

CFR 47 FCC PART 15 SUBPART C ISED RSS-247 ISSUE 2

CERTIFICATION TEST REPORT

For

Integrated video conference terminal

Model for Canada:	UC S10
Model for USA:	UC S10, MSA10, MSA11, MSA12, MSA13, MSA14, MSA15, MSA16, MSA17, MSA18, MSA19, MS10, MS11, MS12, MS13, MS14, MS15, MS16, MS17, MS18, MS19, UC S11, UC S12, UC S13, UC S14, UC S15, UC S16, UC S17, UC S18, UC S19

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	07/22/2020	Initial Issue	



Summary of Test Results						
Clause	Test Items	FCC/ISED Rules	Test Results			
1	6dB Bandwidth and 99% Occupied Bandwidth	FCC Part 15.247 (a) (2) RSS-247 Clause 5.2 (a) ISED RSS-Gen Clause 6.7	Pass			
2	Conducted Output Power	FCC Part 15.247 (b) (3) RSS-247 Clause 5.4 (d)	Pass			
3	Power Spectral Density	FCC Part 15.247 (e) RSS-247 Clause 5.2 (b)	Pass			
4	Conducted Bandedge and Spurious Emission	FCC Part 15.247 (d) RSS-247 Clause 5.5	Pass			
5	Radiated Bandedge and Spurious Emission	FCC Part 15.247 (d) FCC Part 15.209 FCC Part 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9	Pass			
6	Conducted Emission Test for AC Power Port	FCC Part 15.207 RSS-GEN Clause 8.8	Pass			
7	FCC Part 15.203 RSS-GEN Clause 6.8	Pass				

purpose in China. 2. The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 15 SUBPART C >< ISED RSS-247 > when <Accuracy Method> decision rule is applied.



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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Address:	GUANGZHOU SHIRUI ELECTRONICS CO LTD NO. 192 KEZHU ROAD SCIENCE PARK ECONOMIC- TECHNOLOGICAL DEVELOPMENT AREA GUANGZHOU GUANGDONG 510530 CHINA
Manufacturer Information	
Company Name: Address:	GUANGZHOU SHIRUI ELECTRONICS CO LTD NO. 192 KEZHU ROAD SCIENCE PARK ECONOMIC- TECHNOLOGICAL DEVELOPMENT AREA GUANGZHOU GUANGDONG 510530 CHINA
EUT Information	
EUT Name:	Integrated video conference terminal
Model for Canada:	UC S10
Model for USA:	Please refer to clause 5.1. Description of EUT
Sample Received Date:	July 1, 2020
Sample Status:	Normal
Sample ID:	3147330

APPLICABLE STANDARDS					
STANDARD TEST RESULTS					
CFR 47 FCC PART 15 SUBPART C	PASS				
ISED RSS-247 Issue 2	PASS				
ISED RSS-GEN Issue 5	PASS				

July 1 ~ 17, 2020

Prepared By:

Date of Tested:

Kebo. zhong.

Kebo Zhang Project Engineer

Approved By:

Sephenbus

Stephen Guo Laboratory Manager

Checked By:

Shenn les

Shawn Wen Laboratory Leader



2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, CFR 47 FCC Part 2, CFR 47 FCC Part 15, ANSI C63.10-2013, ISED RSS-247 Issue 2 and ISED RSS-GEN Issue 5.

3. FACILITIES AND ACCREDITATION

	 A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. FCC (FCC Designation No.: CN1187) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject
Accreditation Certificate	to the Commission's Delcaration of Conformity (DoC) and Certification rules ISED (Company No.: 21320) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320. VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the
	Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B, the VCCI registration No. is C-20012 and T-20011

Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30MHz had been correlated to measurements performed on an OFS.



4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognize national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty			
Conduction emission	3.62dB			
Radiated Emission (Included Fundamental Emission) (9kHz ~ 30MHz)	2.2dB			
Radiated Emission (Included Fundamental Emission) (30MHz ~ 1GHz)	4.00dB			
Radiated Emission	5.78dB (1GHz ~ 18GHz)			
(Included Fundamental Emission) (1GHz to 26GHz)	5.23dB (18GHz ~ 26GHz)			
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.				



5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name	Integrated video conference terminal
Model for Canada	UC S10
Model for USA	UC S10,MSA10, MSA11,MSA12,MSA13,MSA14,MSA15,MSA16,MSA17, MSA18,MSA19,MS10,MS11,MS12,MS13,MS14,MS15,MS16,MS17,MS18, MS19,UC S11,UC S12,UC S13,UC S14,UC S15,UC S16,UC S17,UC S18, UC S19
Model Difference	The only difference is the model name.
Radio Technology	WLAN (IEEE 802.11b/g/n HT20/n HT40)
Operation frequency	IEEE 802.11b: 2412MHz ~ 2462MHz IEEE 802.11g: 2412MHz ~ 2462MHz IEEE 802.11n HT20: 2412MHz ~ 2462MHz IEEE 802.11n HT40: 2422MHz ~ 2452MHz
Modulation	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT40: OFDM (64QAM, 16QAM, QPSK, BPSK)
Rated Input	AC120V,60Hz
Wireless Module	SKI.WB8821CU.1

5.2. CHANNEL LIST

	Channel List for 802.11b/g/n (20 MHz)								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)		
1	2412	4	2427	7	2442	10	2457		
2	2417	5	2432	8	2447	11	2462		
3	2422	6	2437	9	2452	/	/		

Channel List for 802.11n (40 MHz)								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	
3	2422	5	2432	7	2442	9	2452	
4	2427	6	2437	8	2447	/	/	

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5.3. MAXIMUM OUTPUT POWER

IEEE Std. 802.11	Frequency (MHz)	Channel Number	Maximum Conducted AVG Output Power (dBm)
b	2412 ~ 2462	1-11[11]	11.96
g	2412 ~ 2462	1-11[11]	12.03
n HT20	2412 ~ 2462	1-11[11]	10.97
n HT40	2422 ~ 2452	3-9[7]	11.24

5.4. TEST CHANNEL CONFIGURATION

IEEE Std. 802.11	Test Channel Number	Frequency
b	CH 1, CH 6, CH 11/ Low, Middle, High	2412MHz, 2437MHz, 2462MHz
g	CH 1, CH 6, CH 11/ Low, Middle, High	2412MHz, 2437MHz, 2462MHz
n HT20	CH 1, CH 6, CH 11/ Low, Middle, High	2412MHz, 2437MHz, 2462MHz
n HT40	CH 3, CH 6, CH 9/ Low, Middle, High	2422MHz, 2437MHz, 2452MHz

5.5. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band								
Test Softw	/are		Ampak RFTestTool					
Mashala ('a a	Transmit		Т	est Software	e setting val	he		
Modulation Mode	Antenna	1	NCB: 20MHz			NCB: 40MHz		
Wode	Number	CH 1	CH 6	CH 11	CH 3	CH 6	CH 9	
802.11b	1	28	28	28				
802.11g	1	default	default	default	/			
802.11n HT20	1	default	default	default				
802.11n HT40	1		/		default	default	default	



5.6. THE WORSE CASE CONFIGURATIONS

The EUT was tested in the following configuration(s):

Controlled in test mode using a software application on the EUT supplied by customer. The application was used to enable a continuous transmission and to select the mode, test channels, bandwidth, data rates as required.

Worst-case data rates as provided by the client were:

802.11b mode: 1 Mbps 802.11g mode: 6 Mbps 802.11n HT20 mode: MCS0 802.11n HT40 mode: MCS0

The measured additional path loss was included in any path loss calculations for all RF cable used during tested.

Note: The EUT have two wireless modules, one is called module SKI.WB7668U.1 and the other one called module SKI.WB8821CU.1.

Simultaneously transmission condition.

Condition	Technology		Support (YES/NO)
1 (Module SKI.WB7668U.1)	WLAN(2.4G)	WLAN(5G)	NO
2 (Module SKI.WB8821CU.1)	WLAN(2.4G)	WLAN(5G)	NO

Co-Location condition.

Condition	Technology (Module SKI.WB7668U.1)	Technology (Module SKI.WB8821CU.1)	Support (YES/NO)
1	WLAN (2.4G)	WLAN (2.4G)	YES
2	WLAN (5G)	WLAN (5G)	YES
3	WLAN (2.4G)	WLAN (5G)	YES
4	WLAN (5G)	WLAN (2.4G)	YES

For the Co-Location test result please refer to test report 4789531252-18.



5.7. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Frequency (MHz)		Antenna Type	MAX Antenna Gain (dBi)	
1	2412-2462		FPC	5.95	
Note: Antenna 2 only support WLAN5G, Antenna 1 only support WLAN2.4G. Note: The value of the antenna gain was declared by customer.					
Test Mode	Transmit and Receive Mode	Description			
IEEE 802.11b	⊠1TX, 1RX	ANT 1 can be used as transmitting/receiving antenna			
IEEE 802.11g	⊠1TX, 1RX	ANT 1 can be used as transmitting/receiving antenna			
IEEE 802.11n HT20	⊠1TX, 1RX	ANT 1 can be used as transmitting/receiving antenna			
IEEE 802.11n HT40	⊠1TX, 1RX	ANT 1 can be used as transmitting/receiving antenna			



5.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Remarks
1	Laptop	ThinkPad	TP00094A	/
2	AC adapter	Yealink	GQ36-120300-AU	Input: AC 100-240V, 50/60Hz 1.0A Output: DC 12V 3.0A
3	Monitor	DELL	P2715Qt	27 inch
4	Mouse	Lenovo	NO28UKB	/
4	USB TO UART	/	/	/
5	Earphone	Apple	/	/
6	RJ45 Terminal load	Adafruit	485-4511	/

I/O CABLES

Item	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	/	/	1	/
2	RJ45	/	/	1	/
3	HDMI	/	/	1	/

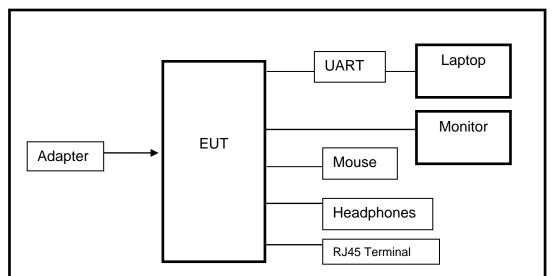
ACCESSORIES

Item	Accessory	Brand Name	Model Name	Description
1	/	/	/	/

TEST SETUP

The EUT can work in engineering mode with a software through a Laptop.

SETUP DIAGRAM FOR TESTS



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6. MEASURING INSTRUMENT AND SOFTWARE USED

	Conducted Emissions								
			Ins	trument					
Used	Equipment	Manufacturer	Mode	el No.	Seria	l No.	Last Cal.	Next Cal.	
V	EMI Test Receiver	R&S	ES	SR3	1019	961	Dec.05,2019	Dec.05,2020	
	Two-Line V- Network	R&S	EN	/216	1019	983	Dec.05,2019	Dec.05,2020	
	Software								
Used		Description			Manufa	acturer	Name	Version	
	Test Softwar	re for Conduct	ed disturb	bance	Far	ad	EZ-EMC	Ver. UL-3A1	
			Radiate	d Emissio	ons				
			Ins	strument					
Used	Equipment	Manufacturer	Mode	el No.	Seria	l No.	Last Cal.	Next Cal.	
V	MXE EMI Receiver	KESIGHT	N90)38A	MY564	00036	Dec.06,2019	Dec.05,2020	
V	Hybrid Log Periodic Antenna	TDK	HLP-3003C		1309	960	Sep.17,2018	Sep.17,2021	
\checkmark	Preamplifier	HP	844	47D	2944A	09099	Dec.05,2019	Dec.05,2020	
V	EMI Measurement Receiver	R&S	ESR26		1013	377	Dec.05,2019	Dec.05,2020	
V	Horn Antenna	TDK	HRN	-0118	130939		Sep.17,2018	Sep.17,2021	
V	High Gain Horn Antenna	Schwarzbeck	BBHA	A-9170	69	1	Aug.11,2018	Aug.11,2021	
V	Preamplifier	TDK	PA-02	2-0118	TRS- 000	67	Dec.05,2019	Dec.05,2020	
V	Preamplifier	TDK	PA-	02-2	TRS- 000		Dec.05,2019	Dec.05,2020	
	Loop antenna	Schwarzbeck		19B	000	08	Jan.07,2019	Jan.07,2022	
V	Band Reject Filter	Wainwright	2400-2	/8-2350- 2483.5- 5-40SS	4		Dec.05,2019	Dec.05,2020	
V	High Pass Filter	Wi	WHKX10-2700- 3000- 18000-40SS		23	3	Dec.05,2019	Dec.05,2020	
Software									
Used	De	escription		Manufa	cturer		Name	Version	
	Test Software fo	r Radiated dis	turbance	Fara	ıd	E	Z-EMC	Ver. UL-3A1	
			Other	instrumen	ts				
Used	Equipment	Manufact	lirer	odel S No. S	Serial No).	Last Cal.	Next Cal.	

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\checkmark	Spectrum Analyzer	Keysight	N9030A	MY55410512	Dec.06,2019	Dec.05,2020
\checkmark	Power sensor, Power Meter	R&S	OSP120	100921	Dec.06,2019	Dec.06,2020



7. ANTENNA PORT TEST RESULTS

7.1. ON TIME AND DUTY CYCLE

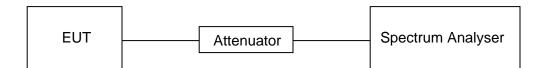
<u>LIMITS</u>

None; for reporting purposes only

PROCEDURE

Refer to ANSI C63.10-2013 clause 11.6 Zero – Span Spectrum Analyzer method.

