



CFR 47 FCC PART 15 SUBPART C

TEST REPORT

For

Children watch

MODEL NUMBER: CP303C

FCC ID: R38YL303C

REPORT NUMBER: 4789488320-3

ISSUE DATE: August 14, 2020

Prepared for

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	05/28/2020	Initial Issue	
V1	08/14/2020	Report revised based in reviewer's comments	Jacky Jiang



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)	Pass
2	Conducted Output Power	FCC Part 15.247 (b) (3)	Pass
3	Power Spectral Density	FCC Part 15.247 (e)	Pass
4	Conducted Bandedge and Spurious Emission	FCC Part 15.247 (d)	Pass
5	Radiated Bandedge and Spurious Emission	FCC Part 15.247 (d) FCC Part 15.209 FCC Part 15.205	Pass
6	Conducted Emission Test For AC Power Port	FCC Part 15.207	Pass
7	Antenna Requirement	FCC Part 15.203	Pass
<p>Note:</p> <p>1. This test report is only published to and used by the applicant, and it is not for evidence purpose in China.</p> <p>2. The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 15 SUBPART C >when <Accuracy Method> decision rule is applied.</p>			



TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	6
2. TEST METHODOLOGY	7
3. FACILITIES AND ACCREDITATION	7
4. CALIBRATION AND UNCERTAINTY	8
4.1. MEASURING INSTRUMENT CALIBRATION	8
4.2. MEASUREMENT UNCERTAINTY	8
5. EQUIPMENT UNDER TEST	9
5.1. DESCRIPTION OF EUT	9
5.2. MAXIMUM OUTPUT POWER	9
5.3. CHANNEL LIST	9
5.4. TEST CHANNEL CONFIGURATION	9
5.5. THE WORSE CASE POWER SETTING PARAMETER	10
5.6. THE WORSE CASE CONFIGURATIONS	10
DESCRIPTION OF AVAILABLE ANTENNAS	11
5.7. TEST ENVIRONMENT	11
5.8. DESCRIPTION OF TEST SETUP	12
6. MEASURING INSTRUMENT AND SOFTWARE USED	13
7. ANTENNA PORT TEST RESULTS	15
7.1. ON TIME AND DUTY CYCLE	15
7.2. 6 dB DTS BANDWIDTH AND 99% OCCUPIED BANDWIDTH	16
7.3. CONDUCTED OUTPUT POWER	18
7.4. POWER SPECTRAL DENSITY	19
7.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS	20
7.6. RADIATED TEST RESULTS	22
7.7. RESTRICTED BANDEDGE	28
7.7.1. 802.11b SISO MODE	28
7.7.2. 802.11g SISO MODE	32
7.7.3. 802.11n HT20 MIMO MODE	40
7.8. SPURIOUS EMISSIONS (1~3GHz)	48
7.8.1. 802.11b SISO MODE	48
7.8.2. 802.11g SISO MODE	54
7.8.3. 802.11n HT20 MIMO MODE	60
7.9. SPURIOUS EMISSIONS (3~18GHz)	66
7.9.1. 802.11b SISO MODE	66
7.9.2. 802.11g SISO MODE	72



7.9.3.	802.11n HT20 MIMO MODE	78
7.10.	SPURIOUS EMISSIONS (18~26GHz).....	84
7.10.1.	802.11n HT20 MIMO MODE	84
7.11.	SPURIOUS EMISSIONS (0.03 ~ 1 GHz).....	86
7.11.1.	802.11n HT20 MIMO MODE	86
7.12.	SPURIOUS EMISSIONS BELOW 30M	88
7.12.1.	802.11n HT20 MIMO MODE	88
8.	AC POWER LINE CONDUCTED EMISSIONS	91
8.1.	802.11n HT20 MIMO MODE.....	92
9.	ANTENNA REQUIREMENTS	94
Appendix A: DTS Bandwidth		95
Test Result.....		95
Test Graphs		96
Appendix B: Occupied Channel Bandwidth		101
Test Result.....		101
Test Graphs		102
Appendix C: Maximum conducted output power.....		107
Test Result.....		107
Appendix D: Maximum power spectral density		108
Test Result.....		108
Test Graphs		109
Appendix E: Band edge measurements.....		114
Test Result.....		114
Test Graphs		115
Appendix F: Conducted Spurious Emission.....		118
Test Result.....		118
Test Graphs		119
Appendix G: Duty Cycle		133
Test Result.....		133
Test Graphs		134



1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd
Address: Building B, Boton Science Park, Chaguang Road, Xili Town, Nanshan District, Shenzhen

Manufacturer Information

Company Name: Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd
Address: Building B, Boton Science Park, Chaguang Road, Xili Town, Nanshan District, Shenzhen

EUT Description

Product Name: Children watch
Model Name: CP303C
Brand: Coolpad
Sample Status: Normal
Sample ID: /
Sample Received date: April 28, 2020
Date Tested: April 30, 2020 ~ May 25, 2020

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 15 SUBPART C	PASS

Prepared By:

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Checked By:

Shawn Wen
Laboratory Leader

Approved By:

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Laboratory Manager



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.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p>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.</p> <p>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 to the Commission's Declaration of Conformity (DoC) and Certification rules</p> <p>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.</p> <p>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</p>
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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
Radiation Emission test(include Fundamental emission) (9kHz-30MHz)	2.2dB
Radiation Emission test(include Fundamental emission) (30MHz-1GHz)	4.00dB
Radiation Emission test (1GHz to 26GHz)(include Fundamental emission)	5.78dB (1GHz-18GHz)
	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	Children watch
Model	CP303C
Radio Technology	IEEE802.11b/g/n HT20
Operation frequency	IEEE 802.11b: 2412MHz—2462MHz IEEE 802.11g: 2412MHz—2462MHz IEEE 802.11n HT20: 2412MHz—2462MHz
Modulation	IEEE 802.11b: DSSS(CCK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM (64QAM, 16QAM, QPSK,BPSK)
Battery:	DC 3.85V, 890mAh

5.2. MAXIMUM OUTPUT POWER

Number of Transmit Chains (NTX)	IEE Std. 802.11	Frequency (MHz)	Channel Number	Max AV Conducted Power (dBm)
2	IEEE 802.11b	2412-2462	1-11[11]	14.77
2	IEEE 802.11g	2412-2462	1-11[11]	12.53
2	IEEE 802.11nHT20	2412-2462	1-11[11]	11.88

5.3. CHANNEL LIST

Channel List for 802.11b/g/n							
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	/	/

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
WiFi TX(802.11b)	CH1,CH6,CH11/ Low, Middle, High	2412MHz, 2437MHz, 2462MHz
WiFi TX(802.11g)	CH1,CH6,CH11/ Low, Middle, High	2412MHz, 2437MHz, 2462MHz
WiFi TX(802.11n HT20)	CH1,CH6,CH11/ Low, Middle, High	2412MHz, 2437MHz, 2462MHz



5.5. THE WORST CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band							
Test Software		QRCT					
Modulation Mode	Transmit Antenna Number	Test Software setting value					
		NCB: 20MHz			NCB: 40MHz		
		CH 1	CH 6	CH 11	CH 3	CH 6	CH 9
802.11b	1	15	15	15	/		
802.11g	1	13	13	13			
802.11n HT20	1	12	12	12			

