

FCC Test Report (WLAN 2.4GHz)

Report No.: RF170724C40

FCC ID: RSE-TG389ACHP

Equipment Name: Media Access Gateway

Trade Name: technicolor

Model Number: TG389ac HP

Product Code: RGWCBA389AM

Received Date: July 24, 2017

Test Date: July 27 to Aug. 09, 2017

Issued Date: Sep. 13, 2017

Applicant: Technicolor Delivery Technologies Belgium

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Release Control Record

Issue No.	Description	Date Issued
RF170724C40	Original release.	Sep. 13, 2017

1 Certificate of Conformity

Equipment Name: Media Access Gateway

Trade Name: technicolor

Test Model: TG389ac HP

Product Code: RGWCBA389AM

Sample Status: Product Unit

Applicant: Technicolor Delivery Technologies Belgium

Test Date: July 27 to Aug. 09, 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 RF EMI characteristics under the conditions specified in this report.

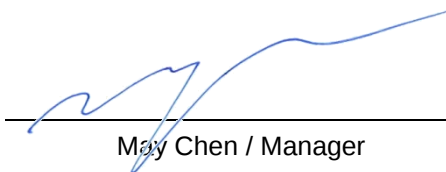
Prepared by :



Date: Sep. 13, 2017

Claire Kuan / Specialist

Approved by :



Date: Sep. 13, 2017

May Chen / Manager

2 Summary of Test Results

Applied Standard: 47 CFR FCC Part 15 Subpart C					
Section	Ref. Std. Clause	Description	Measured	Limit	Result
3.9	15.203	Antenna Requirements	-	-	PASS
4.1	15.207	AC Power Conducted Emissions	Margin is -3.40dB at 0.15000MHz.	15.207	PASS
4.2	15.247(b)(3)	Maximum Conducted Output Power	Power [dBm]: 11b: 25.86 dBm 11g: 21.33 dBm 11n(20M): 25.65 dBm 11n(40M): 22.75 dBm	30 dBm	PASS
4.3	15.247(e)	Power Spectral Density	PSD [dBm]: 11b: -1.30 dBm/3kHz 11g: -10.84 dBm/3kHz 11n(20M): -7.67 dBm/3kHz 11n(40M): -13.95 dBm/3kHz	8dBm/3kHz	PASS
4.4	15.247(a)(2)	6dB Spectrum Bandwidth	Bandwidth [MHz]: 11b: 8.13 MHz 11g: 16.46 MHz 11n(20M): 17.65 MHz 11n(40M): 35.44 MHz	≥500kHz	PASS
4.5	-	Occupied Bandwidth	Bandwidth [MHz]: 11b: 11.88 MHz 11g: 17.16 MHz 11n(20M): 18.24 MHz 11n(40M): 36.48 MHz	-	-
4.6	15.247(d)	Radiated Emissions	Margin is -0.4dB at 4874.00MHz	-	PASS
4.7	15.247(a)(2)	Band Edge Emissions	Margin is -0.1dB at 2390.00MHz, 2483.50MHz and 2486.00MHz.	-	PASS

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	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.30 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.16 dB
	6GHz ~ 18GHz	4.91 dB
	18GHz ~ 40GHz	5.30 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 Basic Description of Equipment Under Test (WLAN 2.4GHz)

Items	Description			
Equipment Name	Media Access Gateway			
Trade Name	technicolor			
Model Number	TG389ac HP			
Product Code	RGWCBA389AM			
FCC ID	RSE-TG389ACHP			
Power Type	From power adapter			
Antenna	Refer section 3.10			
EUT Stage	☒	Product Unit	☐	Pre-Sample
Operating Band and Conducted Output Power	2400~2483.5MHz		☒	IEEE 802.11b: 25.86 dBm
			☒	IEEE 802.11g: 21.33 dBm
			☒	IEEE 802.11n (20MHz): 25.65 dBm
			☒	IEEE 802.11n (40MHz): 22.75 dBm
Product Type	For IEEE 802.11b: WLAN(1TX, 2RX) For IEEE 802.11g: WLAN(1TX, 2RX) For IEEE 802.11n: WLAN(1TX/2TX, 2RX)			
Nominal Bandwidth	20MHz / 40MHz			
Modulation	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g: OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11n: OFDM (BPSK / QPSK / 16QAM / 64QAM) See the below table			
Data Rate (Mbps)	802.11b mode :DSSS (1/2/5.5/11) 802.11g mode :OFDM (6/9/12/18/24/36/48/54) 802.11n(20MHz) mode(MCS0~MCS15); 802.11n(40MHz) mode(MCS0~MCS15) See the below table			
I/O Ports	LAN Port x 4 WAN Port x 1 USB 2.0 Port x 2 FXS Port x 2			
Hardware Version	Beta			
Software Version	17.3.0097-0180000-20170725030736-47e971d32715b4e9ffb1a4eb97c8bf01874d3e19			

IEEE Std. 802.11n modulation and data rate information

MCS Index	Spatial Streams	Modulation Type	Coding Rate	Data Rate (Mbit/s)			
				20 MHz channel		40 MHz channel	
				800ns GI	400ns GI	800ns GI	400ns GI
0	1	BPSK	1/2	6.5	7.2	13.5	15
1		QPSK	1/2	13	14.4	27	30
2		QPSK	3/4	19.5	21.7	40.5	45
3		16-QAM	1/2	26	28.9	54	60
4		16-QAM	3/4	39	43.3	81	90
5		64-QAM	2/3	52	57.8	108	120
6		64-QAM	3/4	58.5	65	121.5	135
7		64-QAM	5/6	65	72.2	135	150
8	2	BPSK	1/2	13	14.4	27	30
9		QPSK	1/2	26	28.9	54	60
10		QPSK	3/4	39	43.3	81	90
11		16-QAM	1/2	52	57.8	108	120
12		16-QAM	3/4	78	86.7	162	180
13		64-QAM	2/3	104	115.6	216	240
14		64-QAM	3/4	117	130	243	270
15		64-QAM	5/6	130	144.4	270	300

Note: GI means guard interval.

3.2 Accessories

Power supply:

Brand	AcBel
Model	WAE004
ID	ADXG
P/N	DSL37751470
Input Power	100-240Vac, 50/60Hz, 0.7A
Output Power	12Vdc, 2.25A
Power Line	1.5m power cable without core attached on adapter

3.3 Feature of Equipment Under Test

Please refer to user manual.

3.4 Information Provided by the Manufacturer

Interface Availability

Interface Model	DC Power	Ethernet LAN 1000Mbps	Ethernet WAN 1000Mbps	FXS	USB 2.0	WLAN IEEE 802.11n (2.4GHz)	WLAN IEEE 802.11ac (5GHz)
TG389ac HP	12Vdc, 2.25A	●(4 port)	●(1 port)	●(2 port)	●(2 port)	●	●

●: Equipped

○: Not Equipped

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 v04, 04/05/2017

KDB 662911 D01 Multiple Transmitter Output v02r01, 10/31/2013

ANSI C63.10-2013

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

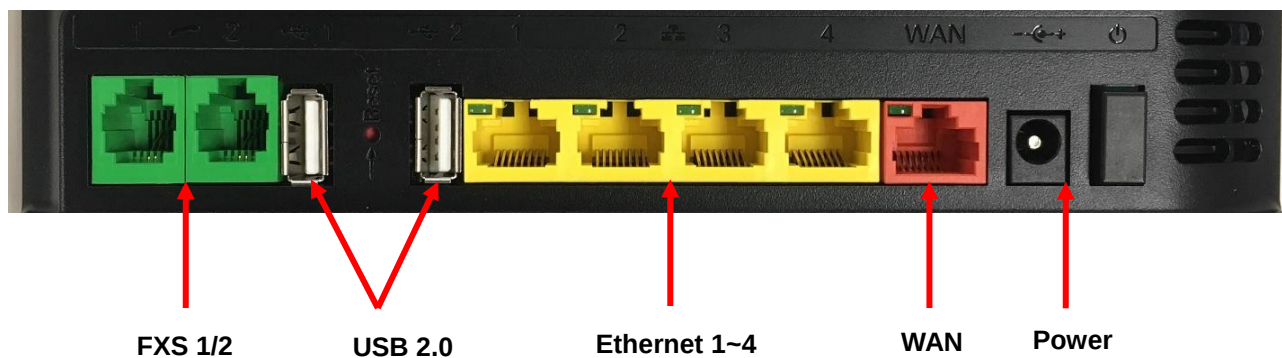
NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.6 Cabling Attached to the Equipment

Cable and Interconnection

Interface	Cable type	Cable length delivered with the modem	"Real life" Cable length that can be attached to this type of interface	Cable length to be used for testing	Internal/ external connection
ETH1, WAN	UTP Cat 5	2 meter	> 10 meter	Two 10 meter cables;	Internal
FXS1/2	UTP Cat 3	2 meter	> 10 meter	1 meter flat cable	Internal
USB 2.0	STP	NA	NA	NA	Internal
AC power	UTP	1.5 meter	>10 meter	1.5 meter	External

3.7 Panel Drawing



3.8 Transmit Operating Mode

Transmit Operating Mode					Transmit Multiple Antennas				
☒	Operating mode 1 (single antenna)				☒	1TX			
☒	Operating mode 2 (multiple antenna, no beam forming)				☒	2TX	☐	3TX	☐ 4TX
☐	Operating mode 3 (multiple antenna, with beam forming)				☐	2TX	☐	3TX	☐ 4TX
☒	802.11b	Operating mode	☒	1TX	☐	2TX	☐	3TX	☐ Cyclic shift
☒	802.11g	Operating mode	☒	1TX	☐	2TX	☐	3TX	☐ Cyclic shift
☒	802.11n(20MHz)	Operating mode	☒	1TX	☒	2TX	☐	3TX	☐ Cyclic shift
☒	802.11n(40MHz)	Operating mode	☒	1TX	☒	2TX	☐	3TX	☐ Cyclic shift

Note:

For IEEE802.11b, 1Mbps~11Mbps: 1TX

For IEEE802.11g, 6Mbps~54Mbps: 1TX

For IEEE802.11n 20MHz/40MHz, MCS0~MCS7: 1 Stream 1TX; MCS8~MCS15: 2 Stream 2TX;

3.9 Antenna Requirements

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

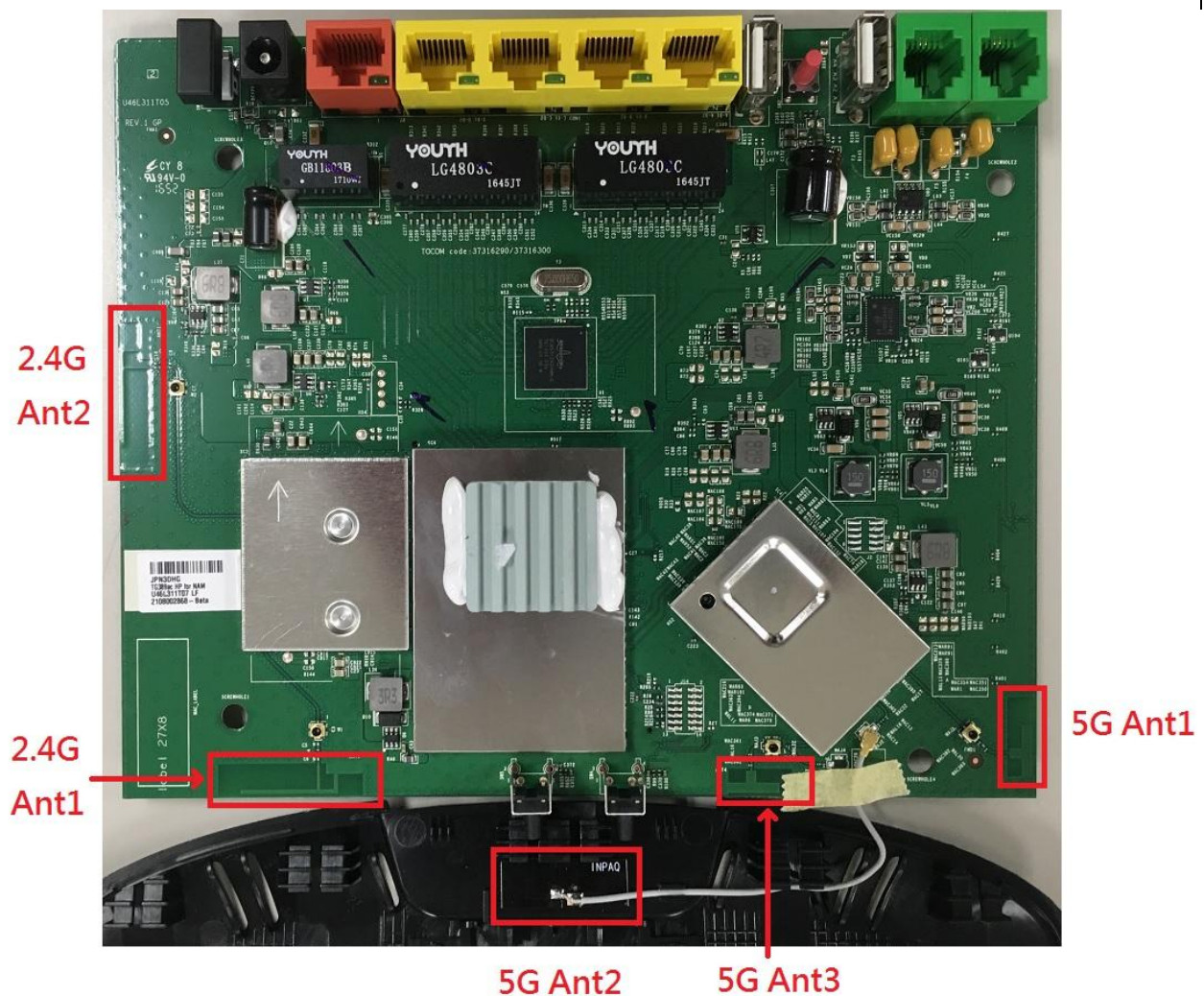
3.10 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	-	-	Printed Antenna	Murata
2	-	-	Printed Antenna	Murata

Antenna & Bandwidth for 2400~2483.5MHz

Antenna	1st (TX)		2nd (TX)	
Bandwidth Mode	20 MHz	40 MHz	20 MHz	40 MHz
802.11b	V	X	X	X
802.11g	V	X	X	X
802.11n	V	V	V	V

Antenna location



For 2400~2483.5MHz

Frequency	Antenna Gain (dBi)			
	Ant. 1 (W1)		Ant. 2 (W2)	
	20 MHz	40 MHz	20 MHz	40 MHz
2412MHz	3.61	-	2.75	-
2422MHz	-	3.79	-	2.80
2437MHz	3.94	3.94	2.78	2.78
2452MHz	-	3.80	-	2.66
2462MHz	3.76	-	2.31	-

Frequency	Maximum Gain (dBi) for SDM mode	
	SDM mode (2 Stream 2 TX) for Power & PSD Gain (KDB 662911 Option 2)	
	20 MHz	40 MHz
2412MHz	2.65	-
2422MHz	-	2.70
2437MHz	3.11	3.11
2452MHz	-	3.01
2462MHz	2.61	-

Note:

1. Antenna Gain refer to "TG389ac HP with shielding antenna table_20161012.xls" files
2. Maximum Correlated Directional Gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ dBi
3. Maximum Uncorrelated Directional Gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N_{ANT}]$ dBi

3.11 Table for Carrier Frequency

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

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400MHz ~ 2483.5 MHz	1	2412 MHz	7	2442MHz
	2	2417MHz	8	2447MHz
	3	2422MHz	9	2452MHz
	4	2427MHz	10	2457MHz
	5	2432MHz	11	2462MHz
	6	2437MHz		

Seven channels are provided for 802.11n (40MHz):

Frequency Band	Channel No.	Frequency	Channel No.	Frequency
2400MHz ~ 2483.5 MHz	3	2422 MHz	7	2442MHz
	4	2427MHz	8	2447MHz
	5	2432MHz	9	2452MHz
	6	2437MHz		

3.12 Table for Test Modes

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Note	Channel	Data Rate	Antenna
AC Power Line Conducted Emissions	802.11b	OFDM/BPSK	6	-	1
Maximum Average Output Power	802.11b	DSSS/DBPSK	1/6/11	1 Mbps	1
	802.11g	OFDM/BPSK	1/6/11	6 Mbps	1
	802.11n(20MHz)		1/6/11	MCS0	1
				MCS8 2S2T SDM	1+2
	802.11n(40MHz)		3/6/9	MCS0	1
				MCS8 2S2T SDM	1+2
Power Spectral Density	802.11b	DSSS/DBPSK	1/6/11	1 Mbps	1
	802.11g	OFDM/BPSK	1/6/11	6 Mbps	1
	802.11n(20MHz)		1/6/11	MCS0	1
				MCS8 2S2T SDM	1+2
	802.11n(40MHz)		3/6/9	MCS0	1
				MCS8 2S2T SDM	1+2
6dB Spectrum Bandwidth	802.11b	DSSS/DBPSK	1/6/11	1 Mbps	1
	802.11g	OFDM/BPSK	1/6/11	6 Mbps	1
	802.11n(20MHz)		1/6/11	MCS0	1
				MCS8 2S2T SDM	1+2
	802.11n(40MHz)		3/6/9	MCS0	1
				MCS8 2S2T SDM	1+2
Band Edge Emissions (Radiated)	802.11b	DSSS/DBPSK	1/6/11	1 Mbps	1
	802.11n(20MHz)	OFDM/BPSK	1/6/11	MCS0	1
				MCS8 2S2T SDM	1+2
	802.11n(40MHz)		3/6/9	MCS0	1
MCS8 2S2T SDM				1+2	
Radiated Emissions Above 1GHz(Radiated)	802.11b	DSSS/DBPSK	1/6/11	1 Mbps	1
	802.11n(20MHz)	OFDM/BPSK	1/6/11	MCS0	1
				MCS8 2S2T SDM	1+2
	802.11n(40MHz)		3/6/9	MCS0	1
MCS8 2S2T SDM				1+2	
Radiated Emissions Below 1GHz(Radiated)	802.11b	OFDM/BPSK	6	-	1

Note:

1. The device with multiple operating mode, measurements on the middle channel were tested to determine the worst case mode. (Each modulation family were tested in band edge, spurious emission and in band PSD after investigate worst case mode)
2. Base on txcore command, the 11b/g default mode is 1S1T SISO Ant1, the 802.11n 20MHz/40MHz default mode are 1S1T SISO Ant1, 2S2T SDM Ant1+2.
wl -i wl0 txcore
txcore enabled bitmap (Nsts {4..1}) 0x0f 0x07 0x03 0x01
txcore mask OFDM 0x01 CCK 0x01
3. Base on same power setting with 802.11n mode, the 802.11g mode were only tested the "Maximum Conducted Output Power" , "Power Spectral Density" and "Bandwidth".

3.13 Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

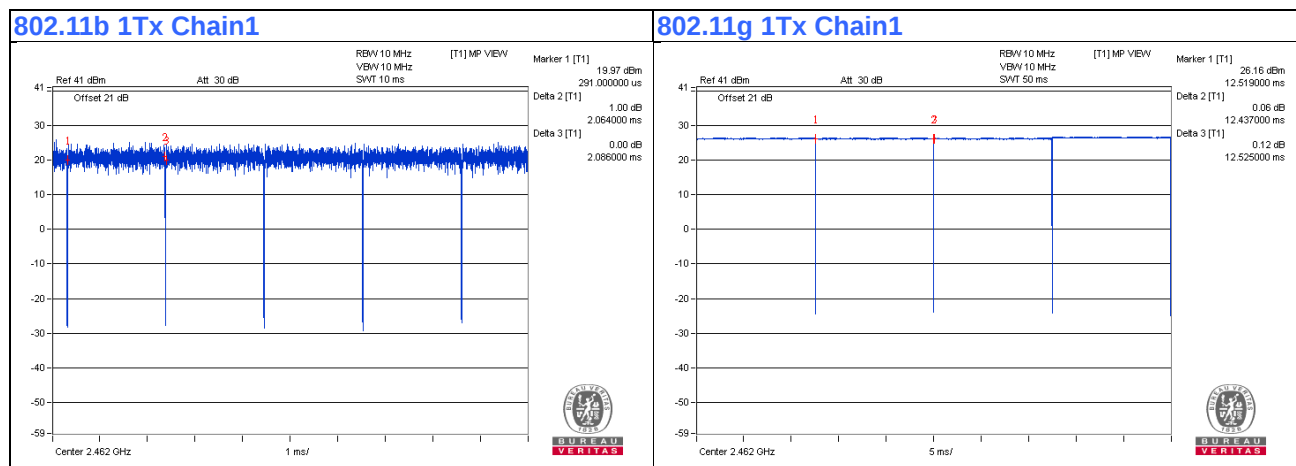
The Power Setting Parameter					
Test Software Version	17.3.0097-0180000-20170725030736-47e971d32715b4e9ffb1a4eb97c8bf01874d3e19				
Worst Modulation Mode	Number of Transmit Chains (NTX)	Frequency (MHz)	Maximum Output Power (dBm)	Power Setting	Data Rate / MCS
802.11b, Ant. 1	1Stream 1TX	2412	23.75	Default(23.5)	1Mbps
802.11b, Ant. 1	1Stream 1TX	2437	25.86	Default(25.75)	1Mbps
802.11b, Ant. 1	1Stream 1TX	2462	23.54	Default(23)	1Mbps
802.11g, Ant. 1	1Stream 1TX	2412	18.62	Default(18.75)	6Mbps
802.11g, Ant. 1	1Stream 1TX	2437	21.33	Default(22)	6Mbps
802.11g, Ant. 1	1Stream 1TX	2462	18.79	Default(19)	6Mbps
802.11n 20MHz, Ant. 1	1Stream 1TX	2412	18.59	Default(18.75)	MCS0
802.11n 20MHz, Ant. 1	1Stream 1TX	2437	21.92	Default(22.5)	MCS0
802.11n 20MHz, Ant. 1	1Stream 1TX	2462	18.75	Default(19)	MCS0
802.11n 20MHz, Ant. 1+2 (SDM)	2Stream 2TX	2412	21.77	Default(18.5)	MCS8
802.11n 20MHz, Ant. 1+2 (SDM)	2Stream 2TX	2437	25.65	Default(23)	MCS8
802.11n 20MHz, Ant. 1+2 (SDM)	2Stream 2TX	2462	21.94	Default(18.75)	MCS8
802.11n 40MHz, Ant. 1	1Stream 1TX	2422	15.94	Default(16.5)	MCS0
802.11n 40MHz, Ant. 1	1Stream 1TX	2437	19.38	Default(20)	MCS0
802.11n 40MHz, Ant. 1	1Stream 1TX	2437	17.42	Default(17.75)	MCS0
802.11n 40MHz, Ant. 1+2 (SDM)	2Stream 2TX	2422	19.62	Default(15.25)	MCS8
802.11n 40MHz, Ant. 1+2 (SDM)	2Stream 2TX	2437	22.75	Default(19.25)	MCS8
802.11n 40MHz, Ant. 1+2 (SDM)	2Stream 2TX	2452	20.89	Default(16.75)	MCS8

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

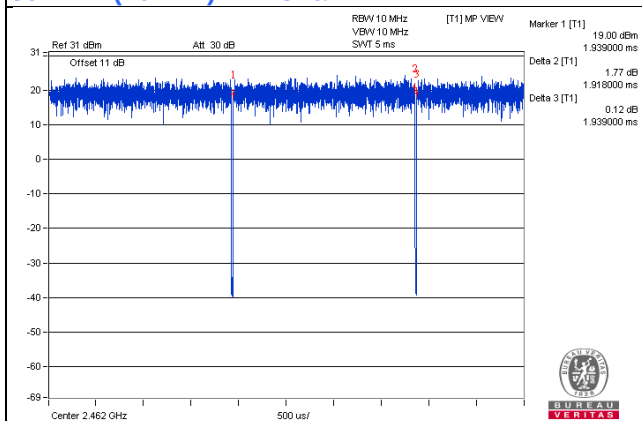
3.14 On Time and Duty Cycle

Mode	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
802.11b 1Tx Chain1	12.437	12.525	99.3	-	-
802.11g 1Tx Chain1	2.064	2.086	98.9	-	-
802.11n (20MHz) 1Tx Chain1	1.918	1.939	98.9	-	-
802.11n (20MHz) 2Tx SDM	0.983	1.003	98.0	-	-
802.11n (40MHz) 1Tx Chain1	0.945	0.962	98.2	-	-
802.11n (40MHz) 2Tx SDM	0.497	0.514	96.7	0.15	3

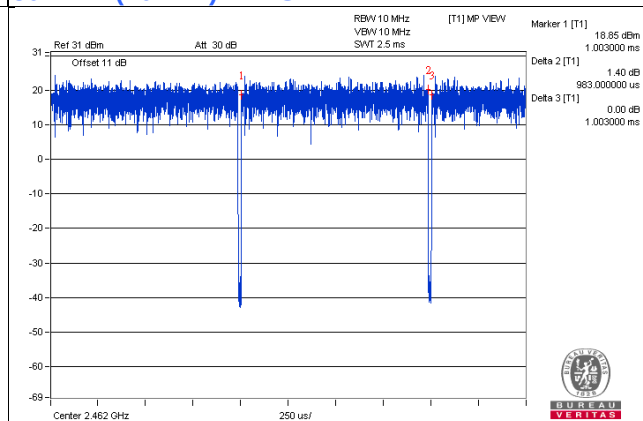
Note: Power measurement using sweep trigger and gating of the power meter, duty factor is not required.



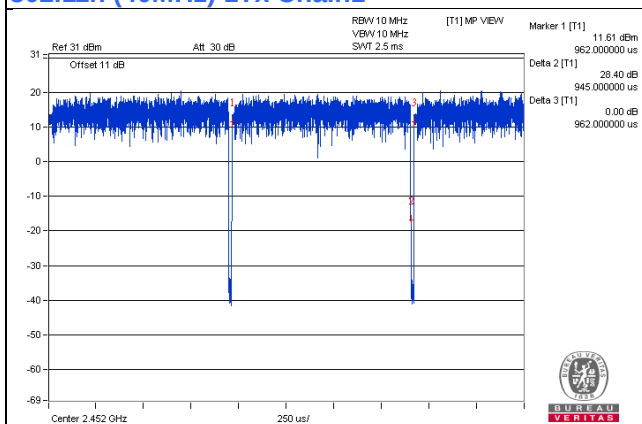
802.11n (20MHz) 1Tx Chain1



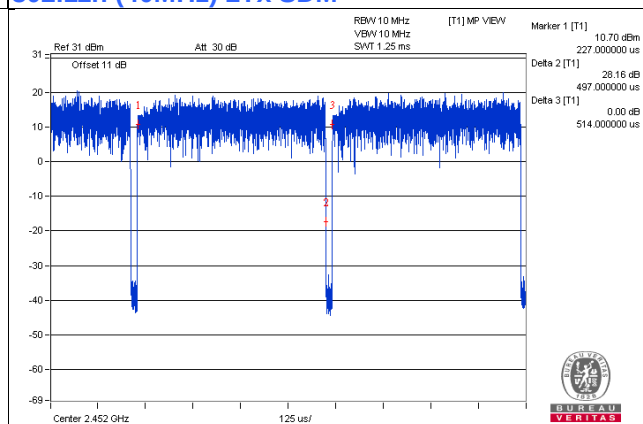
802.11n (20MHz) 2Tx SDM



802.11n (40MHz) 1Tx Chain1



802.11n (40MHz) 2Tx SDM



3.15 Testing Location Information

Test Site Location				
Address	(1) E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.			
TEL	886-3-6668565			
FAX	886-3-6668323			
Test Site No.	Site Category	Location	IC Reg. No.	VCCI Reg. No
Conduction 1	Conduction	Hsinchu	-	-
Chamber 3	966 Chamber	Hsinchu	20331-1	-
Oven 2	Oven	Hsinchu	-	-

3.16 EUT Diagram and Support Equipment

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.

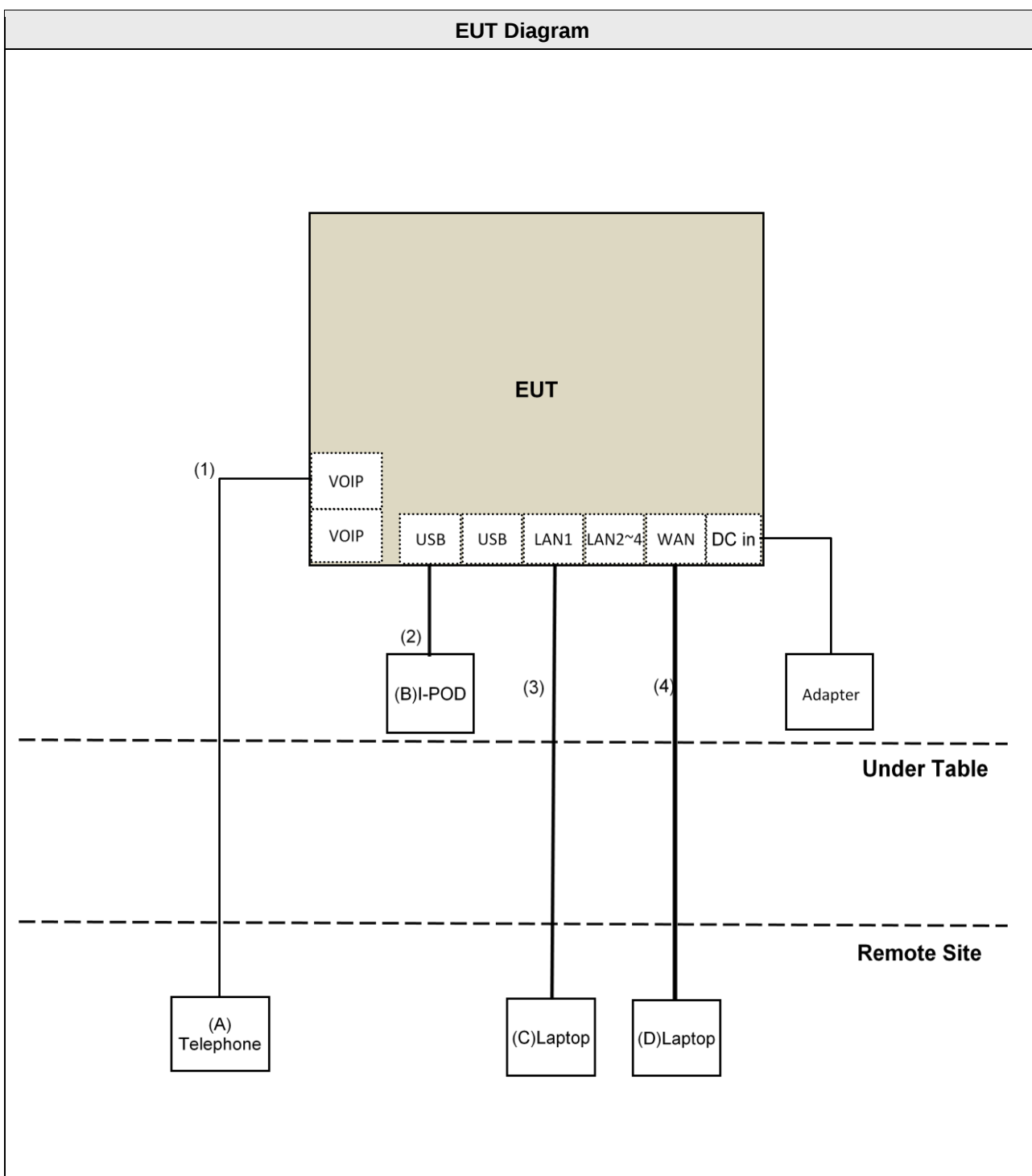
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Telephone	WONDER	WD-303	8C17DA02763	N/A	Provided by Lab
B.	iPod shuffle	Apple	MC749TA/A	CC4DN25WDFDM	FCC DoC	Provided by Lab
C.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab
D.	Laptop	DELL	E6440	F9LYQ32	FCC DoC	Provided by Lab

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-11 cable	1	10	No	0	Provided by Lab
2.	USB cable	1	0.1	No	0	Provided by Lab
3.	RJ-45 cable	1	10	No	0	Provided by Lab
4.	RJ-45 cable	1	10	No	0	Provided by Lab

EUT Diagram



4 Test Types and Results

4.1 AC Power Conducted Emissions Measurement

4.1.1 Limit

For this product which is designed to be connected to the AC power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed below limits table.