TEST SETUP



TEST ENVIRONMENT

Temperature	26.4°C	Relative Humidity	61.5%
Atmosphere Pressure	101kPa	Test Voltage	AC120V,60Hz

RESULTS

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
11b	100	100	1.00	100%	0	0.01	0.01
11g	100	100	1.00	100%	0	0.01	0.01
11n HT20	100	100	1.00	100%	0	0.01	0.01
11n HT40	100	100	1.00	100%	0	0.01	0.01

Note:

Duty Cycle Correction Factor=10log (1/x). Where: x is Duty Cycle (Linear) Where: T is On Time If that calculated VBW is not available on the analyzer then the next higher value should be used.

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11B_Ant1_2437	
Keysight Spectrum Analyzer - Swept SA	- 0 x
RL RF [50 Ω DC SENSE:HT] ALIGN AUTO (96/09/04 AM MJ66, 2020 Center Freq 2.437000000 GHz Trig: Free Run Trig: Free Run	Frequency
NFE PNO: Fast Trig: Free Run TreE WWWWWW IFGainLow #Atten: 30 dB DET P NN NN N	Auto Tum
Ref Offset 19.97 dB ΔΜkr3 116.0 ms 10 dB/div Ref 30.00 dBm 0.32 dB	Auto Tune
	Center Freq 2.437000000 GHz
-10.0	Start Freq
	2.437000000 GHz
400	
50.0	Stop Freq 2.437000000 GHz
60.0	2.407000000 0112
Center 2.437000000 GHz Span 0 Hz	CF Step
Res BW 8 MHz #VBW 50 MHz Sweep 130.0 ms (1001 pts)	8.000000 MHz <u>ito</u> Man
1 Δ2 1 t (Δ) 116.0 ms (Δ) 0.32 dB 2 F 1 t 5.980 ms 18.05 dBm	
3 Δ4 1 t (Δ) 116.0 ms (Δ) 0.32 dB 4 F 1 t 5.980 ms 18.05 dBm	Freq Offset 0 Hz
5 6	
8	Scale Type
9 10 11	g <u>Lin</u>
11G_Ant1_2437	
	- 0 💌
Keying Spectrum Analyzer - Swept SA K	Frequency
Center Freq 2.437000000 GHz NFE PNC: Fast →- IFGainLow #Atten: 30 dB	
Ref Offset 19.97 dB	Auto Tune
10 dB/div Ref 30.00 dBm 0.59 dB	
	Center Freq
	2.437000000 GHz
-10.0	Start Freq
	2.437000000 GHz
40.0	Stop Freq
600	2.437000000 GHz
Center 2.437000000 GHz Span 0 Hz	CF Step
Res BW 8 MHz #VBW 50 MHz Sweep 130.0 ms (1001 pts)	8.000000 MHz
Lice and the set x y Function Function Value - 1 Δ2 1 t (Δ) 100.1 ms (Δ) 0.59 dB	
2 F 1 t 15.47 ms 17.59 dBm 3 Δ4 1 t (Δ) 100.1 ms (Δ) 0.59 dB	Freq Offset
4 F 1 t 15.47 ms 17.69 dBm	0 Hz
	Scale Type
9 10	
	8 <u>LIN</u>
MSQ STATUS	
11N20SISO_Ant1_2437	
Keysight Spectrum Analyzer - Sengt Sc SENSE:INT ALIGN AUTO 09:12:33 AM AU66, 2220 M R.L Feed SENSE:INT ALIGN AUTO 09:12:33 AM AU66, 2220 Center Freq 2.437000000 GHz Trig: Feed Pun Avg Type: Log-Pwr Trig: Feed Pun Avg Type: Log-Pwr	- 0 💌
	Frequency
AM/#2 100.1 mg	Auto Tune
Ref Offset 19.97 dB ΔMkr3 100.1 ms 10 dB/div Ref 30.00 dBm -1.51 dB	
Log - 304	Center Freq
	2.437000000 GHz
-10.0	Start Freq
200 2	2.437000000 GHz
400	
-50.0	Stop Freq 2.437000000 GHz
60.0	
Center 2.437000000 GHz Span 0 Hz	CF Step
Res BW 8 MHz #VBW 50 MHz Sweep 130.0 ms (1001 pts) Med Wood Tricl Sci. x y Function Velocitie -	8.000000 MHz Ito Man
1 Δ2 1 t (Δ) 100.1 ms (Δ) -1.51 dB	
3 $\Delta 4$ 1 t (Δ) 100.1 ms (Δ) -1.51 dB	Freq Offset 0 Hz
4 F 1 t 13.65 ms 18.07 dBm 6	
8	Scale Type
7 8 9 10	

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	11	N40SISO_	_Ant1_2437		
Keysight Spectrum A	50 Q DC	SENSE:INT	ALIGN AUTO	09:14:09 AM Jul 06, 2020	Frequency
Center Freq 2	2.437000000 GHz NFE PNO: Fast ++ IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE DET P N N N N	
	Offset 19.97 dB f 30.00 dBm		۵	Mkr3 100.1 ms -1.05 dB	Auto Tune
20.0	×		مر هنو به المحمد ومرود محمد المحمد المحمد ومحمد وم	3∆4	Center Freq
0.00					2.437000000 GHz
-10.0					Start Freq 2.437000000 GHz
-40.0					Stop Freq 2.437000000 GHz
-60.0 Center 2.4370	00000 GHz			Span 0 Hz	CF Step
Res BW 8 MH:	z #VBW		Sweep 13	0.0 ms (1001 pts)	8.000000 MHz Auto Man
2 F 1 t	 (Δ) 100.1 ms (Δ) 15.86 ms (Δ) 100.1 ms (Δ) 15.86 ms 	-1.05 dB 13.34 dBm -1.05 dB 13.34 dBm			Freq Offset 0 Hz
7 8 9					Scale Type
10					Log <u>Lin</u>
MSG			STATUS		



7.2. 6 dB DTS BANDWIDTH AND 99% OCCUPIED BANDWIDTH

<u>LIMITS</u>

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 2				
Section	Test Item	Limit	Frequency Range (MHz)	
CFR 47 FCC 15.247(a)(2) ISED RSS-247 5.2 (a)	6 dB Bandwidth	≥ 500KHz	2400-2483.5	
ISED RSS-Gen Clause 6.7	99% Occupied Bandwidth	For reporting purposes only.	2400-2483.5	

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 11.8 for DTS bandwidth and clause 6.9 for Occupied Bandwidth.

Center Frequency	The center frequency of the channel under test
Frequency Span	Between 1.5 times and 5.0 times the OBW
Detector	Peak
	For 6 dB Bandwidth: 100kHz For 99% Occupied Bandwidth: 1% to 5% of the occupied bandwidth
IV B W	For 6dB Bandwidth: ≥3 × RBW For 99% Occupied Bandwidth: ≥3 × RBW
Trace	Max hold
Sweep	Auto couple

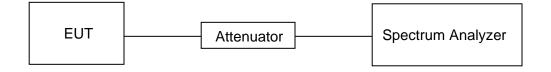
Connect the EUT to the spectrum analyser and use the following settings:

a) Use the 99% power bandwidth function of the instrument, allow the trace to stabilize and report the measured bandwidth.

b) Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



TEST SETUP



TEST ENVIRONMENT

Temperature	26.4°C	Relative Humidity	61.5%
Atmosphere Pressure	101kPa	Test Voltage	AC120V,60Hz

RESULTS

Please refer to appendix A & B.



7.3. CONDUCTED OUTPUT POWER

<u>LIMITS</u>

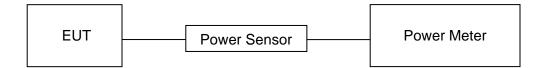
CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(b)(3) ISED RSS-247 5.4 (d)	AVG Output Power	1 watt or 30dBm	2400-2483.5

TEST PROCEDURE

Place the EUT on the table and set it in the transmitting mode.

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power sensor.

AVG Detector use for AVG result.



TEST ENVIRONMENT

Temperature	26.4°C	Relative Humidity	61.5%
Atmosphere Pressure	101kPa	Test Voltage	AC120V,60Hz

RESULTS

Please refer to appendix C.



7.4. POWER SPECTRAL DENSITY

<u>LIMITS</u>

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 2				
Section	Test Item	Limit	Frequency Range (MHz)	
CFR 47 FCC §15.247 (e) ISED RSS-247 5.2 (b)	Power Spectral Density	8 dBm/3 kHz	2400-2483.5	

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 11.10.

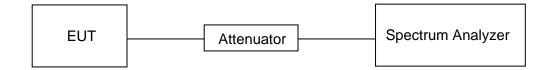
Connect the EUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	3 kHz ≤ RBW ≤ 100 kHz
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple

Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.

If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST SETUP



TEST ENVIRONMENT

Temperature	26.4°C	Relative Humidity	61.5%
Atmosphere Pressure	101kPa	Test Voltage	AC120V,60Hz

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Please refer to appendix D.

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7.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

<u>LIMITS</u>

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 2			
Section	Section Test Item Limit		
CFR 47 FCC §15.247 (d) ISED RSS-247 5.5	Conducted Bandedge and Spurious Emissions	at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power	

TEST PROCEDURE

Refer to ANSI C63.10-2013 clause 11.11 and 11.13.

Connect the EUT to the spectrum analyser and use the following settings for reference level measurement:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	100kHz
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum PSD level.

Change the settings for emission level measurement:

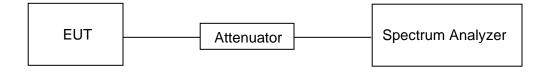
1.5040	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100kHz
VBW	≥3 × RBW
measurement points	≥span/RBW
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum PSD level. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11.

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TEST SETUP



TEST ENVIRONMENT

Temperature	26.4°C	Relative Humidity	61.5%
Atmosphere Pressure	101kPa	Test Voltage	AC120V,60Hz

RESULTS

Please refer to appendix E & F.



8. RADIATED TEST RESULTS

<u>LIMITS</u>

Please refer to CFR 47 FCC §15.205 and §15.209.

Please refer to ISED RSS-GEN Clause 8.9 and Clause 8.10.

Radiation Disturbance Test Limit for FCC (Class B) (9kHz-1GHz)

Emissions radiated outside of the specified frequency bands above 30MHz			
Frequency Range	Field Strength Limit	Field Stren (dBuV/m)	•
(MHz)	(uV/m) at 3 m	Quasi-l	
30 - 88	100	40	
88 - 216	150	43.5	
216 - 960	200	46	
Above 960	500	54	
Above 1000	500	Peak	Average
Above 1000	500	74	54

FCC Emissions radiated outside of the specified frequency bands below 30MHz			
Frequency (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	

ISED General field strength limits at frequencies below 30 MHz

Table 6 – General field strength limits at frequencies below 30 MHz			
Frequency Magnetic field strength (H-Field) (µA/m) Measurement distance (m)			
9 - 490 kHz ^{Note 1}	6.37/F (F in kHz)	300	
490 - 1705 kHz	63.7/F (F in kHz)	30	
1.705 - 30 MHz	0.08	30	

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

ISED Restricted bands please refer to ISED RSS-GEN Clause 8.10



Table 7 – Restricted frequency bands ^{Note 1}			
MHz	MHz	GHz	
0.090 - 0.110	149.9 - 150.05	9.0 - 9.2	
0.495 - 0.505	158.52475 - 158.52525	9.3 - 9.5	
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7	
3.020 - 3.028	162.0125 - 167.17	13.25 - 13.4	
4.125 - 4.128	187.72 - 173.2	14.47 - 14.5	
4.17725 - 4.17775	240 - 285	15.35 - 16.2	
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4	
5.677 - 5.683	399.9 - 410	22.01 - 23.12	
6.215 - 6.218	608 - 614	23.6 - 24.0	
6.26775 - 6.26825	960 - 1427	31.2 - 31.8	
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5	
8.291 - 8.294	1645.5 - 1648.5	Above 38.6	
8.362 - 8.366	1660 - 1710		
8.37625 - 8.38675	1718.8 - 1722.2		
8.41425 - 8.41475	2200 - 2300		
12.29 - 12.293	2310 - 2390		
12.51975 - 12.52025	2483.5 - 2500		
12.57675 - 12.57725	2855 - 2900		
13.36 - 13.41	3260 - 3267		
16.42 - 16.423	3332 - 3339		
16.69475 - 16.69525	3345.8 - 3358		
16.80425 - 16.80475	3500 - 4400		
25.5 - 25.67	4500 - 5150		
37.5 - 38.25	5350 - 5460		
73 - 74.6	7250 - 7750		
74.8 - 75.2	8025 - 8500		
108 - 138			

Note 1: Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

FCC Restricted bands of operation refer to FCC §15.205 (a):

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

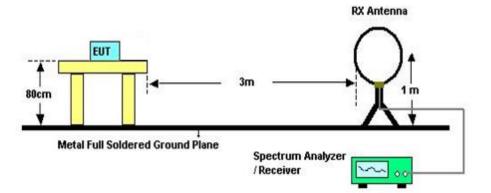
Note: ¹Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. ²Above 38.6c

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TEST SETUP AND PROCEDURE

Below 30MHz



The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9kHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9kHz (From 0.15MHz to 30MHz)
Sweep	Auto
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 11.11.

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80cm above ground.

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

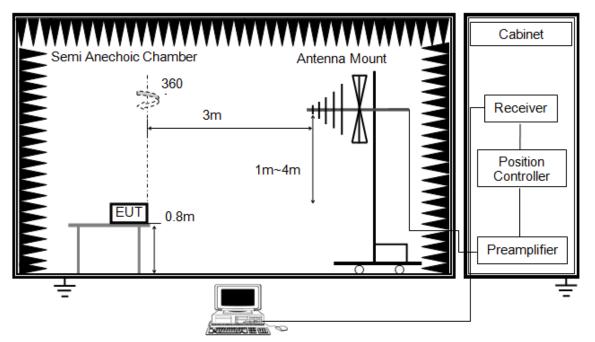
5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak and average detector mode remeasured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak and average detector and reported.

7. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field site based on KDB 414788.



Below 1GHz and above 30MHz



The setting of the spectrum analyser

RBW	120kHz
VBW	300kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 11.11.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

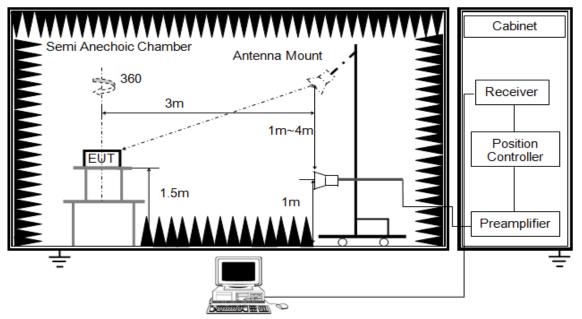
3. The EUT was placed on a turntable with 80cm above ground.

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

5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.



Above 1GHz



The setting of the spectrum analyser

RBW	1MHz
	PEAK: 3MHz AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013 clause 11.11 and 11.12.

2. The EUT was arranged to its worst case and then tune the antenna tower (1.5 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 1.5m above ground.

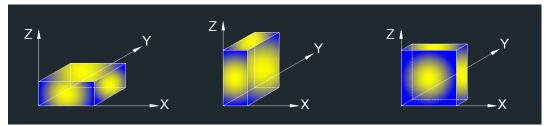
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 7.1.ON TIME AND DUTY CYCLE.



X axis, Y axis, Z axis positions:



Note 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

Note 2: The EUT does not support simultaneous transmission.

Note 3: The EUT was fully exercised with external accessories during the test. In the case of multiple accessory external ports, an external accessory shall be connected to one of each type of port.

TEST ENVIRONMENT

Temperature	23.6°C	Relative Humidity	58%
Atmosphere Pressure	101kPa	Test Voltage	AC120V,60Hz

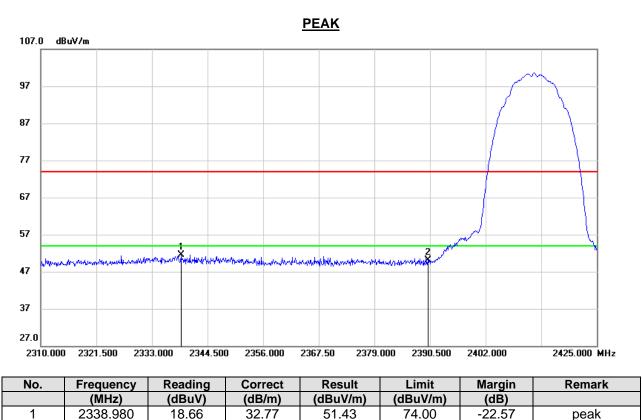
RESULTS

peak

peak

RESTRICTED BANDEDGE 8.1.

8.1.1. 802.11b MODE



RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

Note: 1. Measurement = Reading Level + Correct Factor.

17.19

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

50.13

74.00

-23.87

3. Peak: Peak detector.

2390.000

1

2

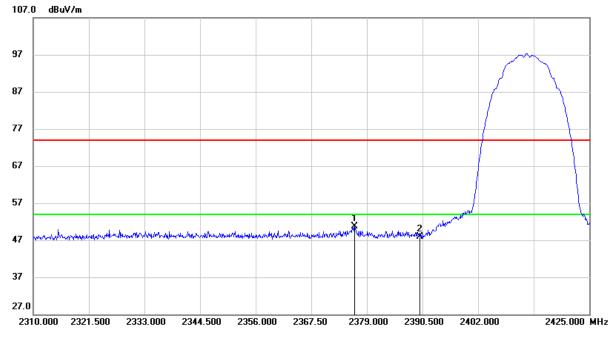
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

32.94



RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)





No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2376.470	17.86	32.90	50.76	74.00	-23.24	peak
2	2390.000	15.05	32.94	47.99	74.00	-26.01	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

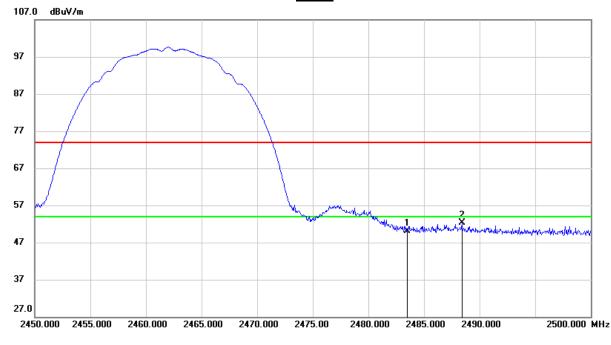
3. Peak: Peak detector.

4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

PEAK



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	16.55	33.58	50.13	74.00	-23.87	peak
2	2488.400	18.69	33.62	52.31	74.00	-21.69	peak

Note: 1. Measurement = Reading Level + Correct Factor.

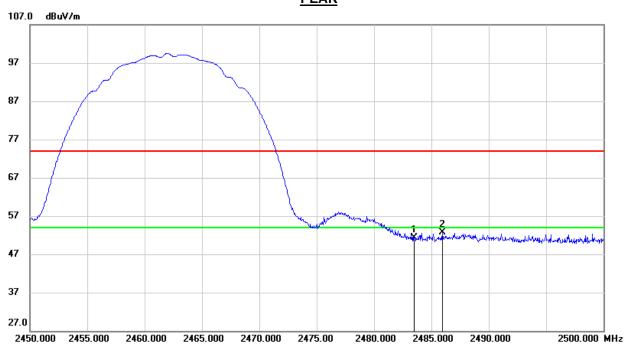
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	17.73	33.58	51.31	74.00	-22.69	peak
2	2485.950	19.02	33.59	52.61	74.00	-21.39	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

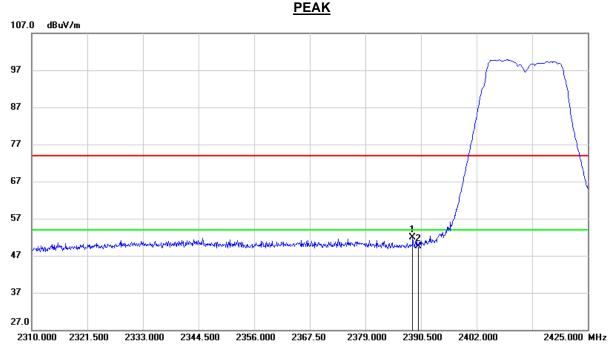
3. Peak: Peak detector.

4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

PEAK



8.1.2. 802.11g MODE



RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2388.775	18.91	32.94	51.85	74.00	-22.15	peak
2	2390.000	16.64	32.94	49.58	74.00	-24.42	peak

Note: 1. Measurement = Reading Level + Correct Factor.

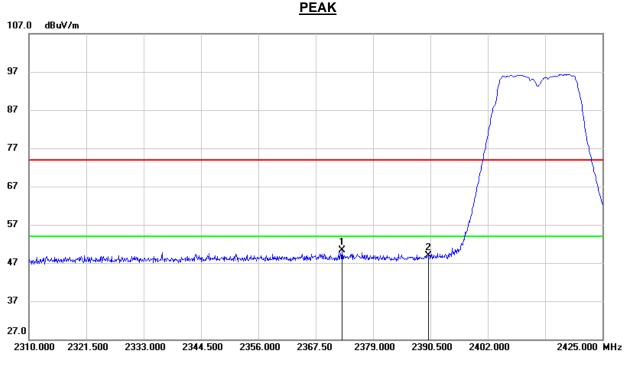
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2372.790	17.49	32.89	50.38	74.00	-23.62	peak
2	2390.000	16.00	32.94	48.94	74.00	-25.06	peak

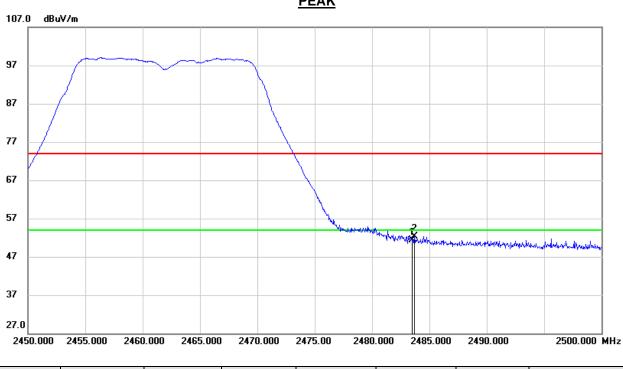
Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	17.65	33.58	51.23	74.00	-22.77	peak
2	2483.700	18.74	33.58	52.32	74.00	-21.68	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

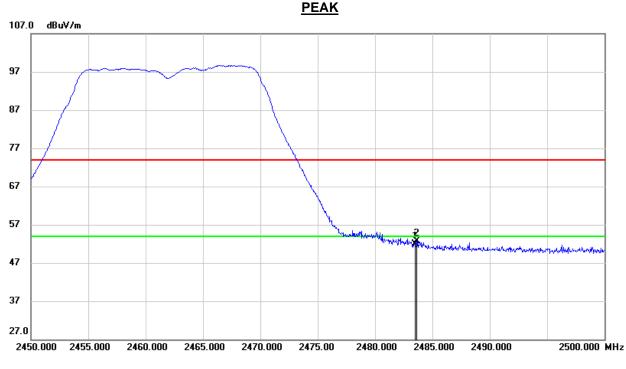
3. Peak: Peak detector.

4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

<u>PEAK</u>



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	18.35	33.58	51.93	74.00	-22.07	peak
2	2483.650	19.11	33.58	52.69	74.00	-21.31	peak

Note: 1. Measurement = Reading Level + Correct Factor.

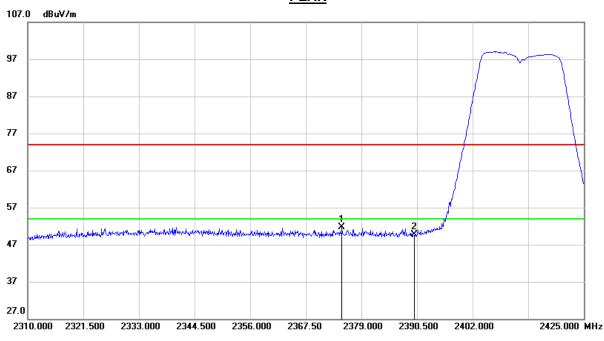
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.



8.1.3. 802.11n HT20 MODE





No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2374.975	18.81	32.89	51.70	74.00	-22.30	peak
2	2390.000	16.74	32.94	49.68	74.00	-24.32	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

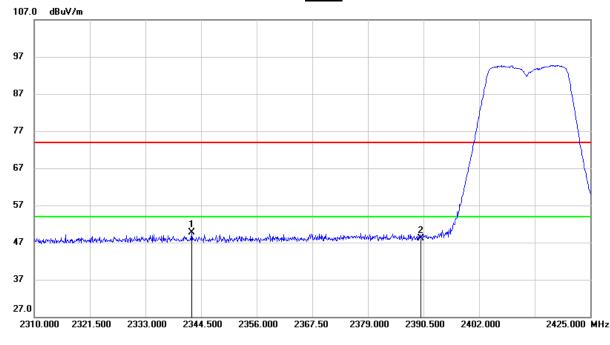
4. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

<u>PEAK</u>



RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

PEAK



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2342.545	16.87	32.79	49.66	74.00	-24.34	peak
2	2390.000	15.12	32.94	48.06	74.00	-25.94	peak

Note: 1. Measurement = Reading Level + Correct Factor.

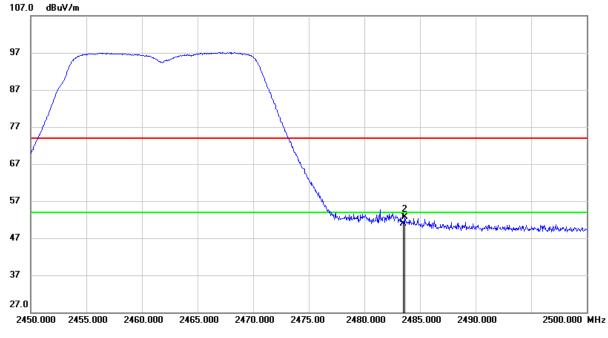
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

<u>PEAK</u>



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	17.32	33.58	50.90	74.00	-23.10	peak
2	2483.650	19.14	33.58	52.72	74.00	-21.28	peak

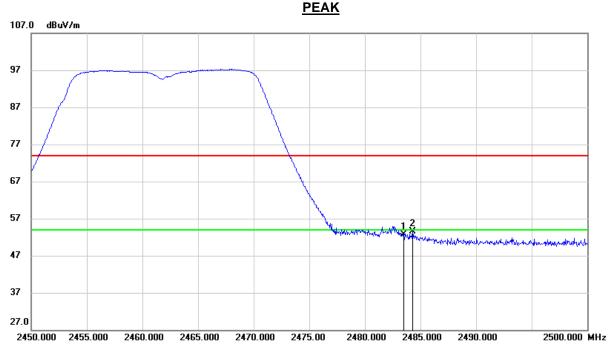
Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	19.07	33.58	52.65	74.00	-21.35	peak
2	2484.300	19.84	33.59	53.43	74.00	-20.57	peak

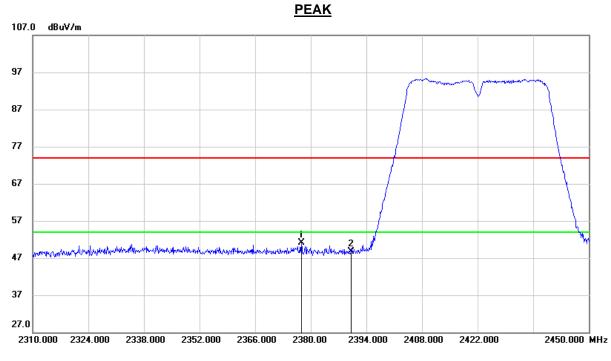
Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.