5.6. THE WORSE CASE CONFIGURATIONS

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



5.7. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna model	Frequency (MHz)	Antenna Type	Max Antenna Gain (dBi)
1	2412-2462	PIFA Antenna	0.23

Test Mode	Transmit and Receive Mode	Description
IEEE 802.11b	<input checked="" type="checkbox"/> 1TX, 1RX	ANT 1 can be used as transmitting/receiving antenna.
IEEE 802.11g	<input checked="" type="checkbox"/> 1TX, 1RX	ANT 1 can be used as transmitting/receiving antenna.
IEEE 802.11n HT20	<input checked="" type="checkbox"/> 1TX, 1RX	ANT 1 can be used as transmitting/receiving antenna.
Note: 2. BT&WLAN 2.4G can't transmit simultaneously. (declared by client)		

5.8. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	45 ~ 70%	
Atmospheric Pressure:	101kPa	
Temperature	TN	22 ~ 28 °C
Voltage:	VL	N/A
	VN	3.85V
	VH	N/A

Note: VL= Lower Extreme Test Voltage
VN= Nominal Voltage.
VH= Upper Extreme Test Voltage
TN= Normal Temperature



5.9. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	PC	Lenovo	E42-80	80T9A02QCD

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	/	/	/	/	/

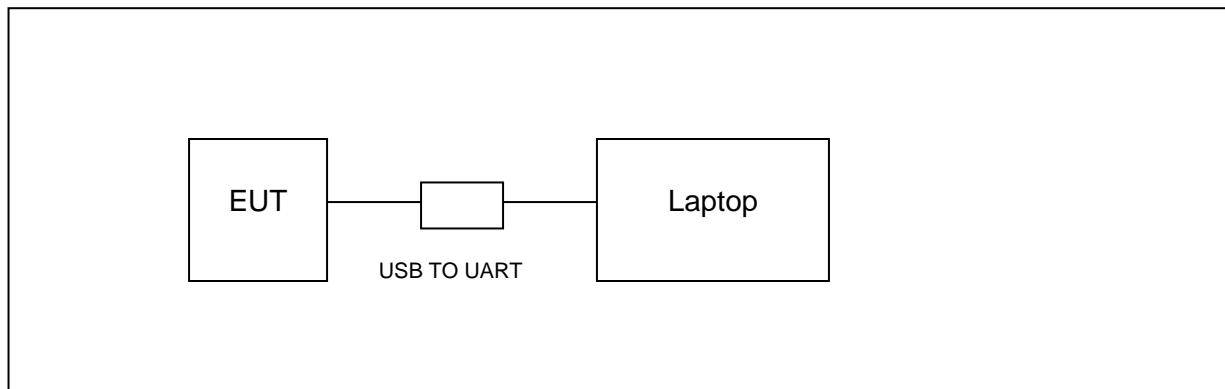
ACCESSORIES

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

TEST SETUP

The EUT can work in engineering mode with a software.

SETUP DIAGRAM FOR TESTS



**6. MEASURING INSTRUMENT AND SOFTWARE USED**

Conducted Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	EMI Test Receiver	R&S	ESR3	101961	Dec.05,2019	Dec.05,2020
<input checked="" type="checkbox"/>	Two-Line V-Network	R&S	ENV216	101983	Dec.05,2019	Dec.05,2020
<input checked="" type="checkbox"/>	Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Dec.05,2019	Dec.05,2020
Software						
Used	Description			Manufacturer	Name	Version
<input checked="" type="checkbox"/>	Test Software for Conducted disturbance			Farad	EZ-EMC	Ver. UL-3A1
Radiated Emissions						
Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Dec.06,2019	Dec.05,2020
<input checked="" type="checkbox"/>	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Sep.17,2018	Sep.17,2021
<input checked="" type="checkbox"/>	Preamplifier	HP	8447D	2944A09099	Dec.05,2019	Dec.05,2020
<input checked="" type="checkbox"/>	EMI Measurement Receiver	R&S	ESR26	101377	Dec.05,2019	Dec.05,2020
<input checked="" type="checkbox"/>	Horn Antenna	TDK	HRN-0118	130939	Sep.17,2018	Sep.17,2021
<input checked="" type="checkbox"/>	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	Aug.11,2018	Aug.11,2021
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-0118	TRS-305-00067	Dec.05,2019	Dec.05,2020
<input checked="" type="checkbox"/>	Preamplifier	TDK	PA-02-2	TRS-307-00003	Dec.05,2019	Dec.05,2020
<input checked="" type="checkbox"/>	Loop antenna	Schwarzbeck	1519B	00008	Jan.07,2019	Jan.07,2022
<input checked="" type="checkbox"/>	Band Reject Filter	Wainwright	WRCJV8-2350-2400-2483.5-2533.5-40SS	4	Dec.05,2019	Dec.05,2020
<input checked="" type="checkbox"/>	High Pass Filter	Wi	WHKX10-2700-3000-18000-40SS	23	Dec.05,2019	Dec.05,2020
Software						
Used	Description		Manufacturer	Name		Version
<input checked="" type="checkbox"/>	Test Software for Radiated disturbance		Farad	EZ-EMC		Ver. UL-3A1



Other instruments						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
<input checked="" type="checkbox"/>	Spectrum Analyzer	Keysight	N9030A	MY55410512	Dec.06,2019	Dec.05,2020
<input checked="" type="checkbox"/>	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

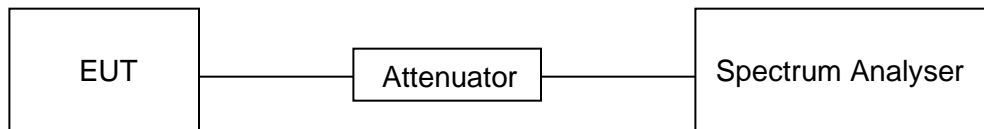
LIMITS

None; for reporting purposes only

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



TEST ENVIRONMENT

Temperature	24.7°C	Relative Humidity	64.8%
Atmosphere Pressure	101kPa	Test Voltage	3.85V

RESULTS

Please refer to Appendix G.



7.2. 6 dB DTS BANDWIDTH AND 99% OCCUPIED BANDWIDTH

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(a)(2)	6 dB Bandwidth	$\geq 500\text{KHz}$	2400-2483.5

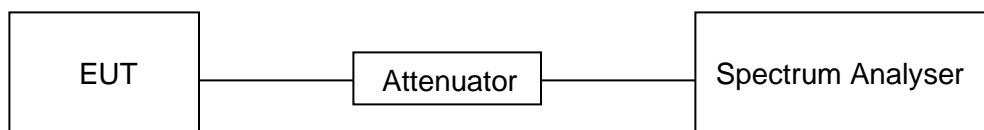
TEST PROCEDURE

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

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	For 6dB Bandwidth :100kHz For 99% Occupied Bandwidth :1% to 5% of the occupied bandwidth
VBW	For 6dB Bandwidth : $\geq 3 \times \text{RBW}$ For 99% Occupied Bandwidth : $\geq 3 \times \text{RBW}$
Trace	Max hold
Sweep	Auto couple

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 and 99% relative to the maximum level measured in the fundamental emission.

