0	Provided by Lab
6.	USB Cable	1	0.1	Yes	0	Provided by Lab
7.	USB Cable	1	0.1	Yes	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)
KDB 558074 D01 DTS Meas Guidance D01 v04
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. 17, 2017	Jan. 16, 2018
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 10, 2016	Nov. 09, 2017
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Dec. 13, 2016	Dec. 12, 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	Dec. 27, 2016	Dec. 26, 2017
Pre-Amplifier EMCI	EMC12630SE	980385	Feb. 02, 2017	Feb. 01, 2018
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	160923 150318 150323	Feb. 02, 2017 Mar. 30, 2016 Mar. 30, 2016	Feb. 01, 2018 Mar. 29, 2017 Mar. 29, 2017
Pre-Amplifier EMCI	EMC184045SE	980387	Feb. 02, 2017	Feb. 01, 2018
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 15, 2016	Dec. 14, 2017
RF Cable	SUCOFLEX 102	36432/2 36433/2	Jan. 15, 2017	Jan. 14, 2018
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	1014008	May 5, 2016	May 4, 2017
Power sensor Anritsu	MA2411B	0917122	May 5, 2016	May 4, 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: Feb. 07 to 15, 2017

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:

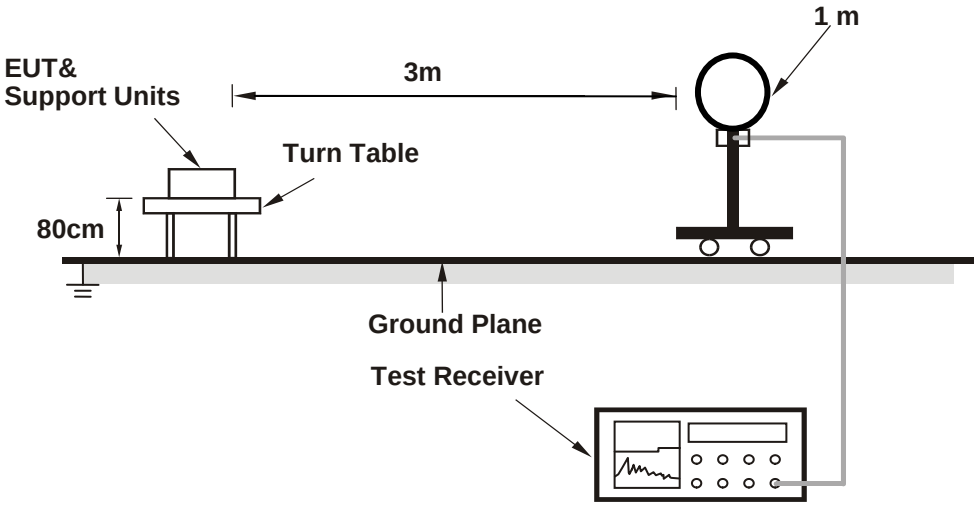
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

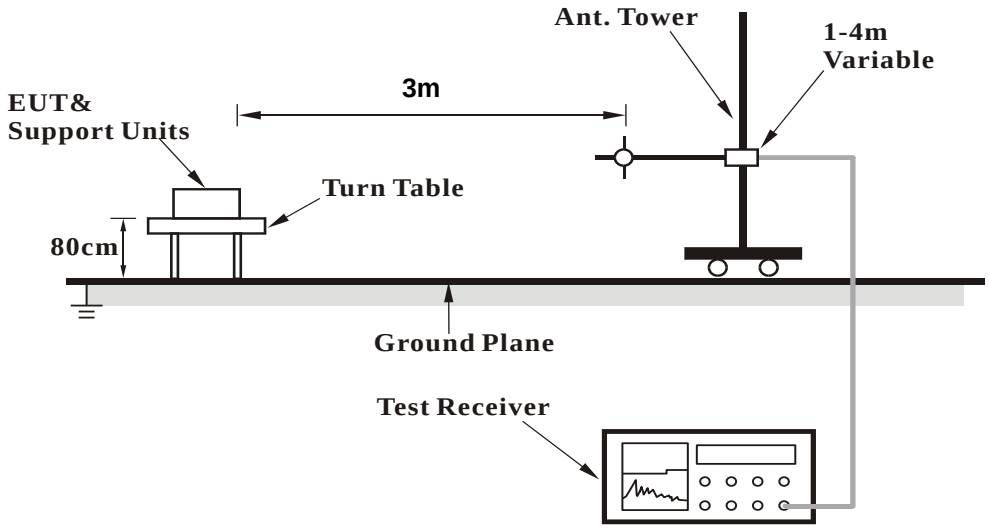
No deviation.

4.1.5 Test Setup

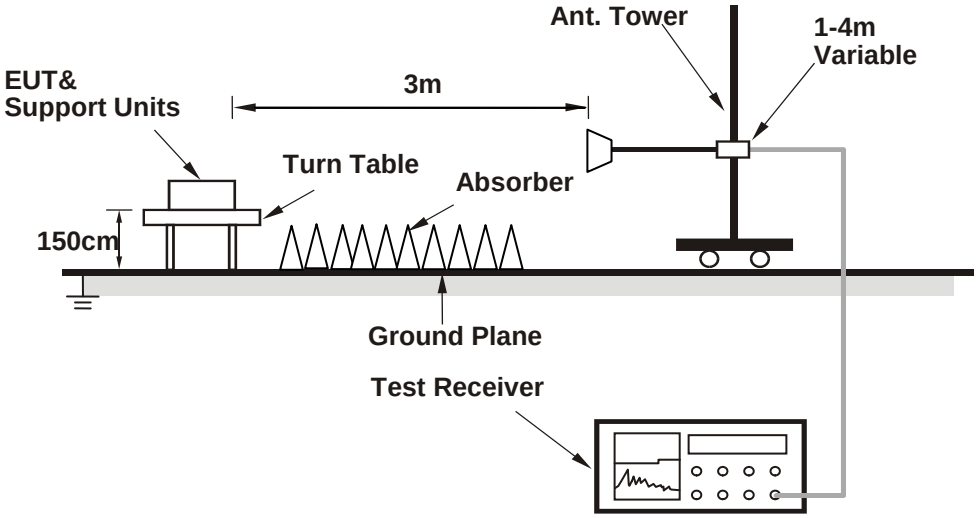
For Radiated emission below 30MHz



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. Controlling software (MP_TEST [RTL819x Ver3.0-2014/09/30]) 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	2385.00	47.8 PK	74.0	-26.2	1.39 H	278	49.9	-2.1
2	2385.00	34.9 AV	54.0	-19.1	1.39 H	278	37.0	-2.1
3	*2412.00	95.8 PK			1.39 H	278	97.8	-2.0
4	*2412.00	93.1 AV			1.39 H	278	95.1	-2.0
5	4824.00	48.5 PK	74.0	-25.5	1.09 H	141	46.3	2.2
6	4824.00	46.0 AV	54.0	-8.0	1.09 H	141	43.8	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	2385.00	51.5 PK	74.0	-22.5	1.50 V	39	53.6	-2.1
2	2385.00	41.9 AV	54.0	-12.1	1.50 V	39	44.0	-2.1
3	*2412.00	109.3 PK			1.50 V	39	111.3	-2.0
4	*2412.00	107.4 AV			1.50 V	39	109.4	-2.0
5	4824.00	52.2 PK	74.0	-21.8	2.53 V	77	50.0	2.2
6	4824.00	51.1 AV	54.0	-2.9	2.53 V	77	48.9	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) 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	*2437.00	96.0 PK			1.43 H	289	98.0	-2.0
2	*2437.00	93.2 AV			1.43 H	289	95.2	-2.0
3	4874.00	48.7 PK	74.0	-25.3	1.01 H	145	46.4	2.3
4	4874.00	46.4 AV	54.0	-7.6	1.01 H	145	44.1	2.3
5	7311.00	47.8 PK	74.0	-26.2	1.51 H	287	39.2	8.6
6	7311.00	39.0 AV	54.0	-15.0	1.51 H	287	30.4	8.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	110.4 PK			1.50 V	354	112.4	-2.0
2	*2437.00	107.5 AV			1.50 V	354	109.5	-2.0
3	4874.00	53.0 PK	74.0	-21.0	1.17 V	42	50.7	2.3
4	4874.00	51.5 AV	54.0	-2.5	1.17 V	42	49.2	2.3
5	7311.00	53.2 PK	74.0	-20.8	2.58 V	38	44.6	8.6
6	7311.00	48.6 AV	54.0	-5.4	2.58 V	38	40.0	8.6

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			1.36 H	274	98.4	-1.9
2	*2462.00	93.8 AV			1.36 H	274	95.7	-1.9
3	2483.50	51.1 PK	74.0	-22.9	1.36 H	274	52.9	-1.8
4	2483.50	34.7 AV	54.0	-19.3	1.36 H	274	36.5	-1.8
5	2500.00	50.1 PK	74.0	-23.9	1.36 H	274	51.8	-1.7
6	2500.00	38.6 AV	54.0	-15.4	1.36 H	274	40.3	-1.7
7	4924.00	48.7 PK	74.0	-25.3	1.05 H	140	46.2	2.5
8	4924.00	46.3 AV	54.0	-7.7	1.05 H	140	43.8	2.5
9	7386.00	47.5 PK	74.0	-26.5	1.50 H	279	38.9	8.6
10	7386.00	38.9 AV	54.0	-15.1	1.50 H	279	30.3	8.6
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	110.9 PK			1.50 V	194	112.8	-1.9
2	*2462.00	108.0 AV			1.50 V	194	109.9	-1.9
3	2483.50	54.9 PK	74.0	-19.1	1.50 V	194	56.7	-1.8
4	2483.50	41.4 AV	54.0	-12.6	1.50 V	194	43.2	-1.8
5	2500.00	53.0 PK	74.0	-21.0	1.51 V	42	54.7	-1.7
6	2500.00	45.1 AV	54.0	-8.9	1.51 V	42	46.8	-1.7
7	4924.00	53.0 PK	74.0	-21.0	1.16 V	48	50.5	2.5
8	4924.00	51.6 AV	54.0	-2.4	1.16 V	48	49.1	2.5
9	7386.00	53.2 PK	74.0	-20.8	2.58 V	43	44.6	8.6
10	7386.00	48.6 AV	54.0	-5.4	2.58 V	43	40.0	8.6

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	57.9 PK	74.0	-16.1	1.49 H	356	60.0	-2.1
2	2390.00	45.3 AV	54.0	-8.7	1.49 H	356	47.4	-2.1
3	*2412.00	94.9 PK			1.49 H	356	96.9	-2.0
4	*2412.00	85.7 AV			1.49 H	356	87.7	-2.0
5	4824.00	43.6 PK	74.0	-30.4	1.08 H	125	41.4	2.2
6	4824.00	32.8 AV	54.0	-21.2	1.08 H	125	30.6	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	64.0 PK	74.0	-10.0	1.50 V	136	66.1	-2.1
2	2390.00	51.5 AV	54.0	-2.5	1.50 V	136	53.6	-2.1
3	*2412.00	108.8 PK			1.50 V	136	110.8	-2.0
4	*2412.00	100.0 AV			1.50 V	136	102.0	-2.0
5	4824.00	48.0 PK	74.0	-26.0	1.16 V	61	45.8	2.2
6	4824.00	37.7 AV	54.0	-16.3	1.16 V	61	35.5	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	35.1 PK	74.0	-38.9	1.56 H	360	37.2	-2.1
2	2390.00	32.8 AV	54.0	-21.2	1.56 H	360	34.9	-2.1
3	*2437.00	95.5 PK			1.56 H	360	97.5	-2.0
4	*2437.00	87.8 AV			1.56 H	360	89.8	-2.0
5	2483.50	48.7 PK	74.0	-25.3	1.56 H	360	50.5	-1.8
6	2483.50	38.5 AV	54.0	-15.5	1.56 H	360	40.3	-1.8
7	4874.00	43.3 PK	74.0	-30.7	1.08 H	132	41.0	2.3
8	4874.00	32.4 AV	54.0	-21.6	1.08 H	132	30.1	2.3
9	7311.00	45.8 PK	74.0	-28.2	1.45 H	286	37.2	8.6
10	7311.00	33.5 AV	54.0	-20.5	1.45 H	286	24.9	8.6
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	49.0 PK	74.0	-25.0	1.76 V	352	51.1	-2.1
2	2390.00	39.0 AV	54.0	-15.0	1.76 V	352	41.1	-2.1
3	*2437.00	109.8 PK			1.76 V	352	111.8	-2.0
4	*2437.00	101.9 AV			1.76 V	352	103.9	-2.0
5	2483.50	51.4 PK	74.0	-22.6	1.76 V	352	53.2	-1.8
6	2483.50	45.0 AV	54.0	-9.0	1.76 V	352	46.8	-1.8
7	4874.00	47.4 PK	74.0	-26.6	1.10 V	64	45.1	2.3
8	4874.00	37.4 AV	54.0	-16.6	1.10 V	64	35.1	2.3
9	7311.00	53.3 PK	74.0	-20.7	3.34 V	360	44.7	8.6
10	7311.00	41.2 AV	54.0	-12.8	3.34 V	360	32.6	8.6