8.1.4. 802.11n HT40 MODE



RESTRICTED BANDEDGE (LOW CHANNEL,	HORIZONTAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2377.620	18.29	32.90	51.19	74.00	-22.81	peak
2	2390.000	15.80	32.94	48.74	74.00	-25.26	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

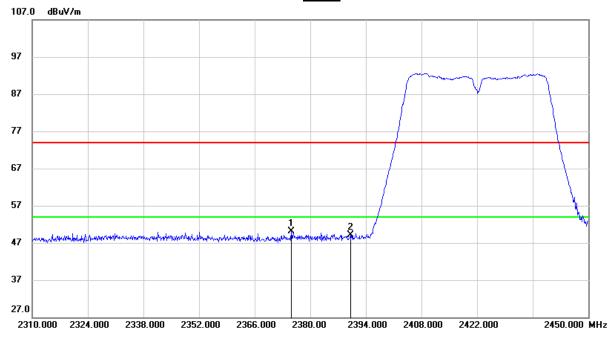
3. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

4. For the transmitting duration, please refer to clause 7.1.



RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

PEAK



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2375.240	17.13	32.90	50.03	74.00	-23.97	peak
2	2390.000	16.09	32.94	49.03	74.00	-24.97	peak

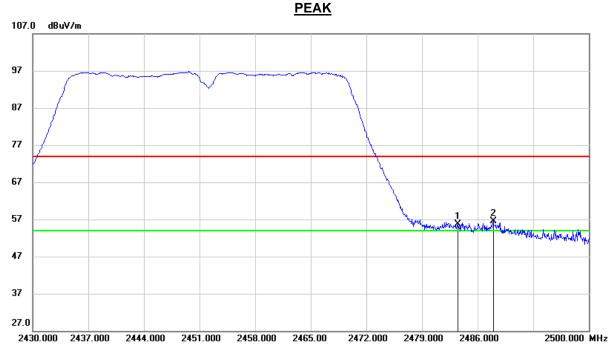
Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

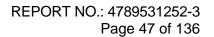


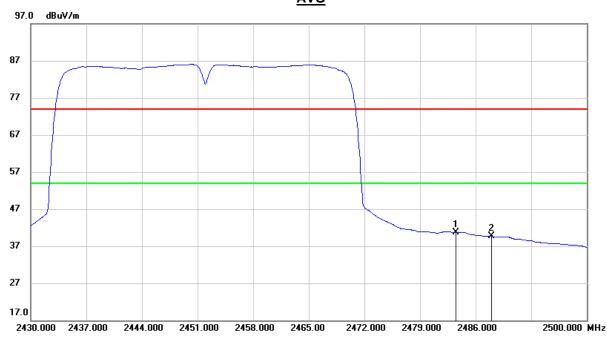
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	22.16	33.58	55.74	74.00	-18.26	peak
2	2487.960	22.89	33.61	56.50	74.00	-17.50	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.





No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	7.16	33.58	40.74	54.00	-13.26	AVG
2	2487.960	6.04	33.61	39.65	54.00	-14.35	AVG

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

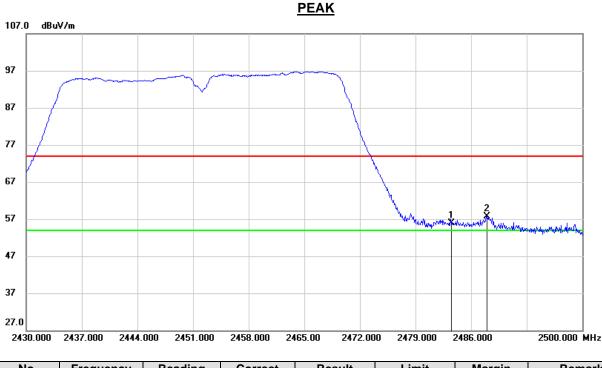
4. For the transmitting duration, please refer to clause 7.1.

5. Only the worst data was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

AVG



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	22.36	33.58	55.94	74.00	-18.06	peak
2	2487.960	24.15	33.61	57.76	74.00	-16.24	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.



AVG 97.0 dBuV/m 87 77 67 57 47 37 27 17.0 2500.000 MHz 2430.000 2437.000 2444.000 2451.000 2458.000 2465.00 2472.000 2479.000 2486.000

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	7.88	33.58	41.46	54.00	-12.54	AVG
2	2487.960	6.97	33.61	40.58	54.00	-13.42	AVG

Note: 1. Measurement = Reading Level + Correct Factor.

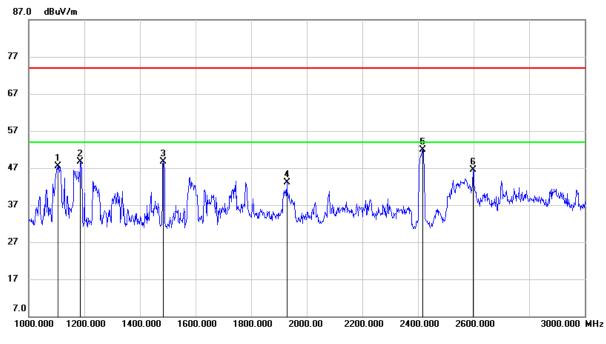
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

4. For the transmitting duration, please refer to clause 7.1.

8.2. SPURIOUS EMISSIONS (1GHz ~ 3GHz)

8.2.1. 802.11g MODE



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1106.000	60.88	-13.47	47.41	74.00	-26.59	peak
2	1186.000	61.57	-12.80	48.77	74.00	-25.23	peak
3	1484.000	60.94	-12.24	48.70	74.00	-25.30	peak
4	1928.000	53.09	-9.91	43.18	74.00	-30.82	peak
5	2412.000	59.74	-7.74	52.00	/	/	fundamental
6	2598.000	54.29	-7.69	46.60	74.00	-27.40	peak

Note: 1. Measurement = Reading Level + Correct Factor.

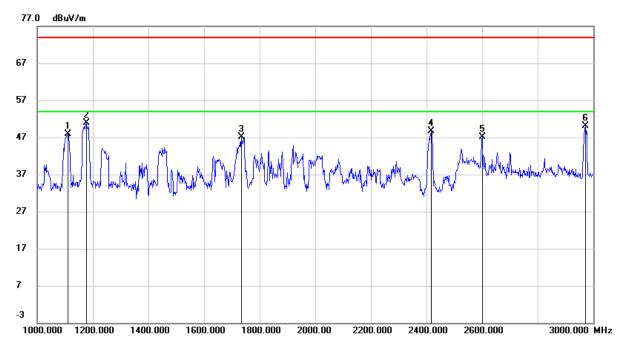
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1110.000	61.37	-13.43	47.94	74.00	-26.06	peak
2	1176.000	63.76	-12.87	50.89	74.00	-23.11	peak
3	1734.000	57.77	-10.57	47.20	74.00	-26.80	peak
4	2412.000	56.45	-7.74	48.71	/	/	fundamental
5	2600.000	54.87	-7.70	47.17	74.00	-26.83	peak
6	2972.000	55.48	-5.36	50.12	74.00	-23.88	peak

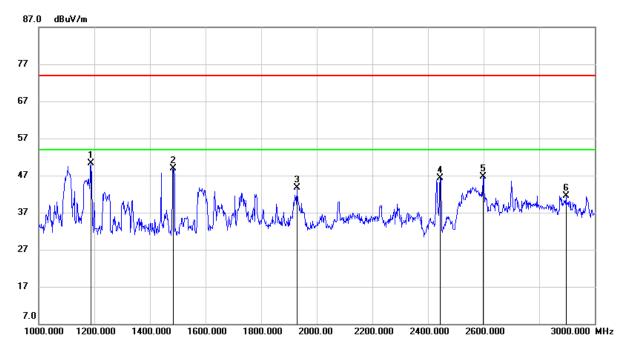
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1188.000	63.17	-12.77	50.40	74.00	-23.60	peak
2	1484.000	61.23	-12.24	48.99	74.00	-25.01	peak
3	1928.000	53.69	-9.91	43.78	74.00	-30.22	peak
4	2437.000	53.95	-7.55	46.40	/	/	fundamental
5	2598.000	54.41	-7.69	46.72	74.00	-27.28	peak
6	2896.000	47.06	-5.54	41.52	74.00	-32.48	peak

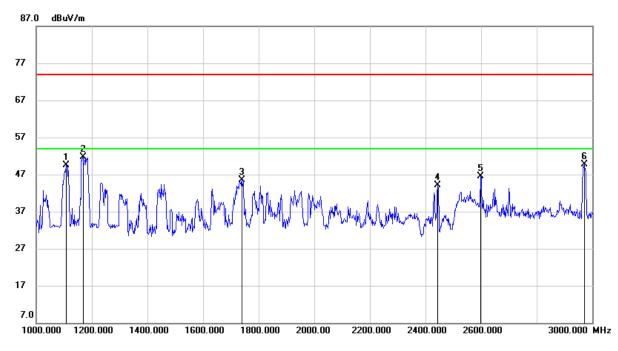
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1108.000	62.99	-13.46	49.53	74.00	-24.47	peak
2	1168.000	64.68	-12.95	51.73	74.00	-22.27	peak
3	1740.000	56.05	-10.51	45.54	74.00	-28.46	peak
4	2437.000	51.73	-7.55	44.18	/	/	fundamental
5	2598.000	54.20	-7.69	46.51	74.00	-27.49	peak
6	2972.000	55.03	-5.36	49.67	74.00	-24.33	peak

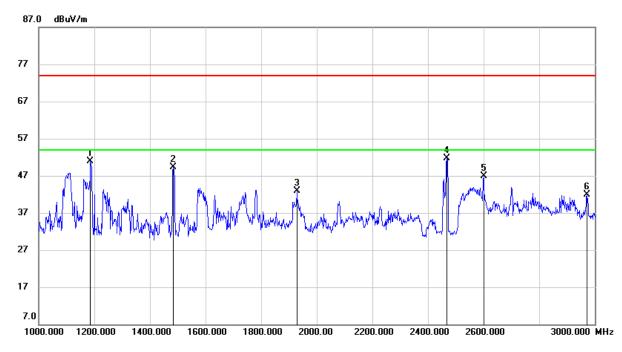
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1186.000	63.69	-12.80	50.89	74.00	-23.11	peak
2	1484.000	61.62	-12.24	49.38	74.00	-24.62	peak
3	1928.000	52.76	-9.91	42.85	74.00	-31.15	peak
4	2462.000	59.02	-7.39	51.63	/	/	fundamental
5	2600.000	54.67	-7.70	46.97	74.00	-27.03	peak
6	2972.000	47.18	-5.36	41.82	74.00	-32.18	peak

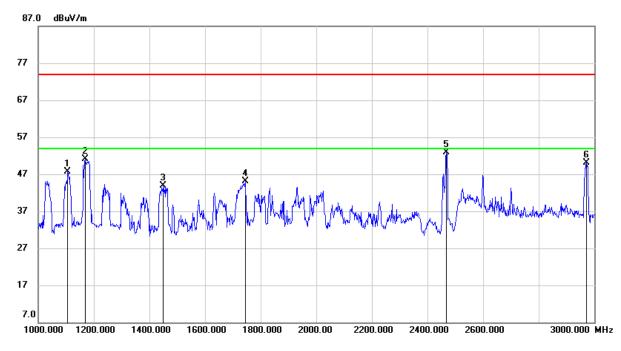
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	1106.000	61.14	-13.47	47.67	74.00	-26.33	peak
2	1170.000	64.01	-12.92	51.09	74.00	-22.91	peak
3	1450.000	56.30	-12.30	44.00	74.00	-30.00	peak
4	1746.000	55.57	-10.45	45.12	74.00	-28.88	peak
5	2462.000	60.38	-7.39	52.99	/	/	fundamental
6	2972.000	55.40	-5.36	50.04	74.00	-23.96	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

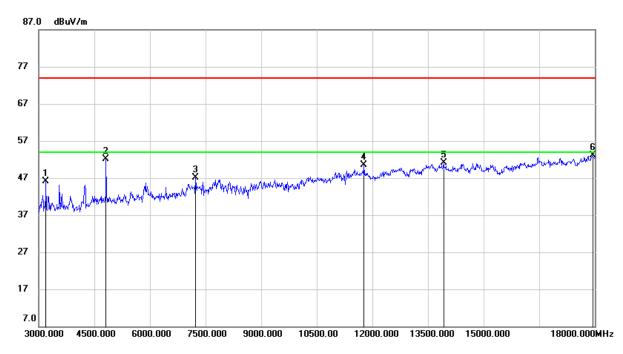
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.

5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Note: All the modes had been tested, but only the worst data was recorded in the report.