TEST SETUP





TEST ENVIRONMENT

Temperature	24.7°C	Relative Humidity	64.8%
Atmosphere Pressure	101kPa	Test Voltage	3.85V

RESULTS

Please refer to Appendix A & B.



7.3. CONDUCTED OUTPUT POWER

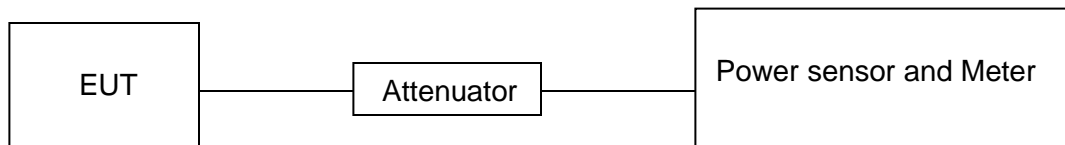
LIMITS

CFR 47 FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(b)(3)	Peak 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.
Measure the power of each channel.
AVG Detector use for AVG result.

TEST SETUP



TEST ENVIRONMENT

Temperature	24.7°C	Relative Humidity	64.8%
Atmosphere Pressure	101kPa	Test Voltage	3.85V

RESULTS

Please refer to Appendix C.



7.4. POWER SPECTRAL DENSITY

LIMITS

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

TEST PROCEDURE

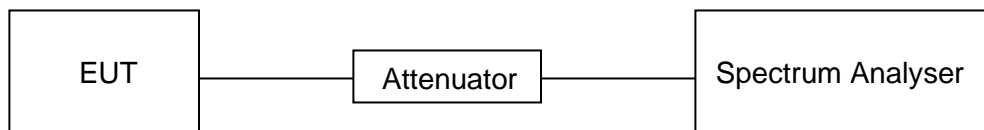
Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	$3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
VBW	$\geq 3 \times \text{RBW}$
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	24.7°C	Relative Humidity	64.8%
Atmosphere Pressure	101kPa	Test Voltage	3.85V

RESULTS

Please refer to Appendix D.



7.5. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

CFR 47 FCC Part15 (15.247) Subpart C		
Section	Test Item	Limit
CFR 47 FCC §15.247 (d)	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

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

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	100kHz
VBW	$\geq 3 \times \text{RBW}$
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

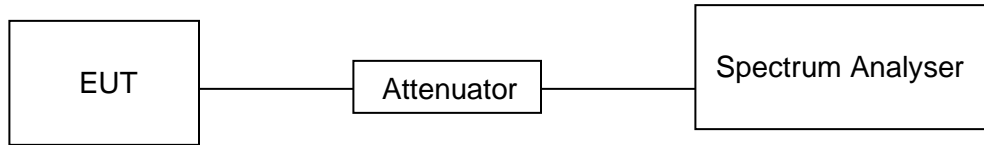
Use the peak marker function to determine the maximum PSD level.

Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100kHz
VBW	$\geq 3 \times \text{RBW}$
measurement points	$\geq \text{span}/\text{RBW}$
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum amplitude level.



TEST SETUP



TEST ENVIRONMENT

Temperature	24.7°C	Relative Humidity	64.8%
Atmosphere Pressure	101kPa	Test Voltage	3.85V

RESULTS

Please refer to Appendix E & F.



7.6. RADIATED TEST RESULTS

LIMITS

Please refer to CFR 47 FCC §15.205 and §15.209

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

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
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.

Radiation Disturbance Test Limit for FCC (Above 1G)



Frequency (MHz)	dB(uV/m) (at 3 meters)	
	Peak	Average
Above 1000	74	54

FCC Restricted bands of operation:

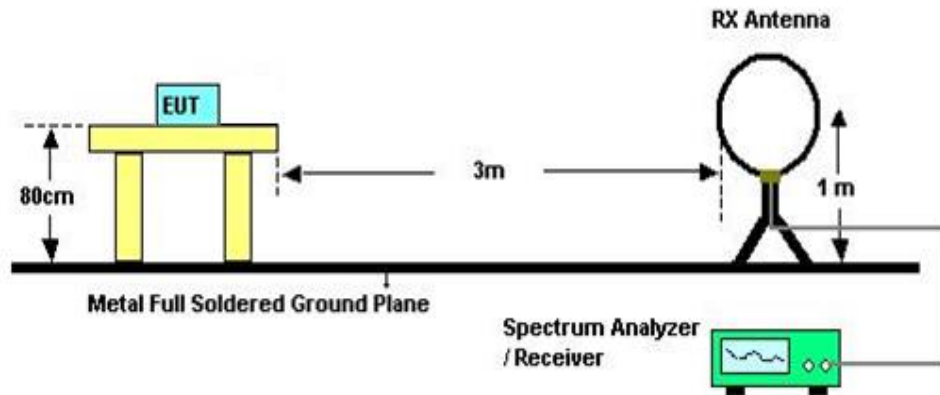
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	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

TEST SETUP AND PROCEDURE

Below 30MHz

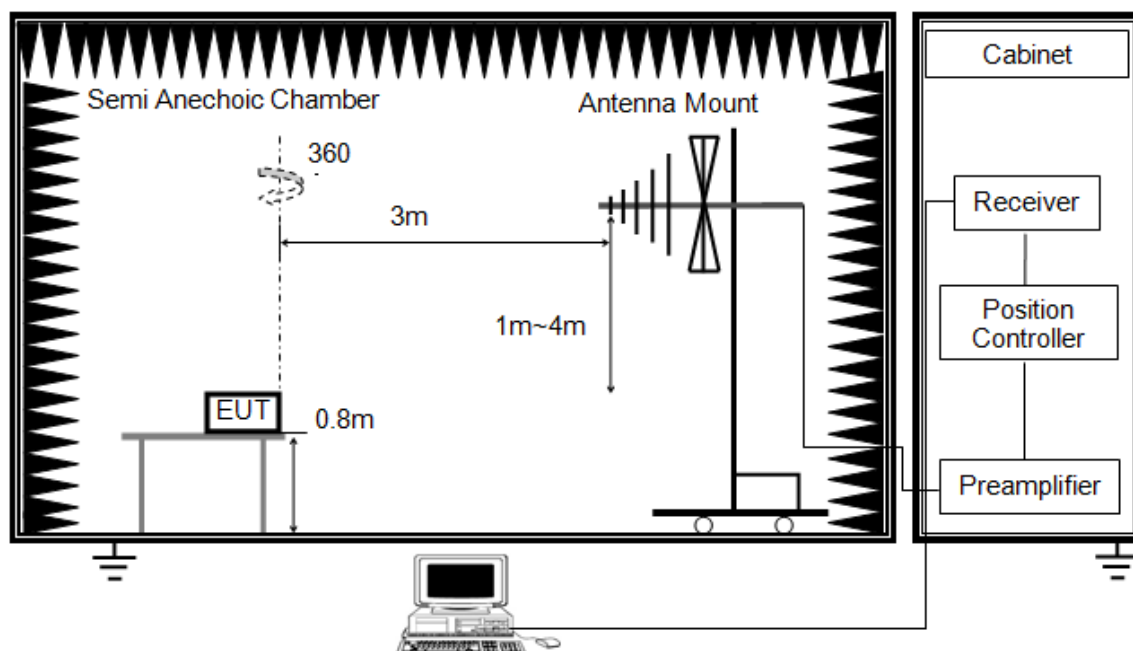


The setting of the spectrum analyzer

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
Detector	Peak/QP/ Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013
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. 3 polarizations(Horizontal, Face-on and Face-off) of the loop antenna are set to make the measurement.
3. The EUT was placed on a turntable with 0.8 meter 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.
6. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)
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 1G