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	95.7 PK			1.36 H	274	97.6	-1.9
2	*2462.00	88.1 AV			1.36 H	274	90.0	-1.9
3	2483.50	63.1 PK	74.0	-10.9	1.36 H	274	64.9	-1.8
4	2483.50	47.1 AV	54.0	-6.9	1.36 H	274	48.9	-1.8
5	4924.00	43.0 PK	74.0	-31.0	1.10 H	116	40.5	2.5
6	4924.00	32.2 AV	54.0	-21.8	1.10 H	116	29.7	2.5
7	7386.00	45.6 PK	74.0	-28.4	1.47 H	279	37.0	8.6
8	7386.00	33.1 AV	54.0	-20.9	1.47 H	279	24.5	8.6
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	109.9 PK			1.50 V	348	111.8	-1.9
2	*2462.00	102.0 AV			1.50 V	348	103.9	-1.9
3	2483.50	67.5 PK	74.0	-6.5	1.50 V	348	69.3	-1.8
4	**2483.50**	**53.8 AV**	**54.0**	**-0.2**	**1.50 V**	**348**	**55.6**	**-1.8**
5	4924.00	47.3 PK	74.0	-26.7	1.15 V	48	44.8	2.5
6	4924.00	37.5 AV	54.0	-16.5	1.15 V	48	35.0	2.5
7	7386.00	53.4 PK	74.0	-20.6	3.31 V	360	44.8	8.6
8	7386.00	41.2 AV	54.0	-12.8	3.31 V	360	32.6	8.6

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	66.7 PK	74.0	-7.3	1.41 H	273	68.8	-2.1
2	2390.00	45.3 AV	54.0	-8.7	1.41 H	273	47.4	-2.1
3	*2412.00	95.0 PK			1.41 H	273	97.0	-2.0
4	*2412.00	85.7 AV			1.41 H	273	87.7	-2.0
5	4824.00	38.3 PK	74.0	-35.7	1.51 H	323	36.1	2.2
6	4824.00	28.9 AV	54.0	-25.1	1.51 H	323	26.7	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	70.6 PK	74.0	-3.4	1.62 V	352	72.7	-2.1
2	2390.00	51.9 AV	54.0	-2.1	1.62 V	352	54.0	-2.1
3	*2412.00	108.6 PK			1.62 V	352	110.6	-2.0
4	*2412.00	99.8 AV			1.62 V	352	101.8	-2.0
5	4824.00	39.2 PK	74.0	-34.8	1.17 V	75	37.0	2.2
6	4824.00	29.7 AV	54.0	-24.3	1.17 V	75	27.5	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	44.7 PK	74.0	-29.3	1.41 H	292	46.8	-2.1
2	2390.00	32.1 AV	54.0	-21.9	1.41 H	292	34.2	-2.1
3	*2437.00	96.3 PK			1.41 H	292	98.3	-2.0
4	*2437.00	86.7 AV			1.41 H	292	88.7	-2.0
5	2483.50	48.1 PK	74.0	-25.9	1.41 H	292	49.9	-1.8
6	2483.50	38.6 AV	54.0	-15.4	1.41 H	292	40.4	-1.8
7	4874.00	38.7 PK	74.0	-35.3	1.45 H	339	36.4	2.3
8	4874.00	29.1 AV	54.0	-24.9	1.45 H	339	26.8	2.3
9	7311.00	41.8 PK	74.0	-32.2	2.33 H	49	33.2	8.6
10	7311.00	30.5 AV	54.0	-23.5	2.33 H	49	21.9	8.6
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	48.2 PK	74.0	-25.8	1.70 V	353	50.3	-2.1
2	2390.00	39.1 AV	54.0	-14.9	1.70 V	353	41.2	-2.1
3	*2437.00	109.6 PK			1.70 V	353	111.6	-2.0
4	*2437.00	101.2 AV			1.70 V	353	103.2	-2.0
5	2483.50	51.8 PK	74.0	-22.2	1.70 V	353	53.6	-1.8
6	2483.50	45.3 AV	54.0	-8.7	1.70 V	353	47.1	-1.8
7	4874.00	39.4 PK	74.0	-34.6	1.15 V	76	37.1	2.3
8	4874.00	29.8 AV	54.0	-24.2	1.15 V	76	27.5	2.3
9	7311.00	45.5 PK	74.0	-28.5	1.80 V	202	36.9	8.6
10	7311.00	34.2 AV	54.0	-19.8	1.80 V	202	25.6	8.6

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	96.3 PK			1.38 H	287	98.2	-1.9
2	*2462.00	86.9 AV			1.38 H	287	88.8	-1.9
3	2483.50	62.9 PK	74.0	-11.1	1.38 H	287	64.7	-1.8
4	2483.50	40.9 AV	54.0	-13.1	1.38 H	287	42.7	-1.8
5	4924.00	38.7 PK	74.0	-35.3	1.45 H	340	36.2	2.5
6	4924.00	29.1 AV	54.0	-24.9	1.45 H	340	26.6	2.5
7	7386.00	42.3 PK	74.0	-31.7	2.38 H	42	33.7	8.6
8	7386.00	30.9 AV	54.0	-23.1	2.38 H	42	22.3	8.6
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			1.68 V	191	112.0	-1.9
2	*2462.00	101.4 AV			1.68 V	191	103.3	-1.9
3	2483.50	66.9 PK	74.0	-7.1	1.68 V	191	68.7	-1.8
4	**2483.50**	**53.8 AV**	**54.0**	**-0.2**	**1.68 V**	**191**	**55.6**	**-1.8**
5	4924.00	44.2 PK	74.0	-29.8	1.16 V	51	41.7	2.5
6	4924.00	34.1 AV	54.0	-19.9	1.16 V	51	31.6	2.5
7	7386.00	46.9 PK	74.0	-27.1	1.74 V	214	38.3	8.6
8	7386.00	35.7 AV	54.0	-18.3	1.74 V	214	27.1	8.6

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	55.3 PK	74.0	-18.7	1.42 H	275	57.4	-2.1
2	2390.00	39.5 AV	54.0	-14.5	1.42 H	275	41.6	-2.1
3	*2422.00	92.1 PK			1.42 H	275	94.2	-2.1
4	*2422.00	82.1 AV			1.42 H	275	84.2	-2.1
5	4844.00	38.8 PK	74.0	-35.2	1.39 H	348	36.5	2.3
6	4844.00	29.4 AV	54.0	-24.6	1.39 H	348	27.1	2.3
7	7266.00	41.4 PK	74.0	-32.6	2.36 H	43	32.8	8.6
8	7266.00	30.4 AV	54.0	-23.6	2.36 H	43	21.8	8.6
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	68.5 PK	74.0	-5.5	1.50 V	51	70.6	-2.1
2	**2390.00**	**53.8 AV**	**54.0**	**-0.2**	**1.50 V**	**51**	**55.9**	**-2.1**
3	*2422.00	105.4 PK			1.50 V	51	107.5	-2.1
4	*2422.00	96.5 AV			1.50 V	51	98.6	-2.1
5	4844.00	41.1 PK	74.0	-32.9	1.74 V	236	38.8	2.3
6	4844.00	29.9 AV	54.0	-24.1	1.74 V	236	27.6	2.3
7	7266.00	45.6 PK	74.0	-28.4	1.84 V	214	37.0	8.6
8	7266.00	34.8 AV	54.0	-19.2	1.84 V	214	26.2	8.6

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	58.2 PK	74.0	-15.8	1.42 H	275	60.3	-2.1
2	2390.00	42.5 AV	54.0	-11.5	1.42 H	275	44.6	-2.1
3	*2437.00	92.1 PK			1.42 H	275	94.1	-2.0
4	*2437.00	82.1 AV			1.42 H	275	84.1	-2.0
5	2483.50	59.6 PK	74.0	-14.4	1.42 H	275	61.4	-1.8
6	2483.50	43.2 AV	54.0	-10.8	1.42 H	275	45.0	-1.8
7	4874.00	38.3 PK	74.0	-35.7	1.50 H	327	36.0	2.3
8	4874.00	28.8 AV	54.0	-25.2	1.50 H	327	26.5	2.3
9	7311.00	41.8 PK	74.0	-32.2	2.35 H	62	33.2	8.6
10	7311.00	30.6 AV	54.0	-23.4	2.35 H	62	22.0	8.6
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	61.9 PK	74.0	-12.1	1.51 V	50	64.0	-2.1
2	2390.00	49.1 AV	54.0	-4.9	1.51 V	50	51.2	-2.1
3	*2437.00	105.0 PK			1.51 V	50	107.0	-2.0
4	*2437.00	97.1 AV			1.51 V	50	99.1	-2.0
5	2483.50	62.4 PK	74.0	-11.6	1.51 V	50	64.2	-1.8
6	2483.50	50.5 AV	54.0	-3.5	1.51 V	50	52.3	-1.8
7	4874.00	40.9 PK	74.0	-33.1	1.69 V	239	38.6	2.3
8	4874.00	29.6 AV	54.0	-24.4	1.69 V	239	27.3	2.3
9	7311.00	45.7 PK	74.0	-28.3	1.84 V	210	37.1	8.6
10	7311.00	34.8 AV	54.0	-19.2	1.84 V	210	26.2	8.6

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	92.1 PK			1.42 H	275	94.0	-1.9
2	*2452.00	82.1 AV			1.42 H	275	84.0	-1.9
3	2483.50	60.4 PK	74.0	-13.6	1.42 H	275	62.2	-1.8
4	2483.50	45.6 AV	54.0	-8.4	1.42 H	275	47.4	-1.8
5	4904.00	38.6 PK	74.0	-35.4	1.46 H	352	36.2	2.4
6	4904.00	28.9 AV	54.0	-25.1	1.46 H	352	26.5	2.4
7	7356.00	41.4 PK	74.0	-32.6	2.28 H	61	32.8	8.6
8	7356.00	30.3 AV	54.0	-23.7	2.28 H	61	21.7	8.6
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	103.1 PK			1.65 V	352	105.0	-1.9
2	*2452.00	95.4 AV			1.65 V	352	97.3	-1.9
3	2483.50	64.3 PK	74.0	-9.7	1.65 V	352	66.1	-1.8
4	**2483.50**	**53.8 AV**	**54.0**	**-0.2**	**1.65 V**	**352**	**55.6**	**-1.8**
5	4904.00	39.2 PK	74.0	-34.8	1.76 V	231	36.8	2.4
6	4904.00	30.1 AV	54.0	-23.9	1.76 V	231	27.7	2.4
7	7356.00	45.7 PK	74.0	-28.3	1.68 V	214	37.1	8.6
8	7356.00	35.2 AV	54.0	-18.8	1.68 V	214	26.6	8.6

REMARKS:

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

Below 1GHz Data:

802.11g

CHANNEL	TX Channel 11	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	41.32	31.2 QP	40.0	-8.8	3.00 H	264	39.7	-8.5
2	148.63	31.1 QP	43.5	-12.4	2.00 H	73	39.4	-8.3
3	451.39	32.8 QP	46.0	-13.2	2.00 H	13	36.5	-3.7
4	580.01	40.7 QP	46.0	-5.3	1.50 H	351	41.8	-1.1
5	750.01	35.4 QP	46.0	-10.6	2.00 H	132	33.4	2.0
6	875.02	38.8 QP	46.0	-7.2	1.00 H	337	35.3	3.5
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	142.88	30.7 QP	43.5	-12.8	1.00 V	23	39.0	-8.3
2	500.01	34.8 QP	46.0	-11.2	1.00 V	342	37.6	-2.8
3	580.16	36.5 QP	46.0	-9.5	1.00 V	360	37.6	-1.1
4	750.03	36.7 QP	46.0	-9.3	1.50 V	240	34.7	2.0
5	875.04	39.8 QP	46.0	-6.2	1.50 V	56	36.3	3.5
6	901.86	37.7 QP	46.0	-8.3	1.50 V	0	33.7	4.0

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

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
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 13, 2016	June 12, 2017
50 ohms Terminator	N/A	EMC-02	Sep. 29, 2016	Sep. 28, 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: Jan. 25, 2017

4.2.3 Test Procedures

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

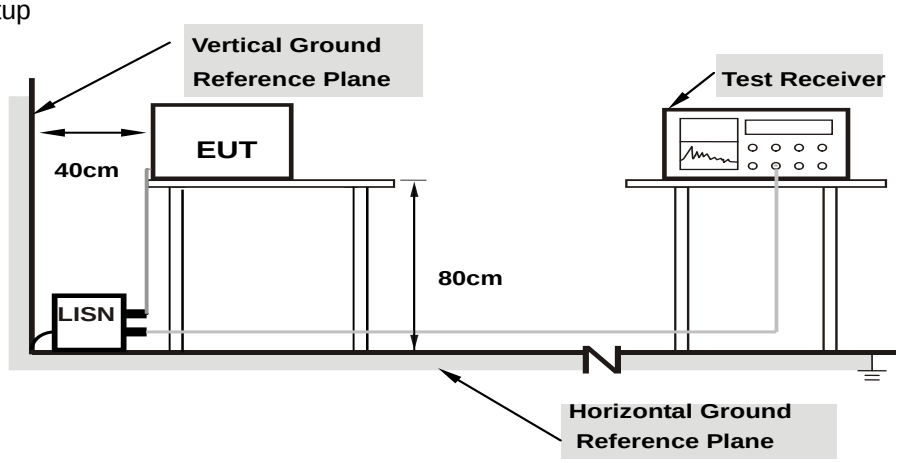
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