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

4.1.2 Measuring Instruments and Setting

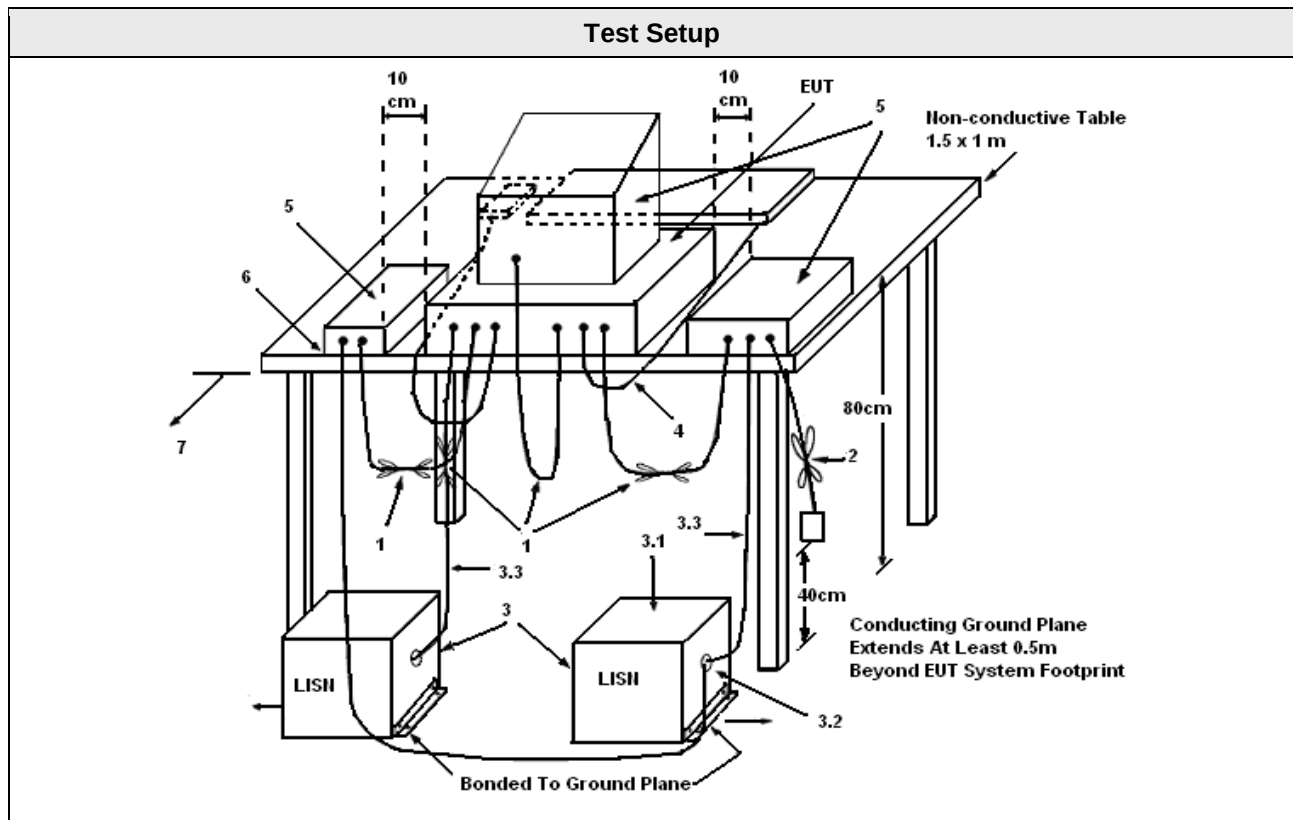
Please refer to section 5 of equipments list in this report. The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

4.1.3 Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT or host of EUT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connected to the other LISNs. The LISN should provide 50uH/50ohms coupling impedance.
4. The frequency range from 150 kHz to 30 MHz was searched.
5. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. The measurement has to be done between each power line and ground at the power terminal.

4.1.4 Test Setup Layout



1. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
2. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
3. EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω . LISN can be placed on top of, or immediately beneath, reference ground plane.
4. All other equipment powered from additional LISN(s).
5. Multiple outlet strip can be used for multiple power cords of non-EUT equipment.
6. LISN at least 80 cm from nearest part of EUT chassis.
7. Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use.
8. Non-EUT components of EUT system being tested.
9. Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop.
10. Rear of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.

4.1.5 Test Deviation

There are no deviations with the original standard.

4.1.6 EUT Operating during Test

The EUT was placed on the test table and programmed in normal function.

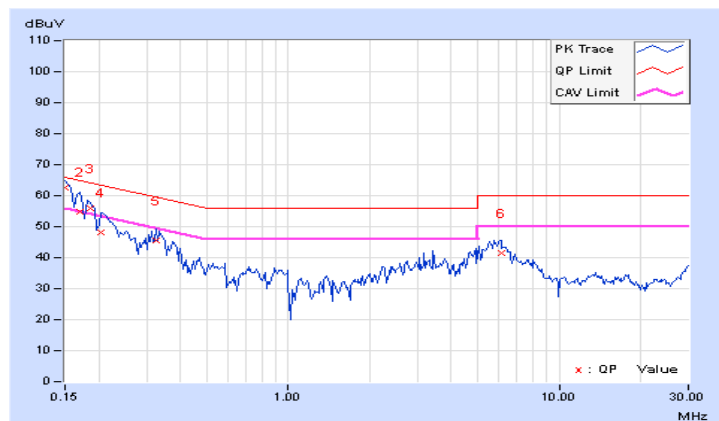
4.1.7 Test Results of AC Power Conducted Emissions

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 75%RH
Tested by	Andy Ho		

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	10.08	52.52	38.70	62.60	48.78	66.00	56.00	-3.40	-7.22
2	0.16953	10.08	44.92	24.31	55.00	34.39	64.98	54.98	-9.98	-20.59
3	0.18516	10.07	45.80	30.52	55.87	40.59	64.25	54.25	-8.38	-13.66
4	0.20469	10.07	38.04	17.31	48.11	27.38	63.42	53.42	-15.31	-26.04
5	0.32578	10.10	35.58	24.18	45.68	34.28	59.56	49.56	-13.88	-15.28
6	6.10156	10.51	30.81	23.95	41.32	34.46	60.00	50.00	-18.68	-15.54

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

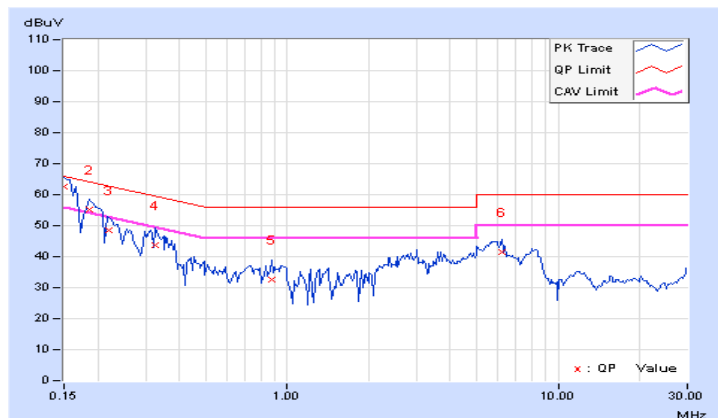


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	25°C, 75%RH
Tested by	Andy Ho		

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	10.07	52.46	39.55	62.53	49.62	66.00	56.00	-3.47	-6.38
2	0.18516	10.05	45.09	32.14	55.14	42.19	64.25	54.25	-9.11	-12.06
3	0.22031	10.05	38.63	22.32	48.68	32.37	62.81	52.81	-14.13	-20.44
4	0.32578	10.09	33.60	15.86	43.69	25.95	59.56	49.56	-15.87	-23.61
5	0.87266	10.12	22.49	12.71	32.61	22.83	56.00	46.00	-23.39	-23.17
6	6.17578	10.43	30.92	25.34	41.35	35.77	60.00	50.00	-18.65	-14.23

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 Maximum Conducted Output Power Measurement

4.2.1 Limit

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm). The limit has to be reduced by the amount in dB that the gain of the antenna exceeds 6dBi. For point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

4.2.2 Measuring Instruments and Setting

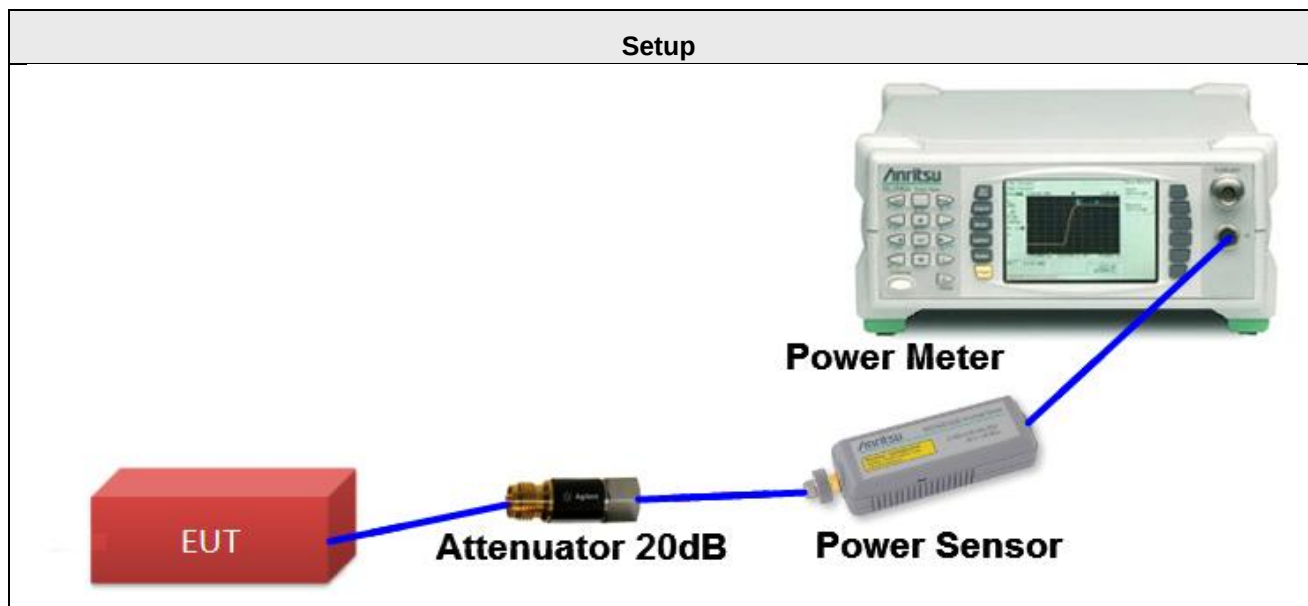
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Power Measurement	Auto
Rise Time	8ns
Sensor Model	MA2411B

4.2.3 Test Procedures

- 1 Test was performed in accordance with Measurement of Digital Transmission Systems Operating under KDB558074 D01 DTS Meas Guidance v04, in section “Maximum conducted output power Method AVGPM-G”, 04/05/2017
- 2 The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor and enable the trigger function to get the all on time transmission. Record the average power level.
- 3 When measuring maximum conducted output power with multiple antenna systems, add every result of the values by mathematic formula.

4.2.4 Test Setup Layout



4.2.5 Test Deviation

There are no deviations with the original standard.

4.2.6 EUT Operating Conditions

The EUT was programmed to be in continuously transmitting mode.

4.2.7 Test Results of Maximum Conducted Output Power

Temperature	25°C	Humidity	60%
Test Engineer	Anderson Chen		

FOR AVERAGE POWER

802.11b 1Tx Chain1

Channel	Frequency (MHz)	Conducted Power (dBm)	Directional Gain (dBi)	Max. Limit (dBm)	Result
1	2412	23.75	3.61	30	PASS
6	2437	25.86	3.94	30	PASS
11	2462	23.54	3.76	30	PASS

802.11g 1Tx Chain1

Channel	Frequency (MHz)	Conducted Power (dBm)	Directional Gain (dBi)	Max. Limit (dBm)	Result
1	2412	18.62	3.61	30	PASS
6	2437	21.33	3.94	30	PASS
11	2462	18.79	3.76	30	PASS

802.11n (20MHz) 1Tx Chain1

Channel	Frequency (MHz)	Conducted Power (dBm)	Directional Gain (dBi)	Max. Limit (dBm)	Result
1	2412	18.59	3.61	30	PASS
6	2437	21.92	3.94	30	PASS
11	2462	18.75	3.76	30	PASS

802.11n (20MHz) 2Tx SDM

Channel	Frequency (MHz)	Conducted Power (dBm)			Directional Gain (dBi)	Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total			
1	2412	18.91	18.61	21.77	2.65	30	PASS
6	2437	22.72	22.56	25.65	3.11	30	PASS
11	2462	18.94	18.91	21.94	2.61	30	PASS

Note:

1. Total Conducted Power = Conducted Power [TX 1(unit in W) + TX 2(unit in W)](unit in dBm)
2. Directional Gain <6dBi, so the limit doesn't reduce.

802.11n (40MHz) 1Tx Chain1

Channel	Frequency (MHz)	Conducted Power (dBm)	Directional Gain (dBi)	Max. Limit (dBm)	Result
3	2422	15.94	3.79	30	PASS
6	2437	19.38	3.94	30	PASS
9	2452	17.42	3.80	30	PASS

802.11n (40MHz) 2Tx SDM

Channel	Frequency (MHz)	Conducted Power (dBm)			Directional Gain (dBi)	Max. Limit (dBm)	Result
		Chain 1	Chain 2	Total			
3	2422	15.92	17.21	19.62	2.70	30	PASS
6	2437	19.15	20.26	22.75	3.11	30	PASS
9	2452	17.36	18.34	20.89	3.01	30	PASS

Note:

1. Total Conducted Power = Conducted Power [TX 1(unit in W) + TX 2(unit in W)](unit in dBm)
2. Directional Gain <6dBi, so the limit doesn't reduce.

4.3 Power Spectral Density Measurement

4.3.1 Limit

For digitally modulated systems, the conductive measured power spectral density(PSD) shall not be greater than 8 dBm in any 3 kHz bandwidth during any time interval of continuous transmission.

4.3.2 Measuring Instruments and Setting

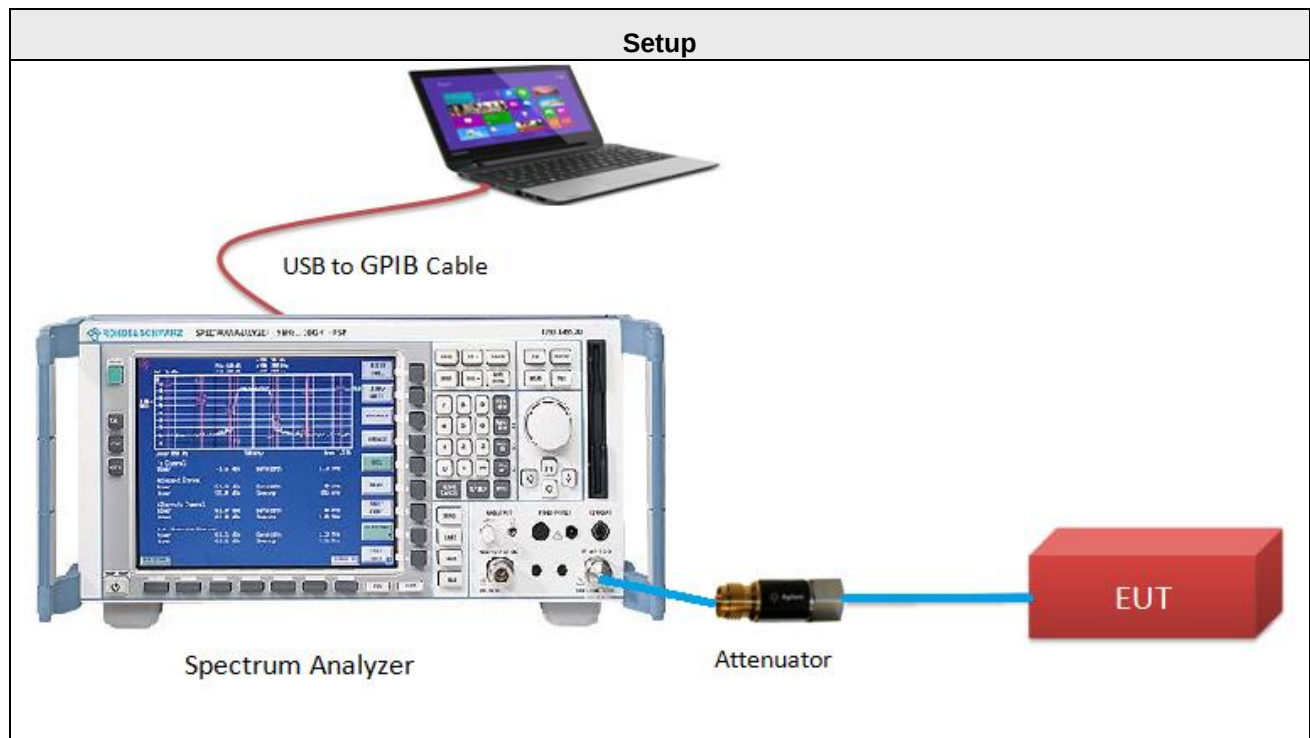
Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Set the span to 1.5 times the DTS channel bandwidth.
RBW	Set the RBW ≥ 3 kHz
VBW	Set the VBW $\geq 3 \times$ RBW
Detector	RMS
Trace	Average sweep count 100
Sweep Time	Auto couple

4.3.3 Test Procedures

- 1 The transmitter output (antenna port) was connected to the spectrum analyzer.
- 2 Test was performed in accordance with Measurement of Digital Transmission Systems Operating under KDB558074 D01 DTS Meas Guidance v04, in section "Maximum power spectral density level in the fundamental emissions Method AVGPSD-1", 04/05/2017.
- 3 Multiple antenna systems was performed in accordance KDB 662911 D01 v02r01 in-Band Power Spectral Density (PSD) Measurements (a) Measure and sum the spectra across the outputs (bin-by-bin summing).
- 4 This procedure may be used when the maximum (average) conducted output power was used to demonstrate compliance to the output power limit. The EUT must be configured to transmit continuously (duty cycle $\geq 98\%$) to ensure that measurements are made only when the EUT is transmitting at its maximum power control level (no transmitter off time is to be considered).
- 5 Ensure that the number of measurement points in the sweep $\geq 2 \times$ span/RBW (use of a greater number of measurement points than this minimum requirement is recommended).
- 6 When measuring first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and so on up to the Nth output to obtain the value for the first frequency bin of the summed spectrum. The summed spectrum value for each of the other frequency bins is computed in the same way.

4.3.4 Test Setup Layout



4.3.5 Test Deviation

There are no deviations with the original standard.

4.3.6 EUT Operating Conditions

The EUT was programmed to be in continuously transmitting mode.

4.3.7 Test Results of Power Spectral Density

Temperature	25°C	Humidity	60%
Test Engineer	Anderson Chen		

802.11b 1Tx Chain1

Channel	Frequency (MHz)	Power Density (dBm/3kHz)	Directional Gain (dBi)	Limit (dBm/3kHz)	Result
1	2412	-1.30	3.61	8	PASS
6	2437	-3.73	3.94	8	PASS
11	2462	-2.30	3.76	8	PASS

Note: Directional Gain <6dBi, so the limit doesn't reduce.

802.11g 1Tx Chain1

Channel	Frequency (MHz)	Power Density (dBm/3kHz)	Directional Gain (dBi)	Limit (dBm/3kHz)	Result
1	2412	-13.56	3.61	8	PASS
6	2437	-10.84	3.94	8	PASS
11	2462	-13.24	3.76	8	PASS

Note: Directional Gain <6dBi, so the limit doesn't reduce.

802.11n (20MHz) 1Tx Chain1

Channel	Frequency (MHz)	Power Density (dBm/3kHz)	Directional Gain (dBi)	Limit (dBm/3kHz)	Result
1	2412	-12.82	3.61	8	PASS
6	2437	-10.49	3.94	8	PASS
11	2462	-14.99	3.76	8	PASS

Note: Directional Gain <6dBi, so the limit doesn't reduce.

802.11n (20MHz) 2Tx SDM

Channel	Frequency (MHz)	Power Density (dBm/3kHz)	Directional Gain (dBi)	Limit (dBm/3kHz)	Result
1	2412	-11.61	2.65	8	PASS
6	2437	-7.67	3.11	8	PASS
11	2462	-10.87	2.61	8	PASS

Note: Directional Gain <6dBi, so the limit doesn't reduce.

Note: Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

802.11n (40MHz) 1Tx Chain1

Channel	Frequency (MHz)	Power Density (dBm/3kHz)	Directional Gain (dBi)	Limit (dBm/3kHz)	Result
3	2422	-18.56	3.79	8	PASS
6	2437	-15.89	3.94	8	PASS
9	2452	-18.10	3.80	8	PASS

Note: Directional Gain <6dBi, so the limit doesn't reduce.

802.11n (40MHz) 2Tx SDM

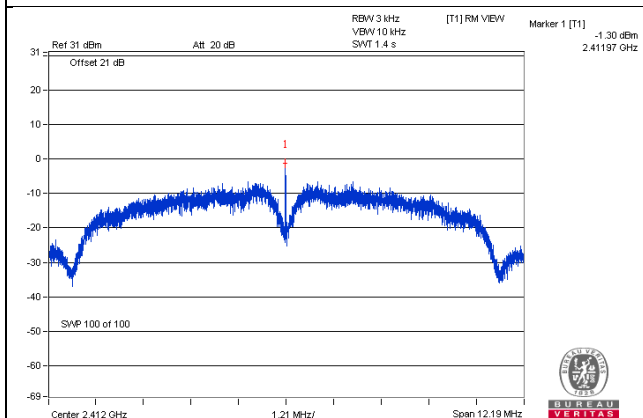
Channel	Frequency (MHz)	PSD w/o Duty Factor (dBm/3kHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/3kHz)	Directional Gain (dBi)	Limit (dBm/3kHz)	Result
3	2422	-16.00	0.15	-15.85	2.70	8	PASS
6	2437	-14.10	0.15	-13.95	3.11	8	PASS
9	2452	-16.32	0.15	-16.17	3.01	8	PASS

Note: Directional Gain <6dBi, so the limit doesn't reduce.

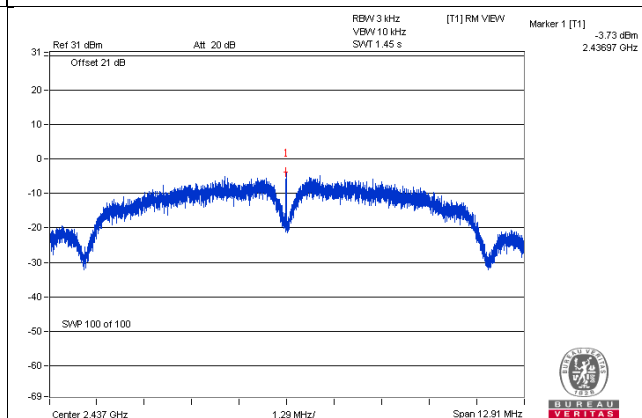
Note: Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

SPECTRUM PLOT

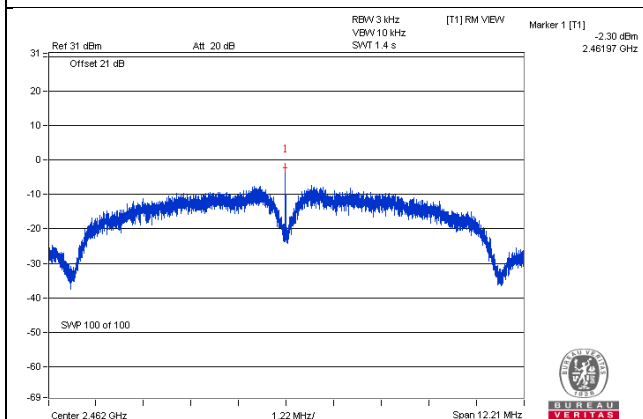
802.11b 1Tx Chain1 2412 MHz



802.11b 1Tx Chain1 2437 MHz

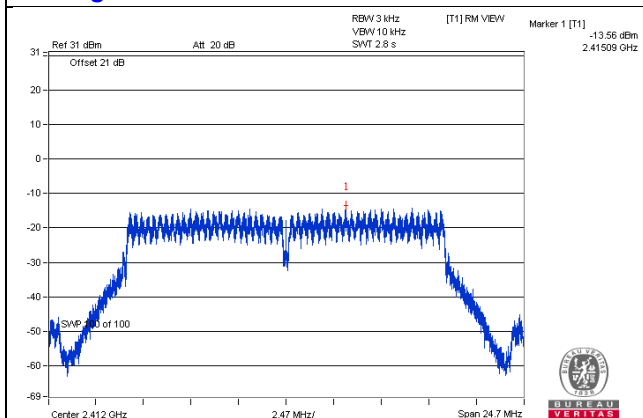


802.11b 1Tx Chain1 2462 MHz

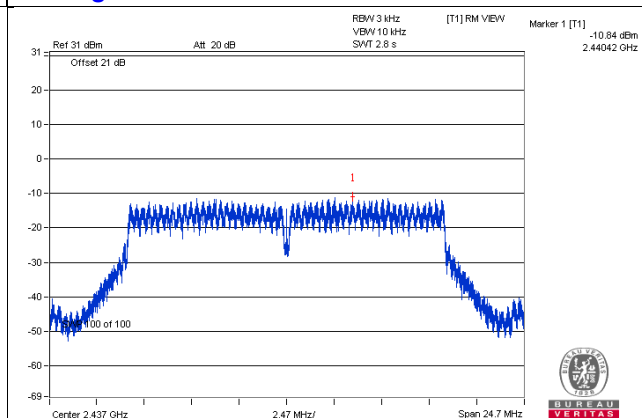


SPECTRUM PLOT

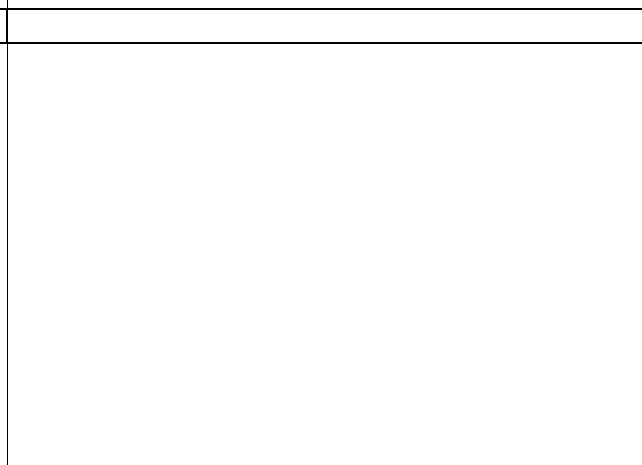
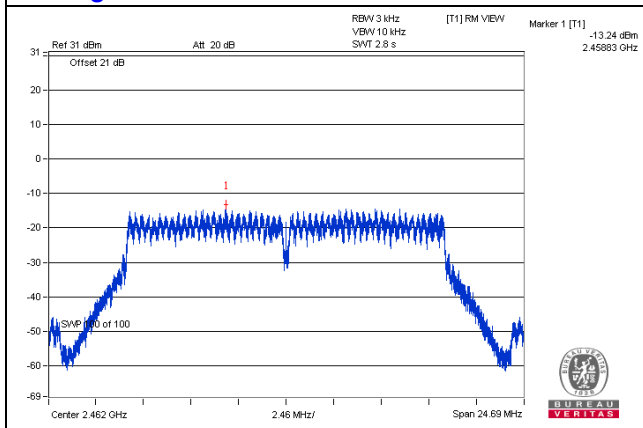
802.11g 1Tx Chain1 2412 MHz



802.11g 1Tx Chain1 2437 MHz

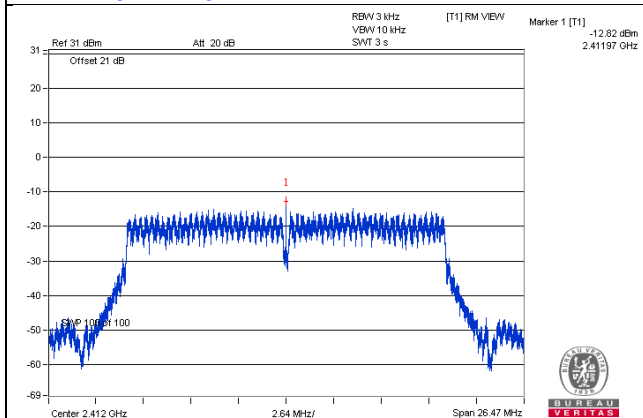


802.11g 1Tx Chain1 2462 MHz

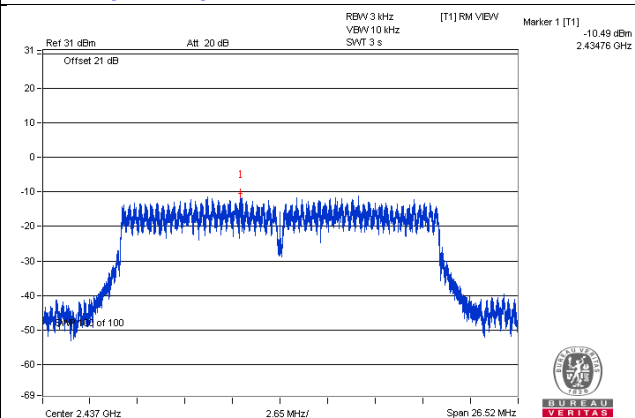


SPECTRUM PLOT

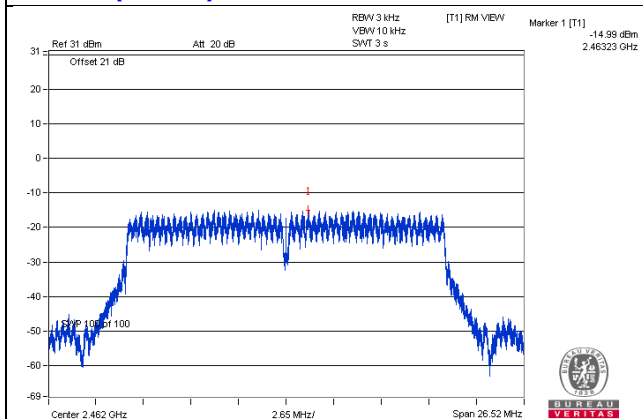
802.11n (20MHz) 1Tx Chain1 2412 MHz



802.11n (20MHz) 1Tx Chain1 2437 MHz

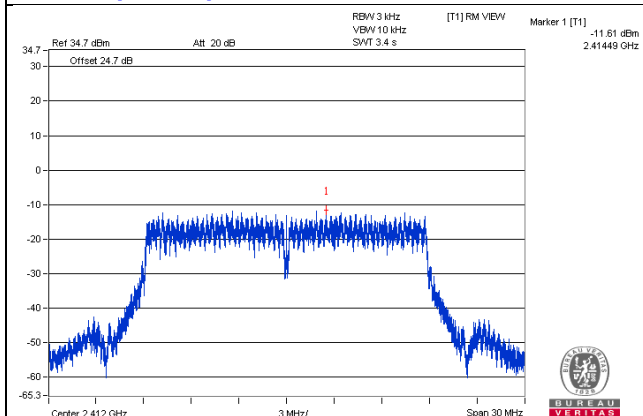


802.11n (20MHz) 1Tx Chain1 2462 MHz

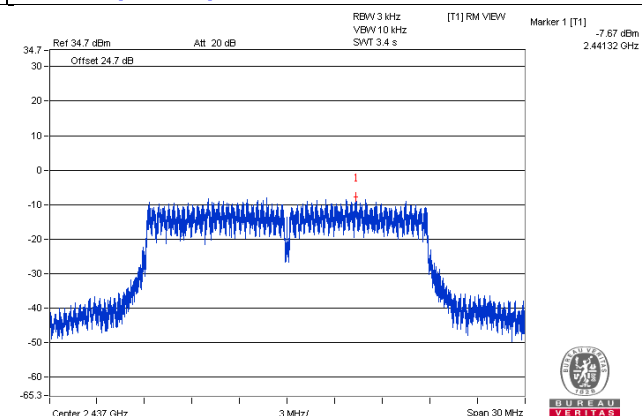


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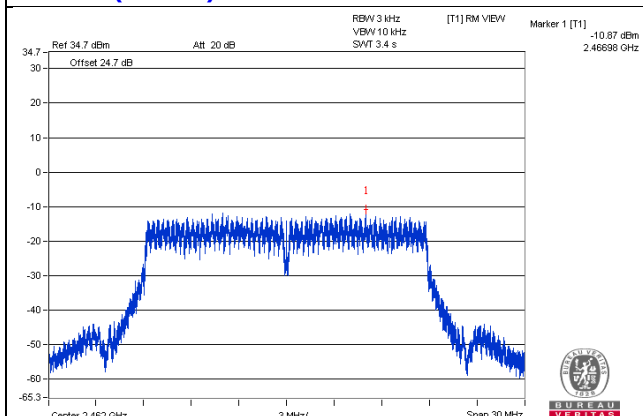
802.11n (20MHz) 2Tx SDM 2412 MHz