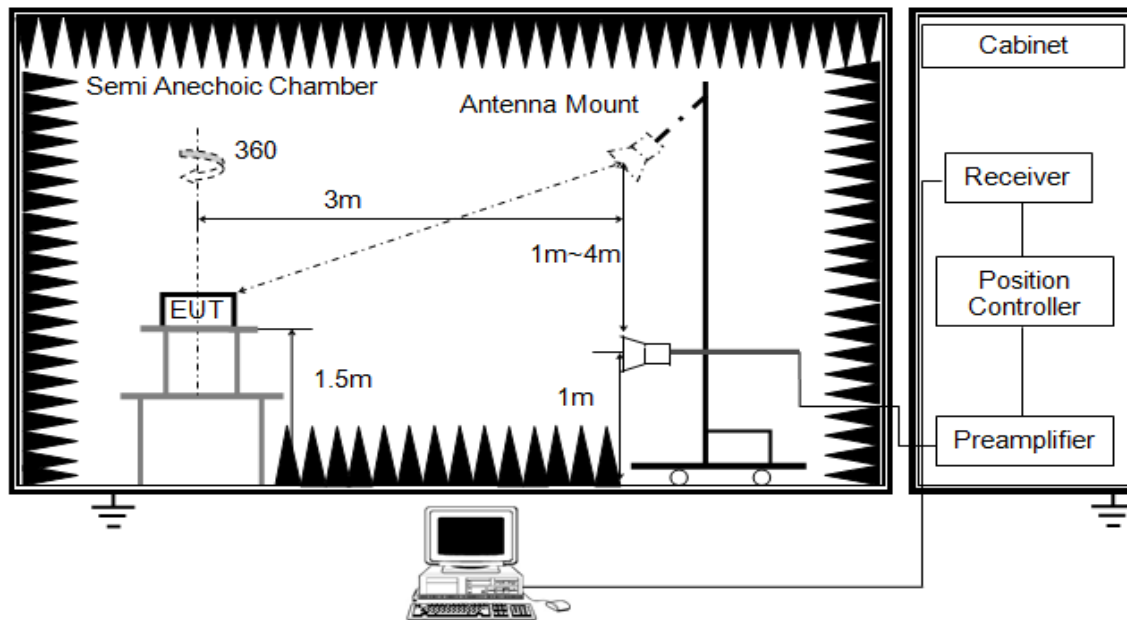


The setting of the spectrum analyser

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

1. The testing follows the guidelines in ANSI C63.10-2013.
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 0.8 meter 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 1G



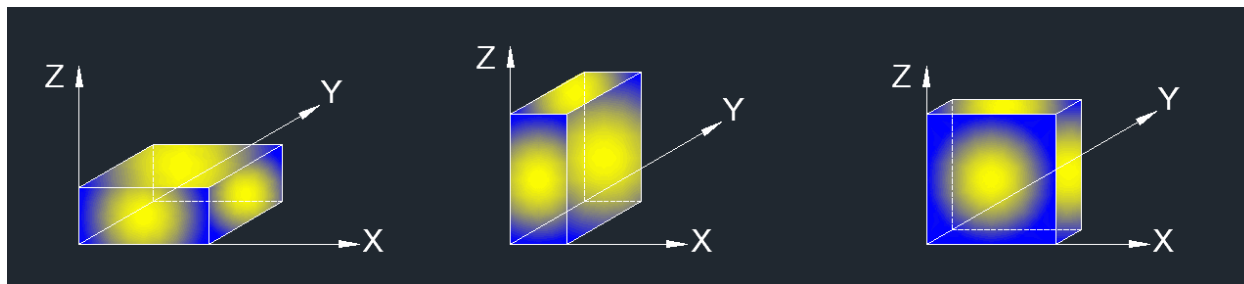
The setting of the spectrum analyser

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

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

TEST ENVIRONMENT

Temperature	23.5°C	Relative Humidity	56%
Atmosphere Pressure	101kPa	Test Voltage	3.85V