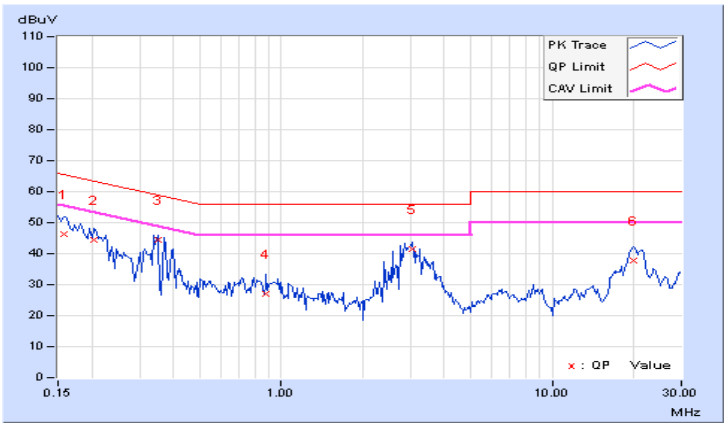
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	10.19	36.25	22.48	46.44	32.67	65.58	55.58	-19.14	-22.91
2	0.20469	10.19	34.13	23.77	44.32	33.96	63.42	53.42	-19.10	-19.46
3	**0.34922**	**10.21**	**34.05**	**31.93**	**44.26**	**42.14**	**58.98**	**48.98**	**-14.72**	**-6.84**
4	0.87656	10.25	16.93	10.38	27.18	20.63	56.00	46.00	-28.82	-25.37
5	3.03906	10.24	31.34	18.27	41.58	28.51	56.00	46.00	-14.42	-17.49
6	20.06250	11.38	26.40	19.93	37.78	31.31	60.00	50.00	-22.22	-18.69

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.

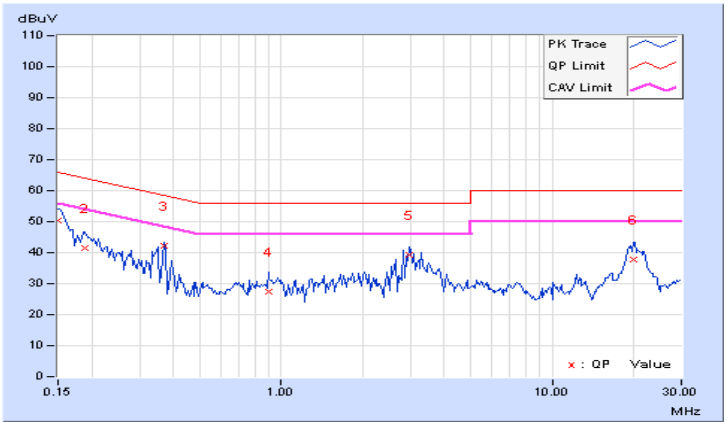


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.18	40.13	25.41	50.31	35.59	66.00	56.00	-15.69	-20.41
2	0.18906	10.16	31.24	19.73	41.40	29.89	64.08	54.08	-22.68	-24.19
3	0.36875	10.20	31.88	28.31	42.08	38.51	58.53	48.53	-16.45	-10.02
4	0.89609	10.23	17.11	11.73	27.34	21.96	56.00	46.00	-28.66	-24.04
5	2.97266	10.22	28.99	14.36	39.21	24.58	56.00	46.00	-16.79	-21.42
6	20.00000	11.10	26.61	18.42	37.71	29.52	60.00	50.00	-22.29	-20.48

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.

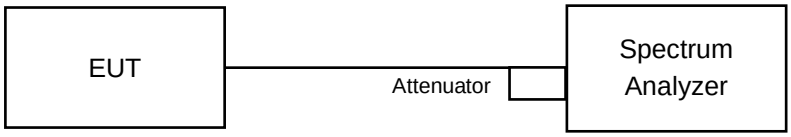


4.3 6dB Bandwidth Measurement

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
		Chain 0	Chain 1		
1	2412	10.10	9.17	0.5	Pass
6	2437	10.12	10.09	0.5	Pass
11	2462	10.12	10.12	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	16.42	16.42	0.5	Pass
6	2437	16.40	16.38	0.5	Pass
11	2462	16.39	16.39	0.5	Pass

802.11n (HT20)

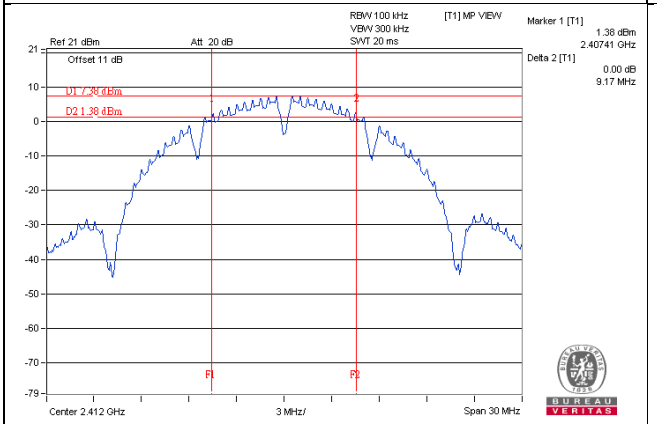
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	17.65	17.64	0.5	Pass
6	2437	17.67	17.68	0.5	Pass
11	2462	17.67	17.68	0.5	Pass

802.11n (HT40)

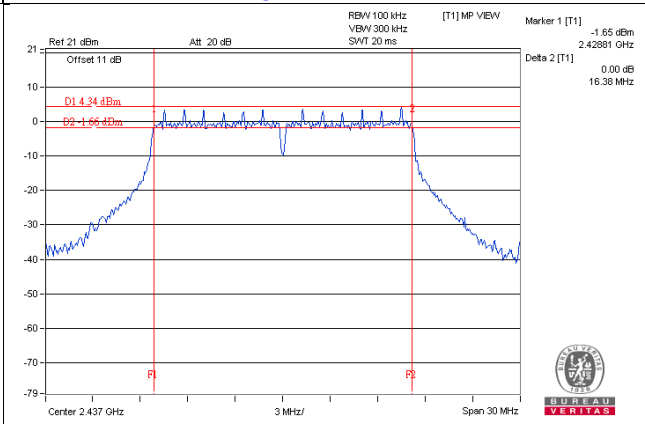
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.64	35.83	0.5	Pass
6	2437	35.74	35.61	0.5	Pass
9	2452	35.74	35.89	0.5	Pass

Spectrum Plot of Worst Value

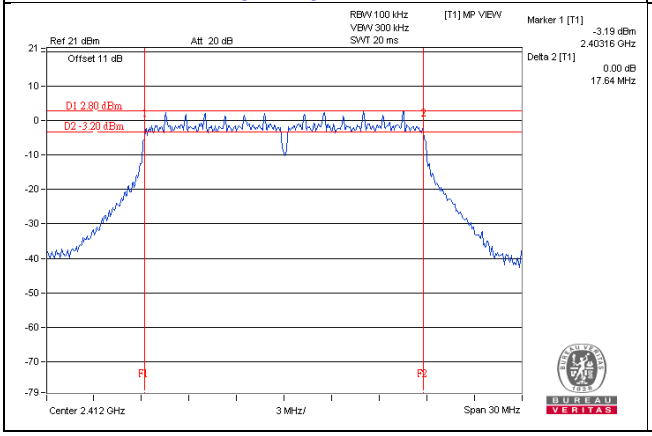
802.11b / Chain 1 : CH1



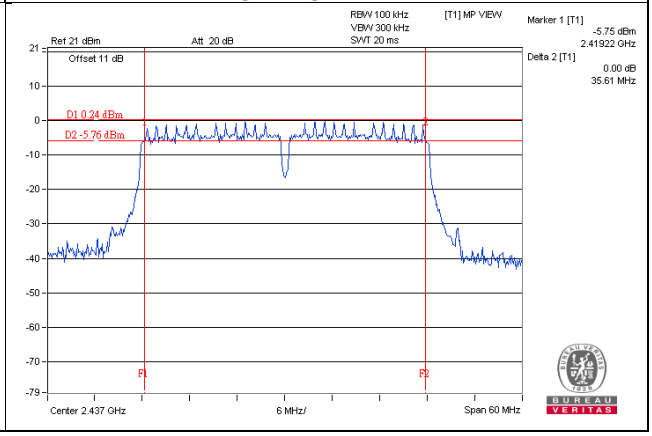
802.11g / Chain 1 : CH6



802.11n (HT20) / Chain 1 : CH1



802.11n (HT40) / Chain 1 : CH6



4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

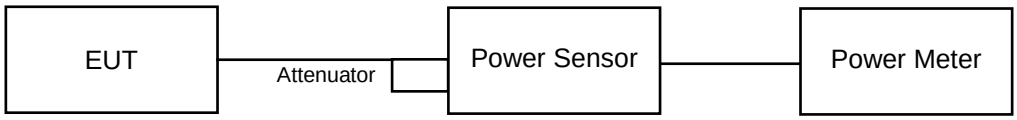
For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

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.

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

FOR PEAK POWER

802.11b

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	19.45	19.75	182.511	22.61	30	Pass
6	2437	19.42	19.66	179.968	22.55	30	Pass
11	2462	19.54	19.31	175.26	22.44	30	Pass

802.11g

Chan.	Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	23.86	23.17	450.711	26.54	30	Pass
6	2437	24.11	23.59	486.192	26.87	30	Pass
11	2462	24.08	23.92	502.463	27.01	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	22.71	22.87	380.28	25.80	30	Pass
6	2437	22.17	22.72	351.884	25.46	30	Pass
11	2462	22.27	22.83	360.522	25.57	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	21.63	21.72	294.14	24.69	30	Pass
6	2437	21.43	21.49	279.924	24.47	30	Pass
9	2452	18.64	19.09	154.21	21.88	30	Pass

FOR AVERAGE POWER

802.11b

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	17.17	17.62	109.929	20.41
6	2437	17.31	17.37	108.403	20.35
11	2462	17.54	17.15	108.634	20.36

802.11g

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	15.25	15.15	66.231	18.21
6	2437	15.38	15.25	68.011	18.33
11	2462	15.33	15.27	67.77	18.31

802.11n (HT20)

Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	13.48	13.65	45.458	16.58
6	2437	13.33	13.70	44.97	16.53
11	2462	13.23	13.63	44.105	16.44

802.11n (HT40)

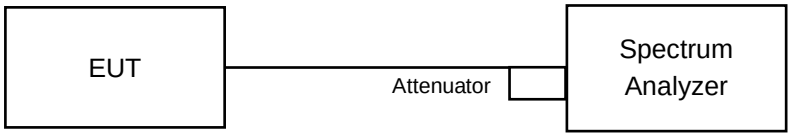
Chan.	Frequency (MHz)	Avg. Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	13.44	13.36	43.757	16.41
6	2437	13.33	13.24	42.614	16.30
9	2452	10.34	10.68	22.509	13.52

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

a. Set analyzer center frequency to DTS channel center frequency.
b. Set the span to 1.5 times the DTS bandwidth.
c. Set the RBW to: 3 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.
i. Use the peak marker function to determine the maximum amplitude level within the RBW.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

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	-13.94	3.01	-10.93	5.85	Pass
	6	2437	-14.30	3.01	-11.29	5.85	Pass
	11	2462	-13.97	3.01	-10.96	5.85	Pass
1	1	2412	-12.83	3.01	-9.82	5.85	Pass
	6	2437	-13.48	3.01	-10.47	5.85	Pass
	11	2462	-14.04	3.01	-11.03	5.85	Pass

NOTE: Directional gain = 5.14dBi + 10log(2) = 8.15dBi > 6dBi , so the power density limit shall be reduced to 8-(8.15-6) = 5.85dBm.

802.11g

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	-12.60	3.01	-9.59	5.85	Pass
	6	2437	-13.75	3.01	-10.74	5.85	Pass
	11	2462	-11.36	3.01	-8.35	5.85	Pass
1	1	2412	-13.02	3.01	-10.01	5.85	Pass
	6	2437	-12.65	3.01	-9.64	5.85	Pass
	11	2462	-12.39	3.01	-9.38	5.85	Pass

NOTE: Directional gain = 5.14dBi + 10log(2) = 8.15dBi > 6dBi , so the power density limit shall be reduced to 8-(8.15-6) = 5.85dBm.

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	-13.48	3.01	-10.47	5.85	Pass
	6	2437	-14.07	3.01	-11.06	5.85	Pass
	11	2462	-13.84	3.01	-10.83	5.85	Pass
1	1	2412	-13.89	3.01	-10.88	5.85	Pass
	6	2437	-13.08	3.01	-10.07	5.85	Pass
	11	2462	-13.26	3.01	-10.25	5.85	Pass

NOTE: Directional gain = 5.14dBi + 10log(2) = 8.15dBi > 6dBi , so the power density limit shall be reduced to 8-(8.15-6) = 5.85dBm.