802.11n (20MHz) 2Tx SDM 2437 MHz

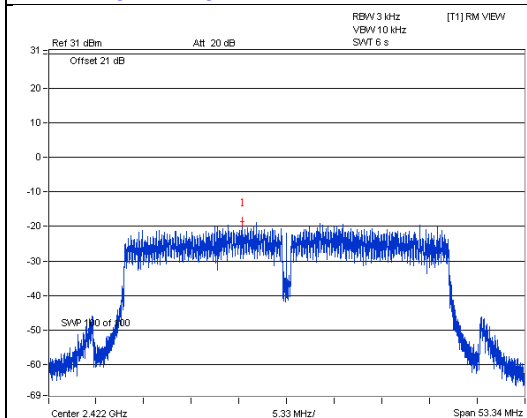


802.11n (20MHz) 2Tx SDM 2462 MHz

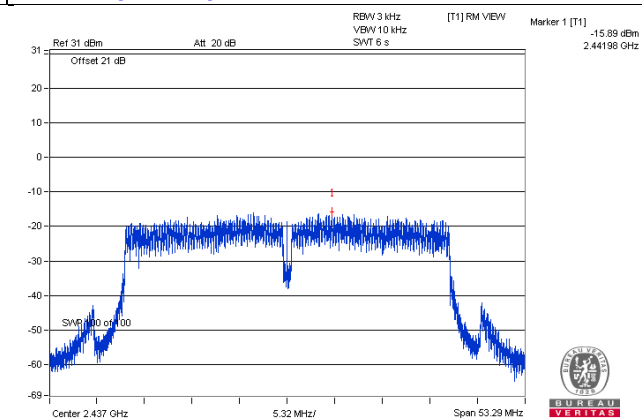


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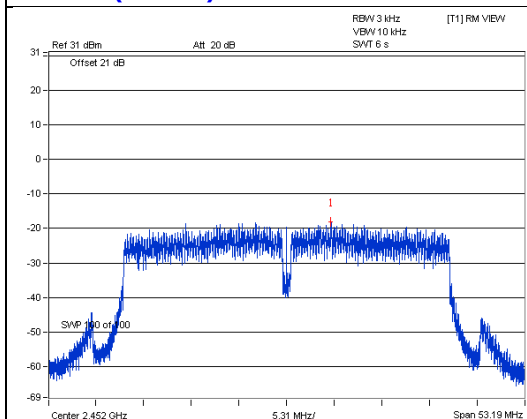
802.11n (40MHz) 1Tx Chain1 2422 MHz



802.11n (40MHz) 1Tx Chain1 2437 MHz

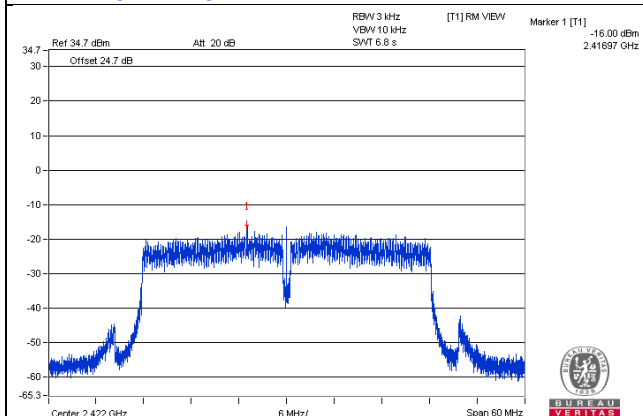


802.11n (40MHz) 1Tx Chain1 2452 MHz

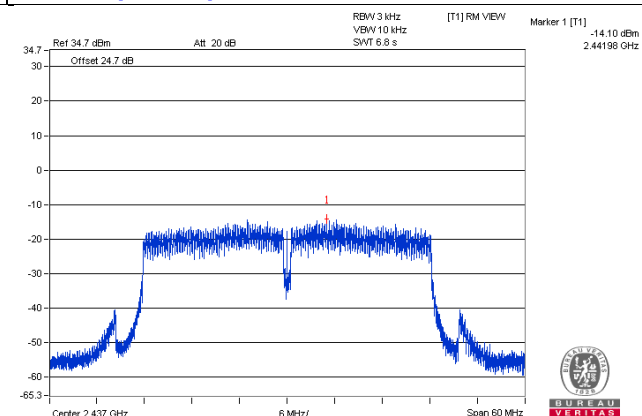


SPECTRUM PLOT

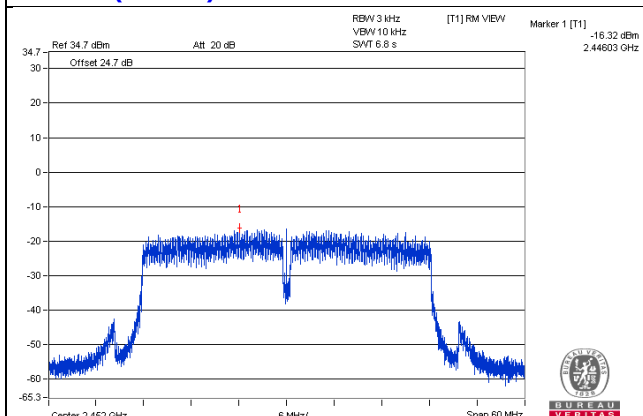
802.11n (40MHz) 2Tx SDM 2422 MHz



802.11n (40MHz) 2Tx SDM 2437 MHz



802.11n (40MHz) 2Tx SDM 2452 MHz



4.4 6dB Bandwidth Measurement

4.4.1 Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz

4.4.2 Measuring Instruments and Setting

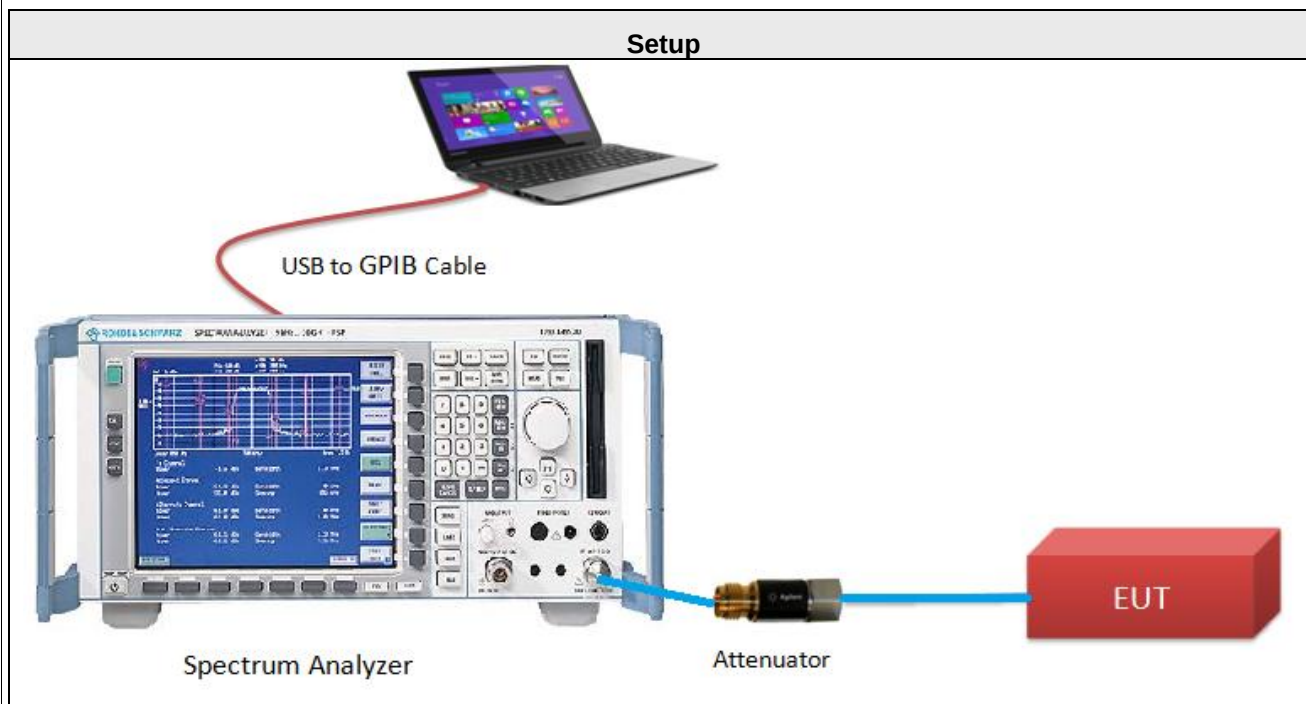
The following table is the setting of the Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> 6dB Bandwidth
RBW	100 kHz.
VBW	$\geq 3 \times \text{RBW}$
Detector	Peak
Trace	Max Hold
Sweep Time	Auto couple

4.4.3 Test Procedures

- 1 The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
- 2 For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier frequency. A peak reading was taken; two markers were set 6 dB below the maximum level on the right and the left side of the emissions.
- 3 The 6dB bandwidth is the frequency difference between the two markers.

4.4.4 Test Setup Layout



4.4.5 Test Deviation

There are no deviations with the original standard.

4.4.6 EUT Operating Conditions

The EUT was programmed to be in continuously transmitting mode.

4.4.7 Test Results of 6dB Bandwidth

Temperature	25°C	Humidity	60%
Test Engineer	Anderson Chen		

802.11b 1Tx Chain1

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	8.13	0.5	PASS
6	2437	8.61	0.5	PASS
11	2462	8.14	0.5	PASS

802.11g 1Tx Chain1

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	16.47	0.5	PASS
6	2437	16.47	0.5	PASS
11	2462	16.46	0.5	PASS

802.11n (20MHz) 1Tx Chain1

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2412	17.65	0.5	PASS
6	2437	17.68	0.5	PASS
11	2462	17.68	0.5	PASS

802.11n (20MHz) 2Tx SDM

CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 1	CHAIN 2		
1	2412	17.65	17.67	0.5	PASS
6	2437	17.66	17.67	0.5	PASS
11	2462	17.67	17.70	0.5	PASS

802.11n (40MHz) 1Tx Chain1

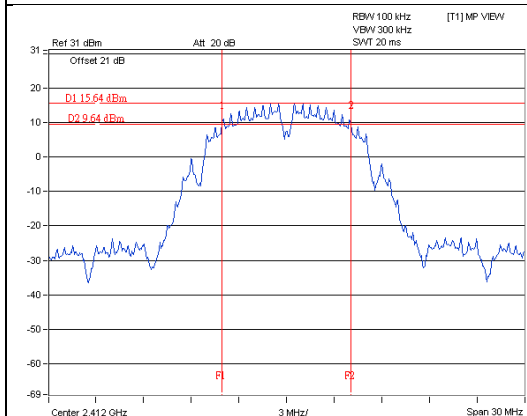
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
3	2422	35.56	0.5	PASS
6	2437	35.53	0.5	PASS
9	2452	35.46	0.5	PASS

802.11n (40MHz) 2Tx SDM

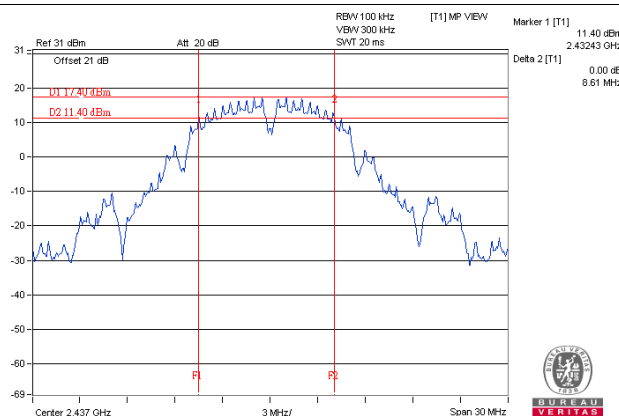
CHANNEL	FREQUENCY (MHz)	6dB BANDWIDTH (MHz)		MINIMUM LIMIT (MHz)	PASS / FAIL
		CHAIN 1	CHAIN 2		
3	2422	35.60	35.76	0.5	PASS
6	2437	35.51	35.44	0.5	PASS
9	2452	35.54	35.78	0.5	PASS

SPECTRUM PLOT

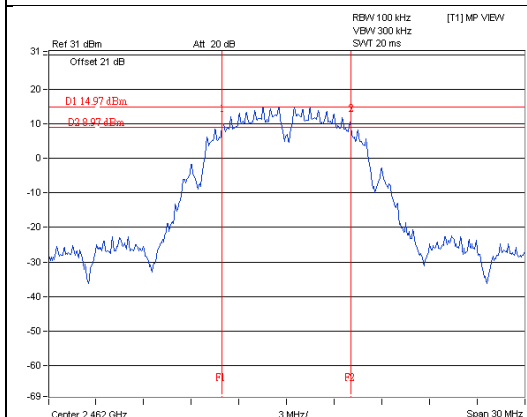
802.11b 1Tx Chain1 CH1



802.11b 1Tx Chain1 CH6

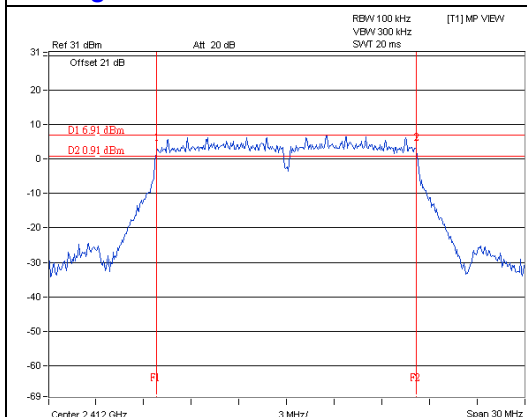


802.11b 1Tx Chain1 CH11

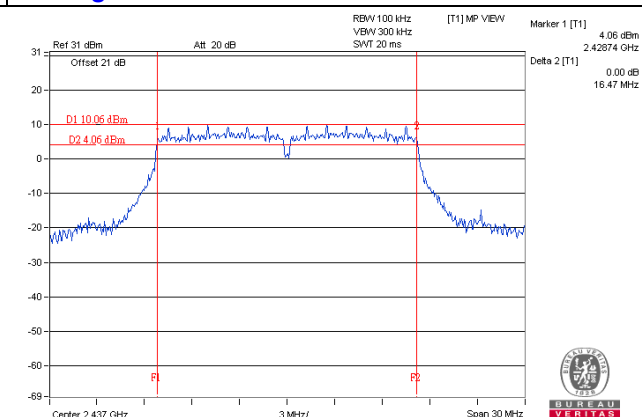


SPECTRUM PLOT

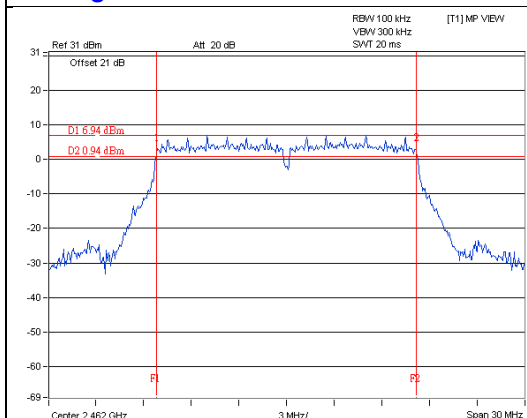
802.11g 1Tx Chain1 CH1



802.11g 1Tx Chain1 CH6

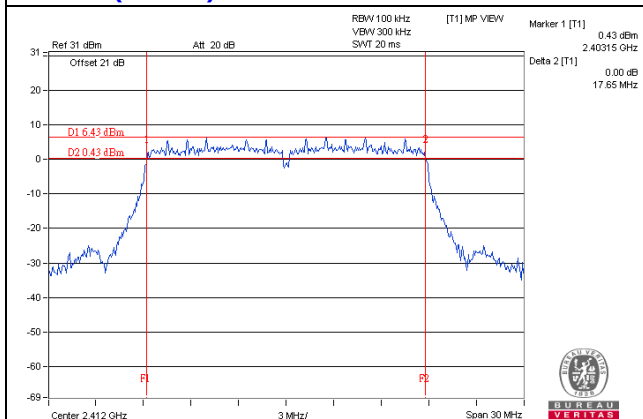


802.11g 1Tx Chain1 CH11

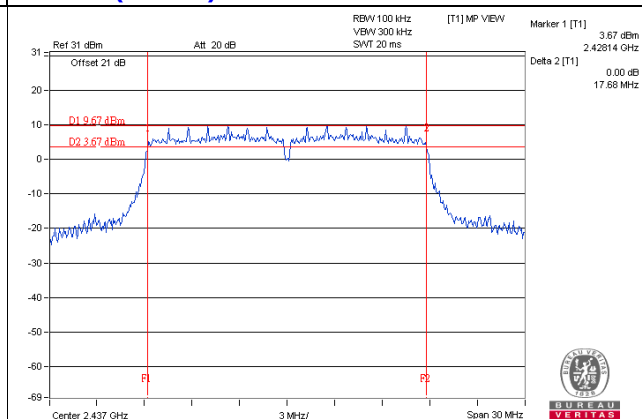


SPECTRUM PLOT

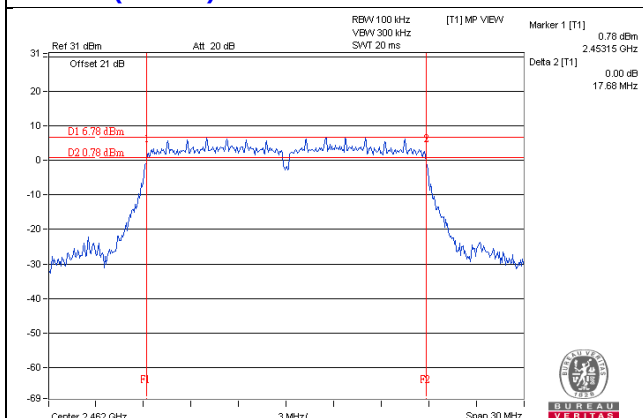
802.11n (20MHz) 1Tx Chain1 CH1



802.11n (20MHz) 1Tx Chain1 CH6

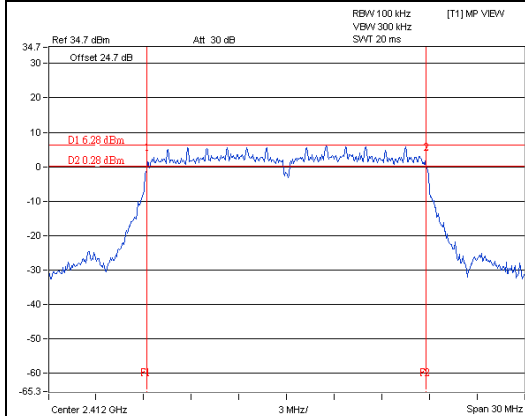


802.11n (20MHz) 1Tx Chain1 CH11

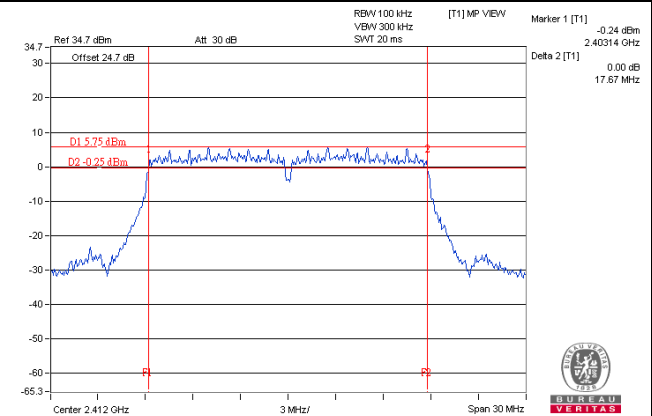


SPECTRUM PLOT

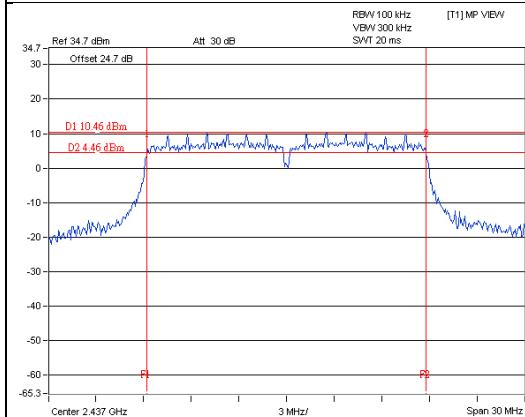
802.11n (20MHz) 2Tx SDM mode Chain1 CH1



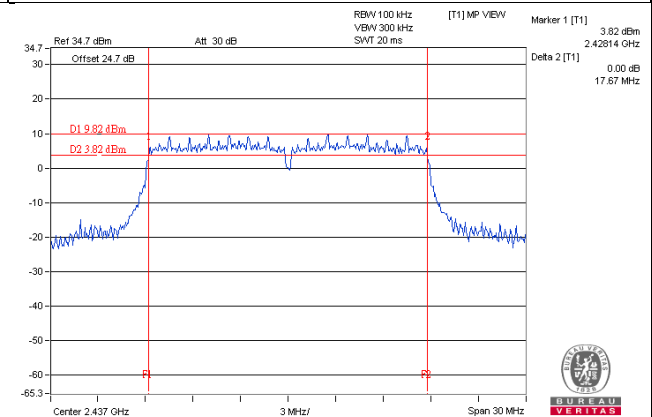
802.11n (20MHz) 2Tx SDM mode Chain2 CH1



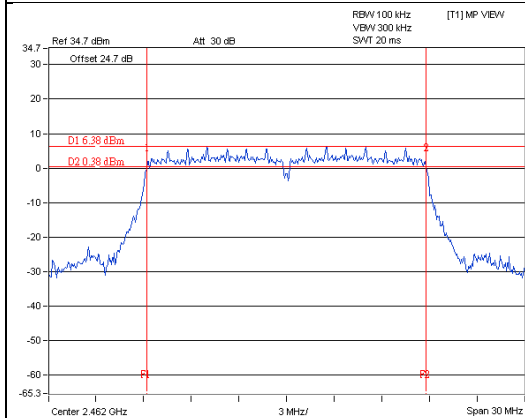
802.11n (20MHz) 2Tx SDM mode Chain1 CH6



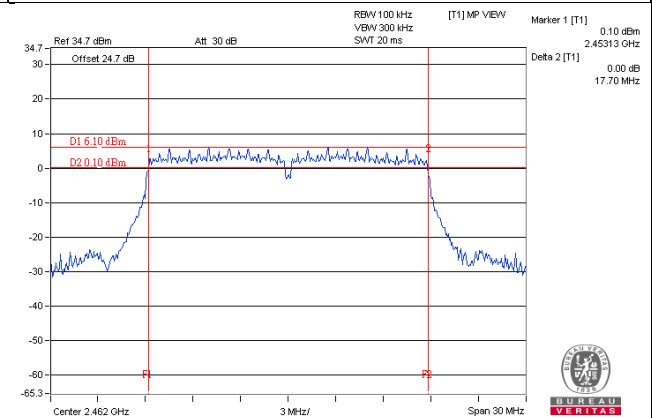
802.11n (20MHz) 2Tx SDM mode Chain2 CH6



802.11n (20MHz) 2Tx SDM mode Chain1 CH11

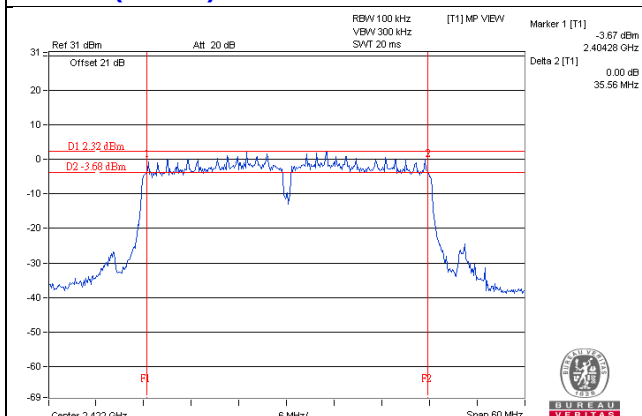


802.11n (20MHz) 2Tx SDM mode Chain2 CH11

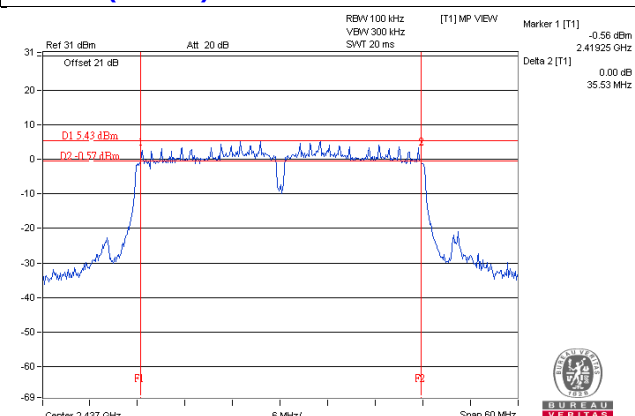


SPECTRUM PLOT

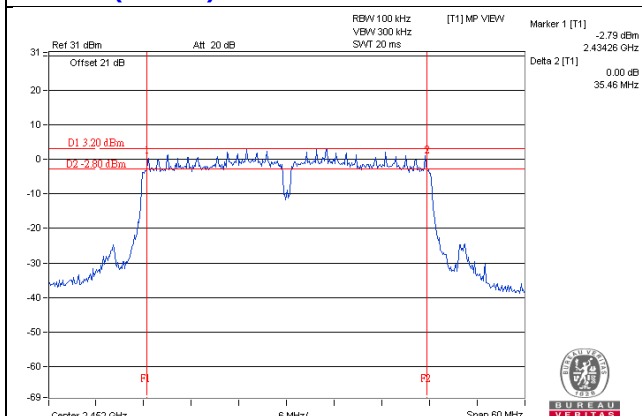
802.11n (40MHz) 1Tx Chain1 CH3



802.11n (40MHz) 1Tx Chain1 CH6

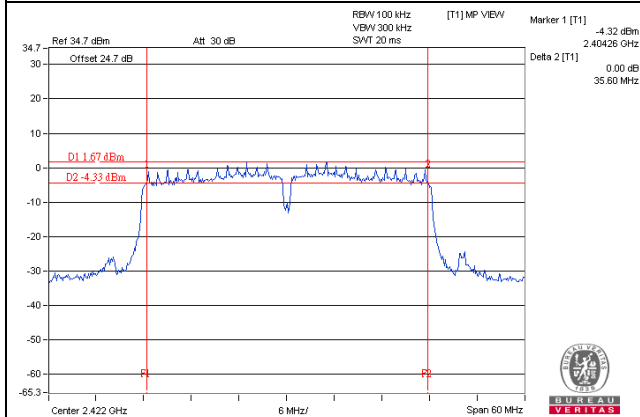


802.11n (40MHz) 1Tx Chain1 CH9

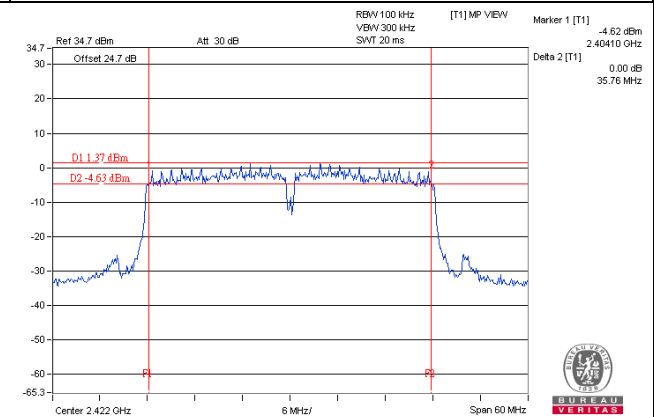


SPECTRUM PLOT

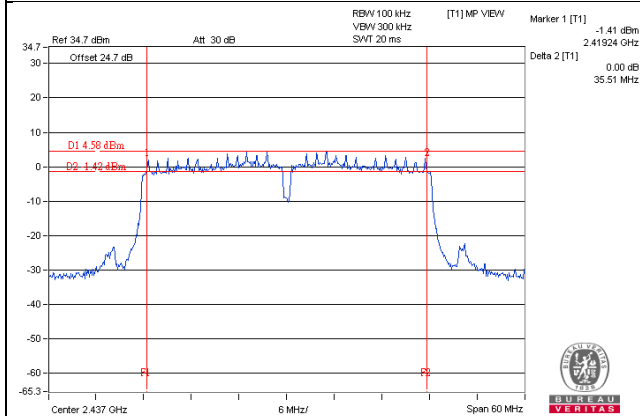
802.11n (40MHz) 2Tx SDM mode Chain1 CH3



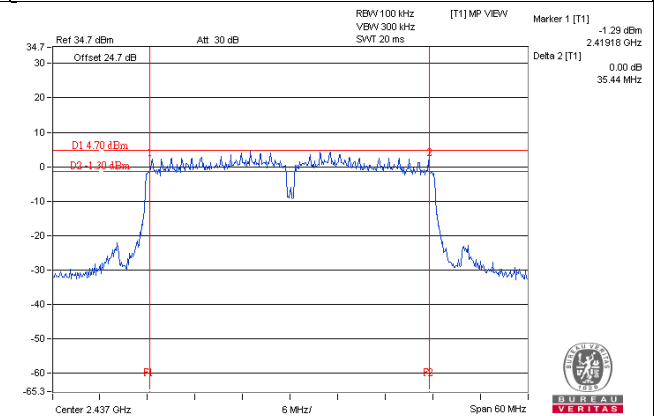
802.11n (40MHz) 2Tx SDM mode Chain2 CH3



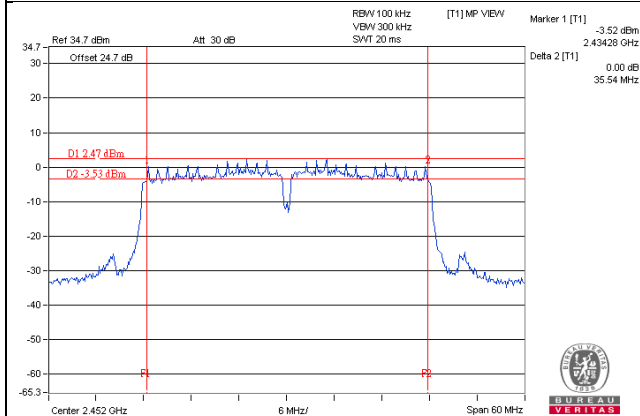
802.11n (40MHz) 2Tx SDM mode Chain1 CH6



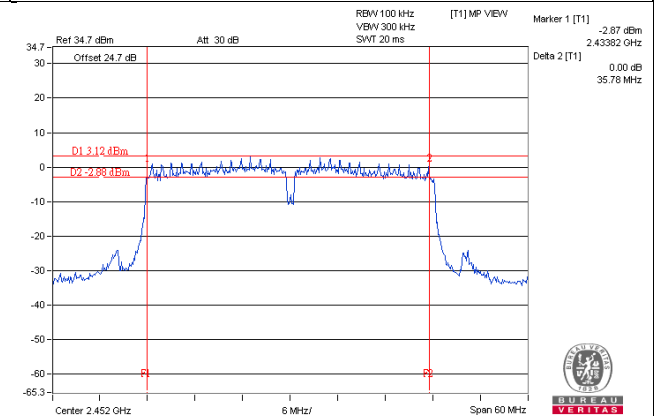
802.11n (40MHz) 2Tx SDM mode Chain2 CH6



802.11n (40MHz) 2Tx SDM mode Chain1 CH9



802.11n (40MHz) 2Tx SDM mode Chain2 CH9



4.5 Occupied Bandwidth Measurement

4.5.1 Measuring Instruments and Setting

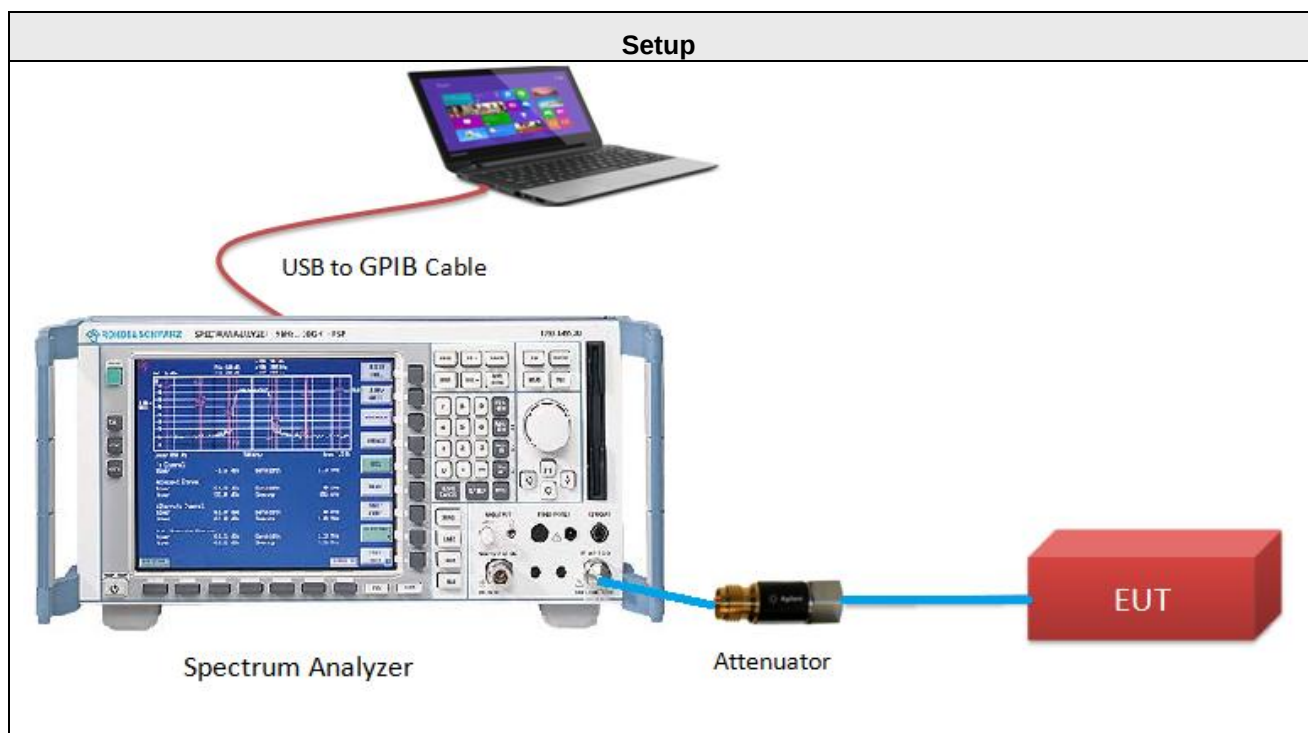
The following table is the setting of the Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RBW	1% to 5% of the anticipated emission bandwidth
VBW	$\geq 3 \times \text{RBW}$
Detector	Peak
Trace	Max Hold
Sweep Time	Auto couple

4.5.2 Test Procedure

- 1 The transmitter output (antenna port) was connected to the spectrum analyzer in peak, Max hold mode.
- 2 For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier frequency. 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 peak.
- 3 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.