8.3. SPURIOUS EMISSIONS (3GHz ~ 18GHz)

8.3.1. 802.11b MODE



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)	

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3195.000	50.62	-4.42	46.20	74.00	-27.80	peak
2	4815.000	51.62	0.51	52.13	74.00	-21.87	peak
3	7230.000	41.28	5.89	47.17	74.00	-26.83	peak
4	11775.000	37.32	13.13	50.45	74.00	-23.55	peak
5	13920.000	34.93	16.17	51.10	74.00	-22.90	peak
6	17940.000	29.62	23.39	53.01	74.00	-20.99	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

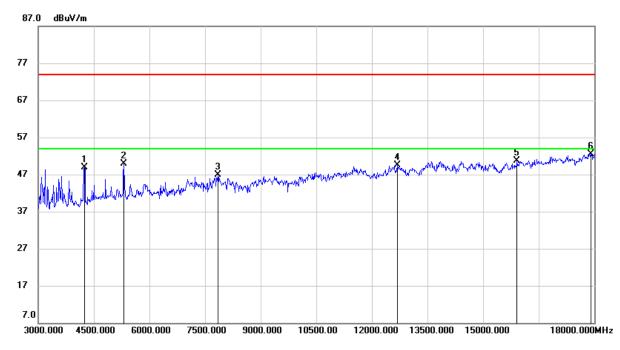
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4245.000	50.50	-1.59	48.91	74.00	-25.09	peak
2	5310.000	47.84	2.02	49.86	74.00	-24.14	peak
3	7845.000	39.19	7.62	46.81	74.00	-27.19	peak
4	12690.000	35.31	14.25	49.56	74.00	-24.44	peak
5	15915.000	33.19	17.57	50.76	74.00	-23.24	peak
6	17910.000	29.22	23.35	52.57	74.00	-21.43	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

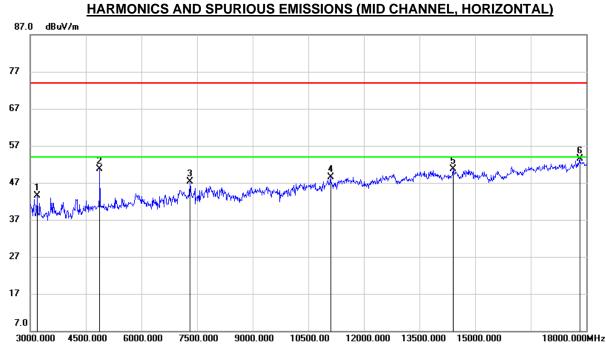
3. Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.





No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3195.000	47.91	-4.42	43.49	74.00	-30.51	peak
2	4875.000	49.94	0.76	50.70	74.00	-23.30	peak
3	7305.000	41.25	6.08	47.33	74.00	-26.67	peak
4	11100.000	35.93	12.56	48.49	74.00	-25.51	peak
5	14400.000	34.41	16.35	50.76	74.00	-23.24	peak
6	17820.000	30.26	23.30	53.56	74.00	-20.44	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

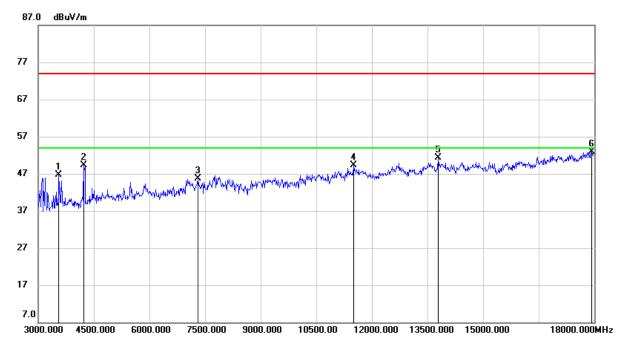
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3555.000	50.47	-3.72	46.75	74.00	-27.25	peak
2	4230.000	50.80	-1.47	49.33	74.00	-24.67	peak
3	7305.000	39.72	6.08	45.80	74.00	-28.20	peak
4	11505.000	35.90	13.42	49.32	74.00	-24.68	peak
5	13785.000	34.32	16.91	51.23	74.00	-22.77	peak
6	17925.000	29.53	23.37	52.90	74.00	-21.10	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

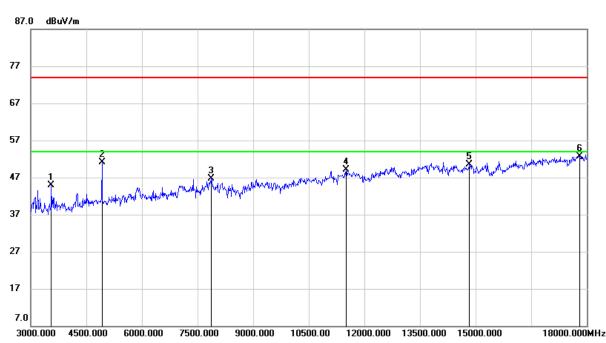
3. Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.





No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3555.000	48.70	-3.72	44.98	74.00	-29.02	peak
2	4920.000	50.09	0.96	51.05	74.00	-22.95	peak
3	7875.000	39.40	7.40	46.80	74.00	-27.20	peak
4	11505.000	35.66	13.42	49.08	74.00	-24.92	peak
5	14835.000	34.53	15.95	50.48	74.00	-23.52	peak
6	17805.000	29.42	23.31	52.73	74.00	-21.27	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

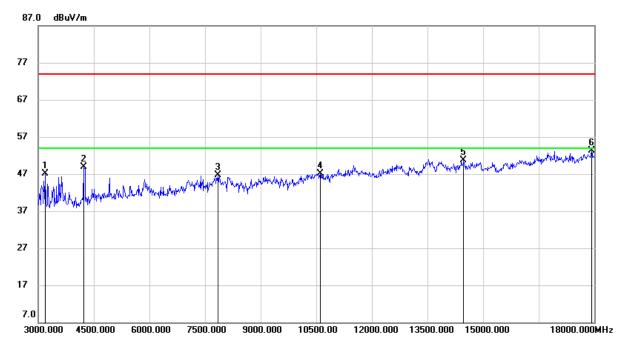
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3180.000	51.34	-4.33	47.01	74.00	-26.99	peak
2	4230.000	50.45	-1.47	48.98	74.00	-25.02	peak
3	7845.000	39.09	7.62	46.71	74.00	-27.29	peak
4	10605.000	35.25	11.93	47.18	74.00	-26.82	peak
5	14475.000	34.32	16.36	50.68	74.00	-23.32	peak
6	17925.000	30.03	23.37	53.40	74.00	-20.60	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

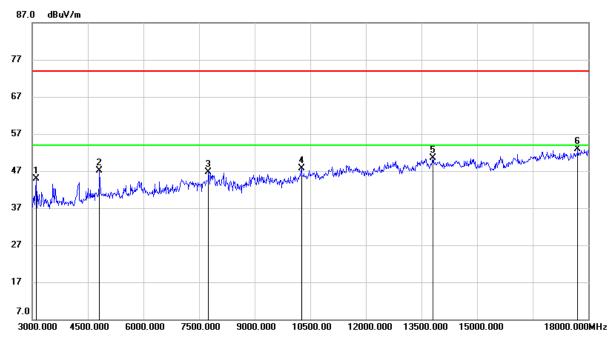
5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.



8.3.2. 802.11g MODE





No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3105.000	48.83	-3.85	44.98	74.00	-29.02	peak
2	4815.000	46.51	0.51	47.02	74.00	-26.98	peak
3	7755.000	39.35	7.29	46.64	74.00	-27.36	peak
4	10260.000	37.00	10.71	47.71	74.00	-26.29	peak
5	13815.000	33.52	16.97	50.49	74.00	-23.51	peak
6	17715.000	30.26	22.56	52.82	74.00	-21.18	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

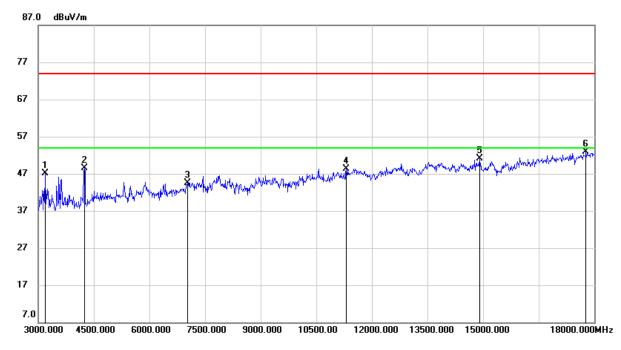
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3180.000	51.48	-4.33	47.15	74.00	-26.85	peak
2	4245.000	50.12	-1.59	48.53	74.00	-25.47	peak
3	7035.000	38.78	5.81	44.59	74.00	-29.41	peak
4	11310.000	35.93	12.37	48.30	74.00	-25.70	peak
5	14910.000	35.01	16.01	51.02	74.00	-22.98	peak
6	17775.000	29.79	23.09	52.88	74.00	-21.12	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

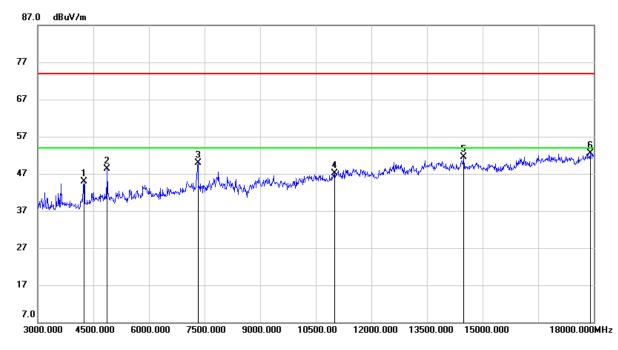
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4245.000	46.42	-1.59	44.83	74.00	-29.17	peak
2	4875.000	47.63	0.76	48.39	74.00	-25.61	peak
3	7320.000	43.82	6.14	49.96	74.00	-24.04	peak
4	11010.000	34.57	12.63	47.20	74.00	-26.80	peak
5	14490.000	35.05	16.37	51.42	74.00	-22.58	peak
6	17910.000	29.08	23.35	52.43	74.00	-21.57	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

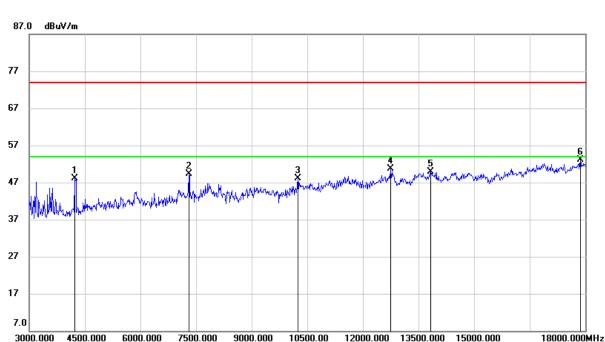
3. Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.





HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4230.000	49.60	-1.47	48.13	74.00	-25.87	peak
2	7305.000	43.29	6.08	49.37	74.00	-24.63	peak
3	10245.000	37.48	10.56	48.04	74.00	-25.96	peak
4	12750.000	35.72	14.98	50.70	74.00	-23.30	peak
5	13830.000	33.00	16.84	49.84	74.00	-24.16	peak
6	17865.000	29.78	23.33	53.11	74.00	-20.89	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

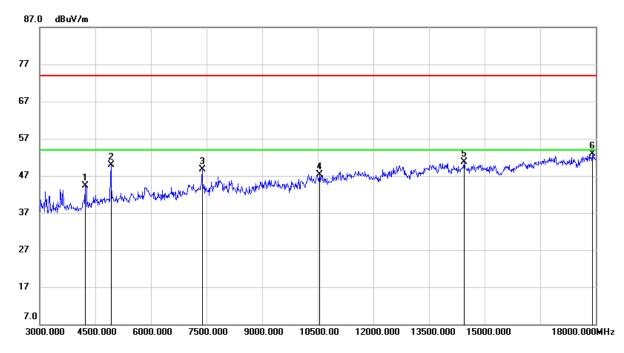
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4230.000	45.87	-1.47	44.40	74.00	-29.60	peak
2	4920.000	49.02	0.96	49.98	74.00	-24.02	peak
3	7380.000	42.39	6.41	48.80	74.00	-25.20	peak
4	10545.000	35.67	11.64	47.31	74.00	-26.69	peak
5	14445.000	34.31	16.36	50.67	74.00	-23.33	peak
6	17910.000	29.58	23.35	52.93	74.00	-21.07	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

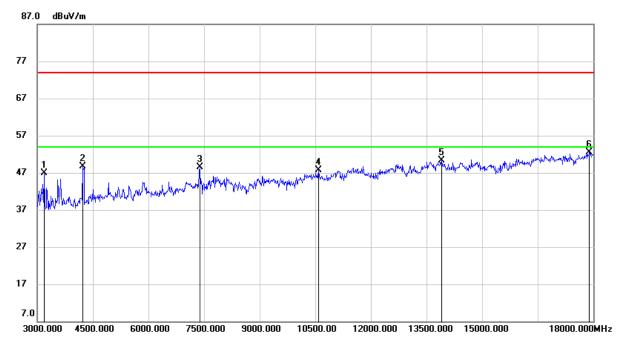
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3195.000	51.37	-4.42	46.95	74.00	-27.05	peak
2	4230.000	50.09	-1.47	48.62	74.00	-25.38	peak
3	7380.000	42.18	6.41	48.59	74.00	-25.41	peak
4	10590.000	35.86	11.88	47.74	74.00	-26.26	peak
5	13905.000	34.03	16.20	50.23	74.00	-23.77	peak
6	17895.000	29.09	23.34	52.43	74.00	-21.57	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

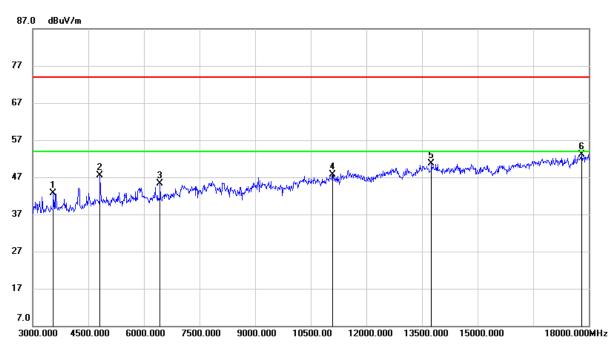
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.