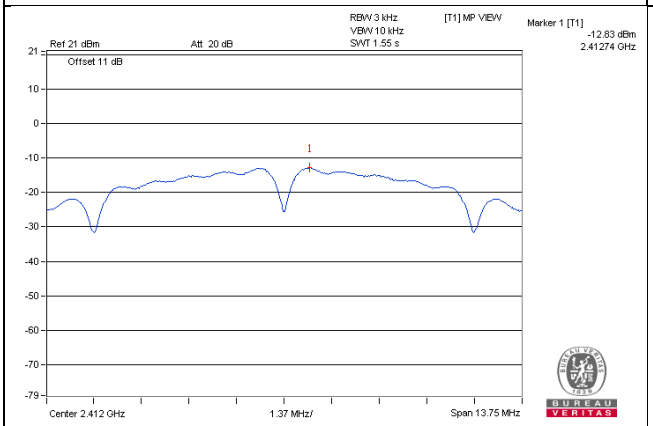
802.11n (HT40)

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	-15.83	3.01	-12.82	5.85	Pass
	6	2437	-14.88	3.01	-11.87	5.85	Pass
	9	2452	-17.87	3.01	-14.86	5.85	Pass
1	3	2422	-15.55	3.01	-12.54	5.85	Pass
	6	2437	-15.16	3.01	-12.15	5.85	Pass
	9	2452	-16.01	3.01	-13.00	5.85	Pass

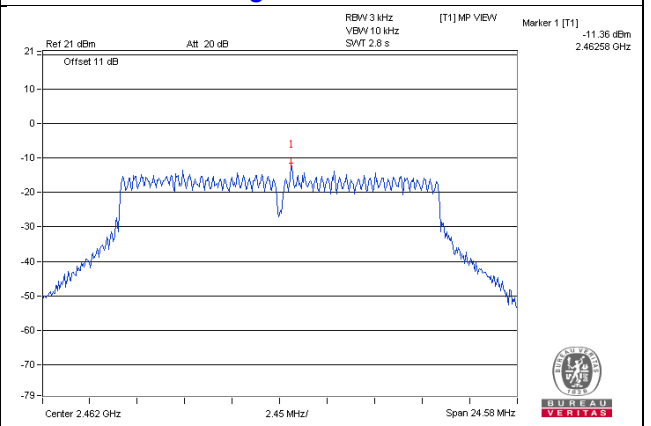
NOTE: Directional gain = 5.14dBi + 10log(2) = 8.15dBi > 6dBi , so the power density limit shall be reduced to 8-(8.15-6) = 5.85dBm.

Spectrum Plot of Worst Value

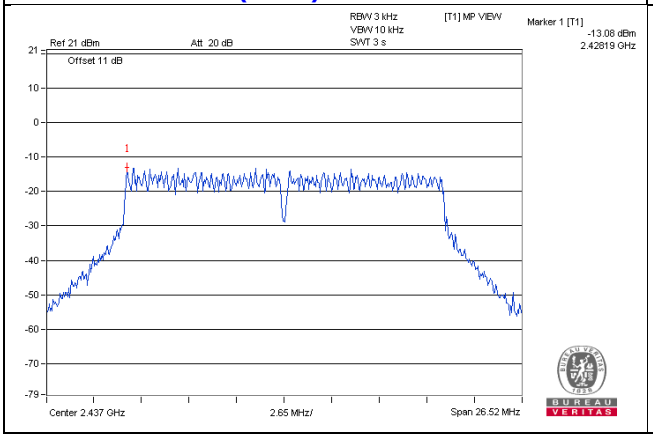
802.11b / Chain 1 : CH1



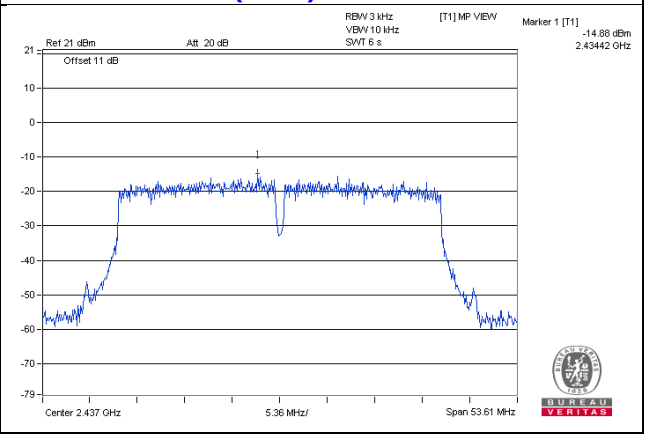
802.11g / Chain 0 : CH11



802.11n (HT20) / Chain 1 : CH6



802.11n (HT40) / Chain 0 : CH6

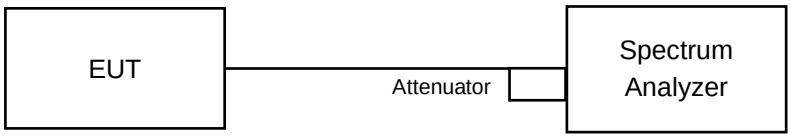


4.6 Conducted Out of Band Emission Measurement

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 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.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