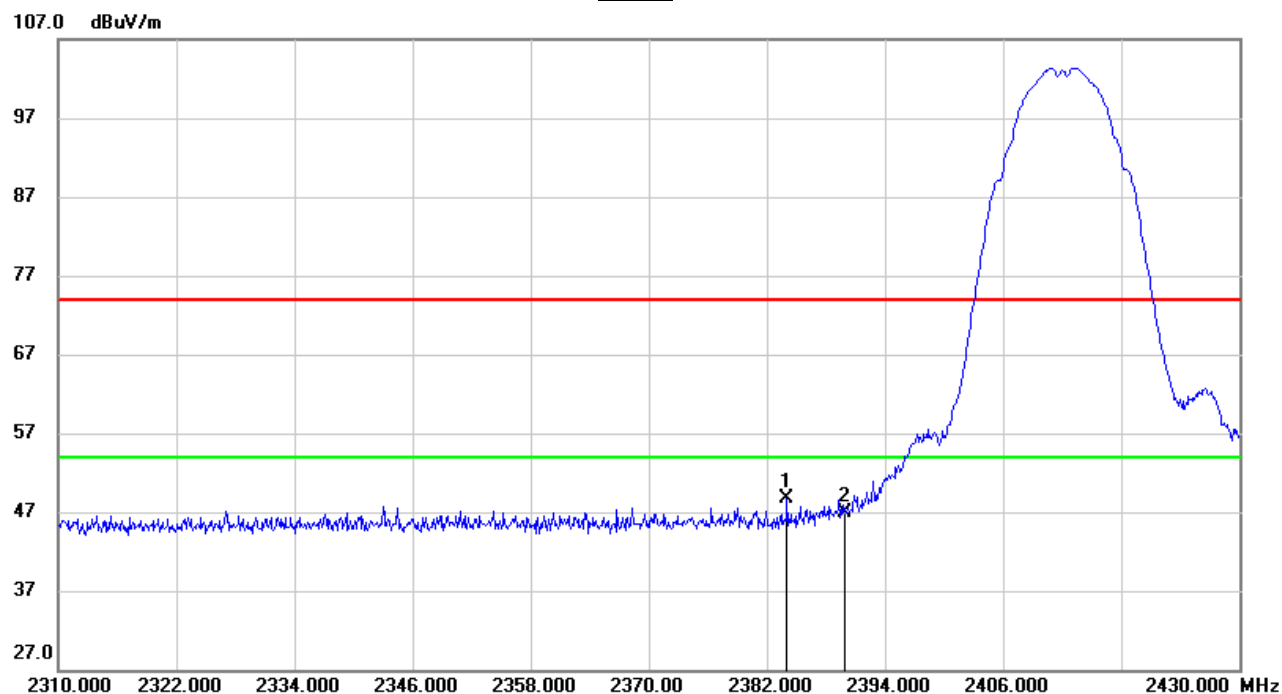
7.7. RESTRICTED BANDEDGE

7.7.1. 802.11b SISO MODE

ANTENNA1

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

PEAK



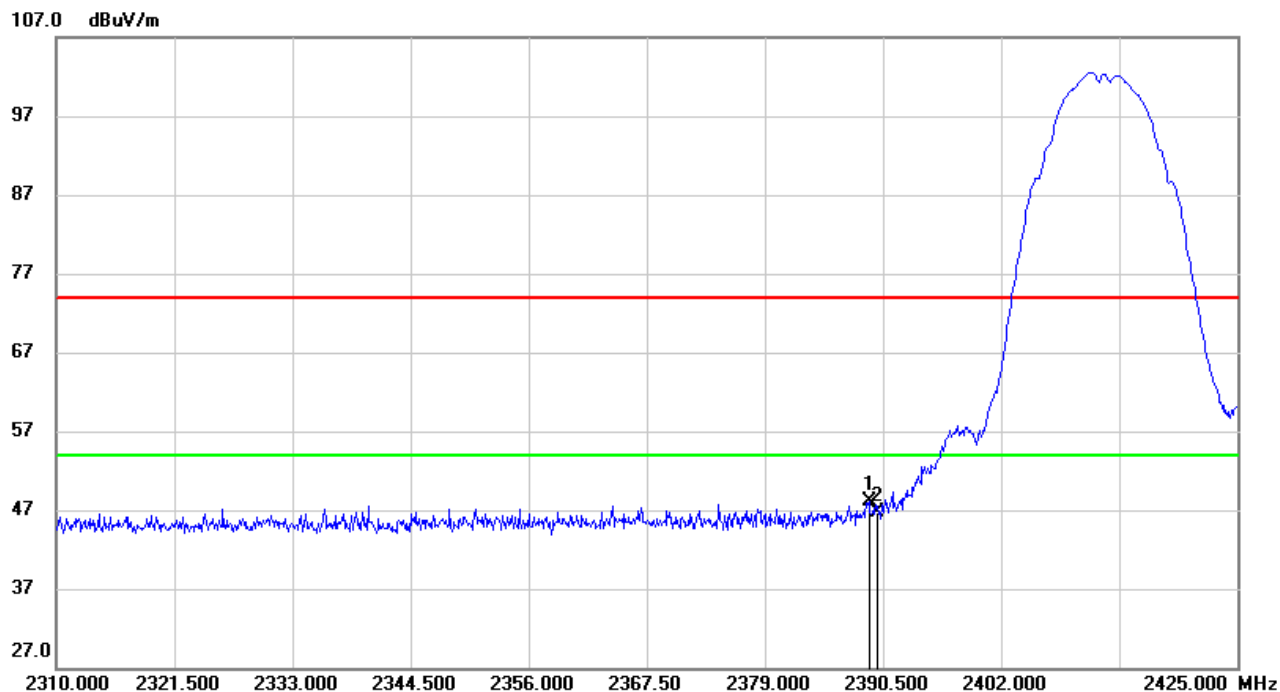
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2384.040	15.86	32.92	48.78	74.00	-25.22	peak
2	2390.000	13.96	32.94	46.90	74.00	-27.10	peak

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 case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

PEAK



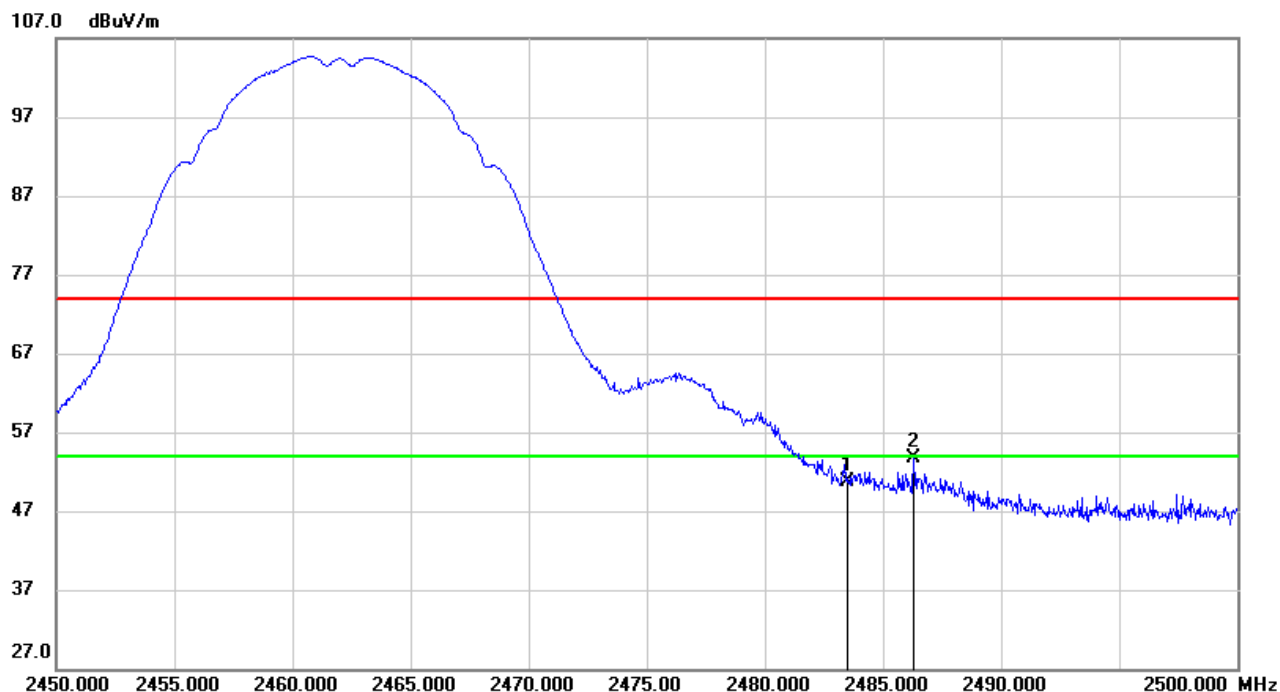
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.120	15.23	32.94	48.17	74.00	-25.83	peak
2	2390.000	13.76	32.94	46.70	74.00	-27.30	peak

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 case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