8.3.3. 802.11n HT20 MODE



HARMONICS AND SPURIOUS EMISSIONS	(LOW CHANNEL HORIZONTAL)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3555.000	46.36	-3.72	42.64	74.00	-31.36	peak
2	4815.000	46.91	0.51	47.42	74.00	-26.58	peak
3	6435.000	40.63	4.72	45.35	74.00	-28.65	peak
4	11085.000	35.16	12.57	47.73	74.00	-26.27	peak
5	13755.000	34.07	16.54	50.61	74.00	-23.39	peak
6	17805.000	29.74	23.31	53.05	74.00	-20.95	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

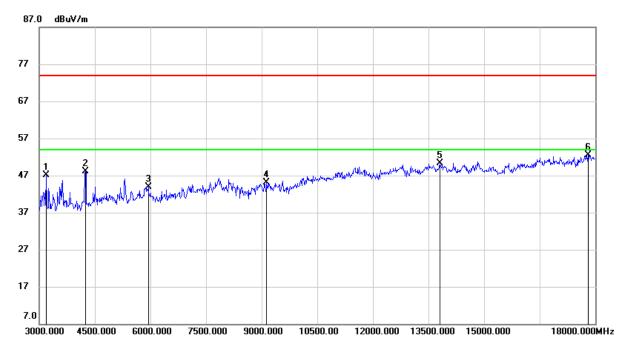
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3180.000	51.39	-4.33	47.06	74.00	-26.94	peak
2	4245.000	49.70	-1.59	48.11	74.00	-25.89	peak
3	5940.000	39.52	4.30	43.82	74.00	-30.18	peak
4	9135.000	35.94	9.07	45.01	74.00	-28.99	peak
5	13800.000	33.27	17.10	50.37	74.00	-23.63	peak
6	17805.000	29.11	23.31	52.42	74.00	-21.58	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

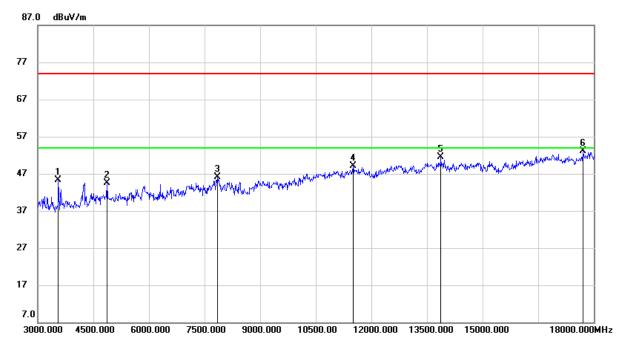
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3555.000	49.02	-3.72	45.30	74.00	-28.70	peak
2	4875.000	43.84	0.76	44.60	74.00	-29.40	peak
3	7845.000	38.46	7.62	46.08	74.00	-27.92	peak
4	11505.000	35.72	13.42	49.14	74.00	-24.86	peak
5	13875.000	35.01	16.44	51.45	74.00	-22.55	peak
6	17715.000	30.55	22.56	53.11	74.00	-20.89	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

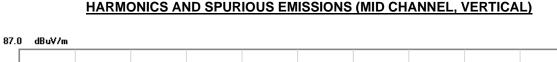
3. Peak: Peak detector.

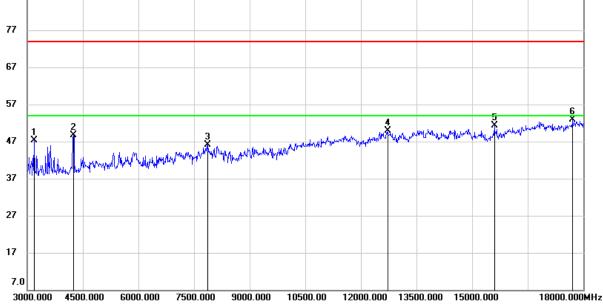
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3180.000	51.65	-4.33	47.32	74.00	-26.68	peak
2	4245.000	50.30	-1.59	48.71	74.00	-25.29	peak
3	7875.000	38.79	7.40	46.19	74.00	-27.81	peak
4	12720.000	35.30	14.57	49.87	74.00	-24.13	peak
5	15600.000	34.25	16.98	51.23	74.00	-22.77	peak
6	17715.000	30.40	22.56	52.96	74.00	-21.04	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

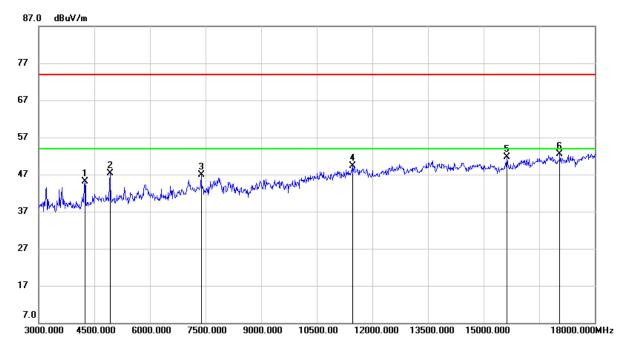
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4245.000	46.62	-1.59	45.03	74.00	-28.97	peak
2	4920.000	46.38	0.96	47.34	74.00	-26.66	peak
3	7380.000	40.58	6.41	46.99	74.00	-27.01	peak
4	11475.000	36.08	13.22	49.30	74.00	-24.70	peak
5	15630.000	34.75	16.89	51.64	74.00	-22.36	peak
6	17055.000	32.06	20.53	52.59	74.00	-21.41	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

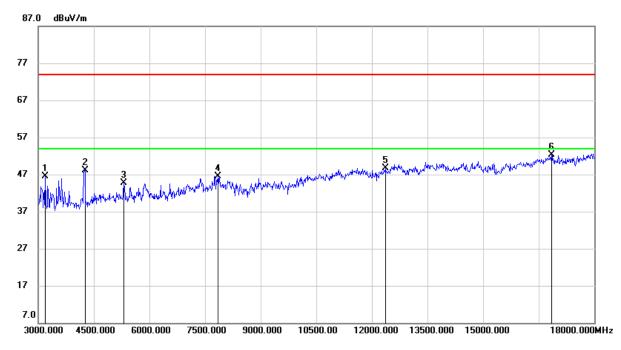
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3195.000	50.96	-4.42	46.54	74.00	-27.46	peak
2	4260.000	49.80	-1.71	48.09	74.00	-25.91	peak
3	5310.000	42.64	2.02	44.66	74.00	-29.34	peak
4	7845.000	38.94	7.62	46.56	74.00	-27.44	peak
5	12360.000	34.61	14.03	48.64	74.00	-25.36	peak
6	16845.000	32.42	19.96	52.38	74.00	-21.62	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

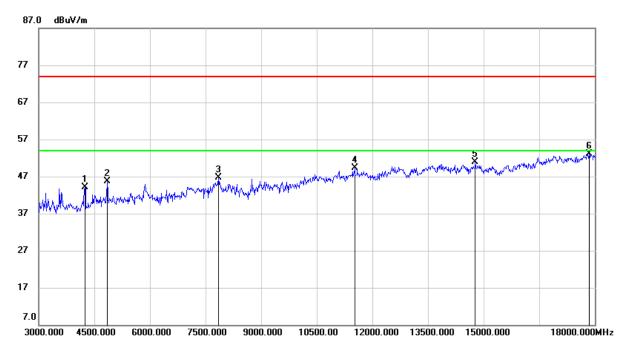
5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.



8.3.4. 802.11n HT40 MODE





No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4245.000	45.62	-1.59	44.03	74.00	-29.97	peak
2	4845.000	45.09	0.64	45.73	74.00	-28.27	peak
3	7845.000	39.06	7.62	46.68	74.00	-27.32	peak
4	11520.000	35.86	13.38	49.24	74.00	-24.76	peak
5	14775.000	35.01	15.95	50.96	74.00	-23.04	peak
6	17850.000	29.81	23.32	53.13	74.00	-20.87	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

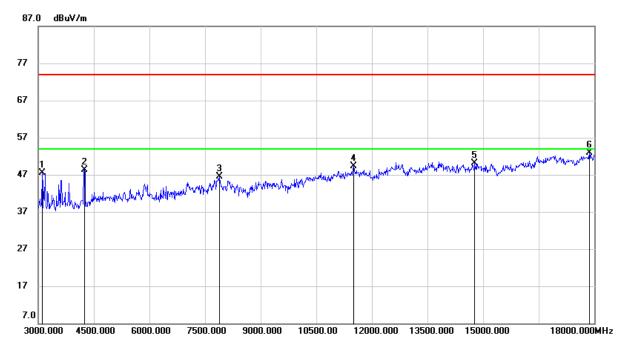
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3105.000	51.36	-3.85	47.51	74.00	-26.49	peak
2	4245.000	49.87	-1.59	48.28	74.00	-25.72	peak
3	7890.000	39.24	7.30	46.54	74.00	-27.46	peak
4	11505.000	35.80	13.42	49.22	74.00	-24.78	peak
5	14775.000	34.08	15.95	50.03	74.00	-23.97	peak
6	17865.000	29.48	23.33	52.81	74.00	-21.19	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

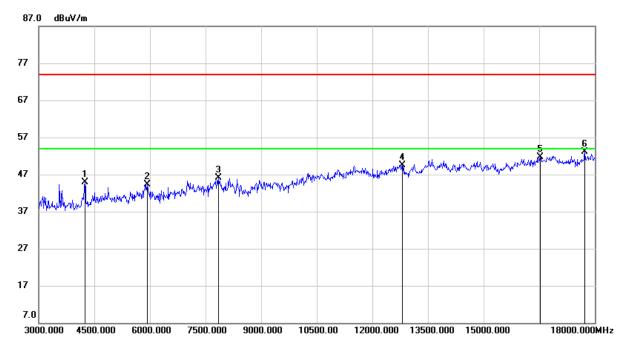
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4245.000	46.41	-1.59	44.82	74.00	-29.18	peak
2	5925.000	39.86	4.54	44.40	74.00	-29.60	peak
3	7845.000	38.41	7.62	46.03	74.00	-27.97	peak
4	12810.000	34.00	15.59	49.59	74.00	-24.41	peak
5	16530.000	32.54	19.26	51.80	74.00	-22.20	peak
6	17730.000	30.47	22.70	53.17	74.00	-20.83	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

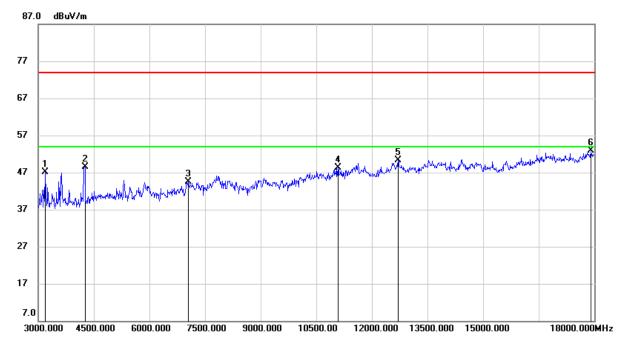
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3180.000	51.50	-4.33	47.17	74.00	-26.83	peak
2	4260.000	50.30	-1.71	48.59	74.00	-25.41	peak
3	7050.000	38.57	5.84	44.41	74.00	-29.59	peak
4	11085.000	35.71	12.57	48.28	74.00	-25.72	peak
5	12705.000	35.93	14.35	50.28	74.00	-23.72	peak
6	17910.000	29.52	23.35	52.87	74.00	-21.13	peak

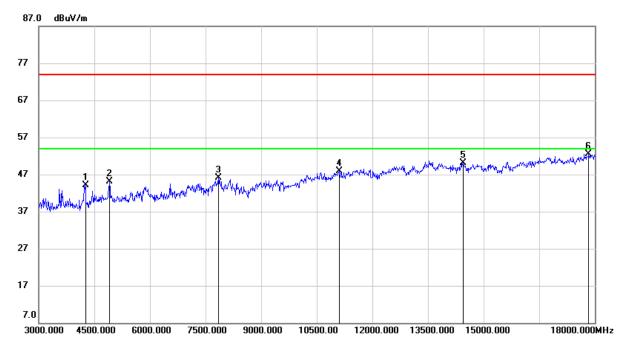
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	4260.000	45.79	-1.71	44.08	74.00	-29.92	peak
2	4905.000	44.21	0.88	45.09	74.00	-28.91	peak
3	7845.000	38.44	7.62	46.06	74.00	-27.94	peak
4	11115.000	35.43	12.55	47.98	74.00	-26.02	peak
5	14445.000	33.82	16.36	50.18	74.00	-23.82	peak
6	17835.000	29.23	23.31	52.54	74.00	-21.46	peak

Note: 1. Peak Result = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

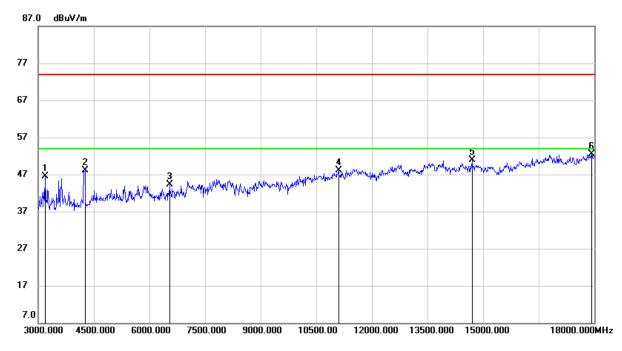
4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	3180.000	50.78	-4.33	46.45	74.00	-27.55	peak
2	4260.000	49.89	-1.71	48.18	74.00	-25.82	peak
3	6540.000	38.97	5.37	44.34	74.00	-29.66	peak
4	11100.000	35.61	12.56	48.17	74.00	-25.83	peak
5	14700.000	34.78	16.05	50.83	74.00	-23.17	peak
6	17925.000	29.12	23.37	52.49	74.00	-21.51	peak

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. AVG: VBW=1/Ton, where: Ton is the transmitting duration.