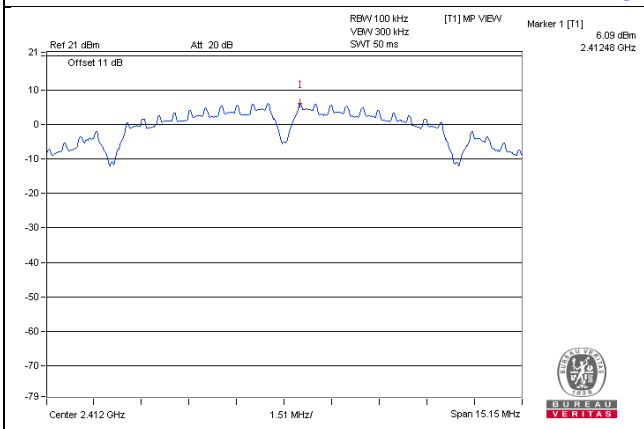
Same as Item 4.3.6

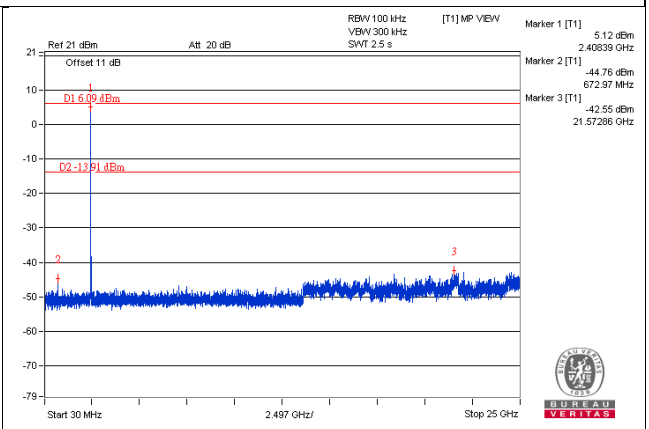
4.6.7 Test Results

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

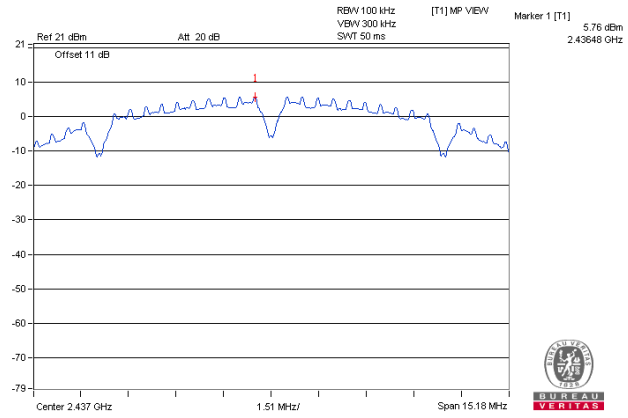
802.11b - CHAIN 0

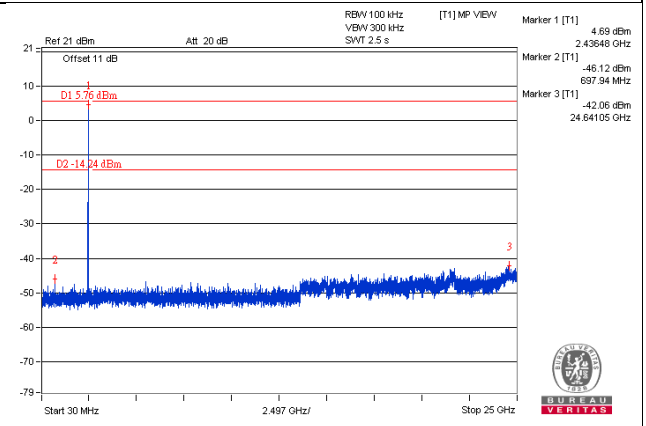
CH 1



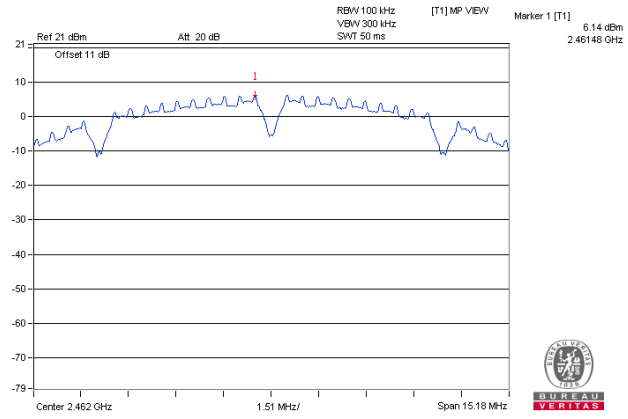


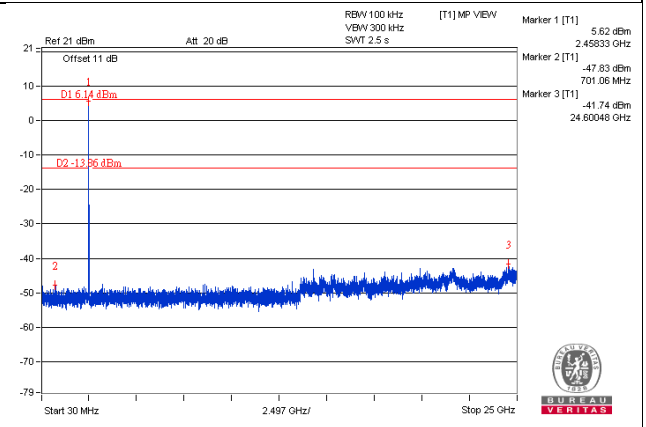
CH 6



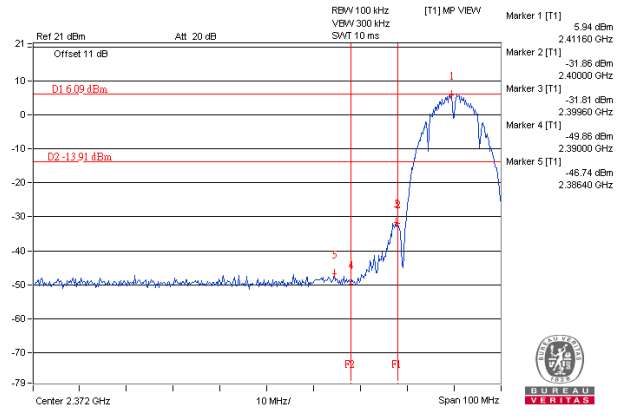


CH 11

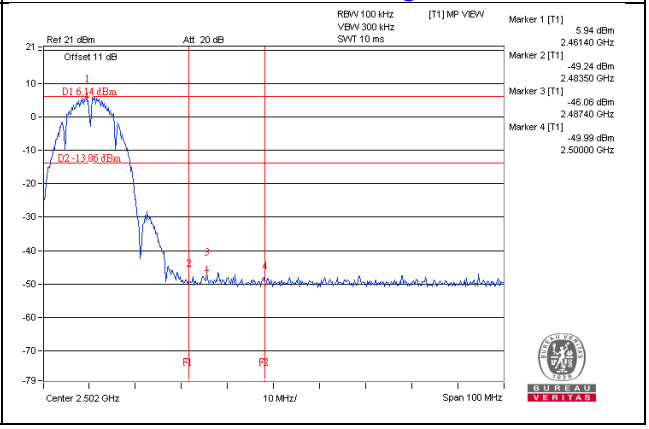




CH 1 Band edge

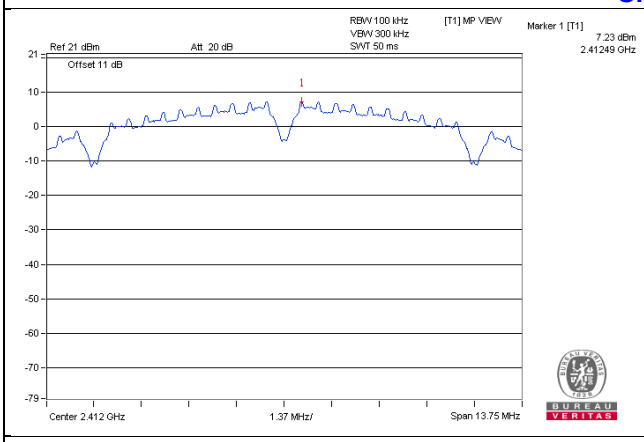


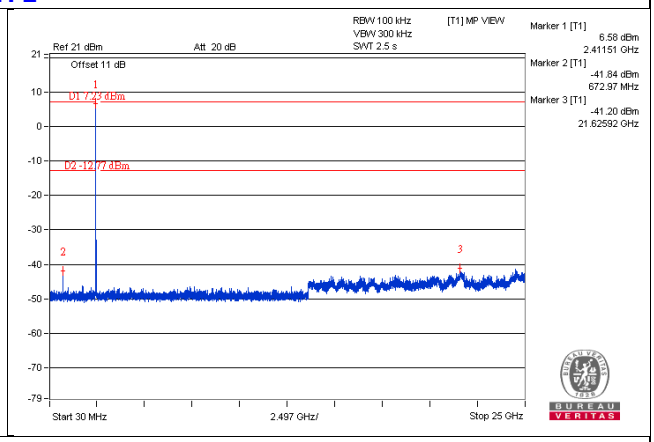
CH 11 Band edge



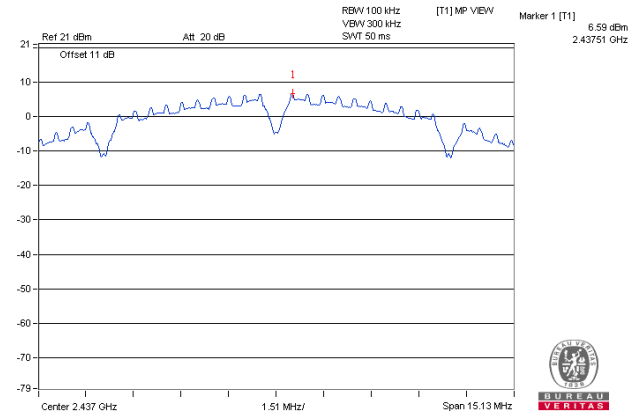
CHAIN 1

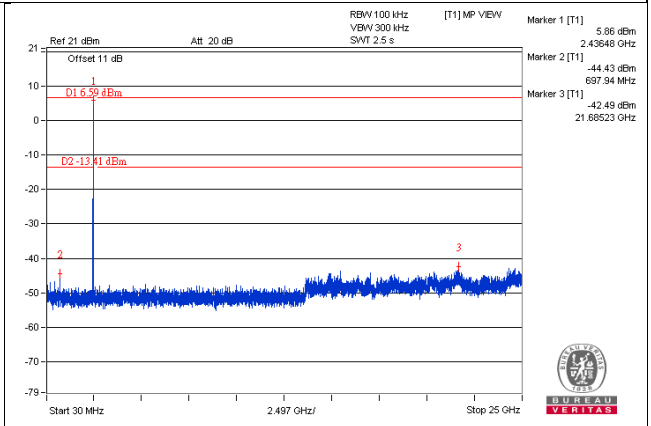
CH 1



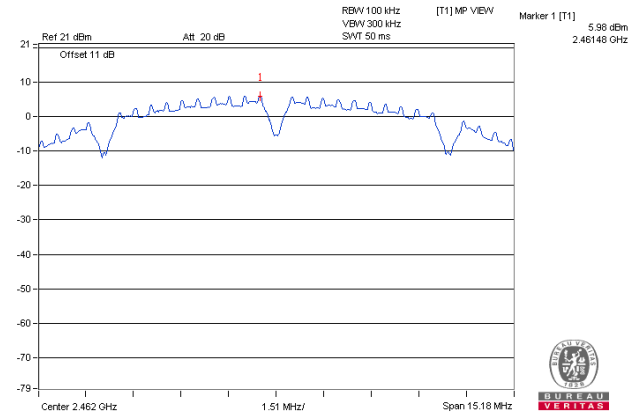


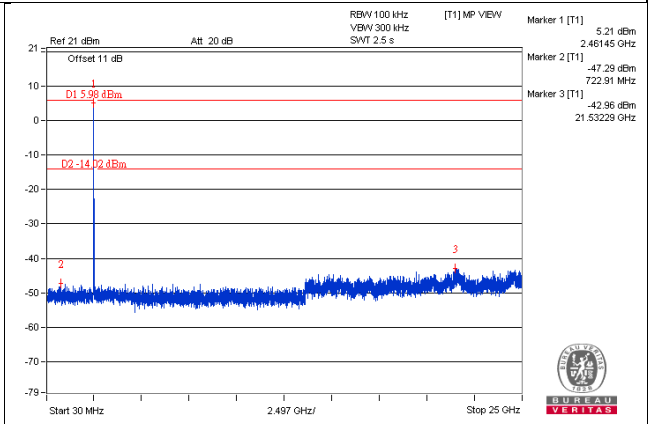
CH 6



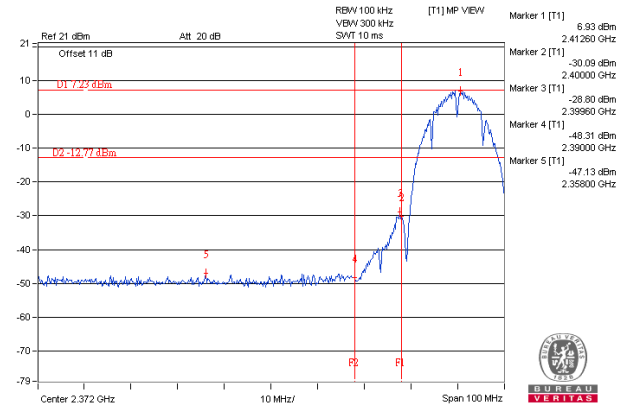


CH 11

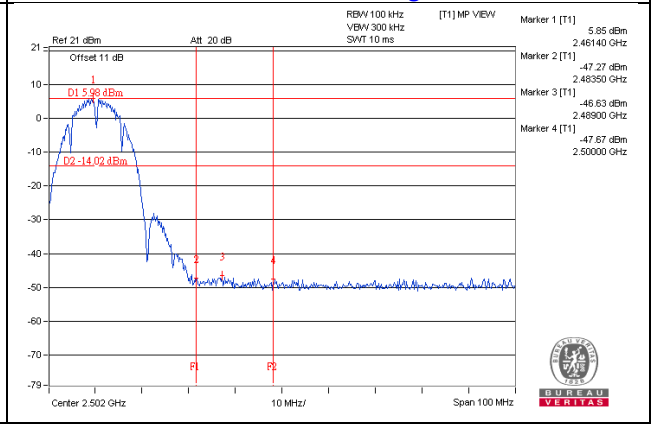