4.5.3 Test Setup Layout



4.5.4 Test Deviation

There are no deviations with the original standard.

4.5.5 EUT Operating Conditions

The EUT was programmed to be in continuously transmitting mode.

4.5.6 Test Results of Occupied Bandwidth

Temperature	25°C	Humidity	60%
Test Engineer	Anderson Chen		

802.11b 1Tx Chain1

CHANNEL	FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)
1	2412	10.44
6	2437	11.88
11	2462	10.44

802.11g 1Tx Chain1

CHANNEL	FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)
1	2412	17.04
6	2437	17.16
11	2462	17.04

802.11n (20MHz) 1Tx Chain1

CHANNEL	FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)
1	2412	18.00
6	2437	18.00
11	2462	17.88

802.11n (20MHz) 2Tx SDM

CHANNEL	FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN 1	CHAIN 2
1	2412	18.00	17.88
6	2437	18.24	18.12
11	2462	17.88	17.88

802.11n (40MHz) 1Tx Chain1

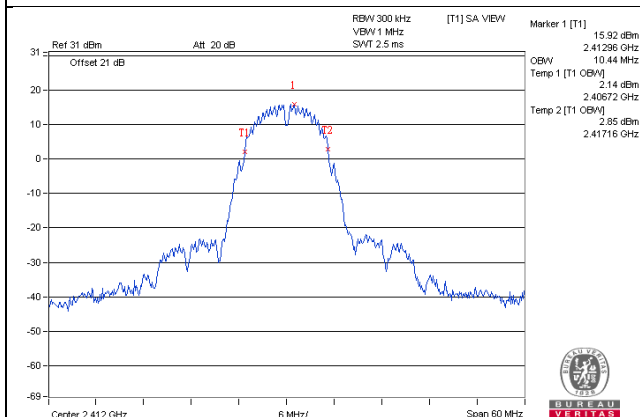
CHANNEL	FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)
3	2422	36.48
6	2437	36.48
9	2452	36.48

802.11n (40MHz) 2Tx SDM

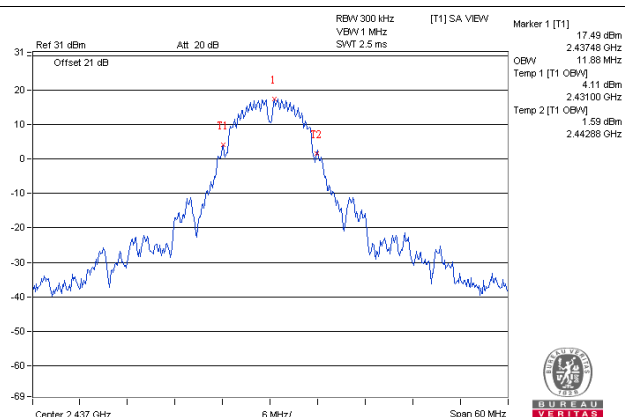
CHANNEL	FREQUENCY (MHz)	OCCUPIED BANDWIDTH (MHz)	
		CHAIN 1	CHAIN 2
3	2422	36.24	36.24
6	2437	36.24	36.48
9	2452	36.48	36.48

SPECTRUM PLOT

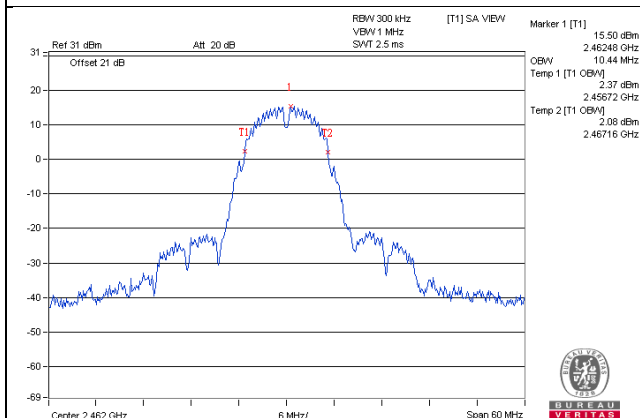
802.11b 1Tx Chain1 CH1



802.11b 1Tx Chain1 CH6

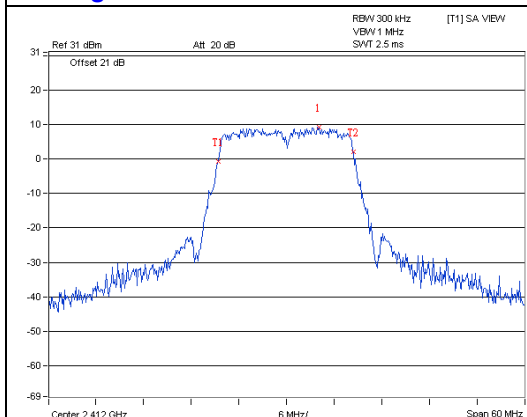


802.11b 1Tx Chain1 CH11

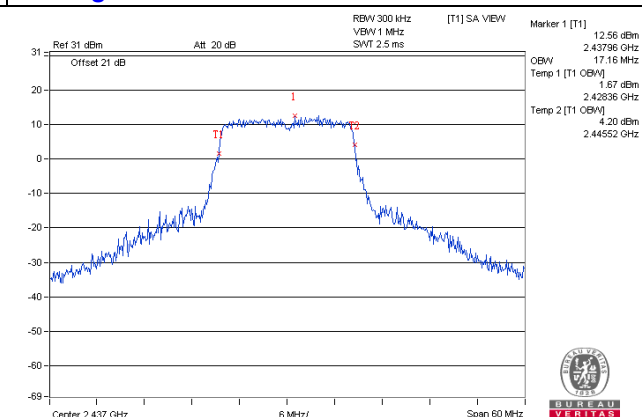


SPECTRUM PLOT

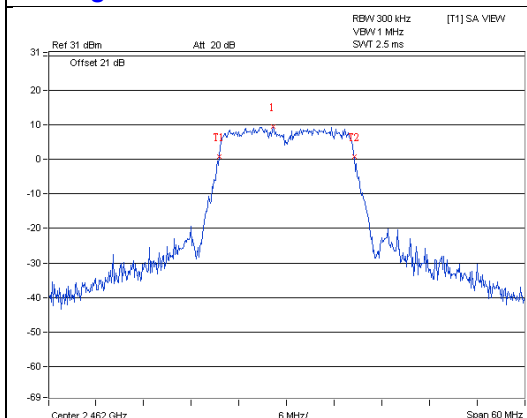
802.11g 1Tx Chain1 CH1



802.11g 1Tx Chain1 CH6

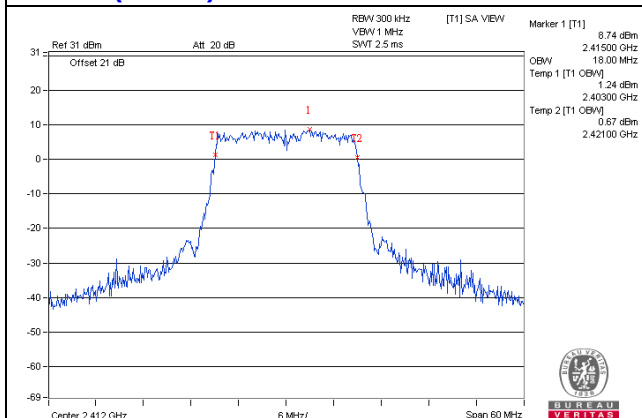


802.11g 1Tx Chain1 CH11

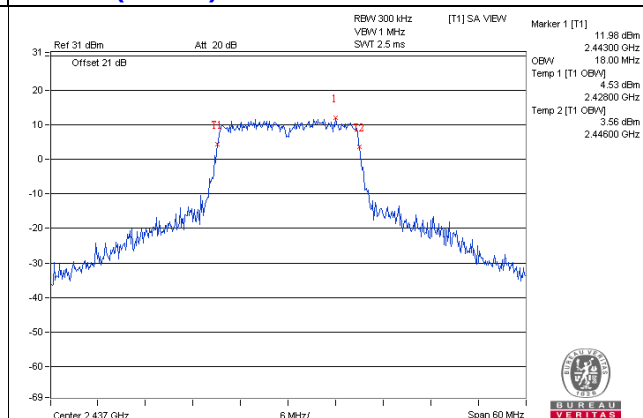


SPECTRUM PLOT

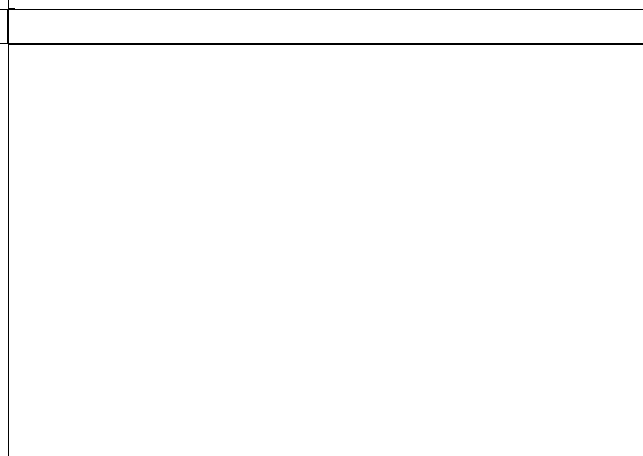
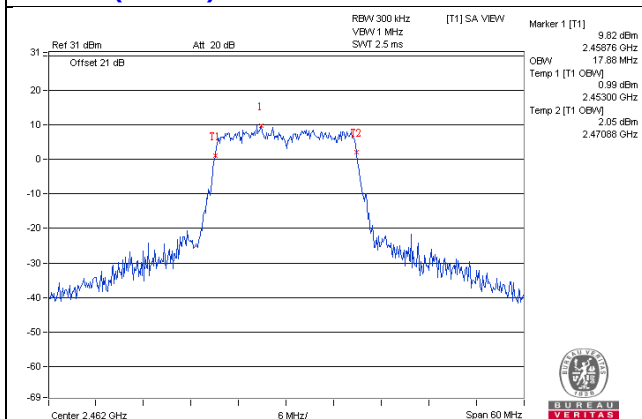
802.11n (20MHz) 1Tx Chain1 CH1



802.11n (20MHz) 1Tx Chain1 CH6

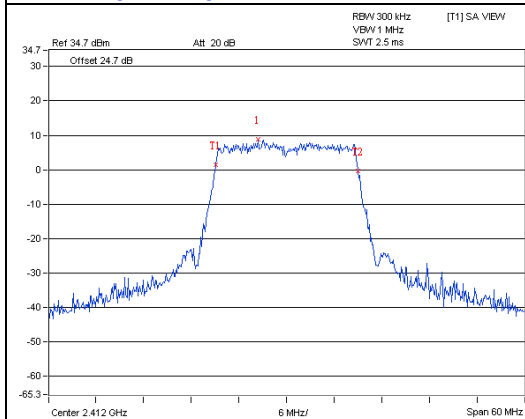


802.11n (20MHz) 1Tx Chain1 CH11

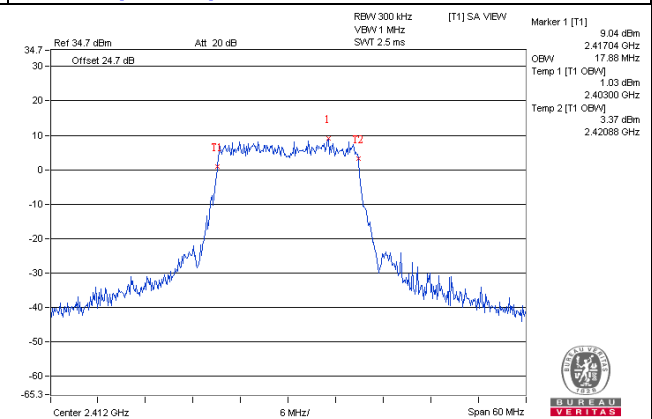


SPECTRUM PLOT

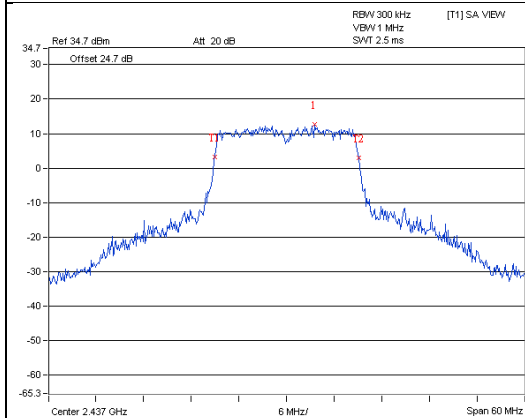
802.11n (20MHz) 2Tx SDM mode Chain1 CH1



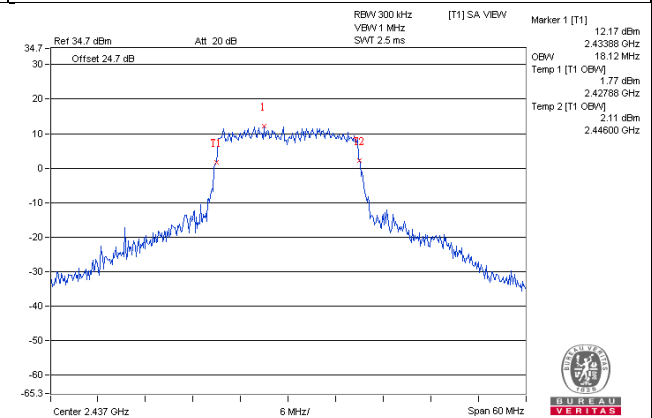
802.11n (20MHz) 2Tx SDM mode Chain2 CH1



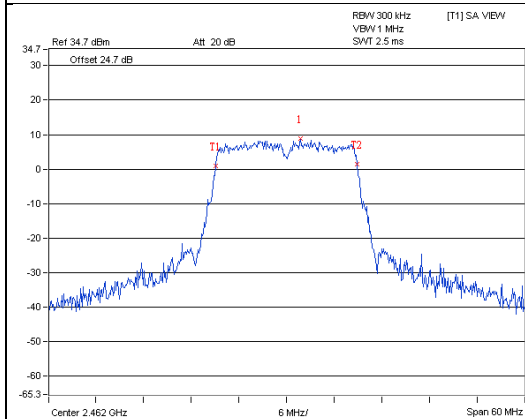
802.11n (20MHz) 2Tx SDM mode Chain1 CH6



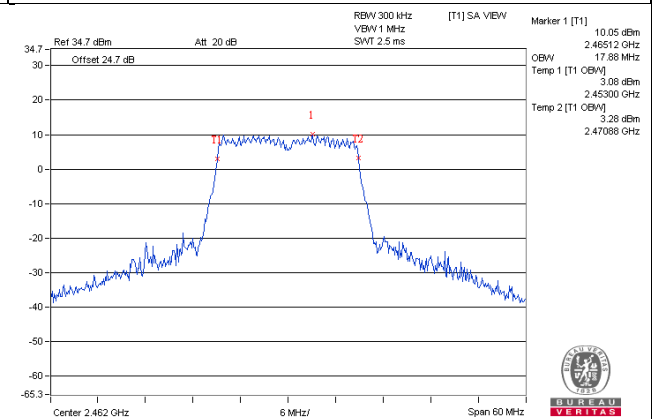
802.11n (20MHz) 2Tx SDM mode Chain2 CH6



802.11n (20MHz) 2Tx SDM mode Chain1 CH11

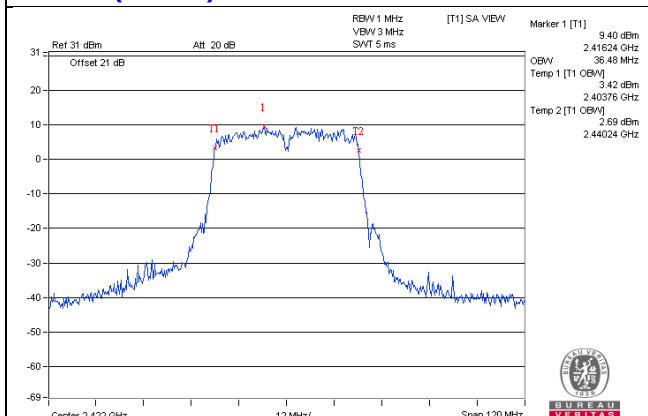


802.11n (20MHz) 2Tx SDM mode Chain2 CH11

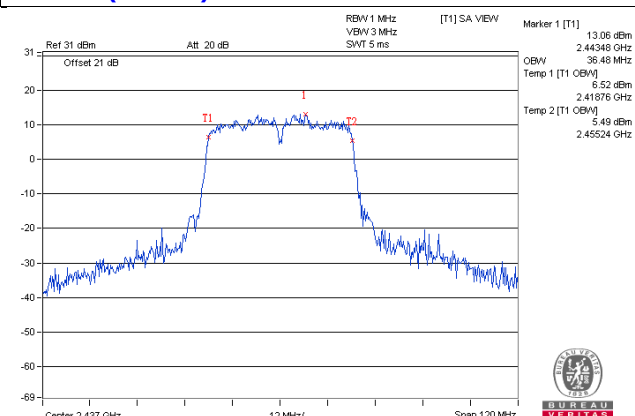


SPECTRUM PLOT

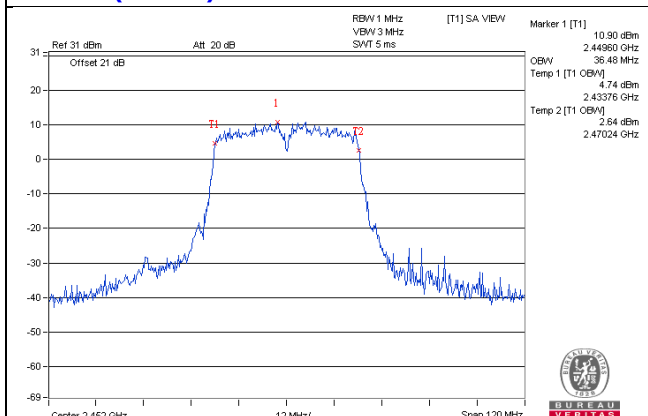
802.11n (40MHz) 1Tx Chain1 CH3



802.11n (40MHz) 1Tx Chain1 CH6

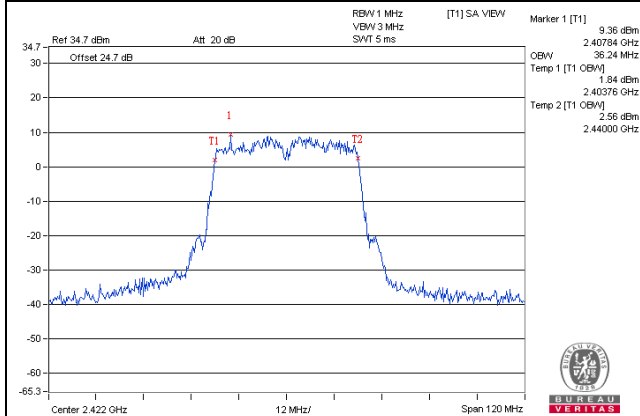


802.11n (40MHz) 1Tx Chain1 CH9

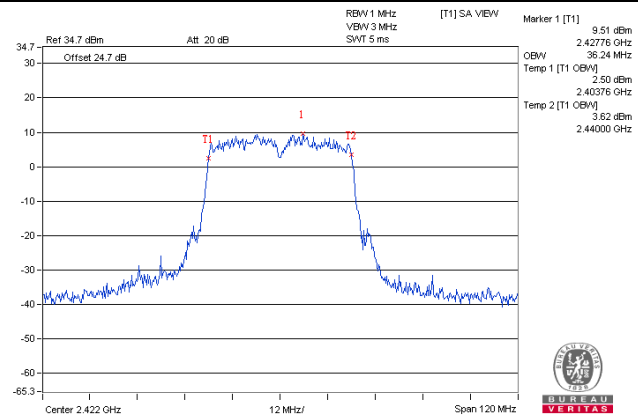


SPECTRUM PLOT

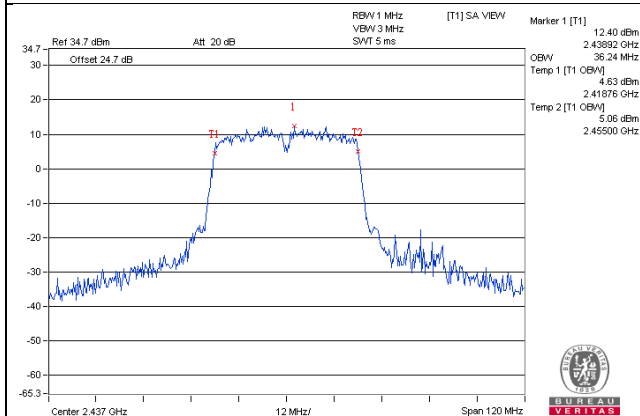
802.11n (40MHz) 2Tx SDM mode Chain1 CH3



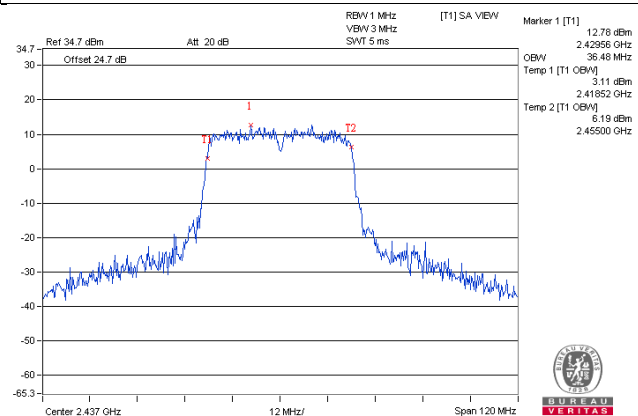
802.11n (40MHz) 2Tx SDM mode Chain2 CH3



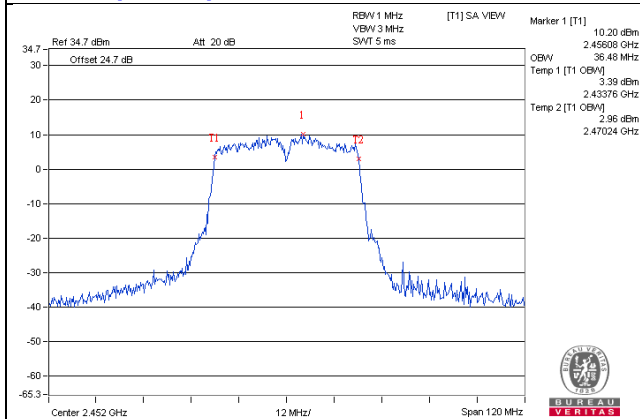
802.11n (40MHz) 2Tx SDM mode Chain1 CH6



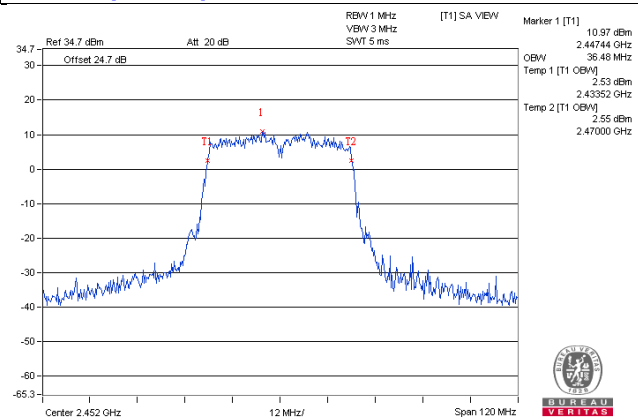
802.11n (40MHz) 2Tx SDM mode Chain2 CH6



802.11n (40MHz) 2Tx SDM mode Chain1 CH9



802.11n (40MHz) 2Tx SDM mode Chain2 CH9



4.6 Radiated Emissions Measurement

4.6.1 Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emissions fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequency Range (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

4.6.2 Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

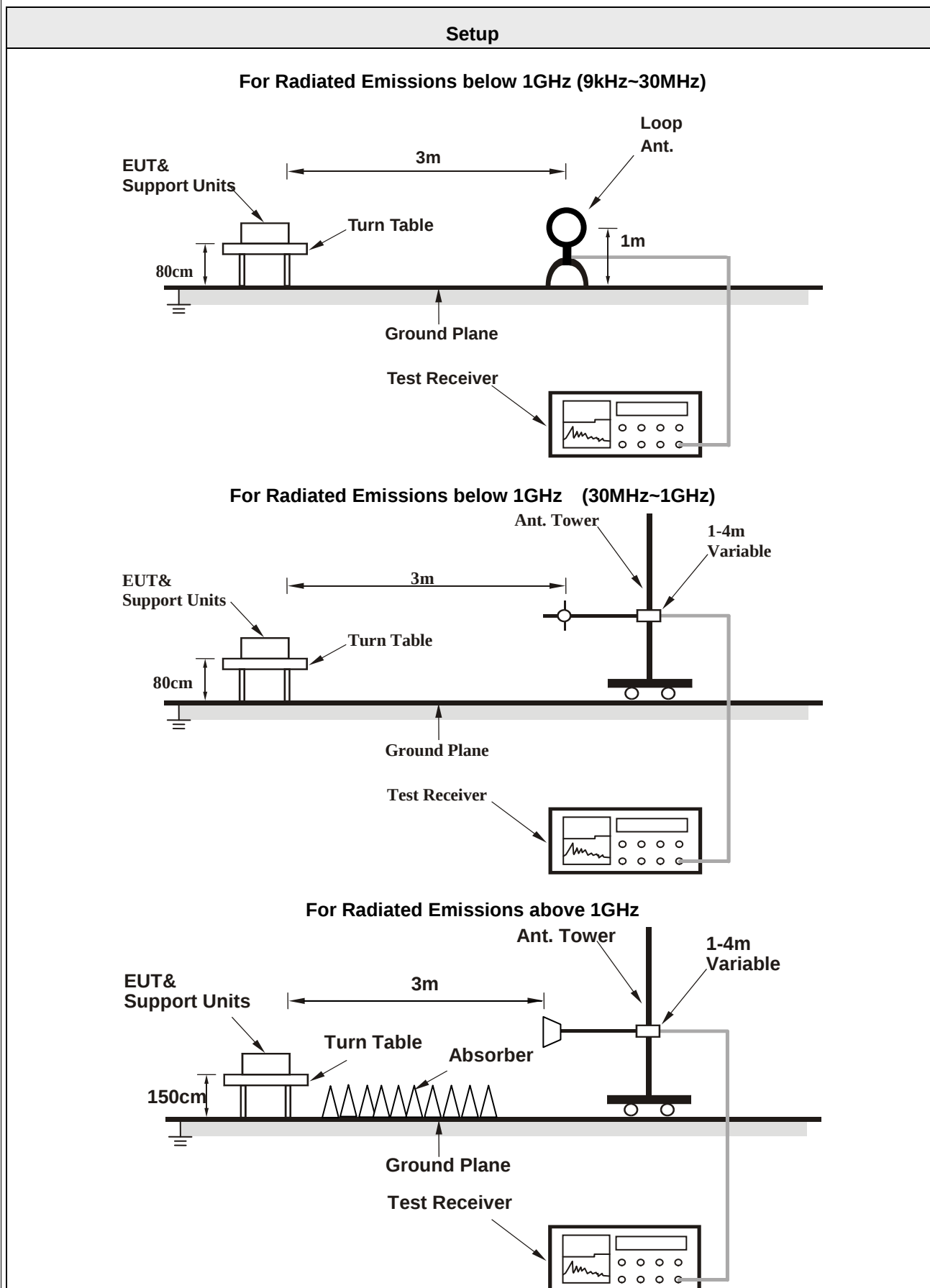
Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emissions in restricted band)	1MHz / 3MHz for Peak, 1 MHz / 1/T for Average
RBW / VBW (Emissions in non-restricted band)	100kHz / 300kHz for peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RBW 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RBW 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RBW 120kHz for QP

4.6.3 Test Procedure

- 1 Configure the EUT according to ANSI C63.10. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2 Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3 The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4 For each suspected emissions, the antenna tower was scan (from 1 m to 4 m) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5 Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode
- 6 For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer for Duty $\geq 98\%$, 1MHz RBW and VBW is $\geq 1/T$ for average reading in spectrum analyzer for Duty $< 98\%$.
- 7 When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
- 8 If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9 For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also PASS with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10 As the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High – Low scan is not required in this case.