PEAK



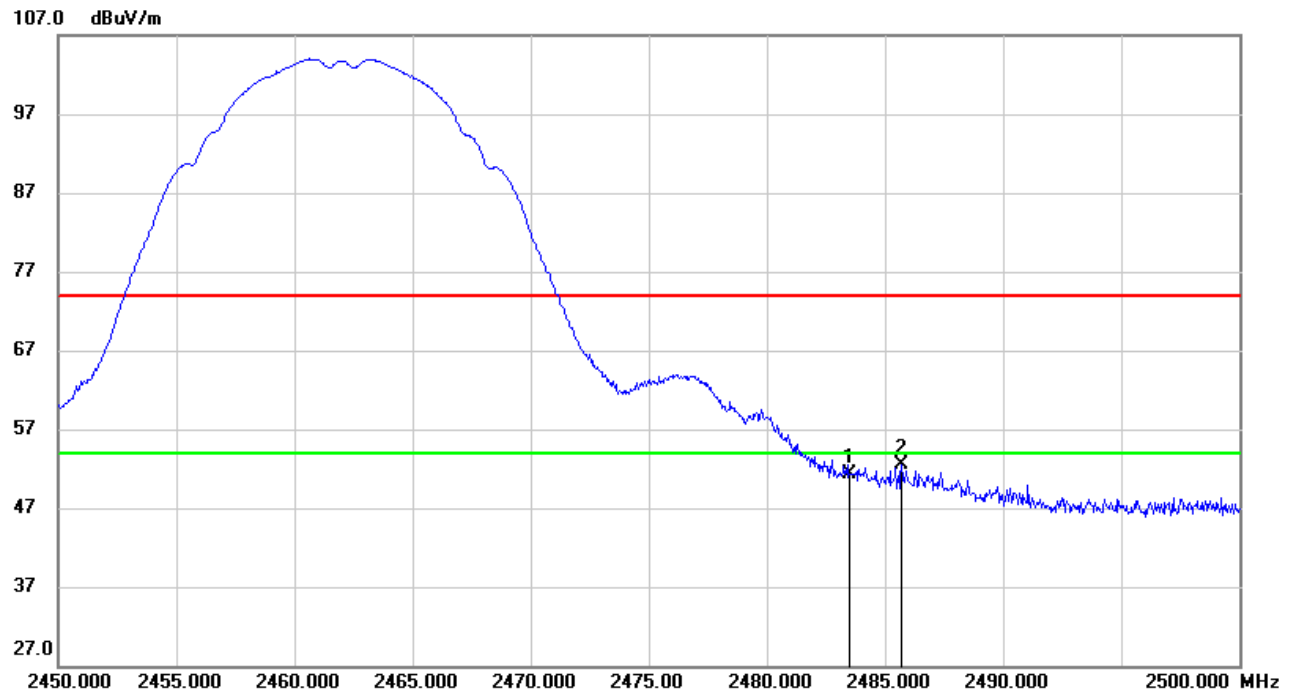
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	17.20	33.58	50.78	74.00	-23.22	peak
2	2486.300	20.00	33.61	53.61	74.00	-20.39	peak

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 case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

PEAK



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	17.70	33.58	51.28	74.00	-22.72	peak
2	2485.700	18.90	33.59	52.49	74.00	-21.51	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 case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Note: All antennas have been tested, only the worst data record in the report.