CH 1 Band edge

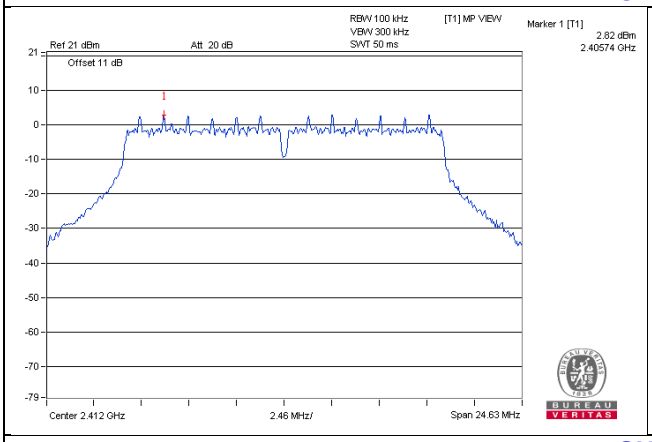


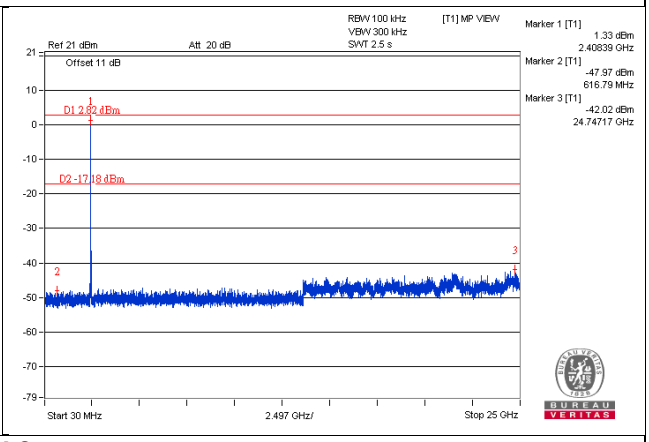
CH 11 Band edge



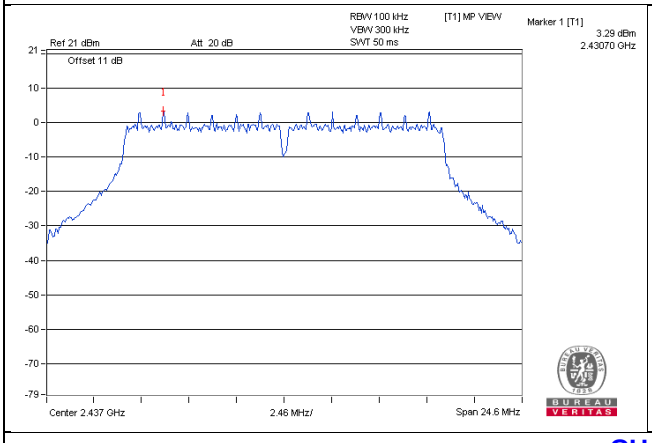
802.11g - CHAIN 0

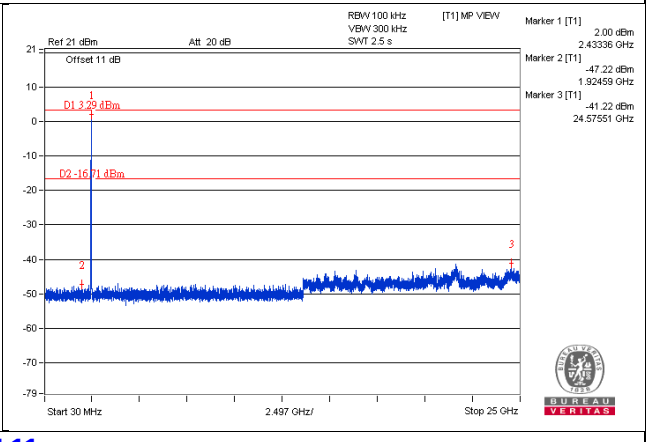
CH 1



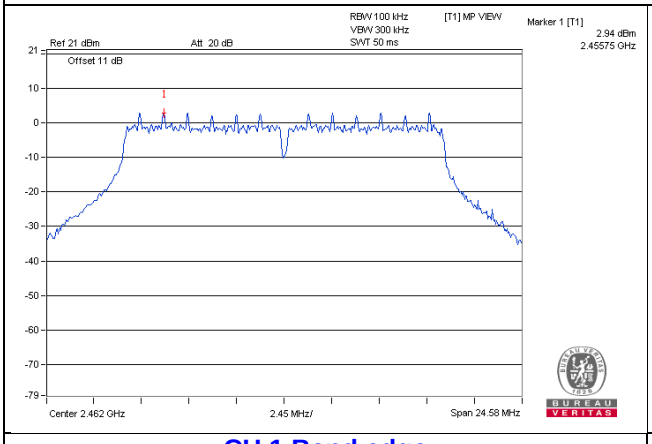


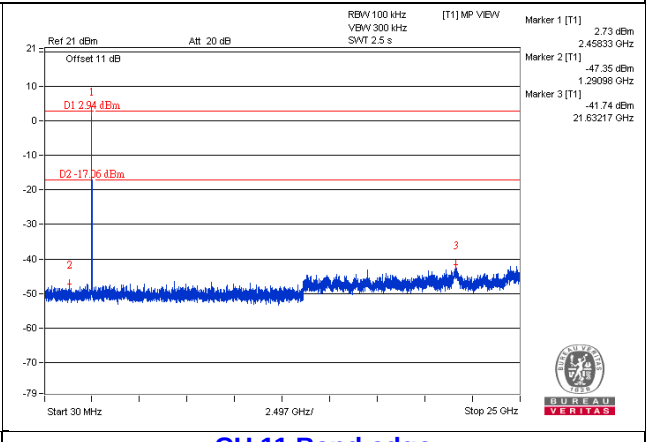
CH 6



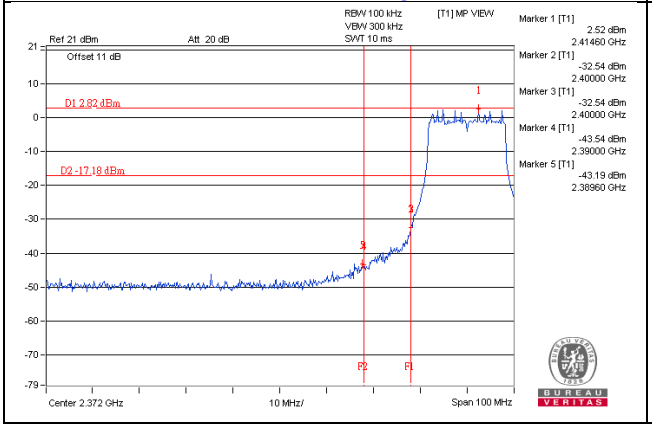


CH 11

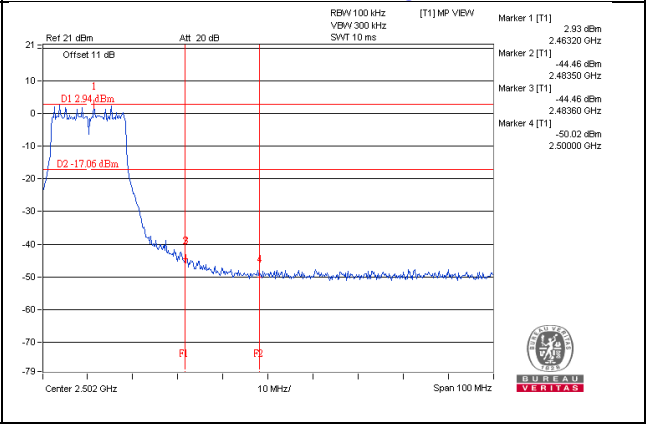




CH 1 Band edge

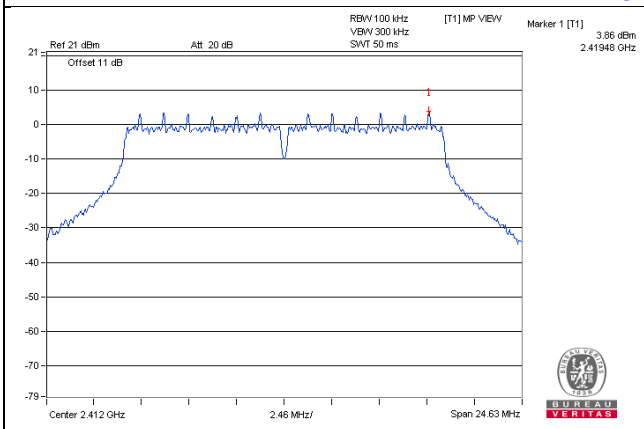


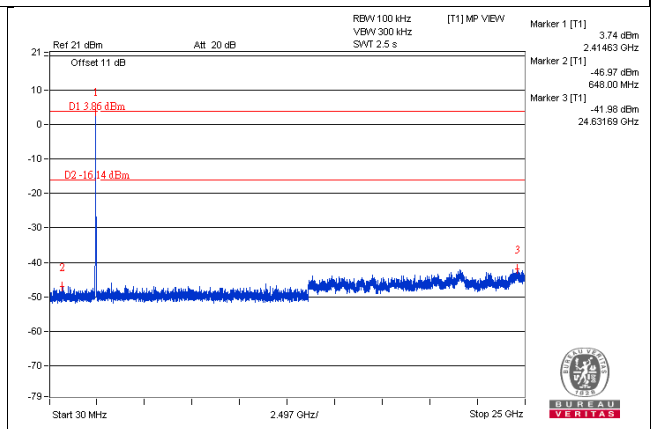
CH 11 Band edge



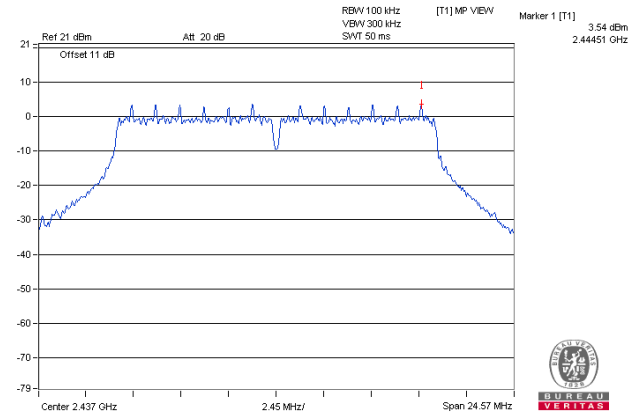
CHAIN 1

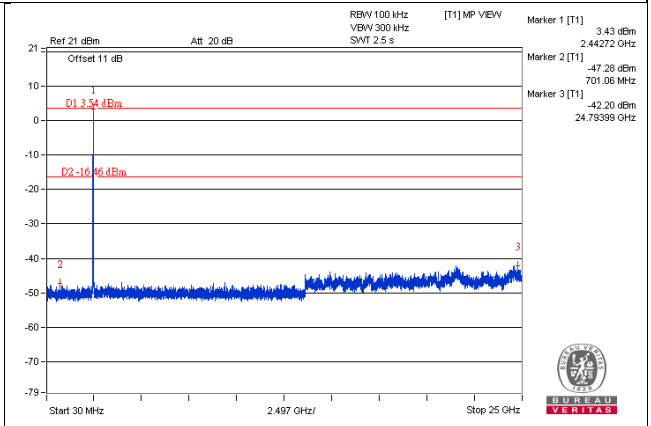
CH 1



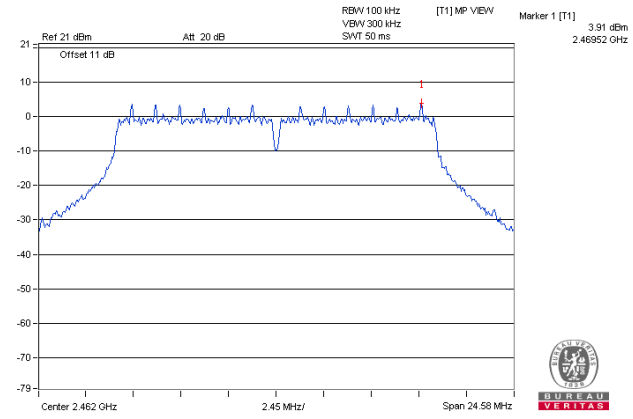


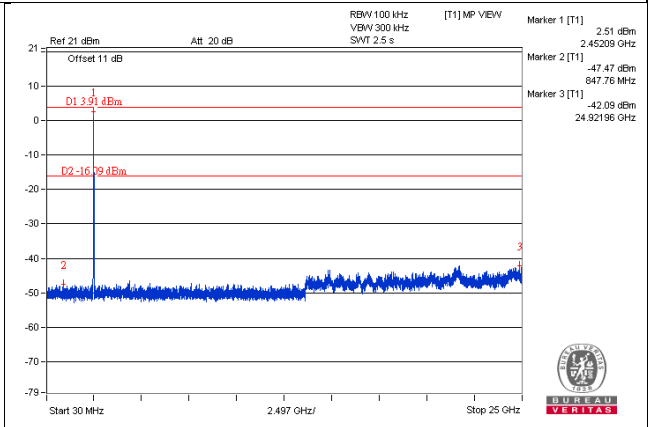
CH 6



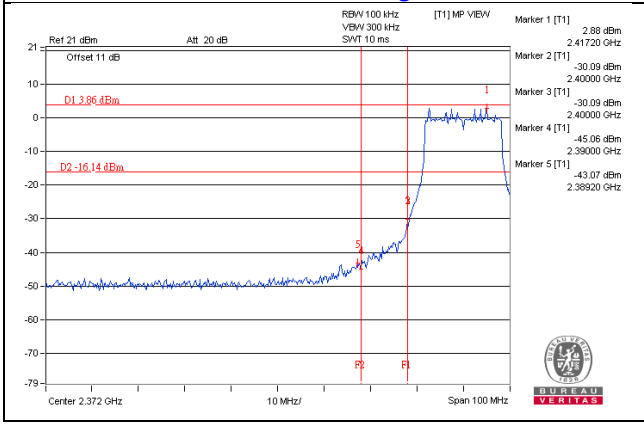


CH 11

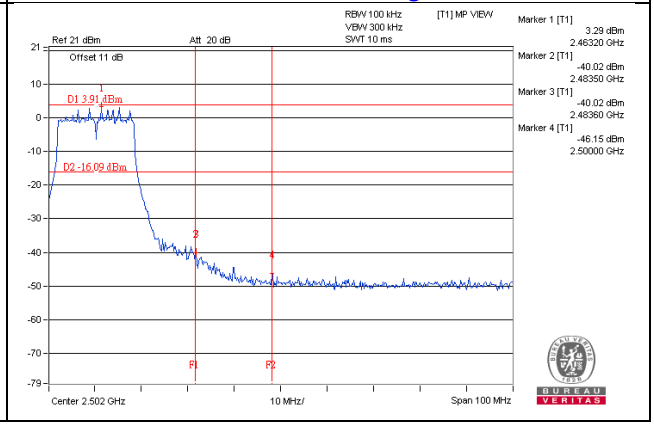




CH 1 Band edge

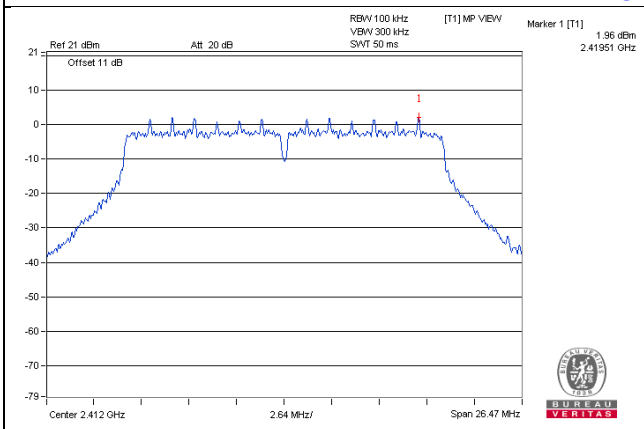