4.6.4 Test Setup Layout



4.6.5 Test Deviation

There are no deviations with the original standard.

4.6.6 EUT Operating Conditions

The EUT was programmed to be in continuously transmitting mode.

4.6.7 Test Results of Radiated Emissions

Temperature	25°C	Humidity	67%
Test Engineer	Rey Chen		

Radiated Emissions Range 9kHz~30MHz

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Radiated Emissions Range 30MHz~1GHz

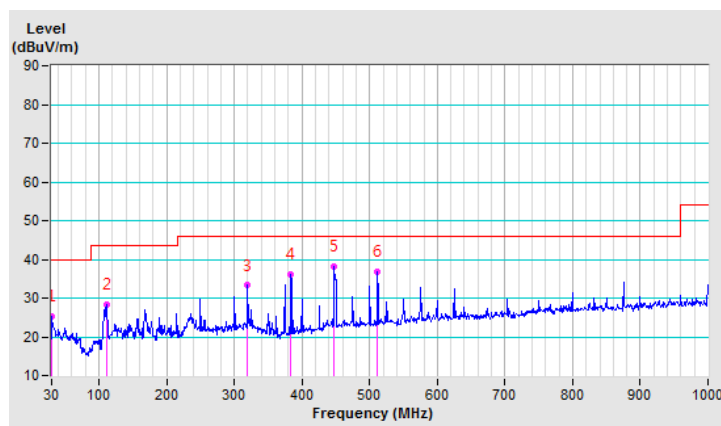
802.11b

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	30.90	25.2 QP	40.0	-14.8	1.50 H	0	34.5	-9.3
2	110.80	28.3 QP	43.5	-15.2	1.50 H	242	39.3	-11.0
3	320.01	33.3 QP	46.0	-12.7	1.00 H	360	40.0	-6.7
4	384.00	36.1 QP	46.0	-9.9	1.00 H	271	41.8	-5.7
5	448.02	38.1 QP	46.0	-7.9	2.00 H	359	41.8	-3.7
6	511.99	36.9 QP	46.0	-9.1	1.50 H	355	39.6	-2.7

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

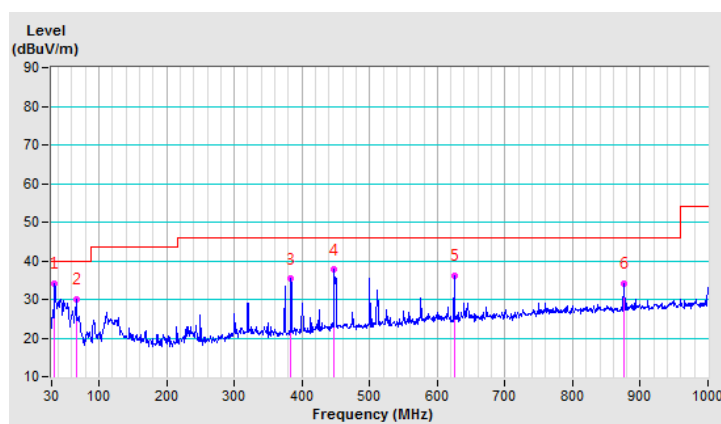


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	34.78	34.2 QP	40.0	-5.8	1.50 V	360	43.3	-9.1
2	66.30	30.1 QP	40.0	-9.9	1.00 V	117	40.0	-9.9
3	384.00	35.3 QP	46.0	-10.7	1.50 V	284	41.0	-5.7
4	448.00	37.7 QP	46.0	-8.3	1.00 V	290	41.4	-3.7
5	625.02	36.2 QP	46.0	-9.8	2.00 V	18	36.8	-0.6
6	875.02	34.0 QP	46.0	-12.0	2.00 V	0	31.4	2.6

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



Radiated Emission Range 1GHz~10th Harmonic

1TX

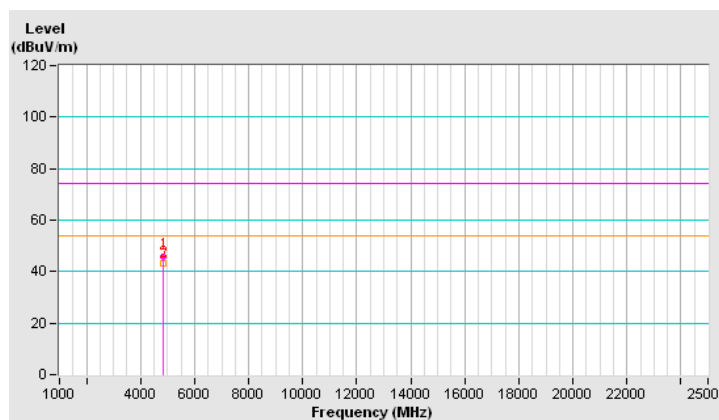
802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4824.00	45.7 PK	74.0	-28.3	1.28 H	328	42.7	3.0
2	4824.00	43.0 AV	54.0	-11.0	1.28 H	328	40.0	3.0

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

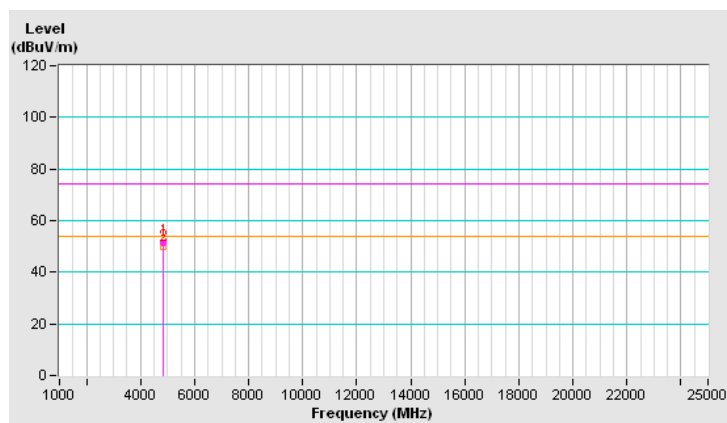


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4824.00	51.3 PK	74.0	-22.7	1.20 V	122	48.3	3.0
2	4824.00	49.6 AV	54.0	-4.4	1.20 V	122	46.6	3.0

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

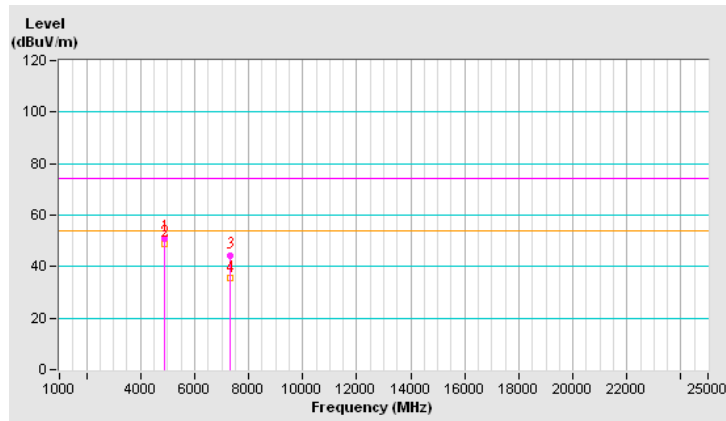


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4874.00	50.9 PK	74.0	-23.1	1.64 H	327	47.7	3.2
2	4874.00	49.0 AV	54.0	-5.0	1.64 H	327	45.8	3.2
3	7311.00	44.4 PK	74.0	-29.6	1.45 H	346	35.5	8.9
4	7311.00	35.4 AV	54.0	-18.6	1.45 H	346	26.5	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

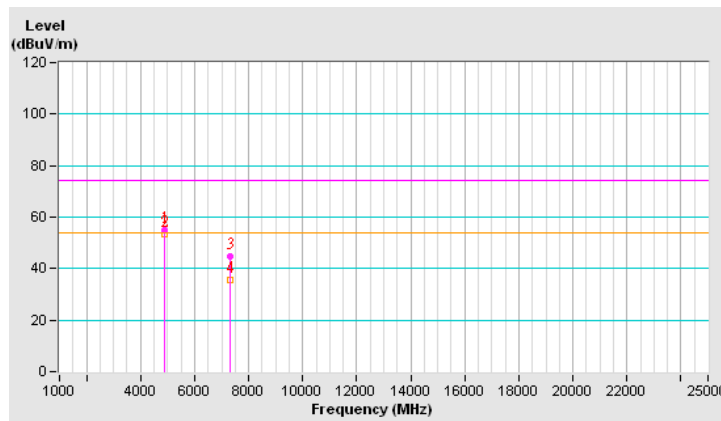


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4874.00	54.9 PK	74.0	-19.1	1.01 V	106	51.7	3.2
2	4874.00	53.6 AV	54.0	-0.4	1.01 V	106	50.4	3.2
3	7311.00	44.6 PK	74.0	-29.4	1.52 V	158	35.7	8.9
4	7311.00	35.5 AV	54.0	-18.5	1.52 V	158	26.6	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

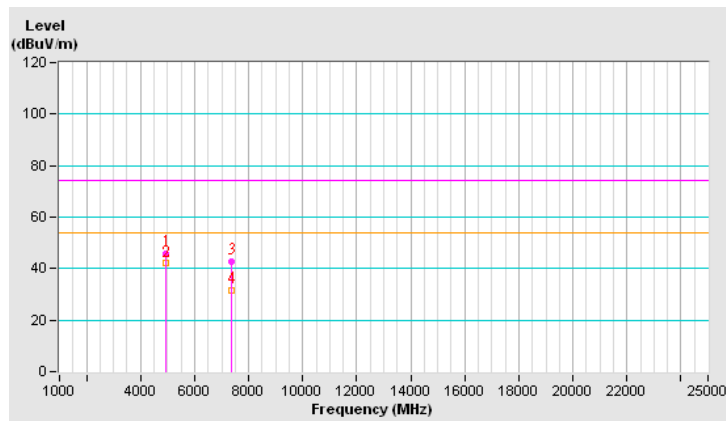


CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4924.00	45.6 PK	74.0	-28.4	1.31 H	327	42.3	3.3
2	4924.00	42.0 AV	54.0	-12.0	1.31 H	327	38.7	3.3
3	7386.00	42.7 PK	74.0	-31.3	1.37 H	347	33.6	9.1
4	7386.00	31.5 AV	54.0	-22.5	1.37 H	347	22.4	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

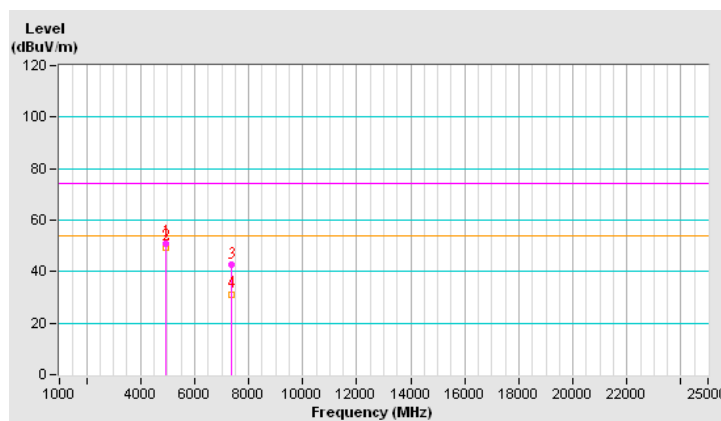


CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4924.00	51.1 PK	74.0	-22.9	1.19 V	124	47.8	3.3
2	4924.00	49.4 AV	54.0	-4.6	1.19 V	124	46.1	3.3
3	7386.00	42.5 PK	74.0	-31.5	1.55 V	165	33.4	9.1
4	7386.00	31.2 AV	54.0	-22.8	1.55 V	165	22.1	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



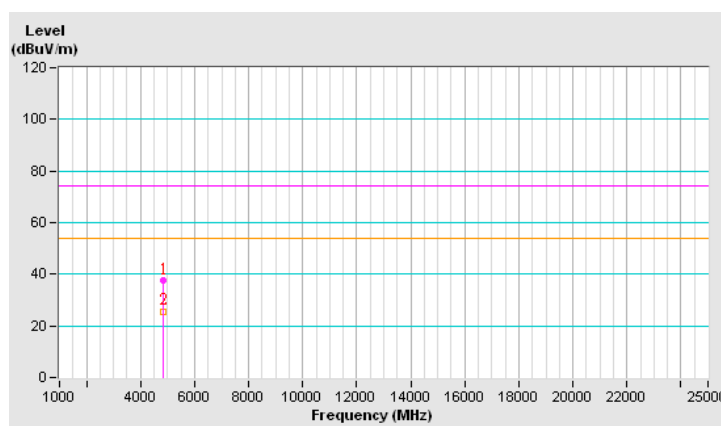
802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4824.00	37.4 PK	74.0	-36.6	1.20 H	317	34.4	3.0
2	4824.00	25.5 AV	54.0	-28.5	1.20 H	317	22.5	3.0

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

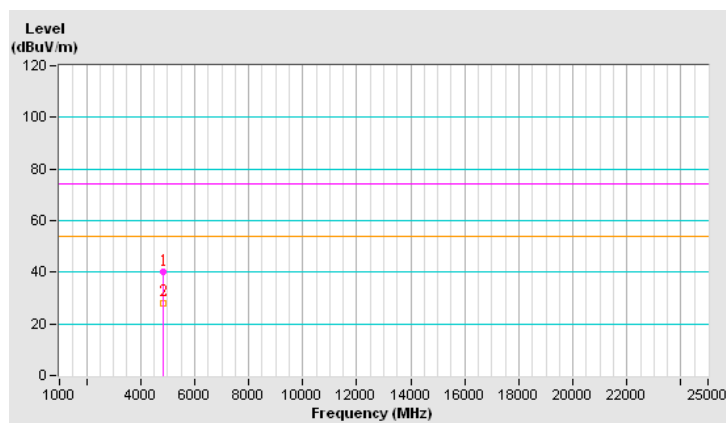


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4824.00	40.0 PK	74.0	-34.0	1.24 V	16	37.0	3.0
2	4824.00	27.8 AV	54.0	-26.2	1.24 V	16	24.8	3.0

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

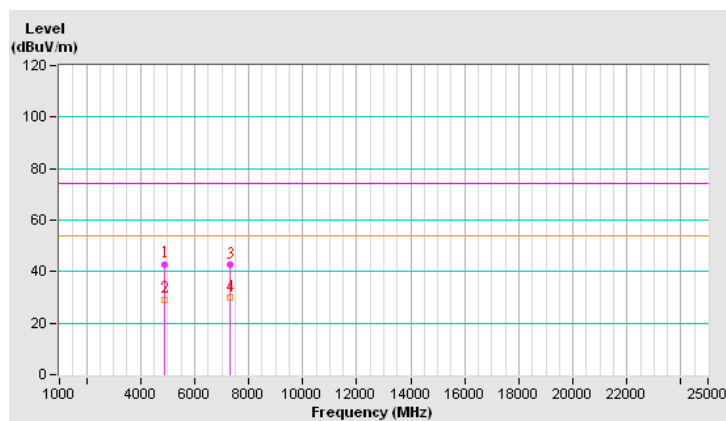


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4874.00	42.9 PK	74.0	-31.1	1.12 H	323	39.7	3.2
2	4874.00	29.2 AV	54.0	-24.8	1.12 H	323	26.0	3.2
3	7311.00	42.5 PK	74.0	-31.5	1.43 H	334	33.6	8.9
4	7311.00	29.8 AV	54.0	-24.2	1.43 H	334	20.9	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

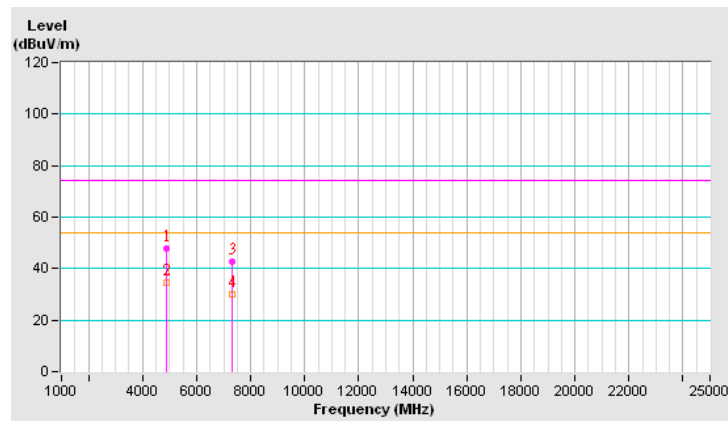


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4874.00	47.8 PK	74.0	-26.2	1.24 V	134	44.6	3.2
2	4874.00	34.5 AV	54.0	-19.5	1.24 V	134	31.3	3.2
3	7311.00	42.6 PK	74.0	-31.4	1.24 V	318	33.7	8.9
4	7311.00	30.0 AV	54.0	-24.0	1.24 V	318	21.1	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

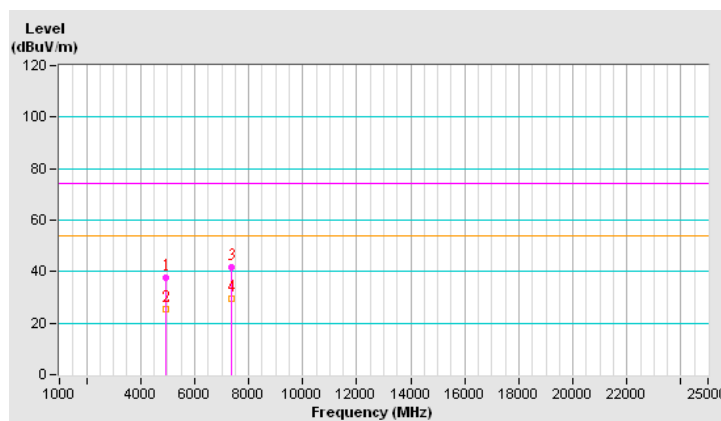


CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4924.00	37.5 PK	74.0	-36.5	1.20 H	325	34.2	3.3
2	4924.00	25.6 AV	54.0	-28.4	1.20 H	325	22.3	3.3
3	7386.00	41.7 PK	74.0	-32.3	1.51 H	302	32.6	9.1
4	7386.00	29.6 AV	54.0	-24.4	1.51 H	302	20.5	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

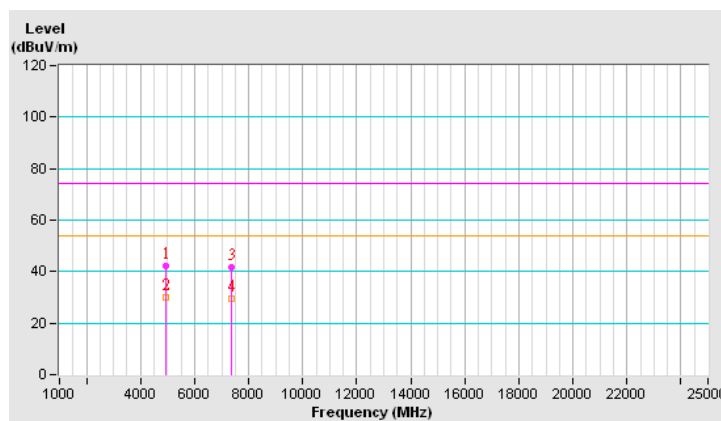


CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4924.00	42.1 PK	74.0	-31.9	1.03 V	58	38.8	3.3
2	4924.00	29.9 AV	54.0	-24.1	1.03 V	58	26.6	3.3
3	7386.00	41.9 PK	74.0	-32.1	1.25 V	309	32.8	9.1
4	7386.00	29.7 AV	54.0	-24.3	1.25 V	309	20.6	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



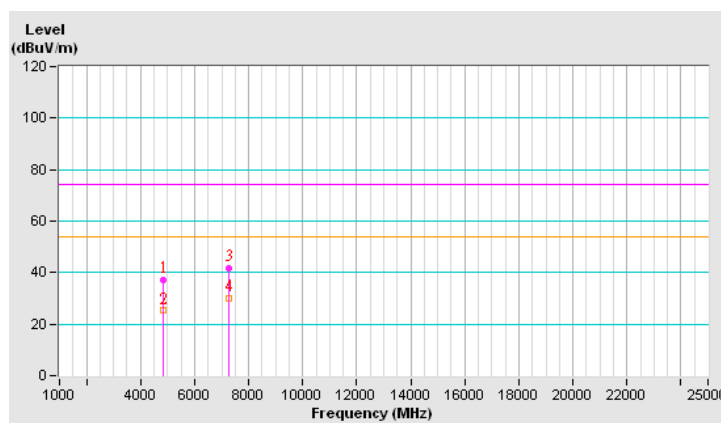
802.11n (HT40)

CHANNEL	TX Channel 3	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	4844.00	37.1 PK	74.0	-36.9	1.19 H	328	34.0	3.1
2	4844.00	25.2 AV	54.0	-28.8	1.19 H	328	22.1	3.1
3	7266.00	41.6 PK	74.0	-32.4	1.55 H	318	32.7	8.9
4	7266.00	30.0 AV	54.0	-24.0	1.55 H	318	21.1	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

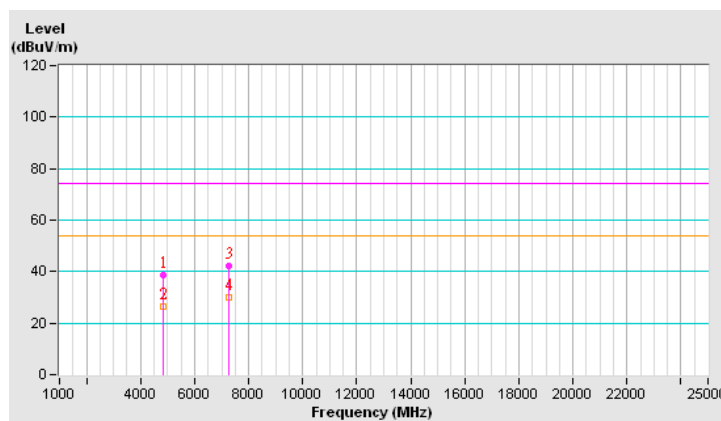


CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4844.00	38.5 PK	74.0	-35.5	1.66 V	170	35.4	3.1
2	4844.00	26.4 AV	54.0	-27.6	1.66 V	170	23.3	3.1
3	7266.00	42.1 PK	74.0	-31.9	1.99 V	317	33.2	8.9
4	7266.00	30.1 AV	54.0	-23.9	1.99 V	317	21.2	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

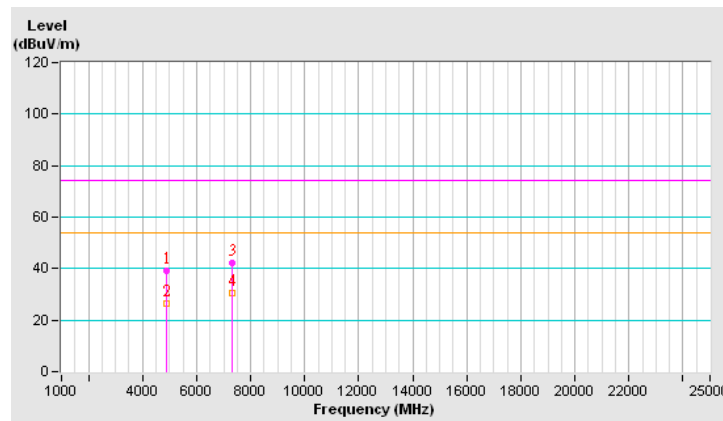


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4874.00	39.3 PK	74.0	-34.7	1.21 H	317	36.1	3.2
2	4874.00	26.5 AV	54.0	-27.5	1.21 H	317	23.3	3.2
3	7311.00	42.4 PK	74.0	-31.6	1.45 H	312	33.5	8.9
4	7311.00	30.5 AV	54.0	-23.5	1.45 H	312	21.6	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

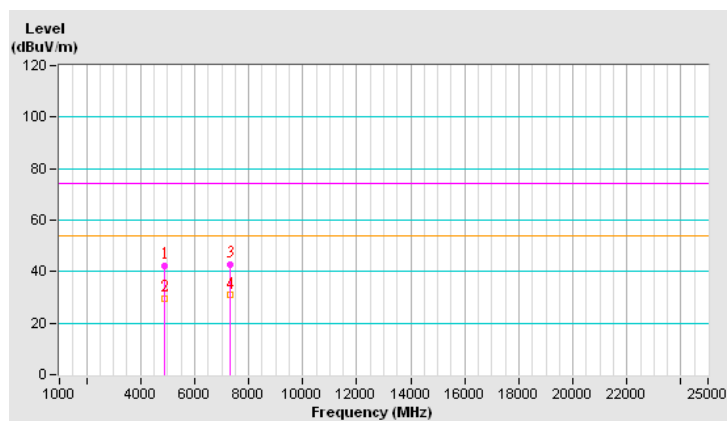


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4874.00	42.1 PK	74.0	-31.9	1.90 V	122	38.9	3.2
2	4874.00	29.7 AV	54.0	-24.3	1.90 V	122	26.5	3.2
3	7311.00	42.6 PK	74.0	-31.4	1.90 V	311	33.7	8.9
4	7311.00	30.8 AV	54.0	-23.2	1.90 V	311	21.9	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

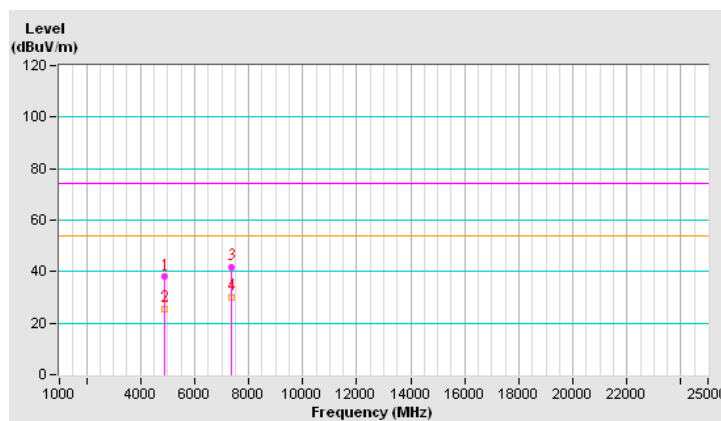


CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4904.00	37.9 PK	74.0	-36.1	1.25 H	299	34.7	3.2
2	4904.00	25.5 AV	54.0	-28.5	1.25 H	299	22.3	3.2
3	7356.00	41.8 PK	74.0	-32.2	1.43 H	321	32.7	9.1
4	7356.00	30.1 AV	54.0	-23.9	1.43 H	321	21.0	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

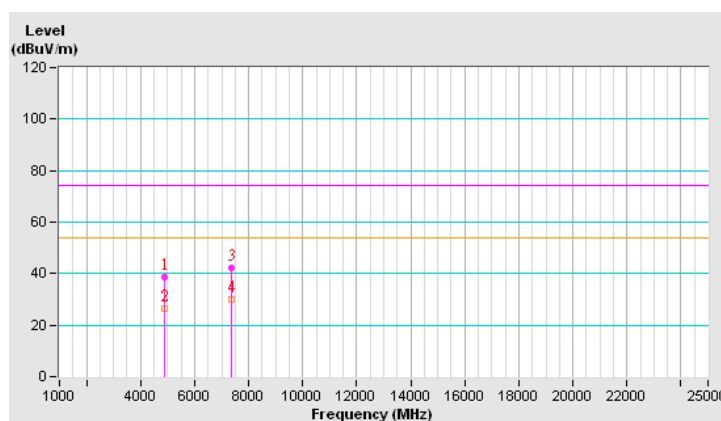


CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4904.00	38.6 PK	74.0	-35.4	1.64 V	161	35.4	3.2
2	4904.00	26.6 AV	54.0	-27.4	1.64 V	161	23.4	3.2
3	7356.00	42.2 PK	74.0	-31.8	1.87 V	302	33.1	9.1
4	7356.00	30.2 AV	54.0	-23.8	1.87 V	302	21.1	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



2TX

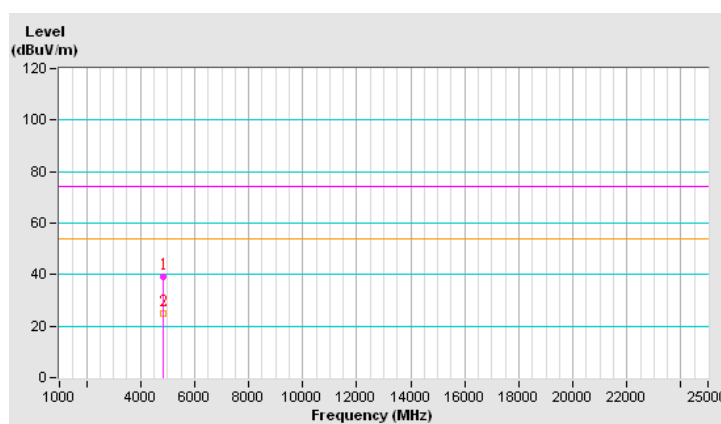
802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4824.00	39.1 PK	74.0	-34.9	1.30 H	154	36.1	3.0
2	4824.00	25.0 AV	54.0	-29.0	1.30 H	154	22.0	3.0

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

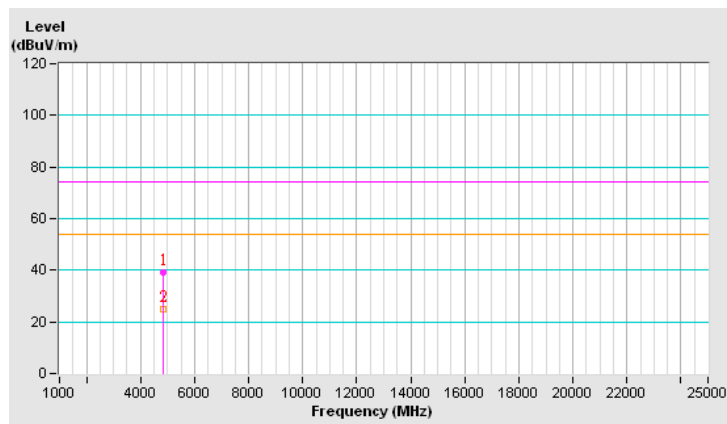


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4824.00	39.2 PK	74.0	-34.8	1.78 V	298	36.2	3.0
2	4824.00	25.1 AV	54.0	-28.9	1.78 V	298	22.1	3.0

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

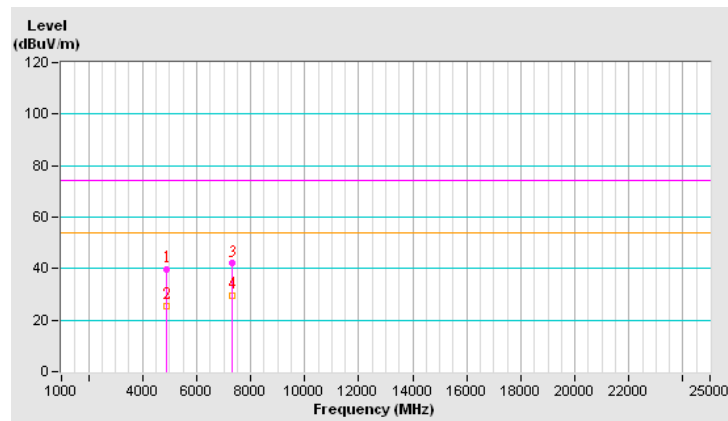


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4874.00	39.7 PK	74.0	-34.3	1.28 H	154	36.5	3.2
2	4874.00	25.4 AV	54.0	-28.6	1.28 H	154	22.2	3.2
3	7311.00	42.0 PK	74.0	-32.0	1.47 H	308	33.1	8.9
4	7311.00	29.5 AV	54.0	-24.5	1.47 H	308	20.6	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