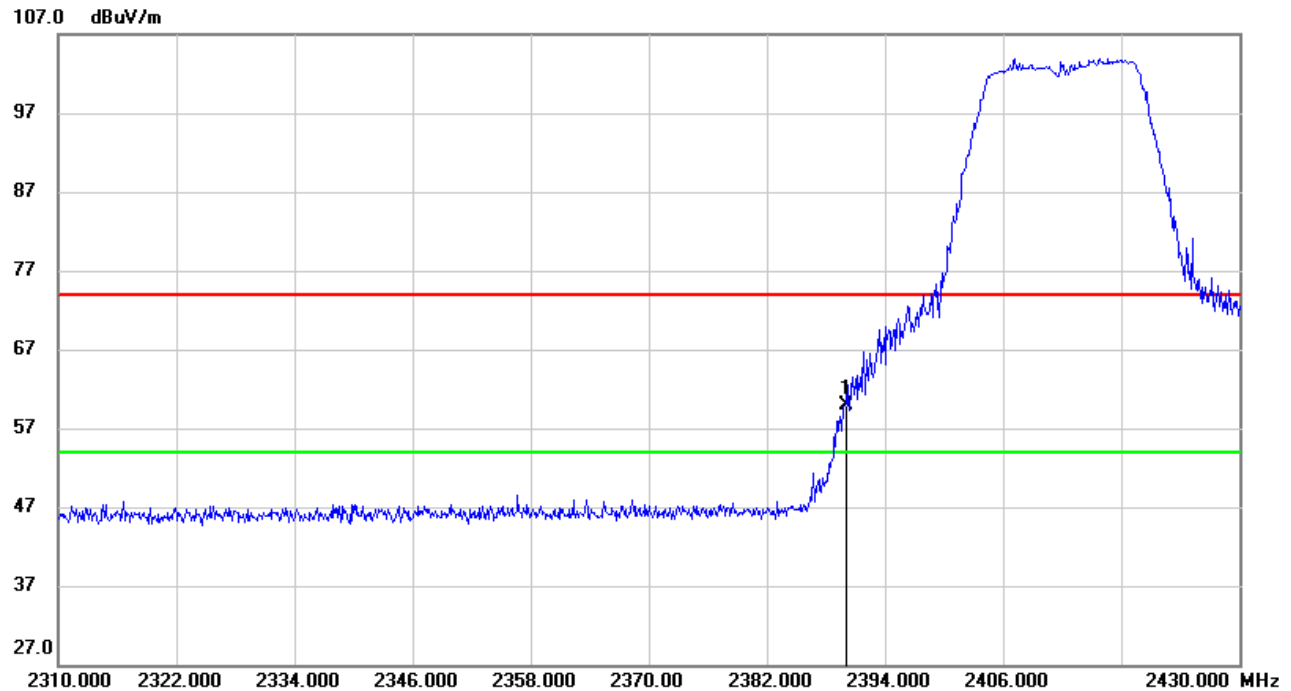


7.7.2. 802.11g SISO MODE

ANTENNA1

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

PEAK

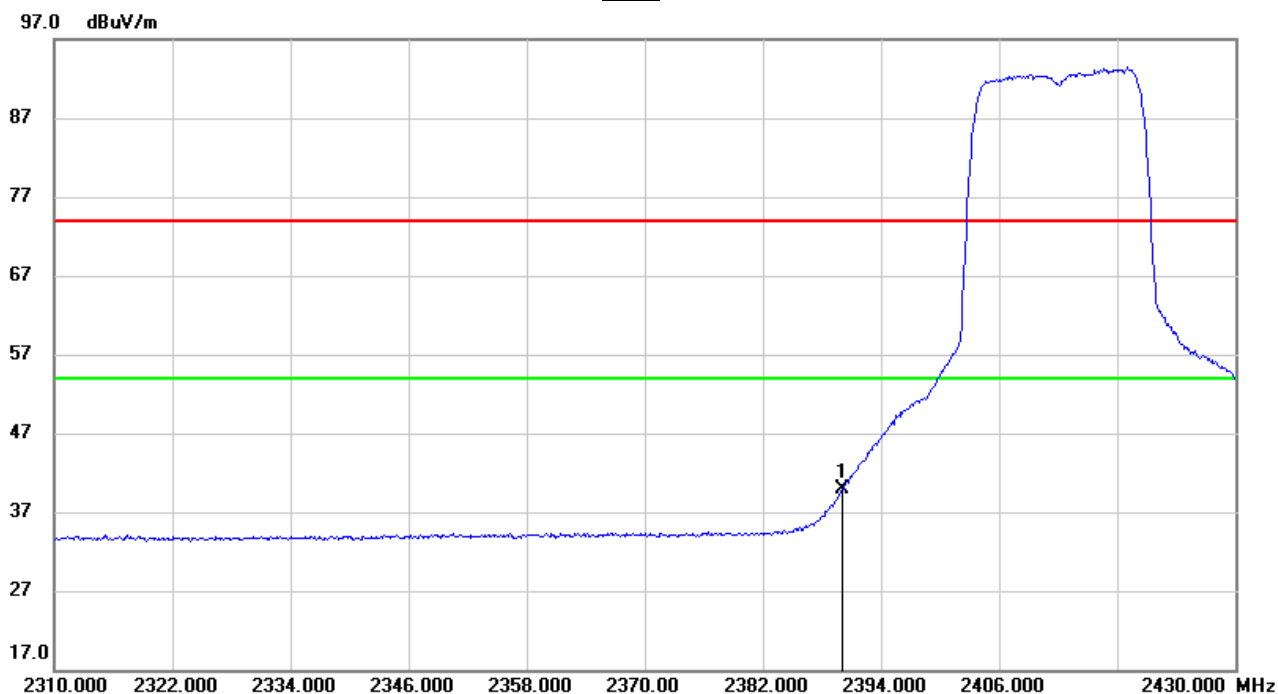


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	27.06	32.94	60.00	74.00	-14.00	peak

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 case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG



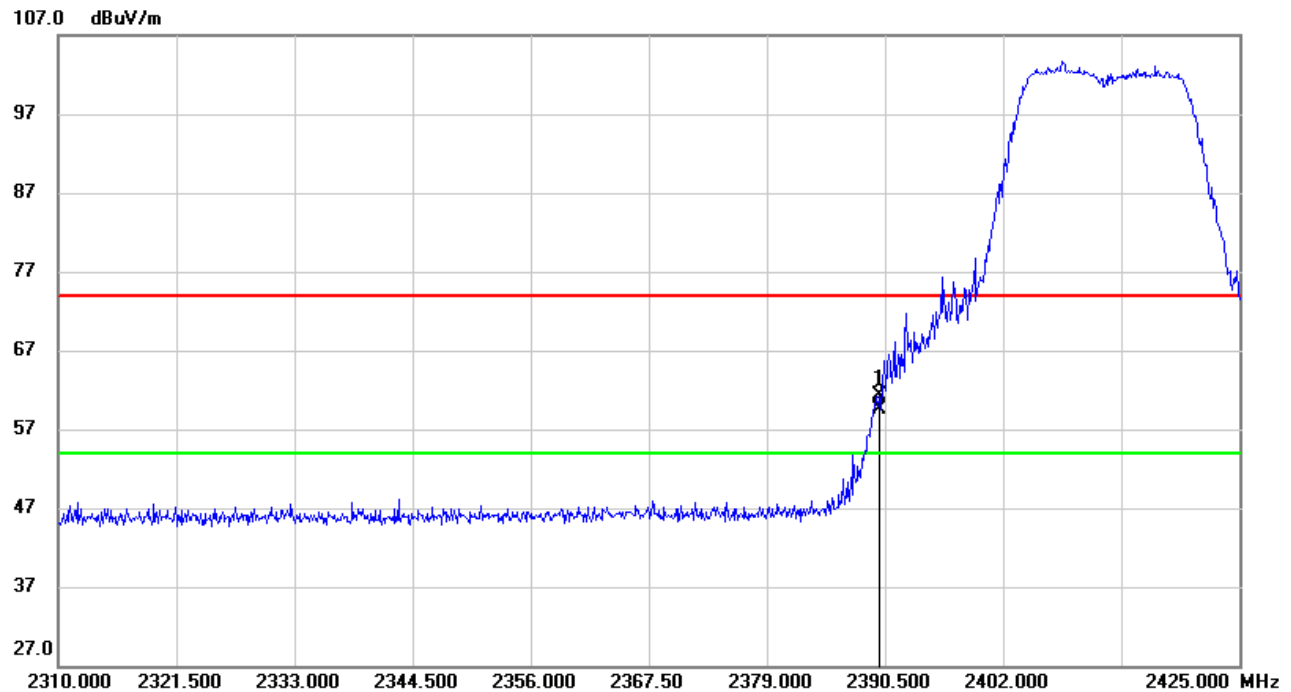
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2390.000	7.02	32.94	39.96	54.00	-14.04	AVG

- 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 transmit duration.
4. For transmit duration, please refer to clause 7.1.
5. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

PEAK

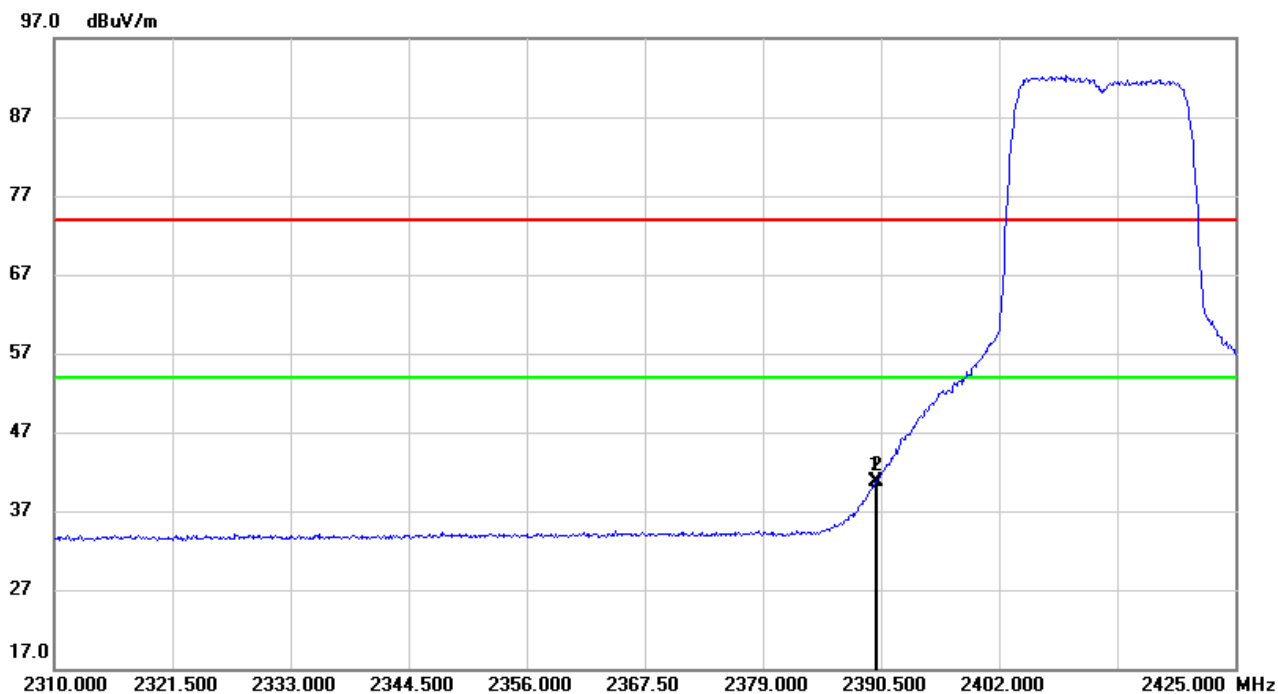


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.925	28.36	32.94	61.30	74.00	-12.70	peak
2	2390.000	26.53	32.94	59.47	74.00	-14.53	peak