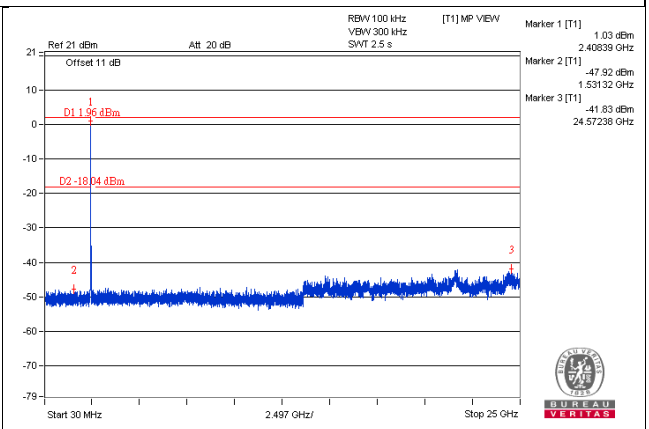
CH 11 Band edge



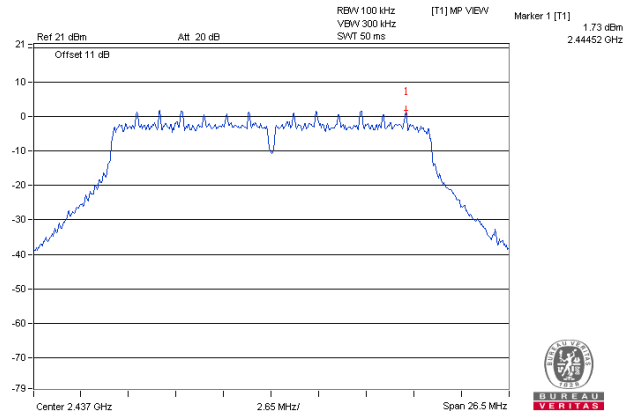
802.11n (HT20) - CHAIN 0

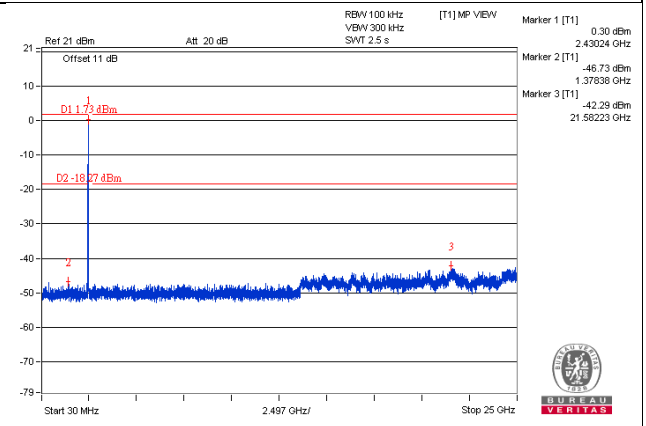
CH 1



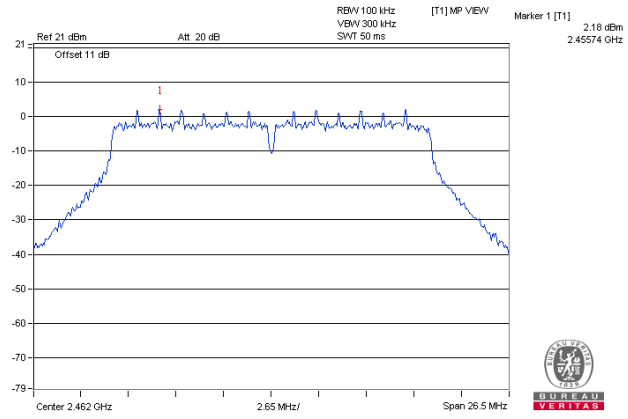


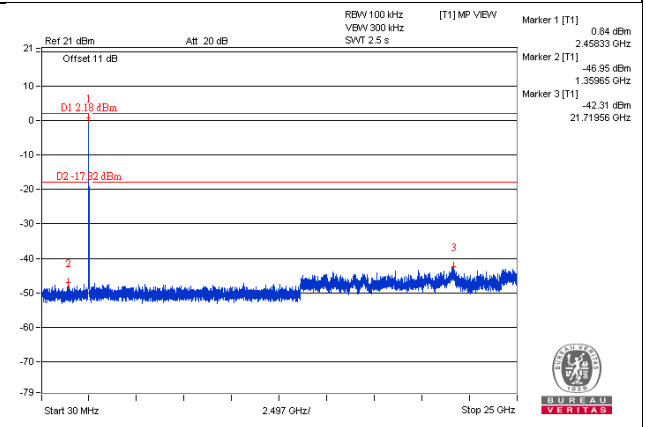
CH 6



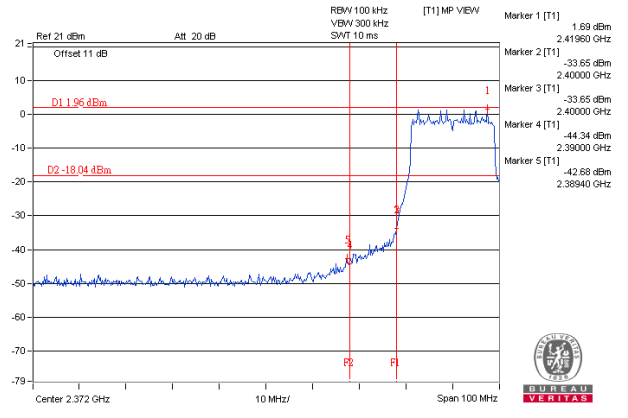


CH 11

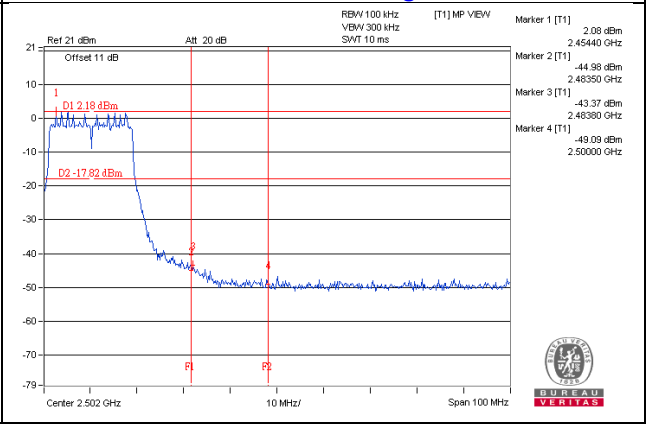




CH 1 Band edge

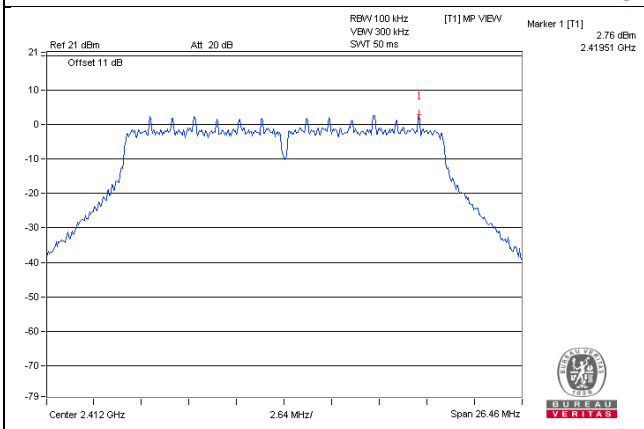


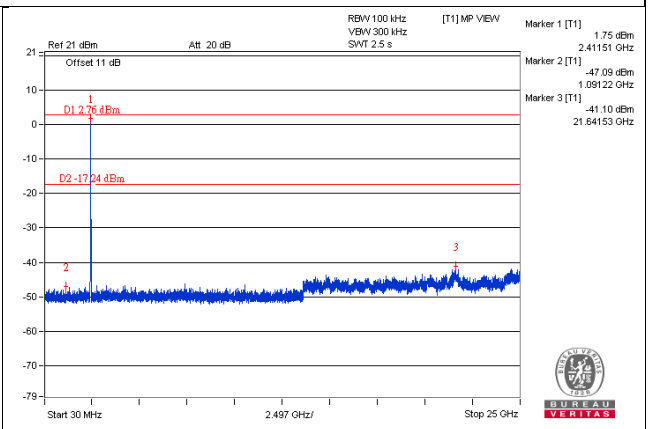
CH 11 Band edge



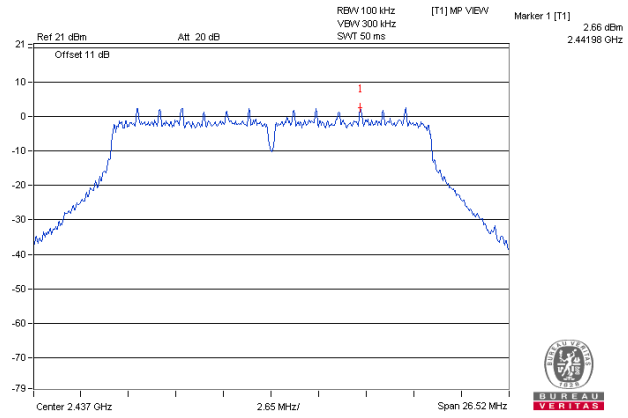
CHAIN 1

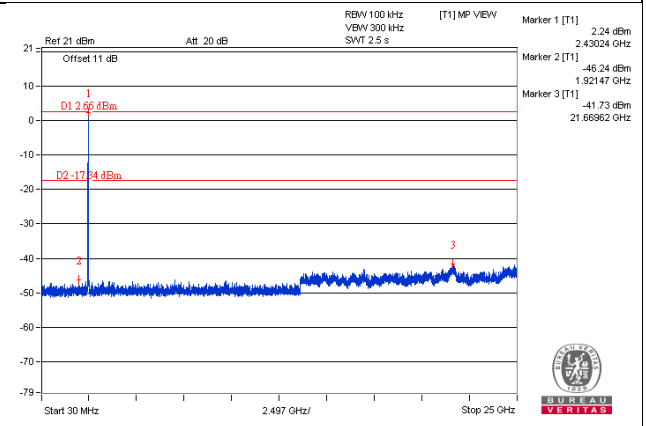
CH 1



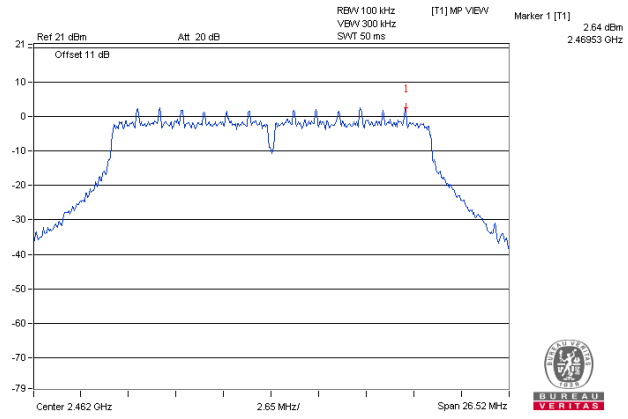


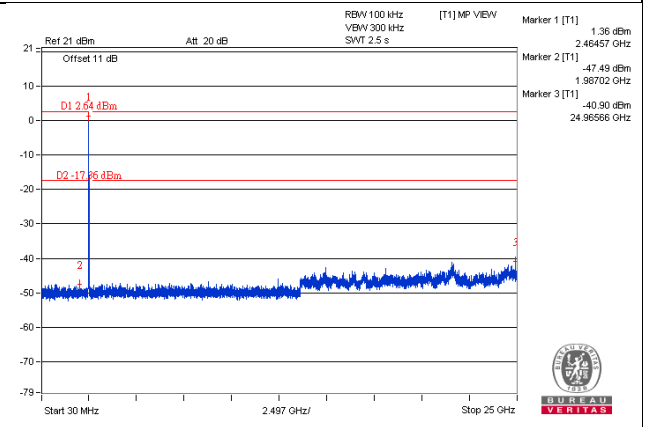
CH 6



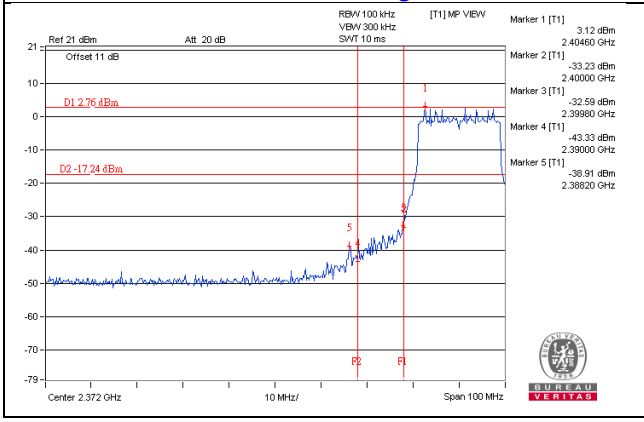


CH 11

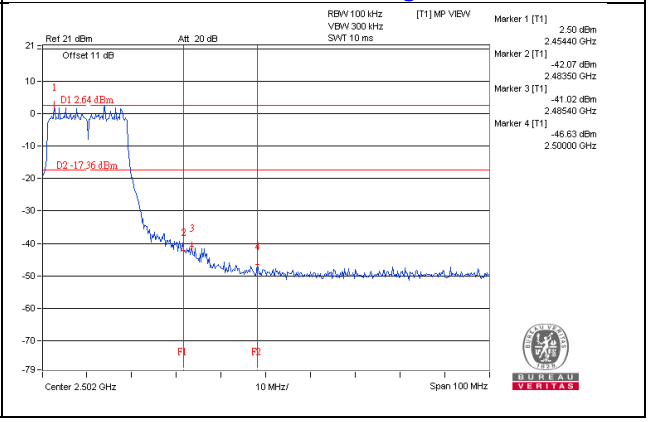




CH 1 Band edge

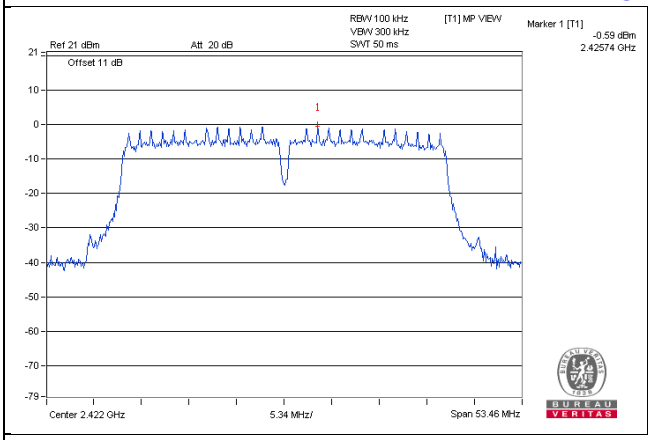


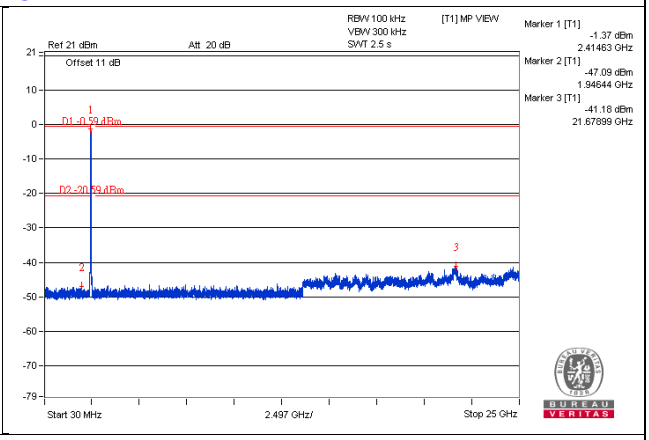