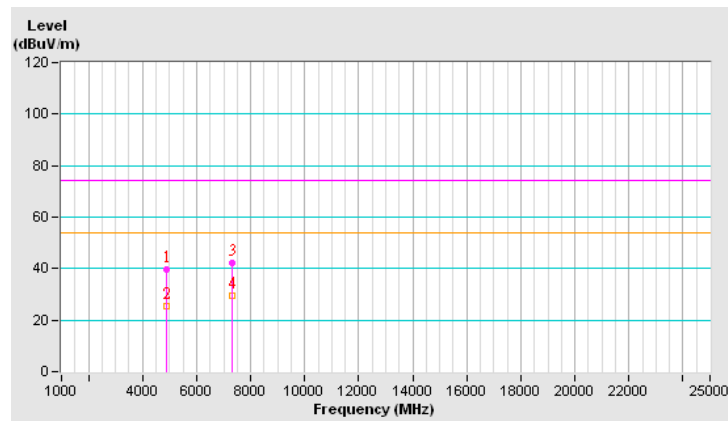


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4874.00	39.8 PK	74.0	-34.2	1.75 V	302	36.6	3.2
2	4874.00	25.5 AV	54.0	-28.5	1.75 V	302	22.3	3.2
3	7311.00	42.1 PK	74.0	-31.9	1.43 V	178	33.2	8.9
4	7311.00	29.7 AV	54.0	-24.3	1.43 V	178	20.8	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

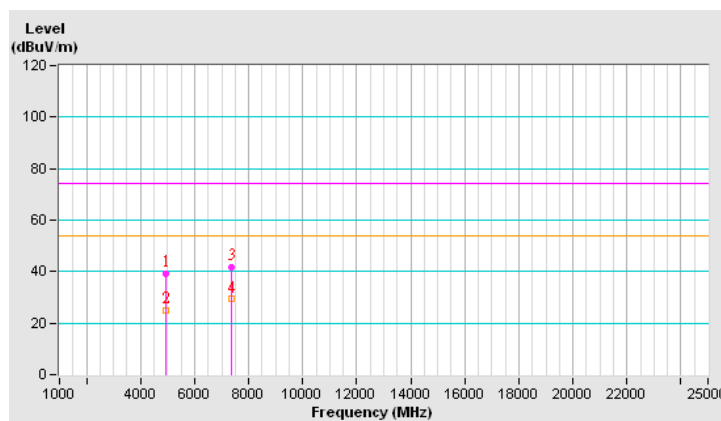


CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	4924.00	39.2 PK	74.0	-34.8	1.29 H	149	35.9	3.3
2	4924.00	25.0 AV	54.0	-29.0	1.29 H	149	21.7	3.3
3	7386.00	41.6 PK	74.0	-32.4	1.46 H	324	32.5	9.1
4	7386.00	29.3 AV	54.0	-24.7	1.46 H	324	20.2	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

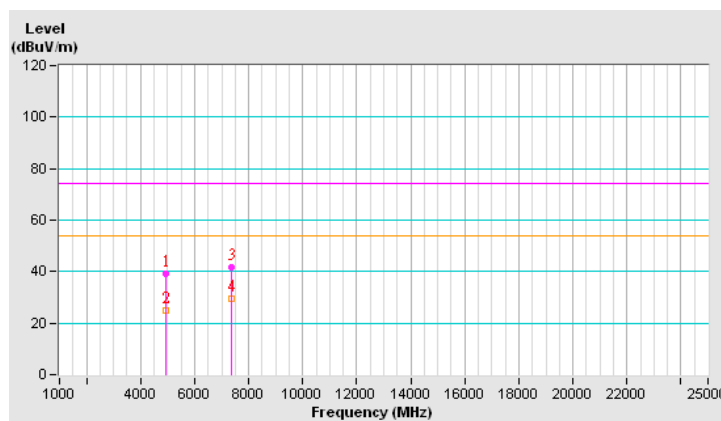


CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4924.00	39.4 PK	74.0	-34.6	1.81 V	289	36.1	3.3
2	4924.00	25.1 AV	54.0	-28.9	1.81 V	289	21.8	3.3
3	7386.00	41.8 PK	74.0	-32.2	1.46 V	186	32.7	9.1
4	7386.00	29.4 AV	54.0	-24.6	1.46 V	186	20.3	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



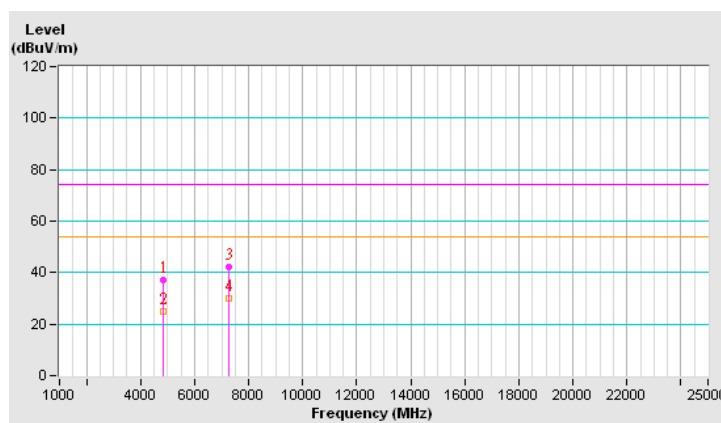
802.11n (HT40)

CHANNEL	TX Channel 3	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	4844.00	37.0 PK	74.0	-37.0	1.22 H	164	33.9	3.1
2	4844.00	25.0 AV	54.0	-29.0	1.22 H	164	21.9	3.1
3	7266.00	42.1 PK	74.0	-31.9	1.51 H	315	33.2	8.9
4	7266.00	30.0 AV	54.0	-24.0	1.51 H	315	21.1	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

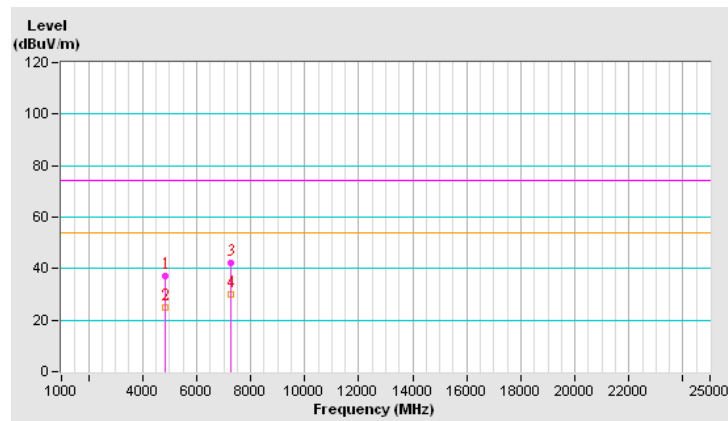


CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4844.00	37.1 PK	74.0	-36.9	1.81 V	291	34.0	3.1
2	4844.00	25.1 AV	54.0	-28.9	1.81 V	291	22.0	3.1
3	7266.00	42.2 PK	74.0	-31.8	1.37 V	170	33.3	8.9
4	7266.00	30.1 AV	54.0	-23.9	1.37 V	170	21.2	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

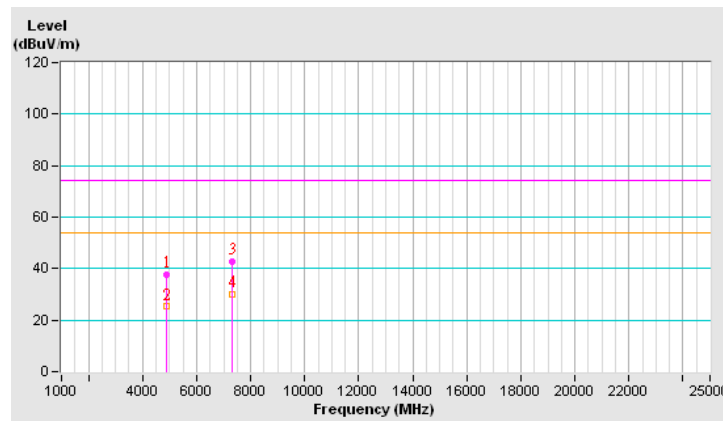


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4874.00	37.8 PK	74.0	-36.2	1.27 H	169	34.6	3.2
2	4874.00	25.2 AV	54.0	-28.8	1.27 H	169	22.0	3.2
3	7311.00	42.6 PK	74.0	-31.4	1.47 H	305	33.7	8.9
4	7311.00	30.2 AV	54.0	-23.8	1.47 H	305	21.3	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

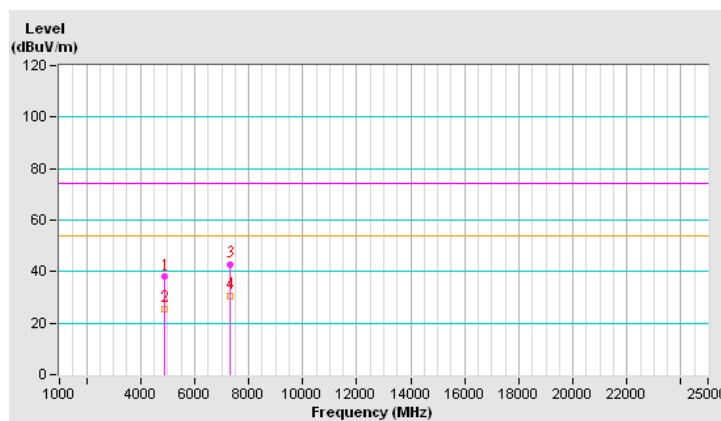


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4874.00	37.9 PK	74.0	-36.1	1.71 V	300	34.7	3.2
2	4874.00	25.3 AV	54.0	-28.7	1.71 V	300	22.1	3.2
3	7311.00	42.6 PK	74.0	-31.4	1.45 V	190	33.7	8.9
4	7311.00	30.4 AV	54.0	-23.6	1.45 V	190	21.5	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

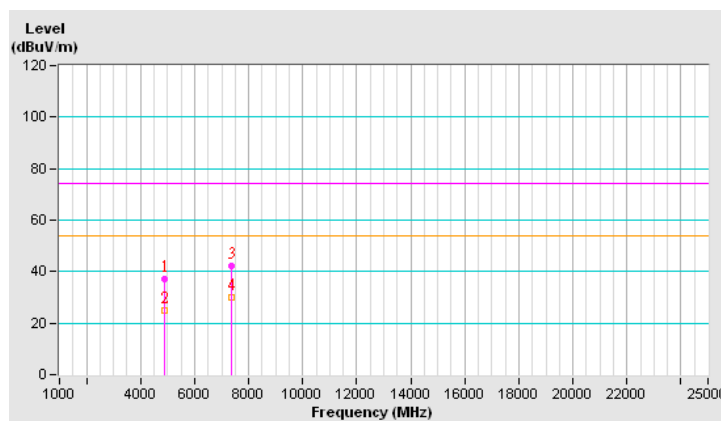


CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4904.00	37.1 PK	74.0	-36.9	1.25 H	163	33.9	3.2
2	4904.00	25.1 AV	54.0	-28.9	1.25 H	163	21.9	3.2
3	7356.00	42.1 PK	74.0	-31.9	1.43 H	301	33.0	9.1
4	7356.00	30.1 AV	54.0	-23.9	1.43 H	301	21.0	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

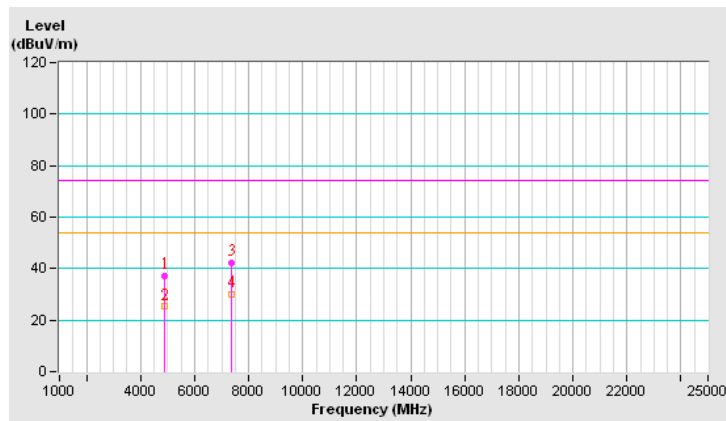


CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	4904.00	37.2 PK	74.0	-36.8	1.71 V	292	34.0	3.2
2	4904.00	25.2 AV	54.0	-28.8	1.71 V	292	22.0	3.2
3	7356.00	42.3 PK	74.0	-31.7	1.41 V	191	33.2	9.1
4	7356.00	30.2 AV	54.0	-23.8	1.41 V	191	21.1	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



4.7 Band Edge and Fundamental Emissions Measurement

4.7.1 Limit

30dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emissions fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed

Frequency range (MHz)	Field Strength (mV/meter)	Measurement Distance (m)
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

4.7.2 Measuring Instruments and Setting

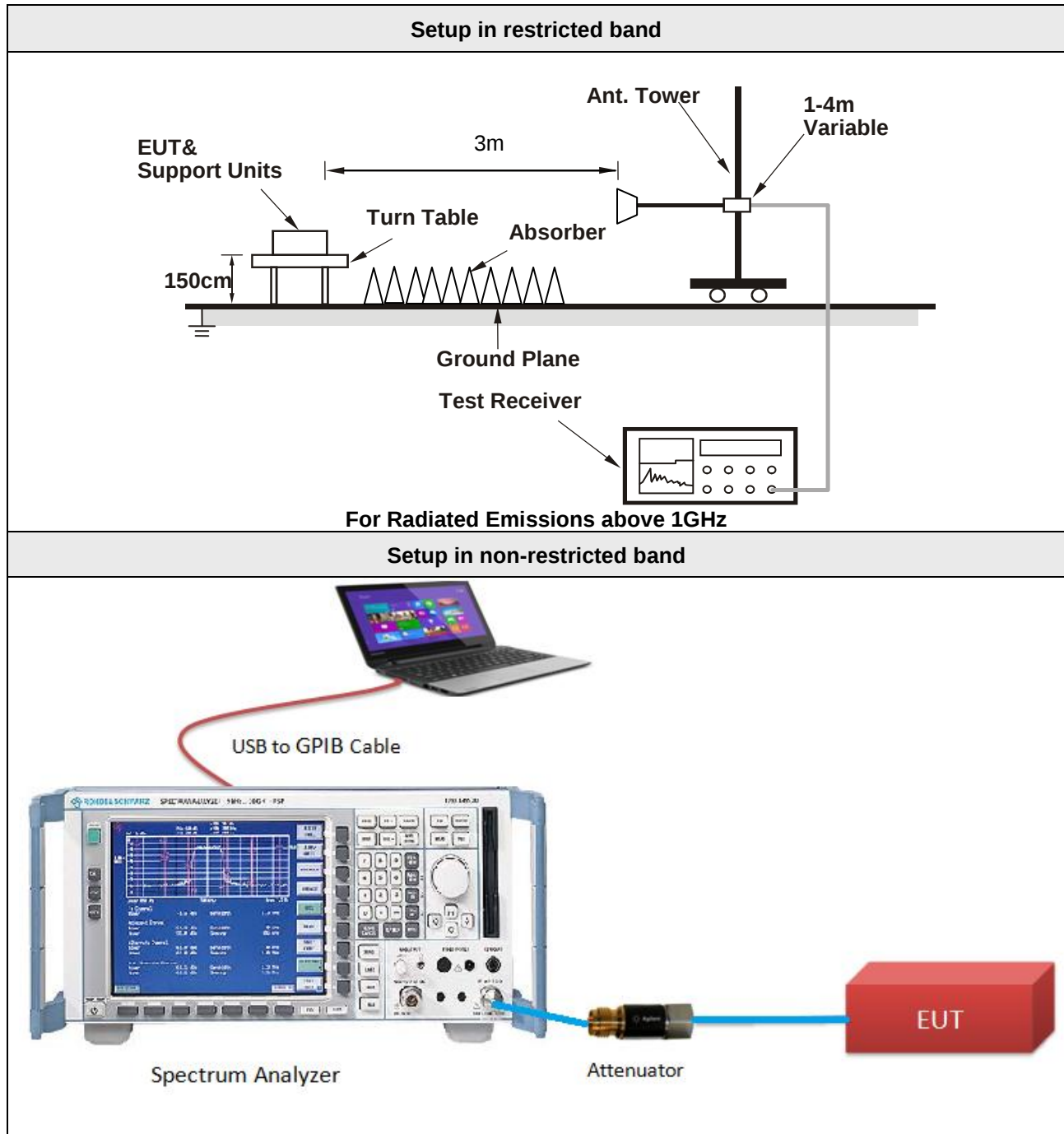
Please refer to section 5 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emissions in restricted band)	1MHz / 3MHz for Peak, 1 MHz / 1/T for Average
RBW / VBW (Emissions in non-restricted band)	100kHz / 300kHz for peak

4.7.3 Test Procedure

- 1 The test procedure is the same as section 4.6.3; only the frequency range investigated is 2310MHz to 2500MHz
- 2 Test for Emissions in non-restricted band was performed in accordance with KDB 558074 D01 v04 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 11 Unwanted Emissions into Non-Restricted Frequency Bands Measurement Procedure.

4.7.4 Test Setup Layout



4.7.5 Test Deviation

There are no deviations with the original standard.

4.7.6 EUT Operating Conditions

The EUT was programmed to be in continuously transmitting mode.

4.7.7 Test Results of Band Edge and Fundamental Emissions

Temperature	22°C	Humidity	66%
Test Engineer	Weiwei Lo		

1TX

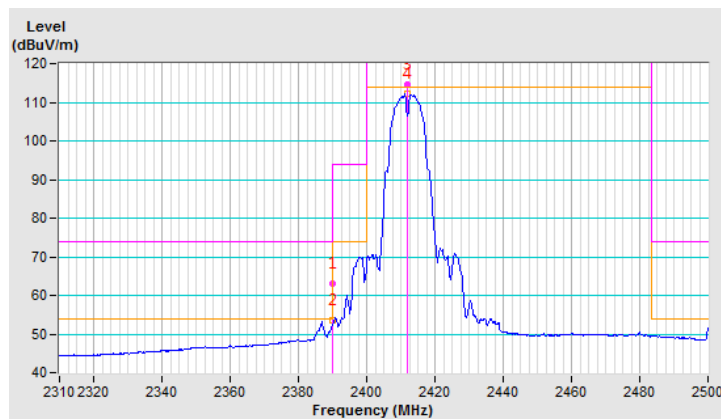
802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	63.0 PK	74.0	-11.0	2.08 H	238	64.6	-1.6
2	2390.00	53.5 AV	54.0	-0.5	2.08 H	238	55.1	-1.6
3	*2412.00	114.7 PK			2.08 H	238	116.2	-1.5
4	*2412.00	112.3 AV			2.08 H	238	113.8	-1.5

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.

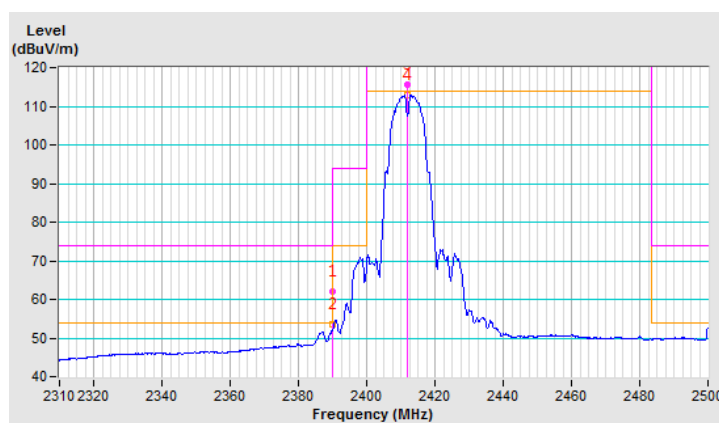


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	62.1 PK	74.0	-11.9	2.76 V	277	63.7	-1.6
2	2390.00	53.5 AV	54.0	-0.5	2.76 V	277	55.1	-1.6
3	*2412.00	115.6 PK			2.76 V	277	117.1	-1.5
4	*2412.00	112.9 AV			2.76 V	277	114.4	-1.5

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.

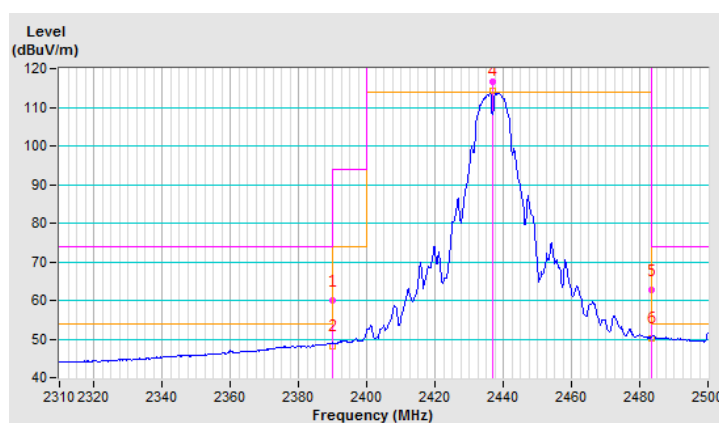


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	59.9 PK	74.0	-14.1	2.02 H	230	61.5	-1.6
2	2390.00	48.2 AV	54.0	-5.8	2.02 H	230	49.8	-1.6
3	*2437.00	116.5 PK			2.02 H	230	118.0	-1.5
4	*2437.00	114.3 AV			2.02 H	230	115.8	-1.5
5	2483.50	62.6 PK	74.0	-11.4	2.02 H	230	64.0	-1.4
6	2483.50	50.2 AV	54.0	-3.8	2.02 H	230	51.6	-1.4

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.

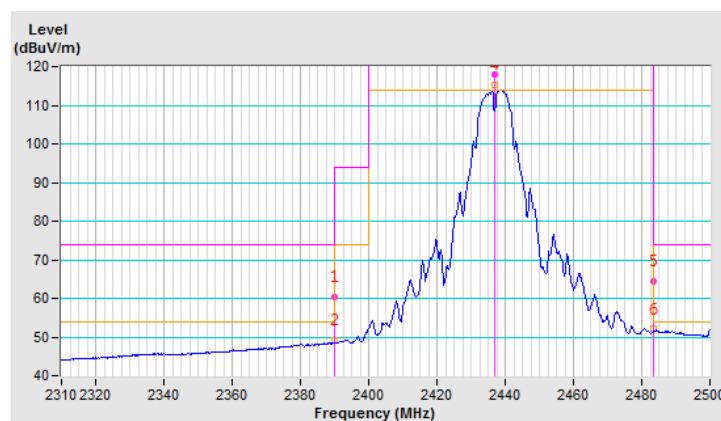


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: 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	60.4 PK	74.0	-13.6	2.70 V	257	62.0	-1.6
2	2390.00	49.2 AV	54.0	-4.8	2.70 V	257	50.8	-1.6
3	*2437.00	117.8 PK			2.70 V	257	119.3	-1.5
4	*2437.00	115.3 AV			2.70 V	257	116.8	-1.5
5	2483.50	64.5 PK	74.0	-9.5	2.70 V	257	65.9	-1.4
6	2483.50	52.1 AV	54.0	-1.9	2.70 V	257	53.5	-1.4

REMARKS:

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

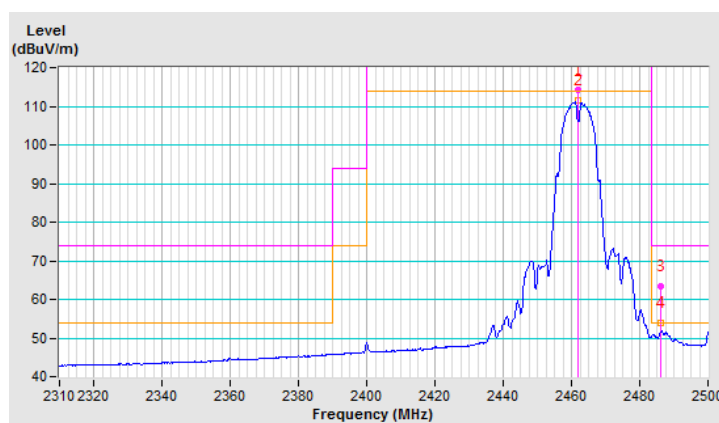


CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	114.1 PK			2.01 H	232	115.5	-1.4
2	*2462.00	111.6 AV			2.01 H	232	113.0	-1.4
3	2486.00	63.5 PK	74.0	-10.5	2.01 H	232	64.9	-1.4
4	2486.00	53.9 AV	54.0	-0.1	2.01 H	232	55.3	-1.4

REMARKS:

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

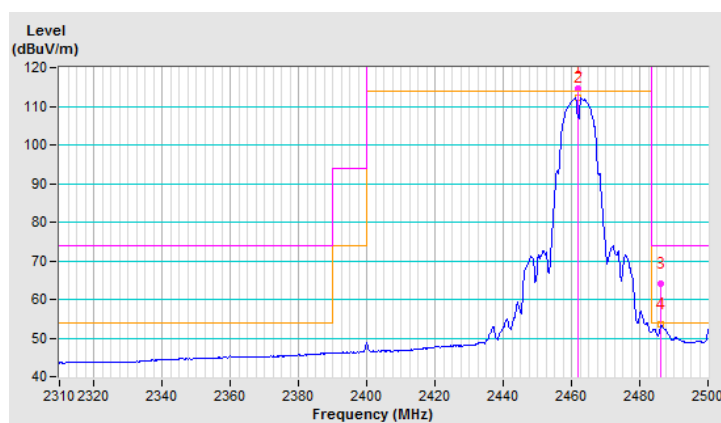


CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: 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	114.6 PK			2.88 V	247	116.0	-1.4
2	*2462.00	112.3 AV			2.88 V	247	113.7	-1.4
3	2486.00	64.2 PK	74.0	-9.8	2.88 V	247	65.6	-1.4
4	2486.00	53.5 AV	54.0	-0.5	2.88 V	247	54.9	-1.4

REMARKS:

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



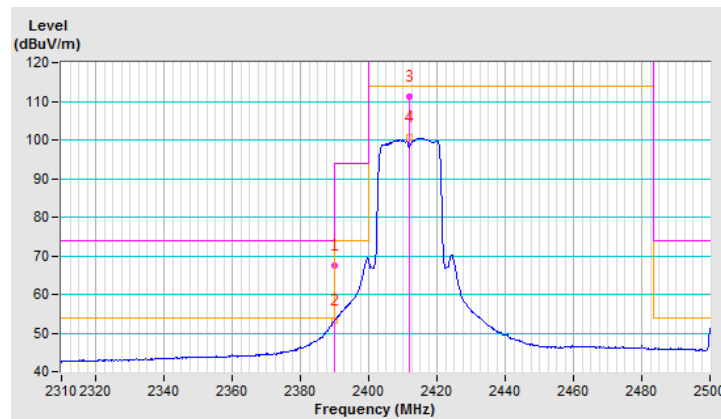
802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.5 PK	74.0	-6.5	2.02 H	232	69.1	-1.6
2	2390.00	53.3 AV	54.0	-0.7	2.02 H	232	54.9	-1.6
3	*2412.00	111.3 PK			2.02 H	232	112.8	-1.5
4	*2412.00	100.8 AV			2.02 H	232	102.3	-1.5

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.

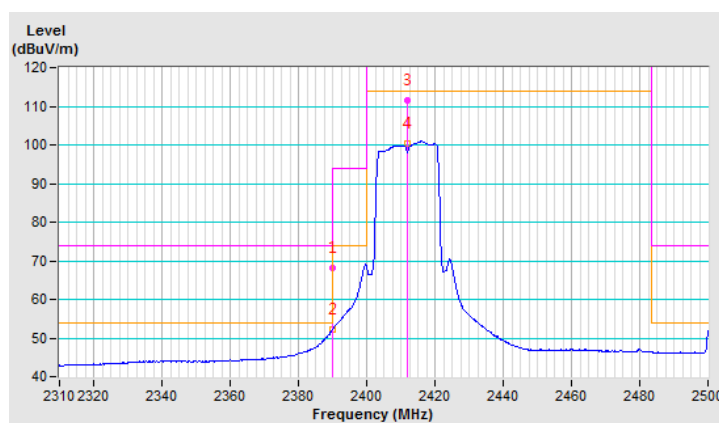


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	68.3 PK	74.0	-5.7	3.23 V	261	69.9	-1.6
2	2390.00	52.3 AV	54.0	-1.7	3.23 V	261	53.9	-1.6
3	*2412.00	111.6 PK			3.23 V	261	113.1	-1.5
4	*2412.00	100.4 AV			3.23 V	261	101.9	-1.5

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.

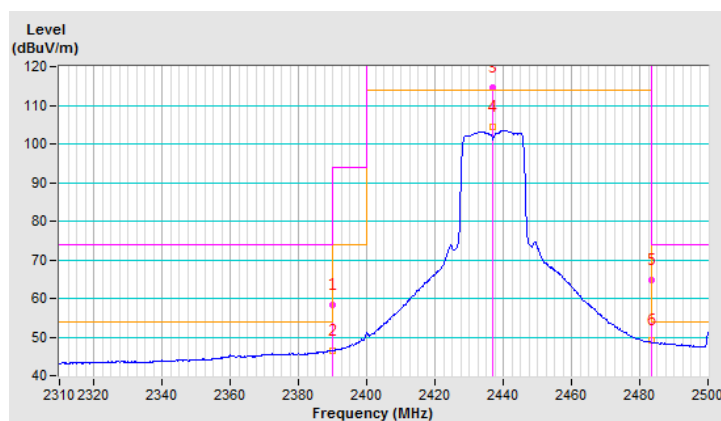


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	58.4 PK	74.0	-15.6	1.98 H	230	60.0	-1.6
2	2390.00	46.6 AV	54.0	-7.4	1.98 H	230	48.2	-1.6
3	*2437.00	114.7 PK			1.98 H	230	116.2	-1.5
4	*2437.00	104.4 AV			1.98 H	230	105.9	-1.5
5	2483.50	64.8 PK	74.0	-9.2	1.98 H	230	66.2	-1.4
6	2483.50	49.2 AV	54.0	-4.8	1.98 H	230	50.6	-1.4

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.