5. For the transmitting duration, please refer to clause 7.1.

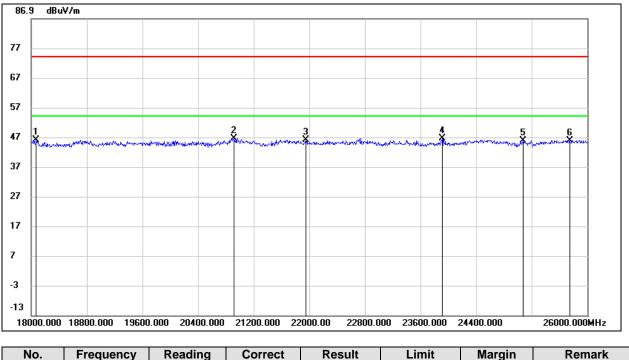
6. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.



8.5. SPURIOUS EMISSIONS (18GHz ~ 26GHz)

8.5.1. 802.11n HT20 MODE

SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	18072.000	50.05	-4.02	46.03	74.00	-27.97	peak
2	20920.000	51.82	-5.23	46.59	74.00	-27.41	peak
3	21952.000	52.20	-6.16	46.04	74.00	-27.96	peak
4	23912.000	50.82	-4.23	46.59	74.00	-27.41	peak
5	25072.000	46.98	-1.11	45.87	74.00	-28.13	peak
6	25744.000	47.18	-1.34	45.84	74.00	-28.16	peak

Note: 1. Measurement = Reading Level + Correct Factor.

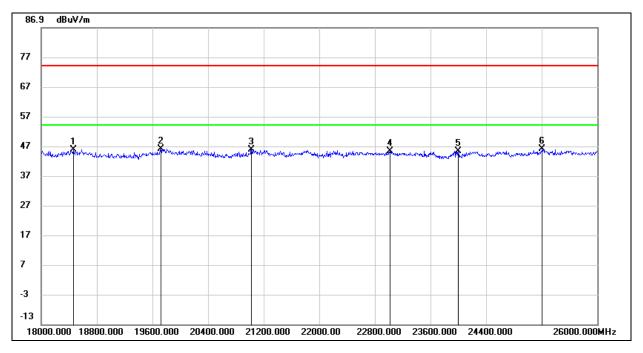
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. The preamplifier only effect to the above 18GHz signal and no filter added to the measurement chain.



SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	18464.000	50.20	-4.39	45.81	74.00	-28.19	peak
2	19720.000	50.50	-4.39	46.11	74.00	-27.89	peak
3	21024.000	51.14	-5.30	45.84	74.00	-28.16	peak
4	23016.000	50.87	-5.58	45.29	74.00	-28.71	peak
5	24000.000	49.41	-4.01	45.40	74.00	-28.60	peak
6	25208.000	47.13	-1.16	45.97	74.00	-28.03	peak

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

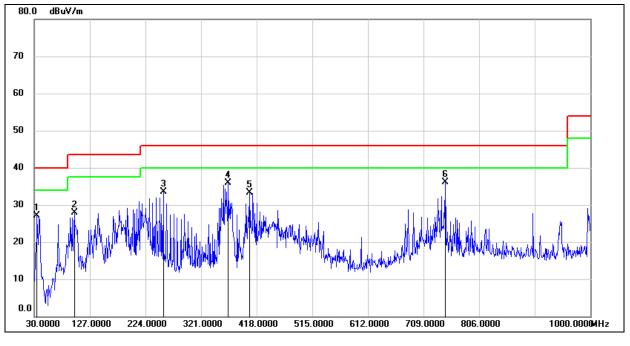
4. The preamplifier only effect to the above 18GHz signal and no filter added to the measurement chain.

Note: All the modes had been tested, but only the worst data was recorded in the report.

8.6. SPURIOUS EMISSIONS (30MHz ~ 1 GHz)

8.6.1. 802.11n HT20 MODE

SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	34.8500	46.60	-19.49	27.11	40.00	-12.89	QP
2	99.8399	49.22	-21.25	27.97	43.50	-15.53	QP
3	255.0400	52.48	-19.06	33.42	46.00	-12.58	QP
4	368.5300	50.06	-14.09	35.97	46.00	-10.03	QP
5	405.3900	46.67	-13.35	33.32	46.00	-12.68	QP
6	746.8300	44.55	-8.39	36.16	46.00	-9.84	QP

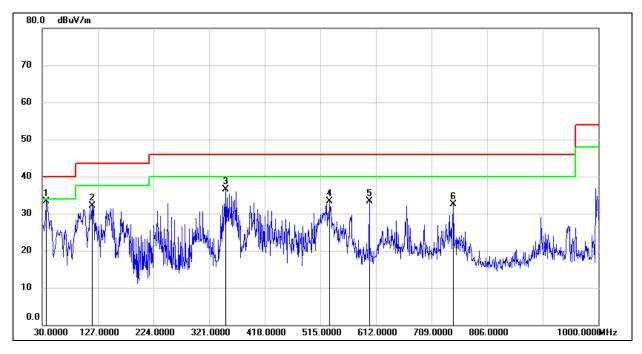
Note: 1. Result Level = Read Level + Correct Factor.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.



SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	36.7900	53.02	-19.72	33.30	40.00	-6.70	QP
2	117.3000	52.31	-20.18	32.13	43.50	-11.37	QP
3	350.1000	51.07	-14.57	36.50	46.00	-9.50	QP
4	531.4900	44.39	-11.08	33.31	46.00	-12.69	QP
5	600.3600	43.23	-9.91	33.32	46.00	-12.68	QP
6	746.8300	40.80	-8.39	32.41	46.00	-13.59	QP

Note: 1. Result Level = Read Level + Correct Factor.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

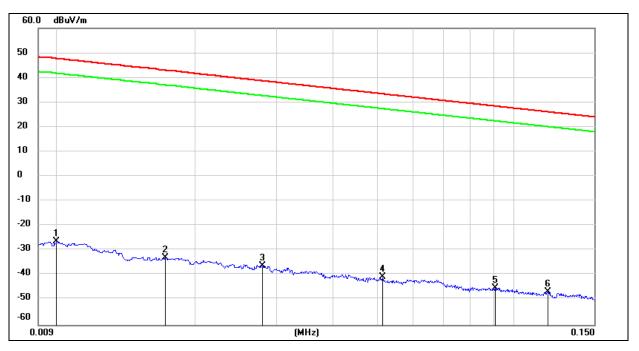
Note: All the modes had been tested, but only the worst data was recorded in the report.



8.7. SPURIOUS EMISSIONS BELOW 30MHz

8.7.1. 802.11n HT20 MODE





<u>9kHz~ 150kHz</u>

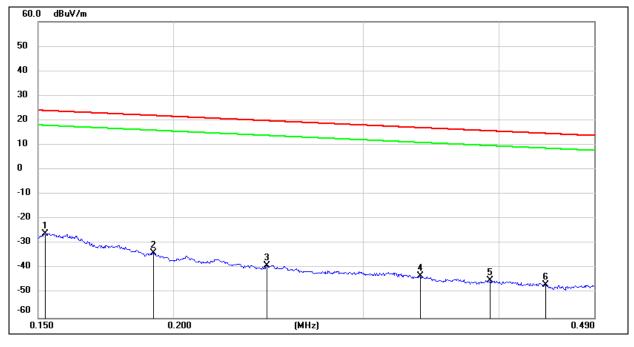
No.	Frequency	Reading	Correct	FCC Result	FCC Limit	ISED Result	ISED Limit	Margin	Remark
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuA/m)	(dBuA/m)	(dB)	
1	0.0100	75.22	-101.40	-26.18	47.60	-77.68	-3.90	-73.78	peak
2	0.0171	68.38	-101.36	-32.98	42.94	-84.48	-8.56	-75.92	peak
3	0.0280	65.29	-101.38	-36.09	38.66	-87.59	-12.84	-74.75	peak
4	0.0514	60.68	-101.48	-40.80	33.38	-92.30	-18.12	-74.18	peak
5	0.0911	56.61	-101.72	-45.11	28.41	-96.61	-23.09	-73.52	peak
6	0.1184	55.02	-101.74	-46.72	26.14	-98.22	-25.36	-72.86	peak

Note: 1. Measurement = Reading Level + Correct Factor ($dBuA/m = dBuV/m - 20Log10[120\pi] = dBuV/m - 51.5$).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

<u>150kHz ~ 490kHz</u>



No.	Frequency	Reading	Correct	FCC	FCC	ISED	ISED	Margin	Remark
				Result	Limit	Result	Limit		
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuA/m)	(dBuA/m)	(dB)	
1	0.1524	75.80	-101.63	-25.83	23.94	-77.33	-27.56	-49.77	peak
2	0.1917	68.04	-101.70	-33.66	21.95	-85.16	-29.55	-55.61	peak
3	0.2442	63.03	-101.79	-38.76	19.85	-90.26	-31.65	-58.61	peak
4	0.3382	58.73	-101.90	-43.17	17.02	-94.67	-34.48	-60.19	peak
5	0.3930	57.05	-101.96	-44.91	15.71	-96.41	-35.79	-60.62	peak
6	0.4415	55.35	-102.01	-46.66	14.70	-98.16	-36.80	-61.36	peak

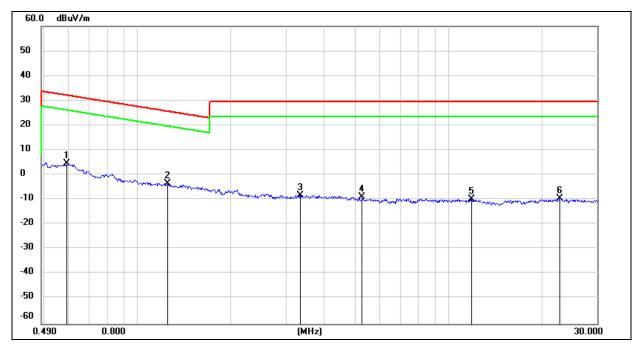
Note: 1. Measurement = Reading Level + Correct Factor ($dBuA/m = dBuV/m - 20Log10[120\pi] = dBuV/m - 51.5$).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.



<u>490kHz ~ 30MHz</u>



No.	Frequency	Reading	Correct	FCC	FCC	ISED	ISED	Margin	Remark
				Result	Limit	Result	Limit		
	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuA/m)	(dBuA/m)	(dB)	
1	0.5917	66.74	-62.08	4.66	32.16	-46.84	-19.34	-27.50	peak
2	1.2460	58.75	-62.16	-3.41	25.70	-54.91	-25.80	-29.11	peak
3	3.3334	53.27	-61.50	-8.23	29.54	-59.73	-21.96	-37.77	peak
4	5.2705	52.54	-61.45	-8.91	29.54	-60.41	-21.96	-38.45	peak
5	11.8513	51.06	-60.88	-9.82	29.54	-61.32	-21.96	-39.36	peak
6	22.7700	51.17	-60.62	-9.45	29.54	-60.95	-21.96	-38.99	peak

Note: 1. Measurement = Reading Level + Correct Factor ($dBuA/m = dBuV/m - 20Log10[120\pi] = dBuV/m - 51.5$).

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

3. All 3 polarizations (Horizontal, Face-on and Face-off) of the loop antenna had been tested, but only the worst data recorded in the report.

Note: All the modes had been tested, but only the worst data was recorded in the report.



9. AC POWER LINE CONDUCTED EMISSIONS

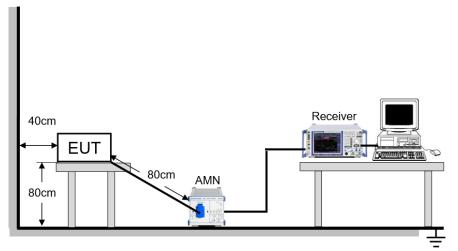
LIMITS

Please refer to CFR 47 FCC §15.207 (a) and ISED RSS-Gen Clause 8.8

FREQUENCY (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

TEST SETUP AND PROCEDURE

Refer to ANSI C63.10-2013 clause 6.2.



The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9kHz.