CH 11 Band edge



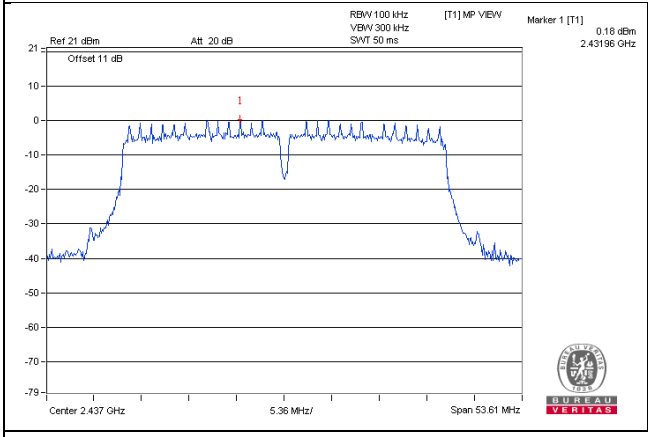
802.11n (HT40) - Chain 0

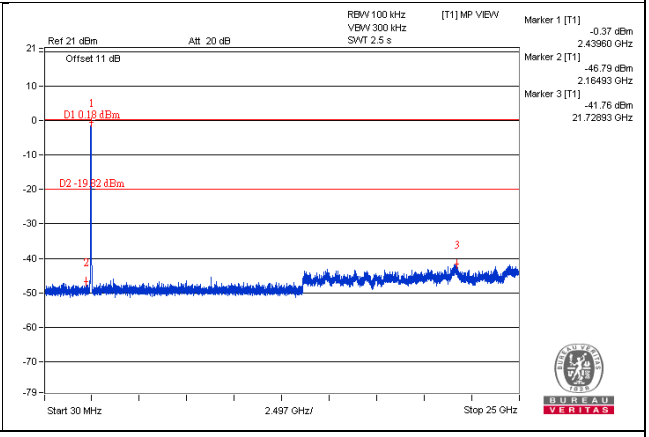
CH 3



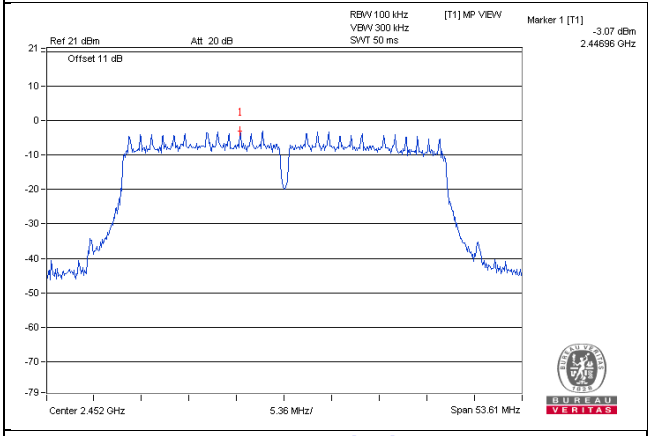


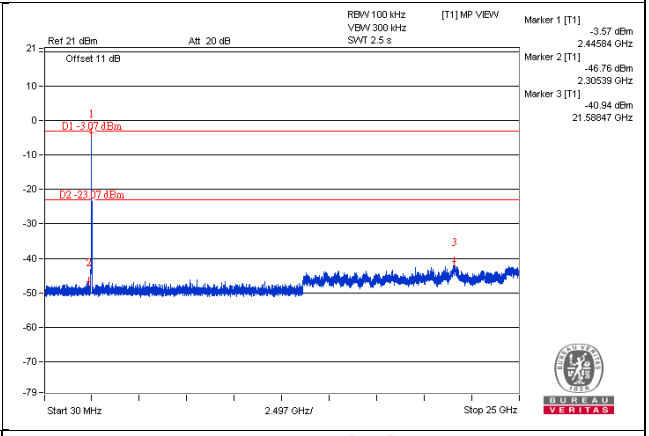
CH 6



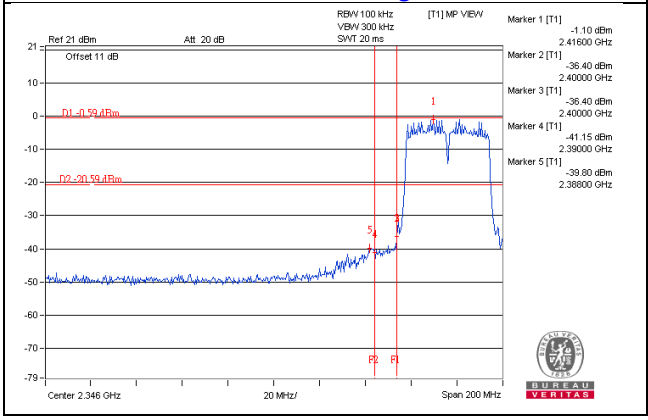


CH 9

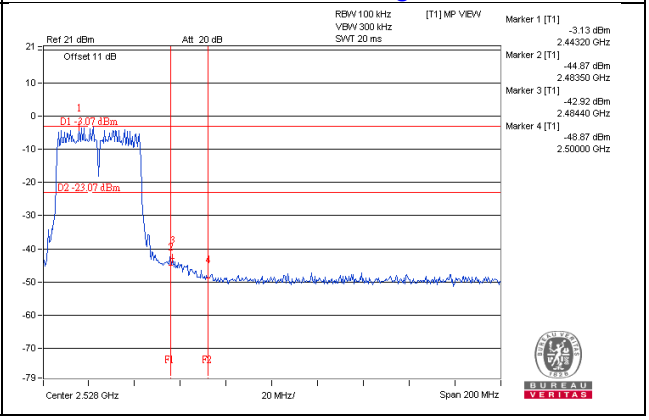




CH 3 Band edge

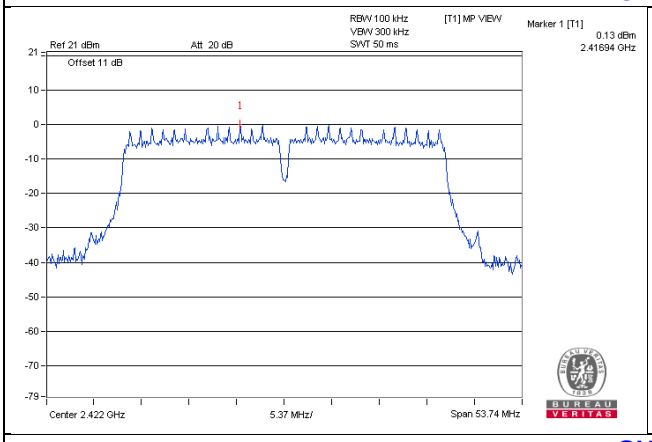


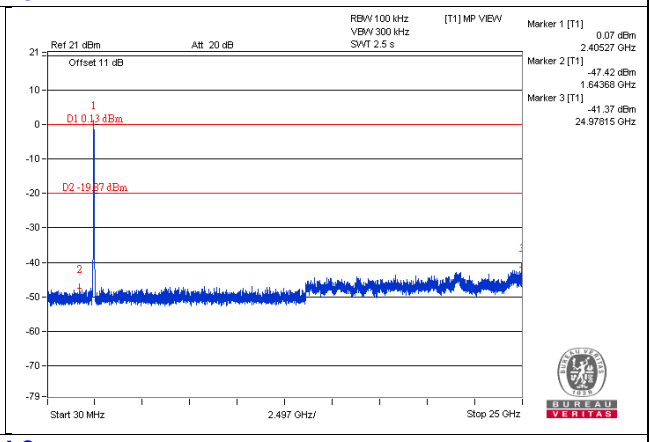
CH 9 Band edge



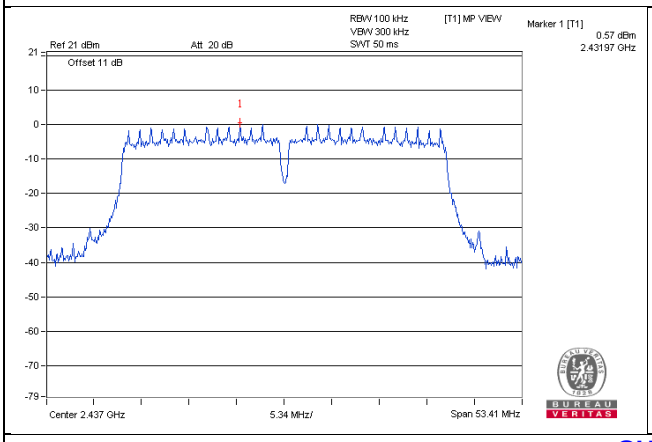
Chain 1

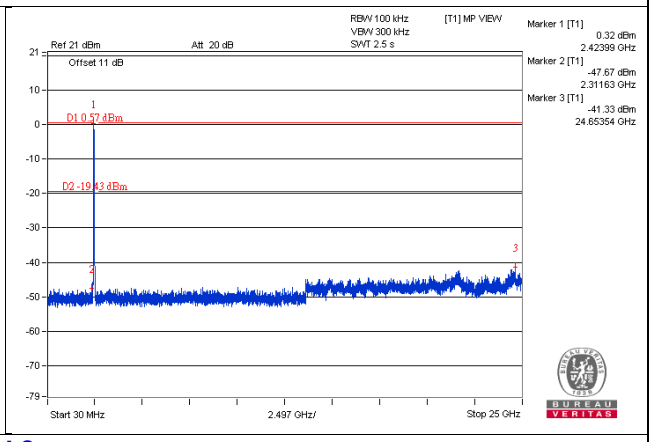
CH 3



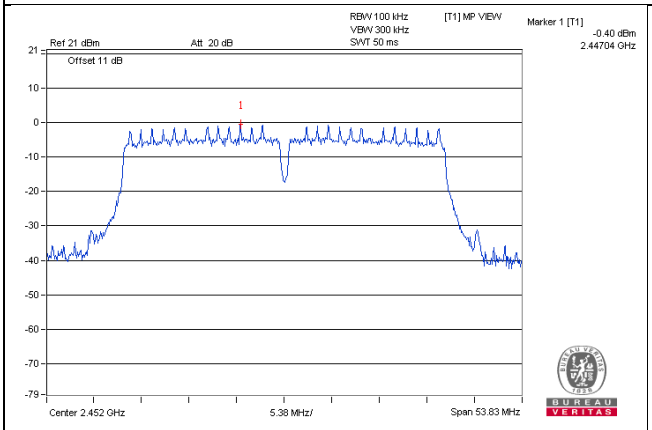


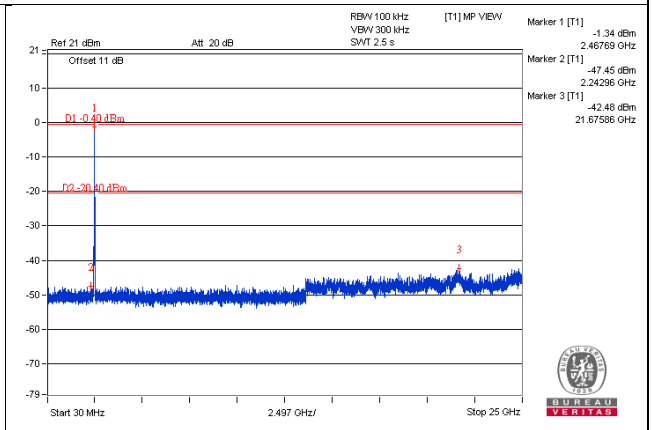
CH 6



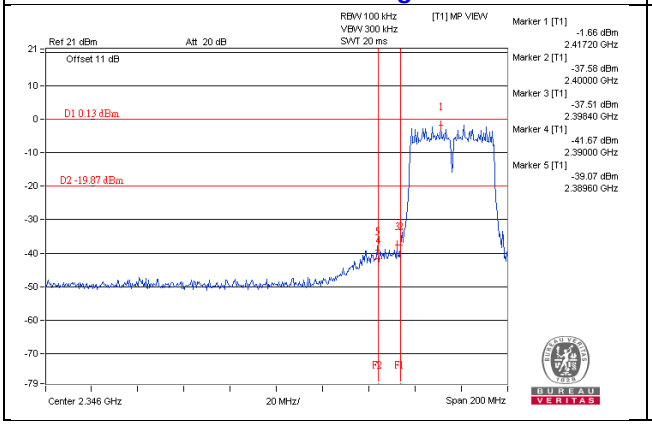


CH 9

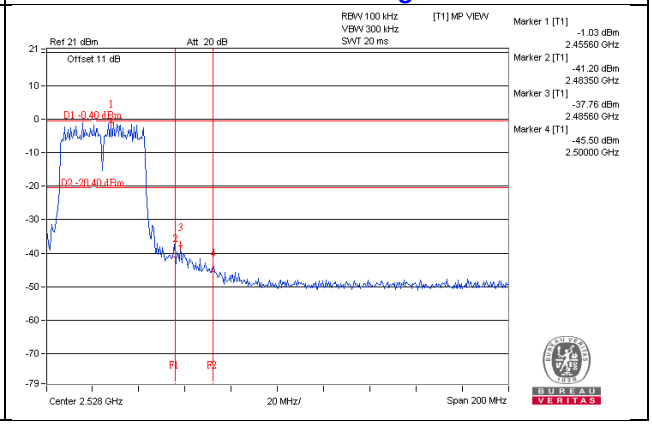




CH 3 Band edge



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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