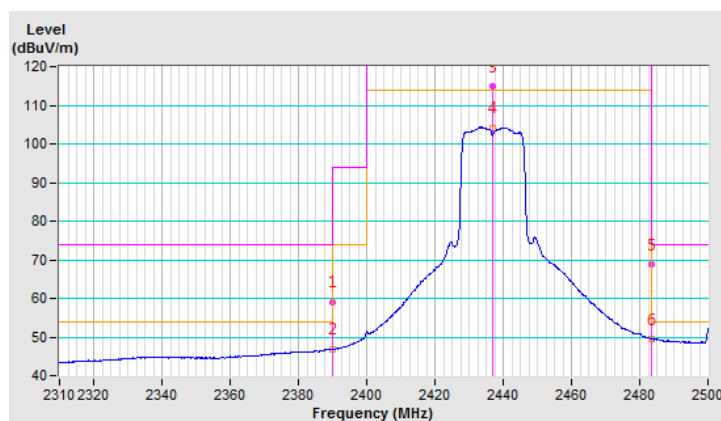


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: 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	58.9 PK	74.0	-15.1	3.26 V	257	60.5	-1.6
2	2390.00	46.7 AV	54.0	-7.3	3.26 V	257	48.3	-1.6
3	*2437.00	114.8 PK			3.26 V	257	116.3	-1.5
4	*2437.00	104.2 AV			3.26 V	257	105.7	-1.5
5	2483.50	68.7 PK	74.0	-5.3	3.26 V	257	70.1	-1.4
6	2483.50	49.4 AV	54.0	-4.6	3.26 V	257	50.8	-1.4

REMARKS:

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

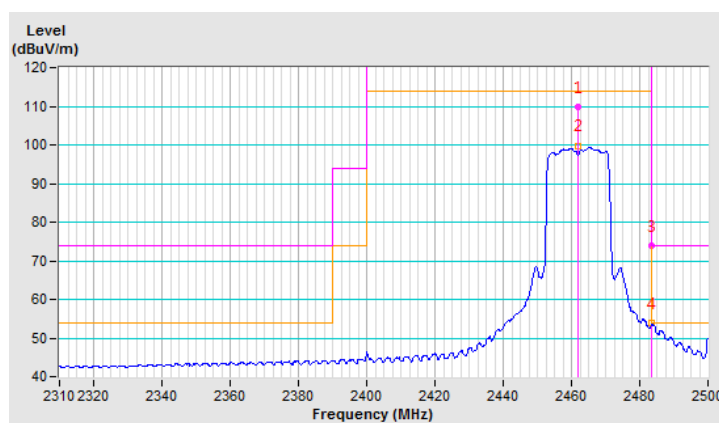


CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.7 PK			2.07 H	220	111.1	-1.4
2	*2462.00	99.6 AV			2.07 H	220	101.0	-1.4
3	2483.50	73.8 PK	74.0	-0.2	2.07 H	220	75.2	-1.4
4	2483.50	53.8 AV	54.0	-0.2	2.07 H	220	55.2	-1.4

REMARKS:

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

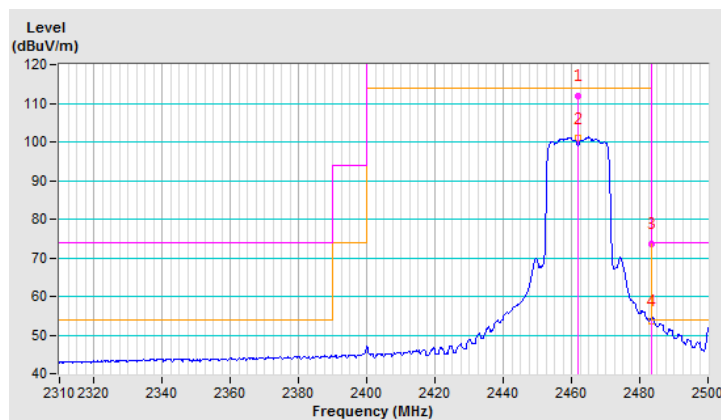


CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: 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	112.0 PK			3.23 V	251	113.4	-1.4
2	*2462.00	100.9 AV			3.23 V	251	102.3	-1.4
3	2483.50	73.6 PK	74.0	-0.4	3.23 V	251	75.0	-1.4
4	2483.50	53.6 AV	54.0	-0.4	3.23 V	251	55.0	-1.4

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.



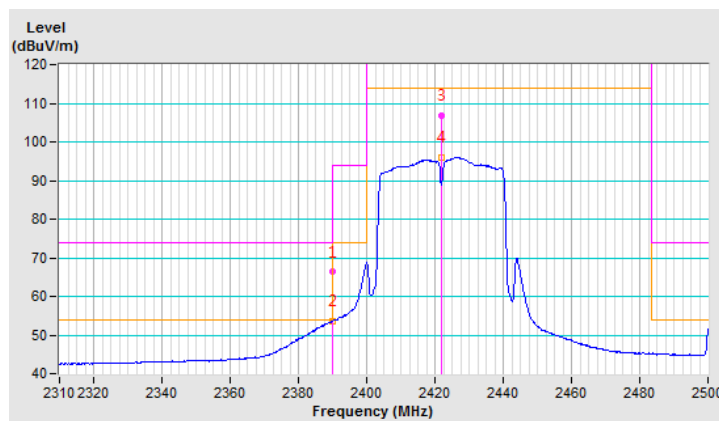
802.11n (HT40)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
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	66.3 PK	74.0	-7.7	2.09 H	230	67.9	-1.6
2	2390.00	53.6 AV	54.0	-0.4	2.09 H	230	55.2	-1.6
3	*2422.00	106.9 PK			2.09 H	230	108.5	-1.6
4	*2422.00	96.1 AV			2.09 H	230	97.7	-1.6

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.

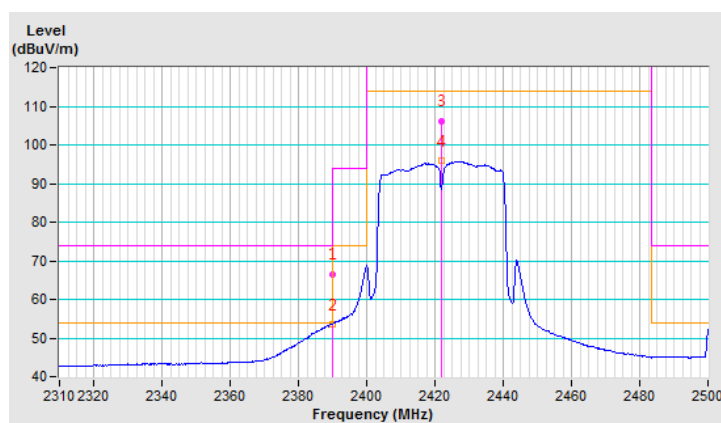


CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	66.4 PK	74.0	-7.6	3.32 V	263	68.0	-1.6
2	2390.00	53.4 AV	54.0	-0.6	3.32 V	263	55.0	-1.6
3	*2422.00	106.2 PK			3.32 V	263	107.8	-1.6
4	*2422.00	95.8 AV			3.32 V	263	97.4	-1.6

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.

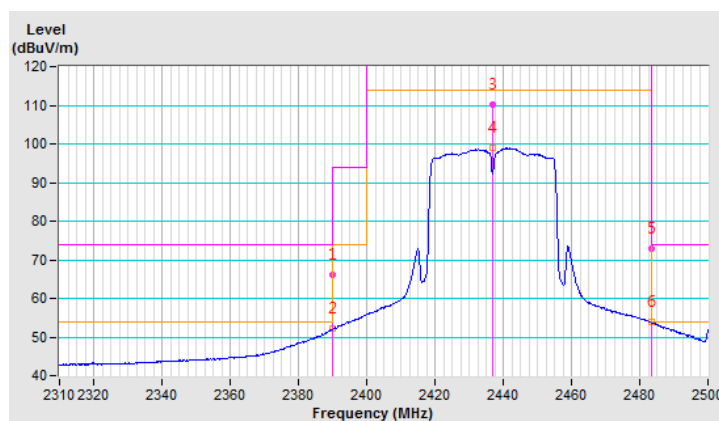


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	66.2 PK	74.0	-7.8	2.06 H	230	67.8	-1.6
2	2390.00	52.3 AV	54.0	-1.7	2.06 H	230	53.9	-1.6
3	*2437.00	110.2 PK			2.06 H	230	111.7	-1.5
4	*2437.00	98.9 AV			2.06 H	230	100.4	-1.5
5	2483.50	72.8 PK	74.0	-1.2	2.06 H	230	74.2	-1.4
6	2483.50	53.9 AV	54.0	-0.1	2.06 H	230	55.3	-1.4

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.

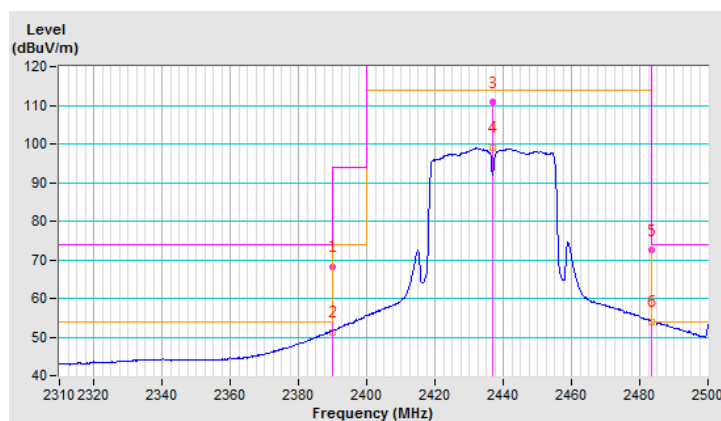


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: 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	68.3 PK	74.0	-5.7	3.28 V	262	69.9	-1.6
2	2390.00	51.2 AV	54.0	-2.8	3.28 V	262	52.8	-1.6
3	*2437.00	110.7 PK			3.28 V	262	112.2	-1.5
4	*2437.00	99.0 AV			3.28 V	262	100.5	-1.5
5	2483.50	72.4 PK	74.0	-1.6	3.28 V	262	73.8	-1.4
6	2483.50	53.9 AV	54.0	-0.1	3.28 V	262	55.3	-1.4

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.

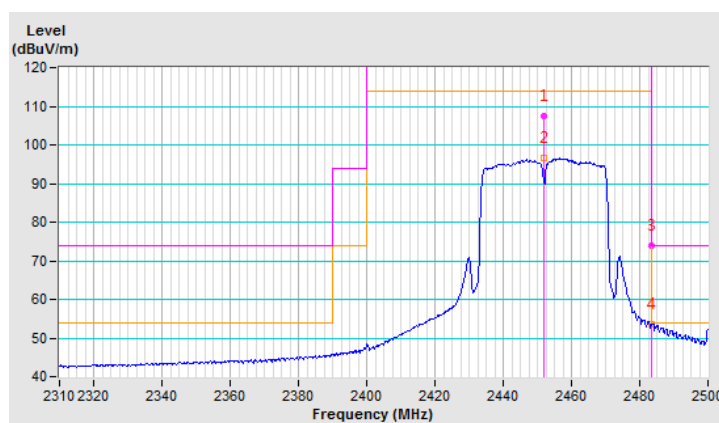


CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	*2452.00	107.4 PK			2.08 H	233	108.9	-1.5
2	*2452.00	96.7 AV			2.08 H	233	98.2	-1.5
3	2483.50	73.9 PK	74.0	-0.1	2.08 H	233	75.3	-1.4
4	2483.50	53.6 AV	54.0	-0.4	2.08 H	233	55.0	-1.4

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.

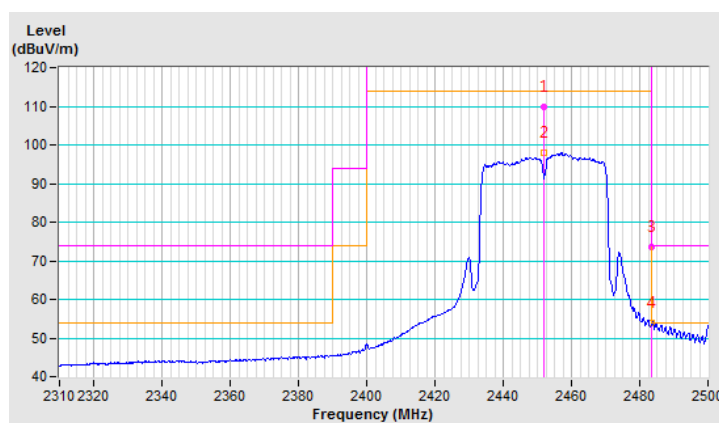


CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	109.9 PK			3.25 V	263	111.4	-1.5
2	*2452.00	98.1 AV			3.25 V	263	99.6	-1.5
3	2483.50	73.6 PK	74.0	-0.4	3.25 V	263	75.0	-1.4
4	2483.50	53.9 AV	54.0	-0.1	3.25 V	263	55.3	-1.4

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.



2TX

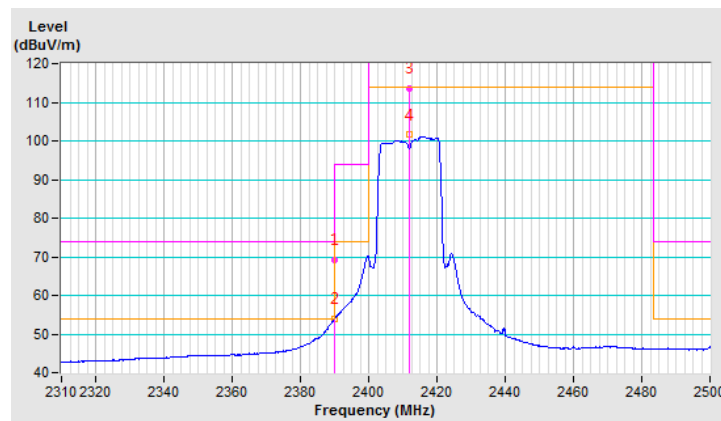
802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.1 PK	74.0	-4.9	1.02 H	309	70.7	-1.6
2	2390.00	53.9 AV	54.0	-0.1	1.02 H	309	55.5	-1.6
3	*2412.00	113.6 PK			1.02 H	309	115.1	-1.5
4	*2412.00	101.6 AV			1.02 H	309	103.1	-1.5

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.

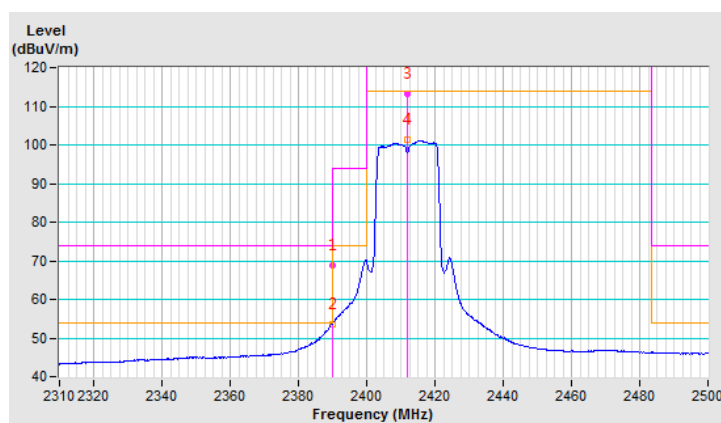


CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	68.8 PK	74.0	-5.2	2.71 V	125	70.4	-1.6
2	2390.00	53.6 AV	54.0	-0.4	2.71 V	125	55.2	-1.6
3	*2412.00	113.2 PK			2.71 V	125	114.7	-1.5
4	*2412.00	101.5 AV			2.71 V	125	103.0	-1.5

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.

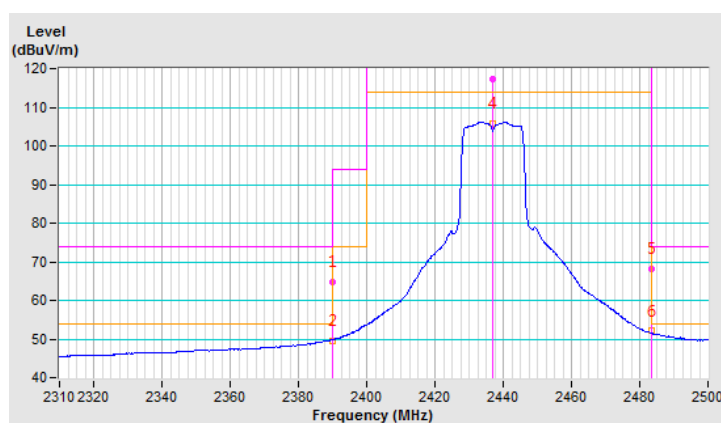


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	64.7 PK	74.0	-9.3	1.02 H	308	66.3	-1.6
2	2390.00	49.6 AV	54.0	-4.4	1.02 H	308	51.2	-1.6
3	*2437.00	117.3 PK			1.02 H	308	118.8	-1.5
4	*2437.00	105.9 AV			1.02 H	308	107.4	-1.5
5	2483.50	68.3 PK	74.0	-5.7	1.02 H	308	69.7	-1.4
6	2483.50	52.1 AV	54.0	-1.9	1.02 H	308	53.5	-1.4

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.

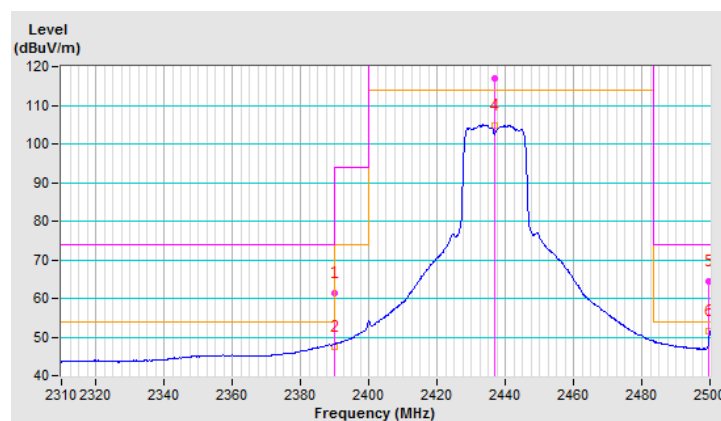


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: 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	61.4 PK	74.0	-12.6	2.41 V	129	63.0	-1.6
2	2390.00	47.6 AV	54.0	-6.4	2.41 V	129	49.2	-1.6
3	*2437.00	116.8 PK			2.41 V	129	118.3	-1.5
4	*2437.00	104.8 AV			2.41 V	129	106.3	-1.5
5	2499.80	64.4 PK	74.0	-9.6	2.41 V	129	65.7	-1.3
6	2499.80	51.5 AV	54.0	-2.5	2.41 V	129	52.8	-1.3

REMARKS:

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

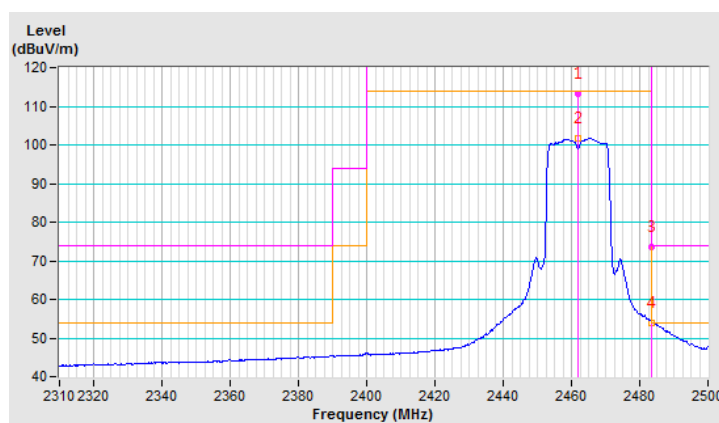


CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	113.2 PK			1.01 H	307	114.6	-1.4
2	*2462.00	101.8 AV			1.01 H	307	103.2	-1.4
3	2483.50	73.7 PK	74.0	-0.3	1.01 H	307	75.1	-1.4
4	2483.50	53.9 AV	54.0	-0.1	1.01 H	307	55.3	-1.4

REMARKS:

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

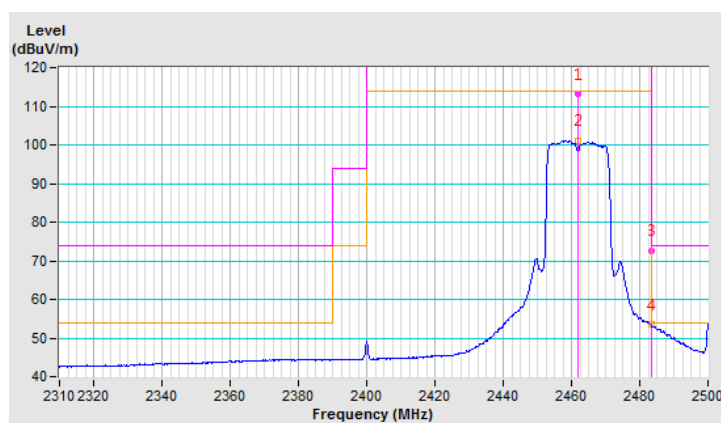


CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: 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	113.1 PK			2.61 V	128	114.5	-1.4
2	*2462.00	101.1 AV			2.61 V	128	102.5	-1.4
3	2483.50	72.6 PK	74.0	-1.4	2.61 V	128	74.0	-1.4
4	2483.50	53.4 AV	54.0	-0.6	2.61 V	128	54.8	-1.4

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.



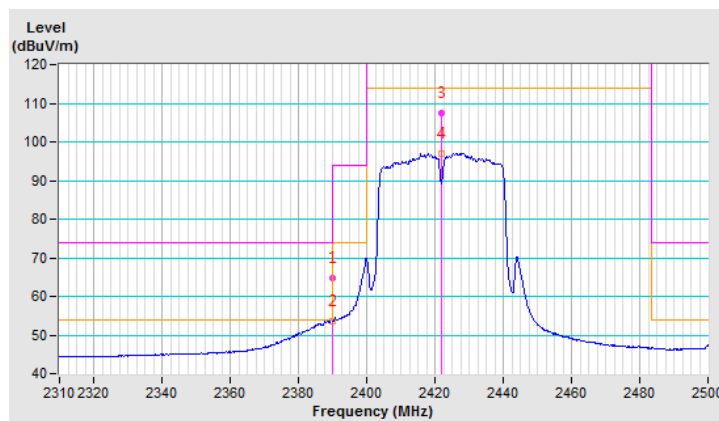
802.11n (HT40)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
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	64.9 PK	74.0	-9.1	1.22 H	298	66.5	-1.6
2	2390.00	53.7 AV	54.0	-0.3	1.22 H	298	55.3	-1.6
3	*2422.00	107.4 PK			1.22 H	298	109.0	-1.6
4	*2422.00	97.0 AV			1.22 H	298	98.6	-1.6

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.

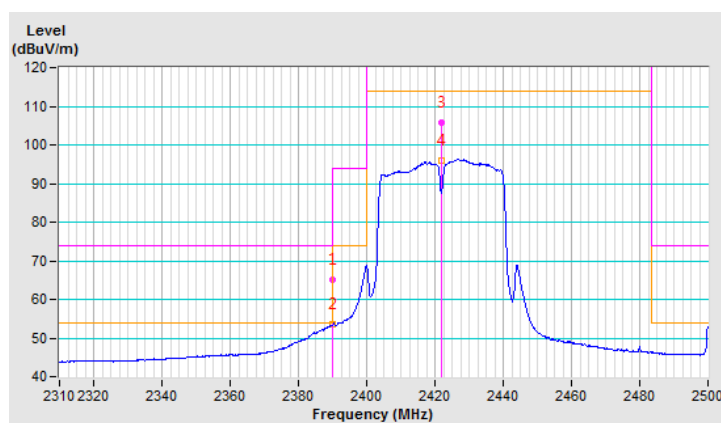


CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	65.2 PK	74.0	-8.8	2.24 V	129	66.8	-1.6
2	2390.00	53.6 AV	54.0	-0.4	2.24 V	129	55.2	-1.6
3	*2422.00	105.9 PK			2.24 V	129	107.5	-1.6
4	*2422.00	96.0 AV			2.24 V	129	97.6	-1.6

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.

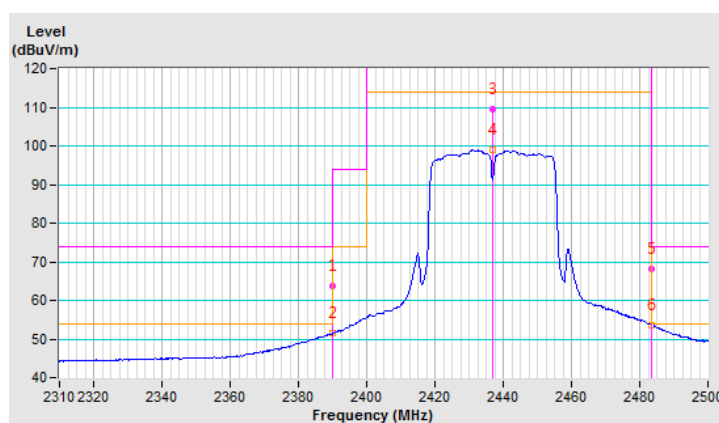


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	63.8 PK	74.0	-10.2	1.19 H	291	65.4	-1.6
2	2390.00	51.6 AV	54.0	-2.4	1.19 H	291	53.2	-1.6
3	*2437.00	109.5 PK			1.19 H	291	111.0	-1.5
4	*2437.00	99.0 AV			1.19 H	291	100.5	-1.5
5	2483.50	68.3 PK	74.0	-5.7	1.19 H	291	69.7	-1.4
6	2483.50	53.7 AV	54.0	-0.3	1.19 H	291	55.1	-1.4

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.

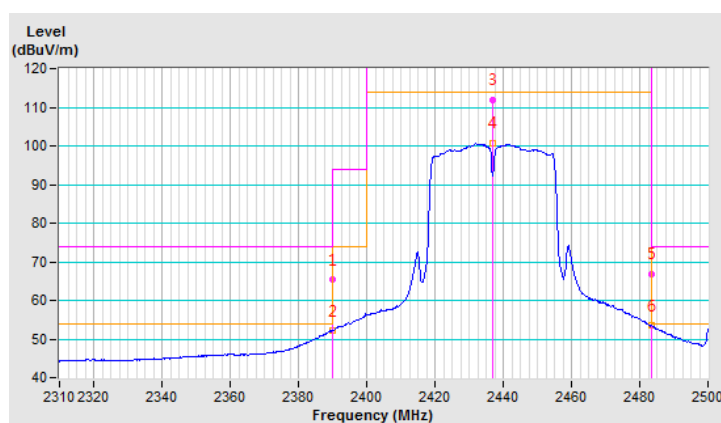


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: 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	65.3 PK	74.0	-8.7	2.31 V	132	66.9	-1.6
2	2390.00	52.1 AV	54.0	-1.9	2.31 V	132	53.7	-1.6
3	*2437.00	111.8 PK			2.31 V	132	113.3	-1.5
4	*2437.00	100.7 AV			2.31 V	132	102.2	-1.5
5	2483.50	66.7 PK	74.0	-7.3	2.31 V	132	68.1	-1.4
6	2483.50	53.4 AV	54.0	-0.6	2.31 V	132	54.8	-1.4

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.

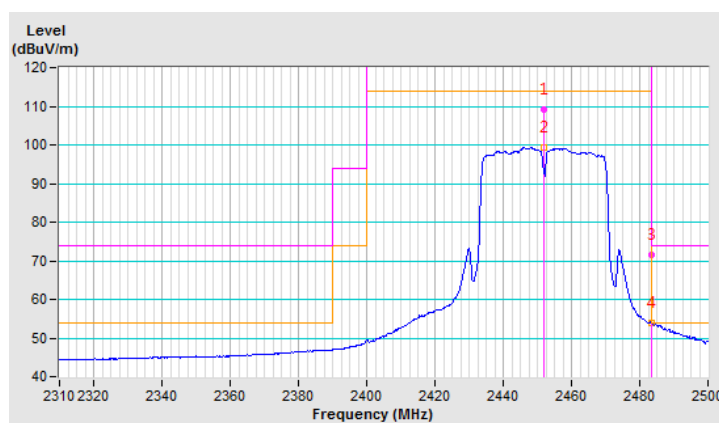


CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	*2452.00	109.2 PK			1.14 H	302	110.7	-1.5
2	*2452.00	99.3 AV			1.14 H	302	100.8	-1.5
3	2483.50	71.6 PK	74.0	-2.4	1.14 H	302	73.0	-1.4
4	2483.50	53.9 AV	54.0	-0.1	1.14 H	302	55.3	-1.4

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.

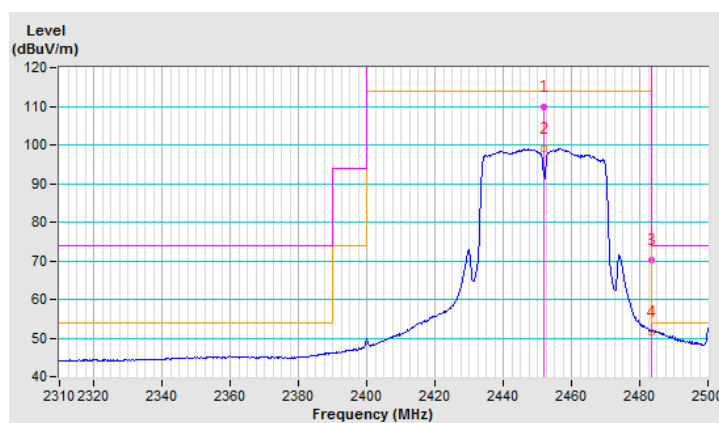


CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	109.8 PK			2.36 V	128	111.3	-1.5
2	*2452.00	98.9 AV			2.36 V	128	100.4	-1.5
3	2483.50	70.1 PK	74.0	-3.9	2.36 V	128	71.5	-1.4
4	2483.50	51.6 AV	54.0	-2.4	2.36 V	128	53.0	-1.4

REMARKS:

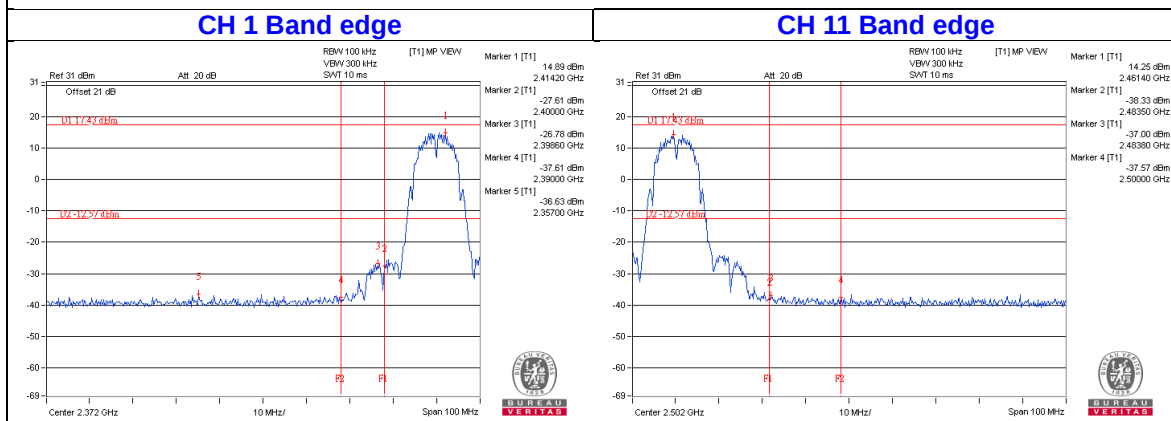
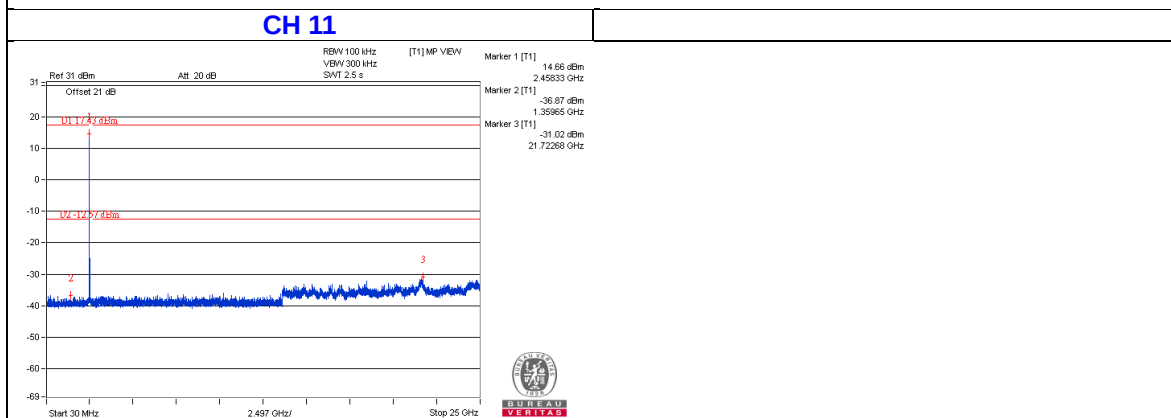
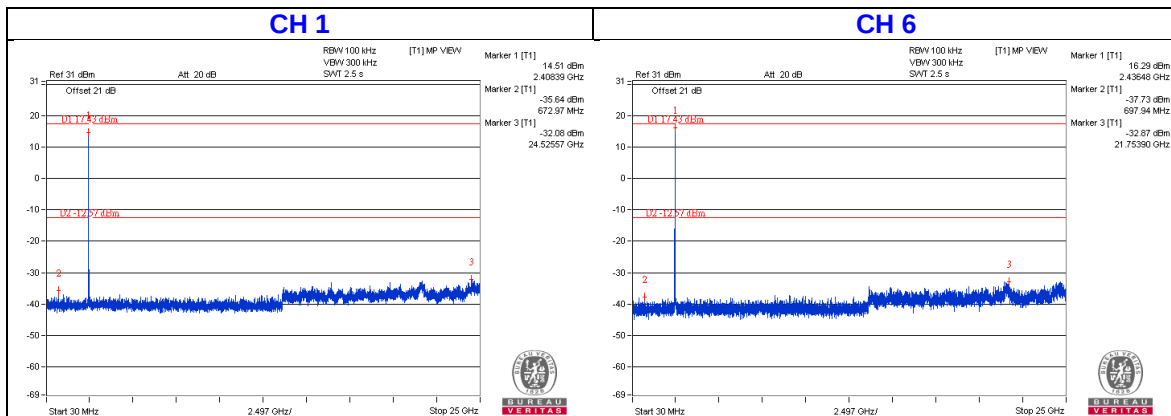
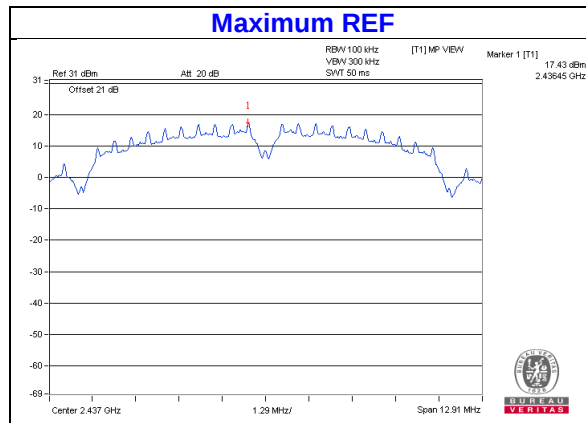
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.