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

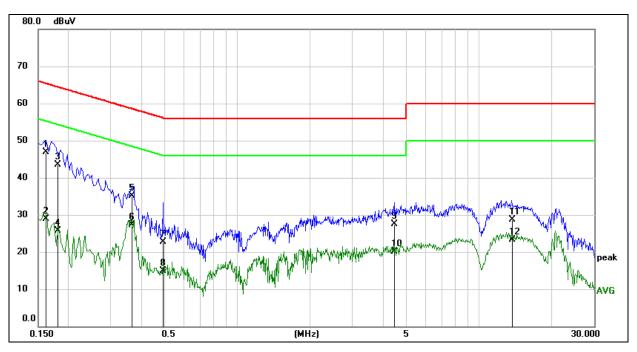
TEST ENVIRONMENT

Temperature	22°C	Relative Humidity	68.9%
Atmosphere Pressure	101kPa	Test Voltage	AC120V,60Hz

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9.1. 802.11n HT20 MODE



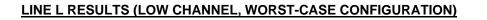
LINE N RESULTS (LOW CHANNEL, WORST-CASE CONFIGURATION)

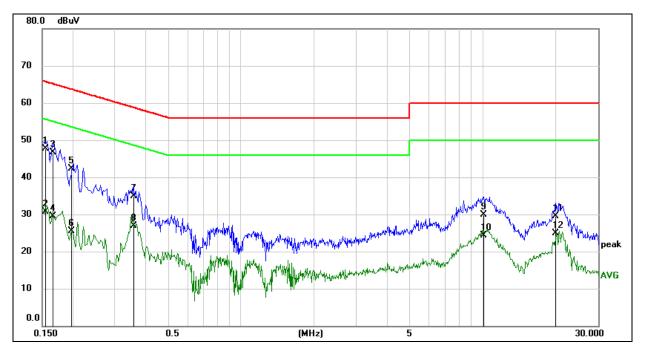
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	
1	0.1615	37.33	9.60	46.93	65.39	-18.46	QP
2	0.1615	19.37	9.60	28.97	55.39	-26.42	AVG
3	0.1812	33.89	9.60	43.49	64.43	-20.94	QP
4	0.1812	16.08	9.60	25.68	54.43	-28.75	AVG
5	0.3673	25.54	9.60	35.14	58.56	-23.42	QP
6	0.3673	17.62	9.60	27.22	48.56	-21.34	AVG
7	0.4920	13.03	9.60	22.63	56.13	-33.50	QP
8	0.4920	5.24	9.60	14.84	46.13	-31.29	AVG
9	4.4901	17.83	9.66	27.49	56.00	-28.51	QP
10	4.4901	10.43	9.66	20.09	46.00	-25.91	AVG
11	13.7192	18.87	9.86	28.73	60.00	-31.27	QP
12	13.7192	13.36	9.86	23.22	50.00	-26.78	AVG

Note: 1. Result = Reading +Correct Factor.

- 2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
- 4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.







No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	
1	0.1543	38.02	9.61	47.63	65.77	-18.14	QP
2	0.1543	21.03	9.61	30.64	55.77	-25.13	AVG
3	0.1654	37.03	9.61	46.64	65.19	-18.55	QP
4	0.1654	19.93	9.61	29.54	55.19	-25.65	AVG
5	0.1977	32.70	9.60	42.30	63.71	-21.41	QP
6	0.1977	15.81	9.60	25.41	53.71	-28.30	AVG
7	0.3571	25.30	9.60	34.90	58.80	-23.90	QP
8	0.3571	17.29	9.60	26.89	48.80	-21.91	AVG
9	10.0811	20.12	9.74	29.86	60.00	-30.14	QP
10	10.0811	14.48	9.74	24.22	50.00	-25.78	AVG
11	20.1199	19.46	10.12	29.58	60.00	-30.42	QP
12	20.1199	14.85	10.12	24.97	50.00	-25.03	AVG

Note: 1. Result = Reading +Correct Factor.

- 2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
- 4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

Note: All the modes had been tested, but only the worst data was recorded in the report.



10. ANTENNA REQUIREMENTS

APPLICABLE REQUIREMENTS

Please refer to FCC §15.203

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 a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Please refer to FCC §15.247(b)(4)

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

RESULTS

Complies



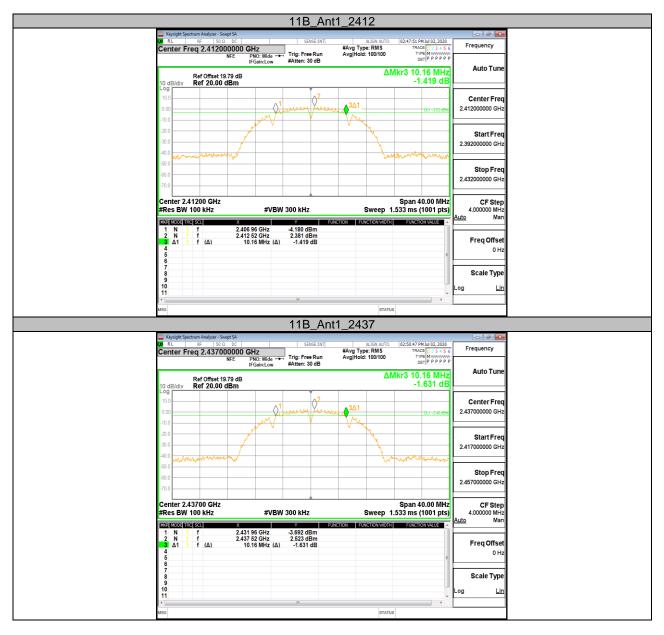
11. Appendix A: DTS Bandwidth

11.1.1. Test Result

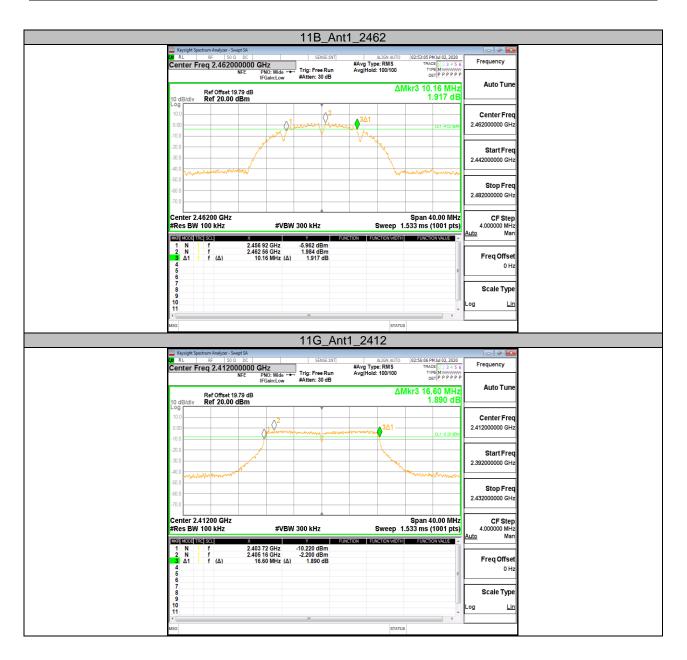
Test Mode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
		2412	10.160	2406.960	2417.120	0.5	PASS
11B	Ant1	2437	10.160	2431.960	2442.120	0.5	PASS
		2462	10.160	2456.920	2467.080	0.5	PASS
		2412	16.600	2403.720	2420.320	0.5	PASS
11G	Ant1	2437	16.600	2428.720	2445.320	0.5	PASS
		2462	16.600	2453.720	2470.320	0.5	PASS
		2412	17.760	2403.120	2420.880	0.5	PASS
11N20SISO	Ant1	2437	17.760	2428.120	2445.880	0.5	PASS
		2462	17.760	2453.120	2470.880	0.5	PASS
		2422	36.560	2403.760	2440.320	0.5	PASS
11N40SISO	Ant1	2437	36.560	2418.760	2455.320	0.5	PASS
		2452	36.560	2433.760	2470.320	0.5	PASS



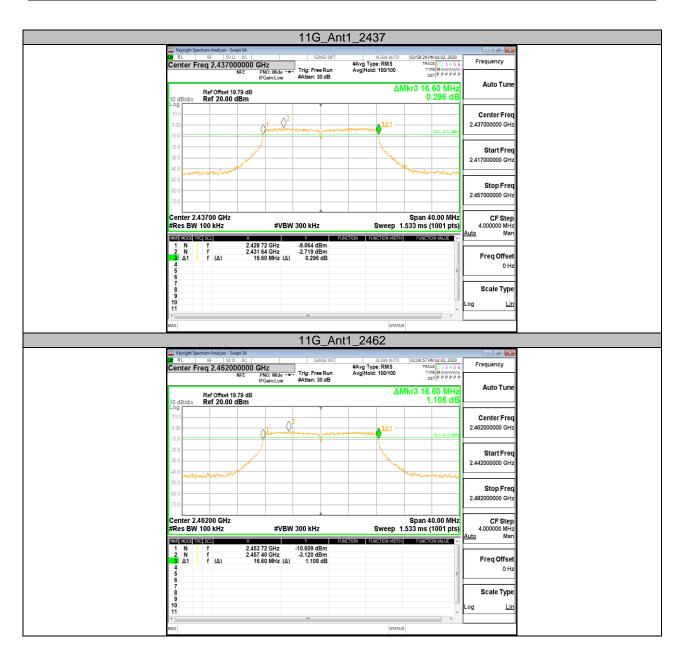
11.1.2. Test Graphs



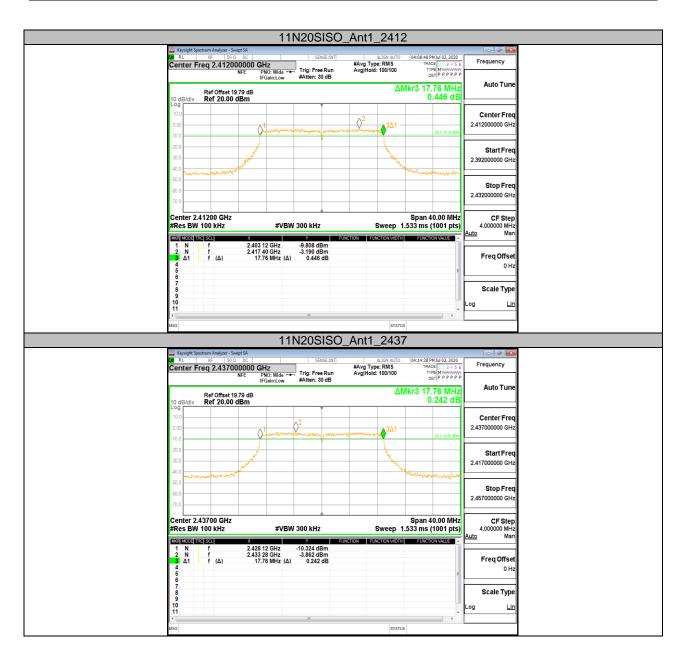




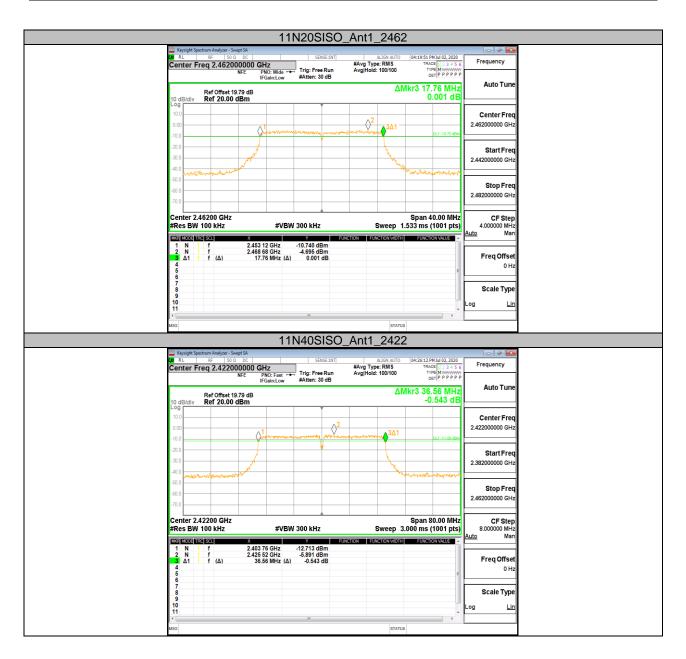




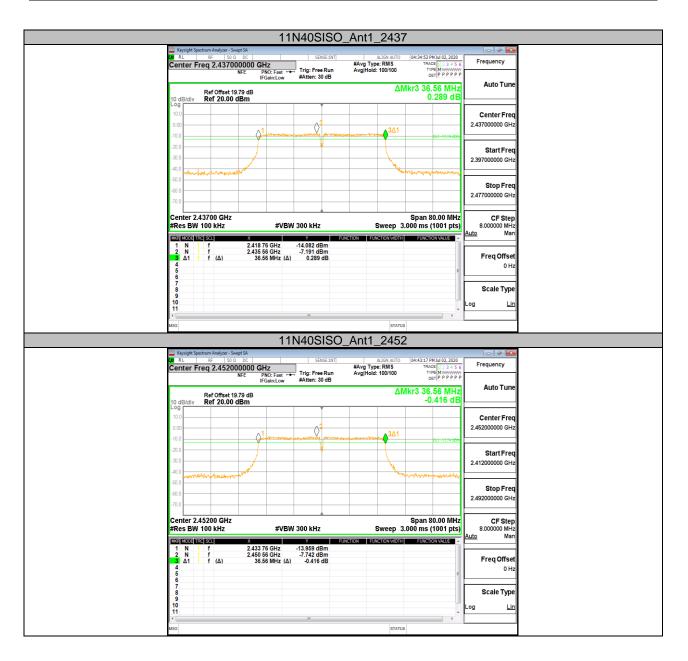














Test Mode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
		2412	15.034	2404.514	2419.548		PASS
11B	Ant1	2437	15.041	2429.520	2444.561		PASS
		2462	15.066	2454.486	2469.552		PASS
		2412	17.006	2403.461	2420.467		PASS
11G	Ant1	2437	16.993	2428.463	2445.456		PASS
		2462	16.921	2453.518	2470.439		PASS
		2412	17.946	2403.085	2421.031		PASS
11N20SISO	Ant1	2437	17.955	2428.077	2446.032		PASS
		2462	17.983	2453.020	2471.003		PASS
		2422	36.541	2403.849	2440.390		PASS
11N40SISO	Ant1	2437	36.521	2418.851	2455.372		PASS
		2452	36.520	2433.846	2470.366		PASS

11.2. Appendix B: Occupied Channel Bandwidth 11.2.1. Test Result



11.2.2. Test Graphs