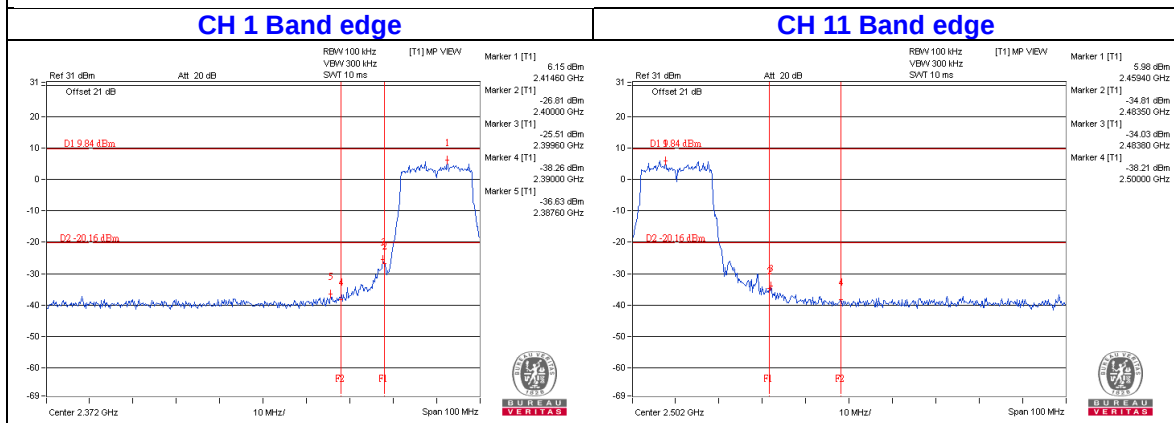
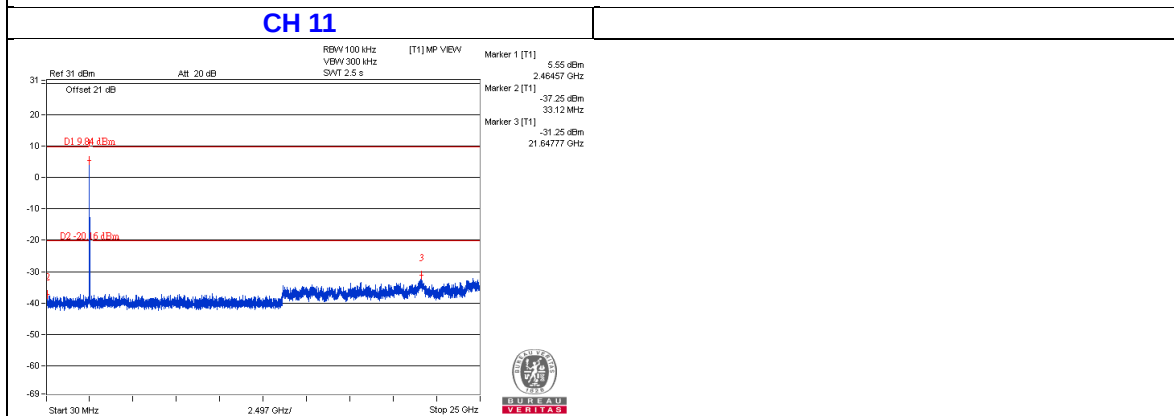
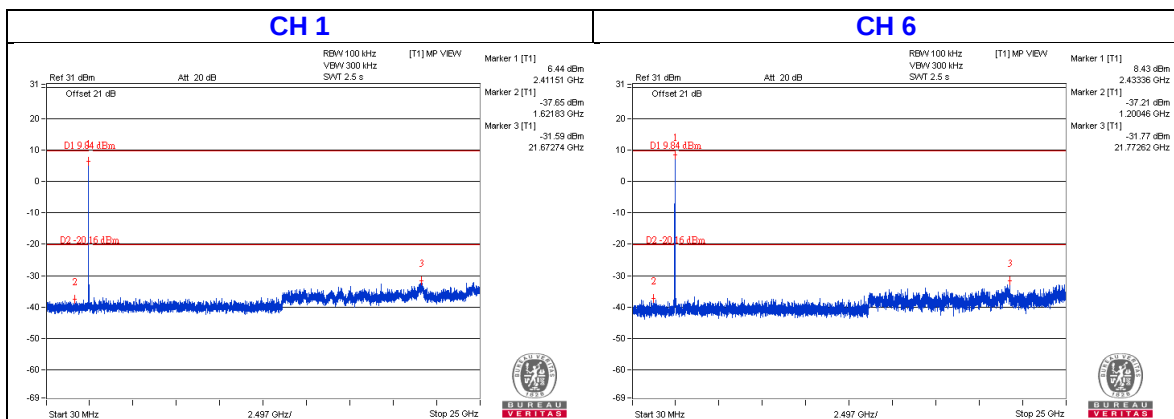
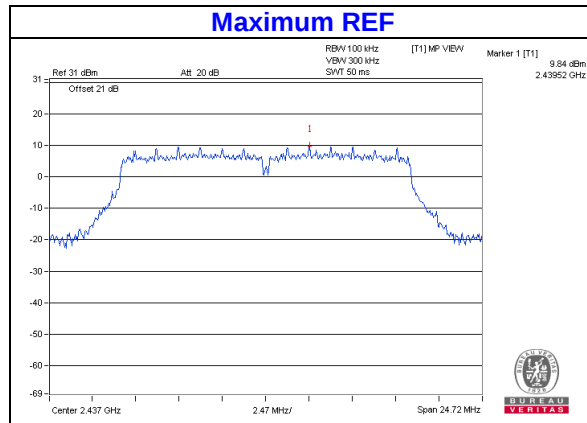
4.7.8 Test Results of Band Edge and Emissions not in Restricted Bands

Below 30dB of the highest emissions level of operating band (in 100kHz Resolution Bandwidth).

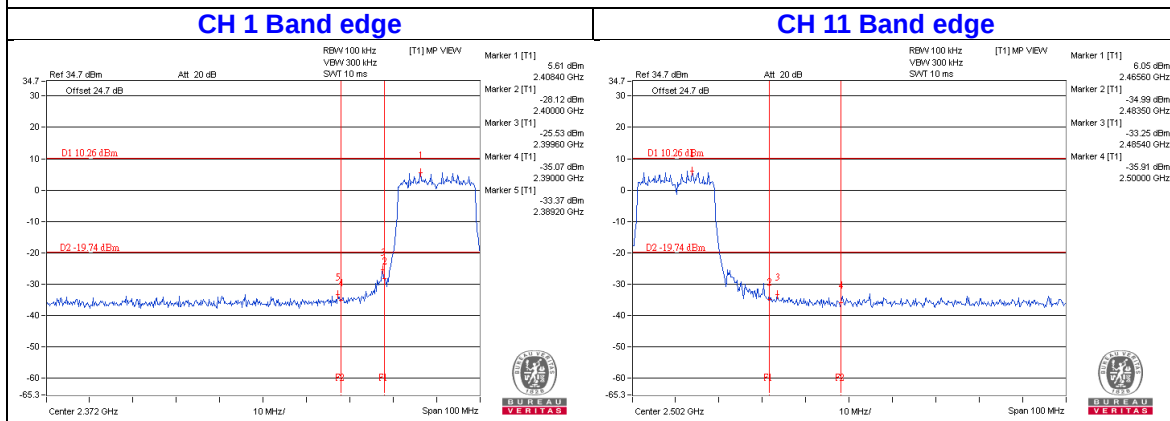
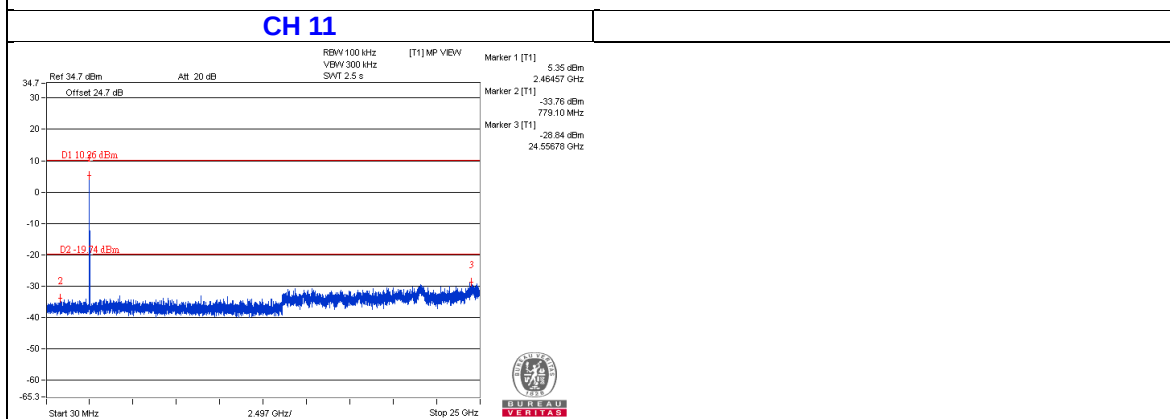
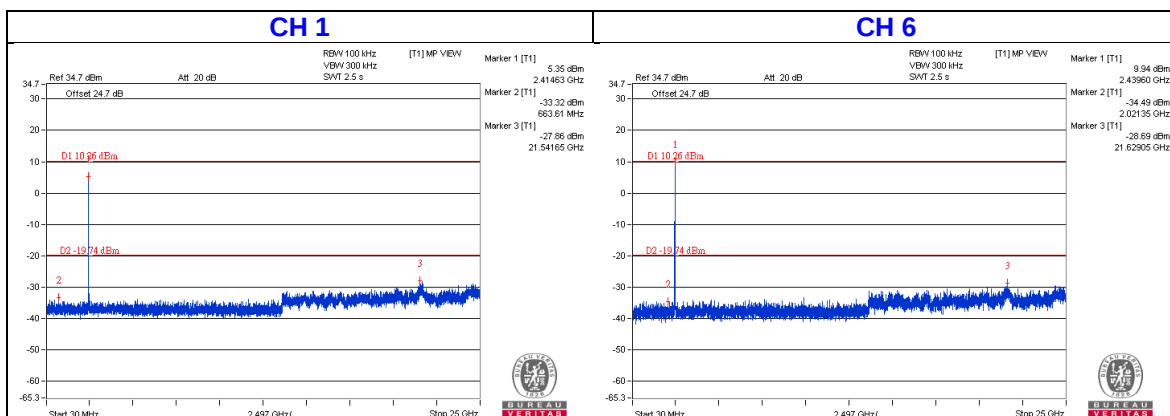
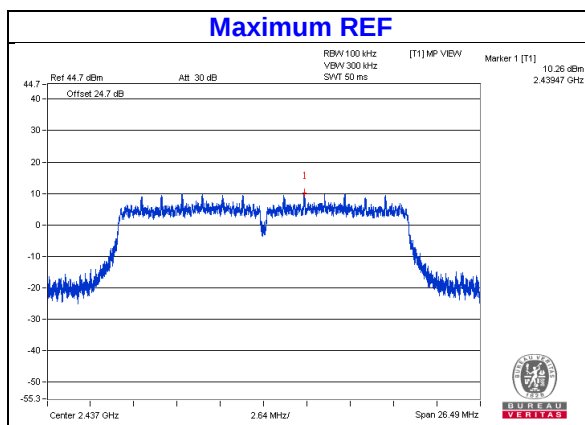
802.11b



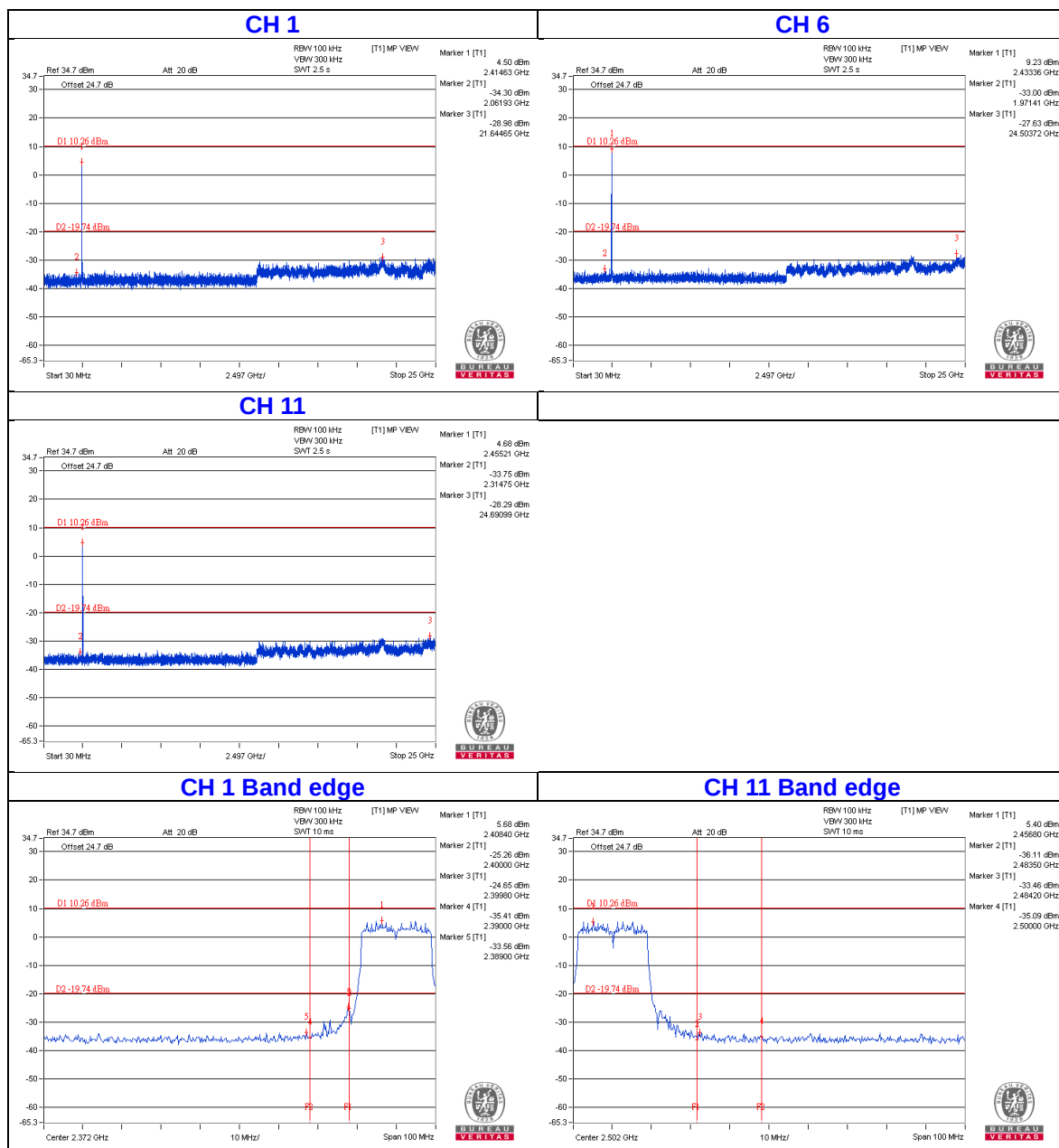
802.11n (20MHz) – 1TX:



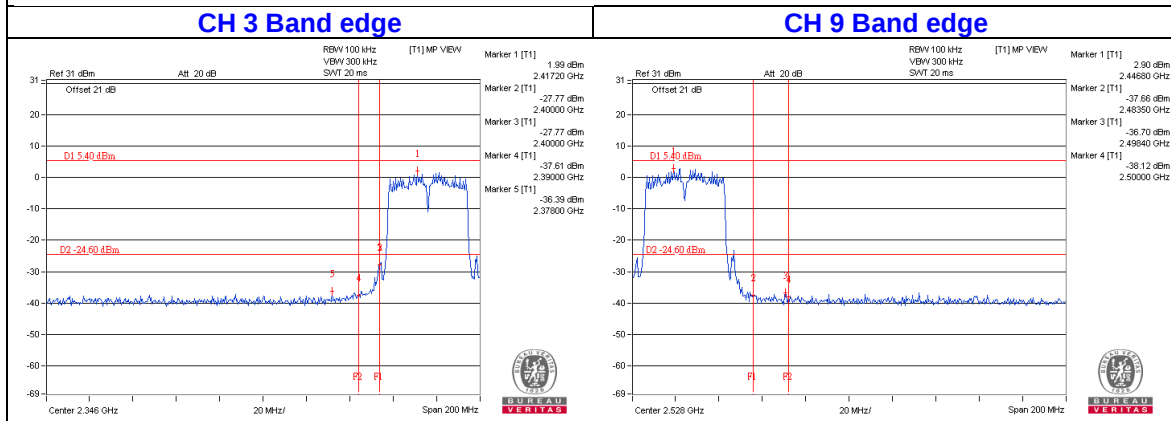
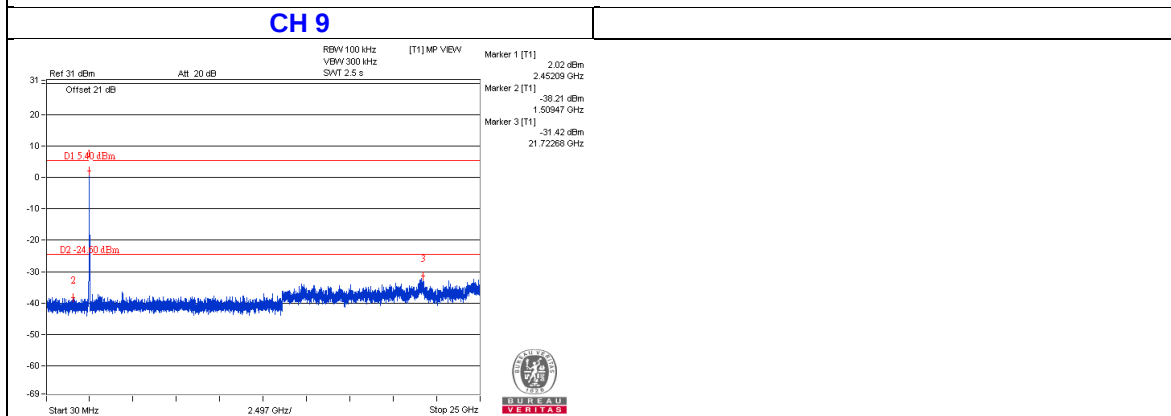
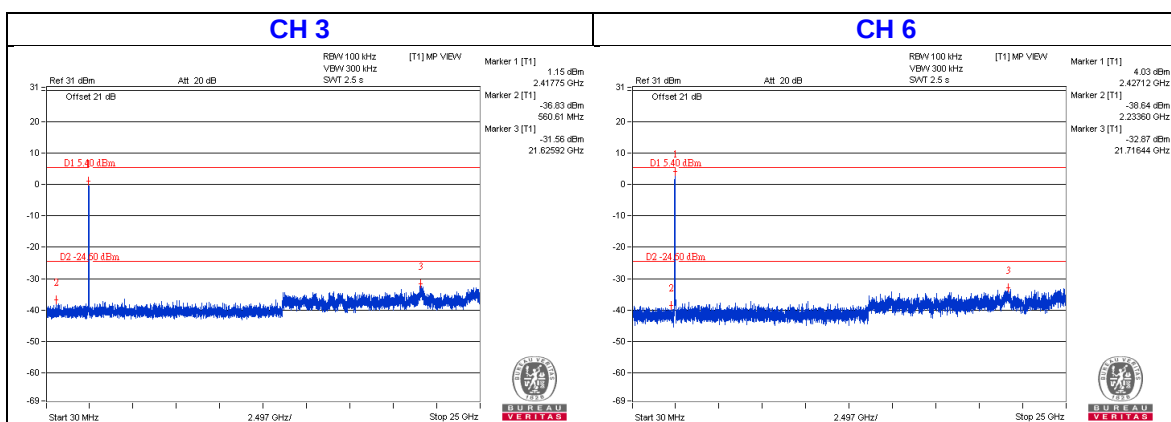
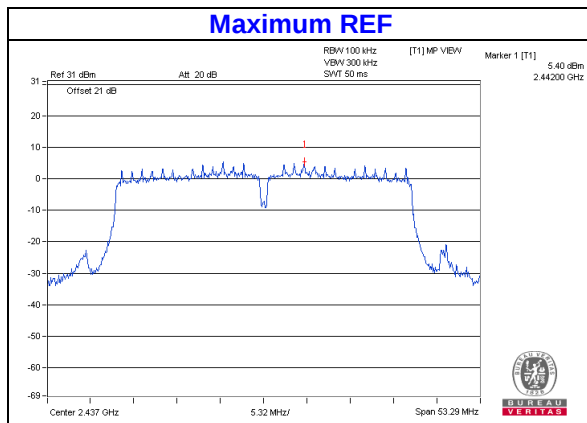
802.11n (20MHz) – 2TX: Chain 1



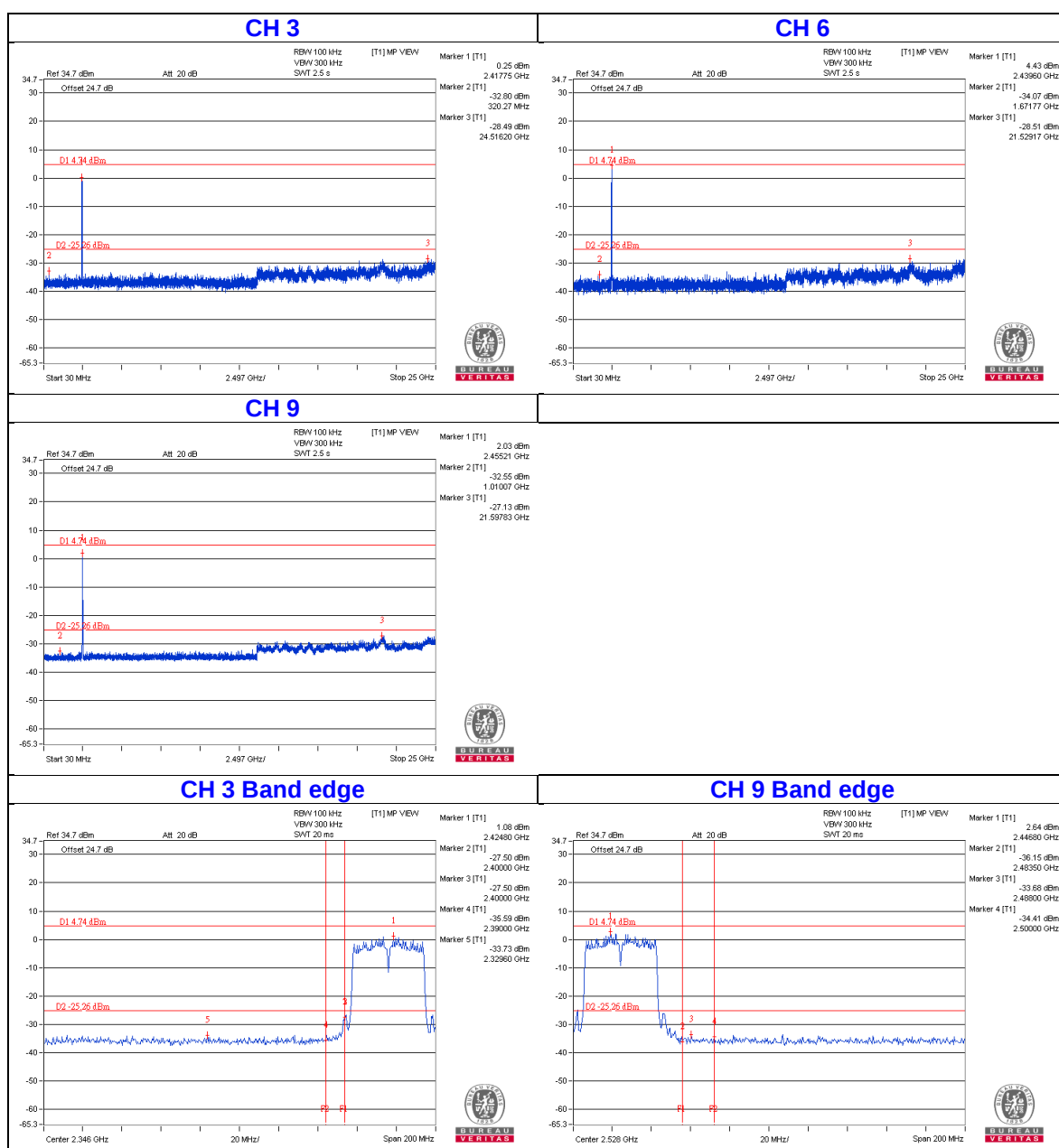
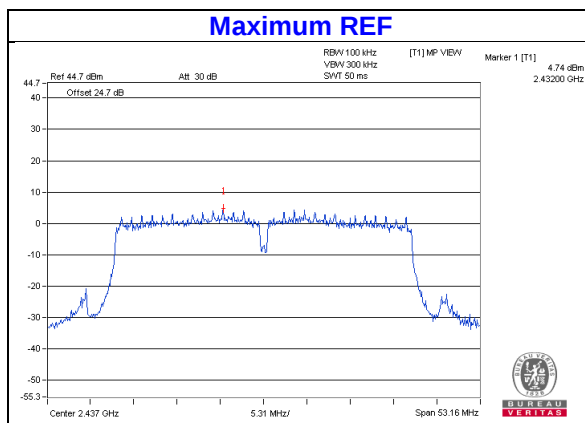
Chain 2



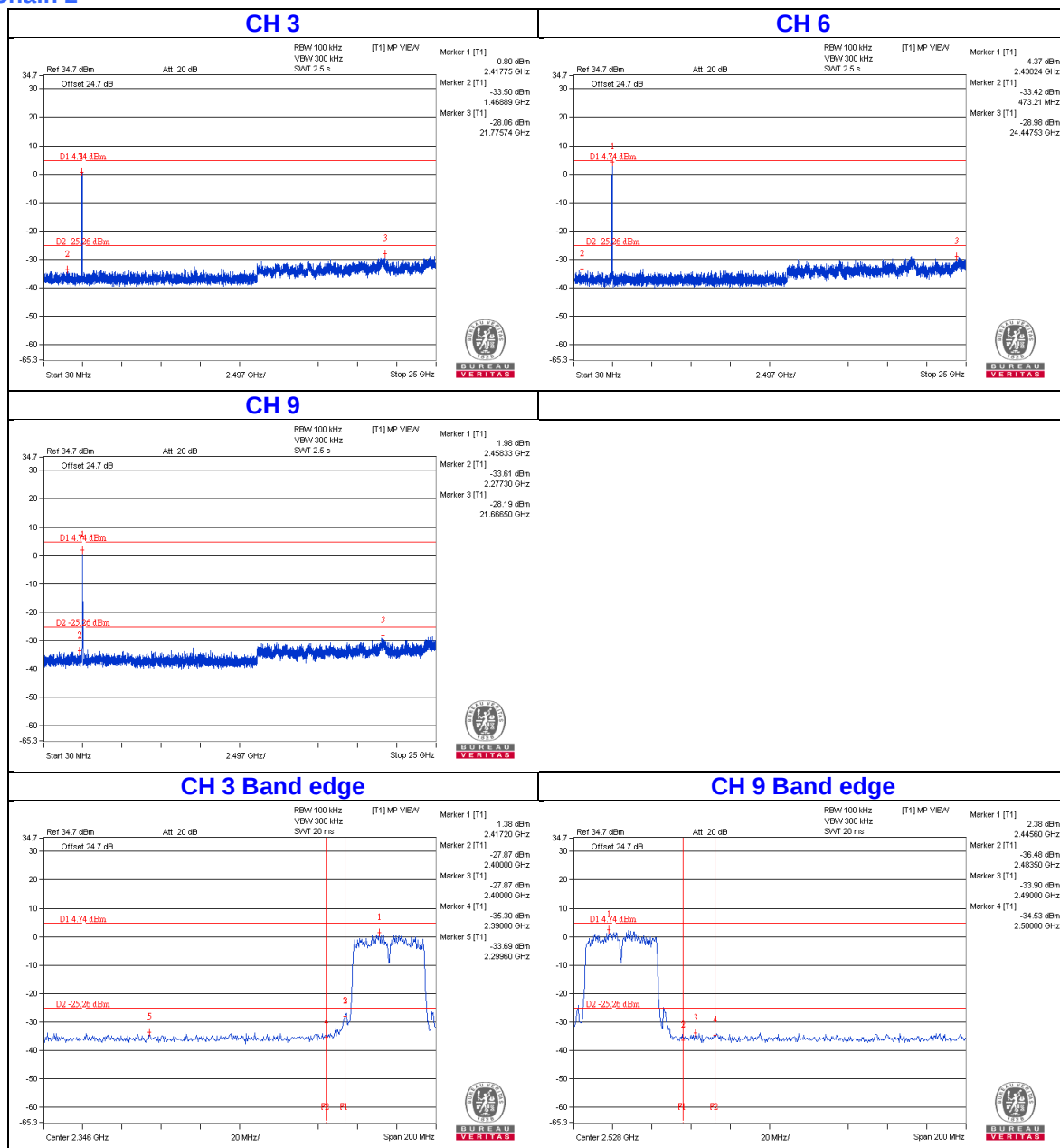
802.11n (40MHz) – 1TX:



802.11n (40MHz) – 2TX: Chain 1



Chain 2



5 List of 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 03, 2017	June 02, 2018
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 18, 2017	June 17, 2018
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: Aug. 02, 2017

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	July 12, 2017	July 11, 2018
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-05	May 06, 2017	May 05, 2018
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Dec. 29, 2016	Dec. 28, 2017
RF Cable	8D	966-3-1 966-3-2 966-3-3	Apr. 01, 2017	Mar. 31, 2018
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Oct. 05, 2016	Oct. 04, 2017
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Dec. 28, 2016	Dec. 27, 2017
Pre-Amplifier EMCI	EMC12630SE	980384	Feb. 02, 2017	Feb. 01, 2018
RF Cable	EMC104-SM-SM-1200 EMC104-SM-SM-2000 EMC104-SM-SM-5000	160922 150317 150322	Feb. 02, 2017 Mar. 29, 2017 Mar. 29, 2017	Feb. 01, 2018 Mar. 28, 2018 Mar. 28, 2018
Spectrum Analyzer Keysight	N9030A	MY54490679	July 25, 2017	July 24, 2018
Pre-Amplifier EMCI	EMC184045SE	980386	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	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Spectrum Analyzer Agilent	E4446A	MY48250253	Dec. 21, 2016	Dec. 20, 2017
Power meter Anritsu	ML2495A	1014008	May 11, 2017	May 10, 2018
Power sensor Anritsu	MA2411B	0917122	May 11, 2017	May 10, 2018

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 3.
3. The CANADA Site Registration No. is 20331-1
4. Tested Date: July 27 to Aug. 09, 2017

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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The address and road map of all our labs can be found in our web site also.

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