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 case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG



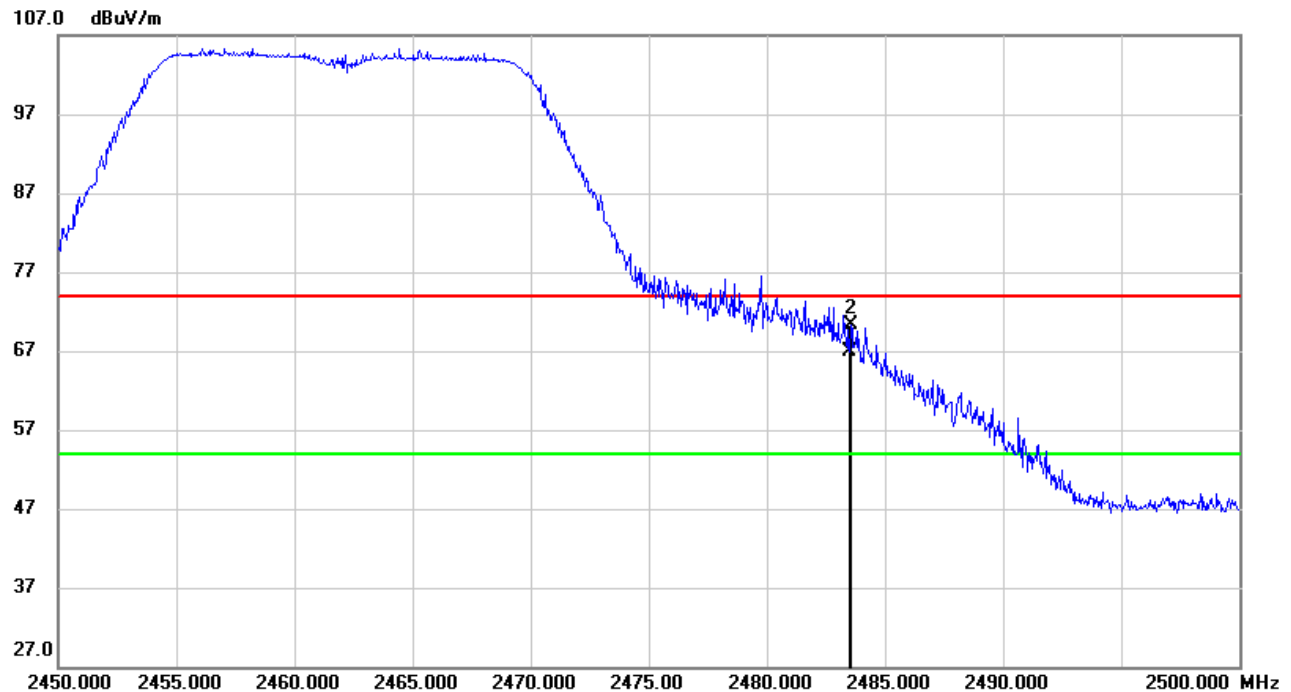
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.925	7.75	32.94	40.69	54.00	-13.31	AVG
2	2390.000	7.82	32.94	40.76	54.00	-13.24	AVG

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 transmit duration.
4. For transmit duration, please refer to clause 7.1.
5. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

PEAK

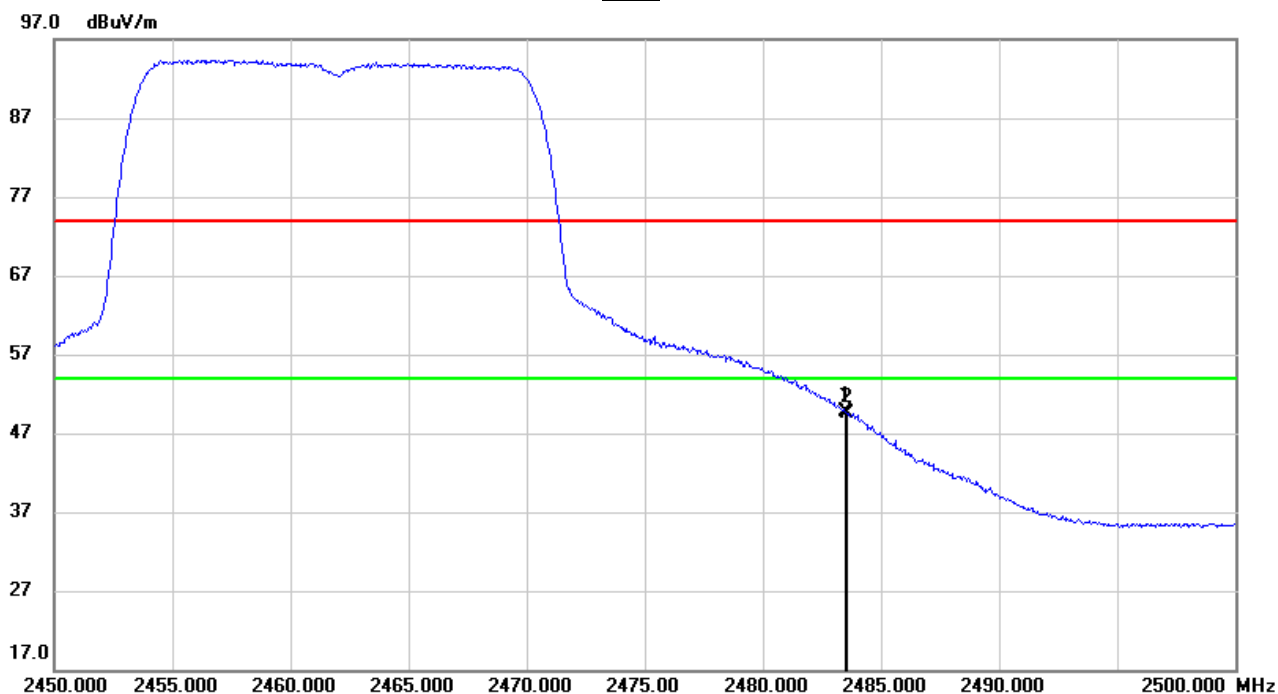


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	33.35	33.58	66.93	74.00	-7.07	peak
2	2483.550	36.66	33.58	70.24	74.00	-3.76	peak

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 case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG



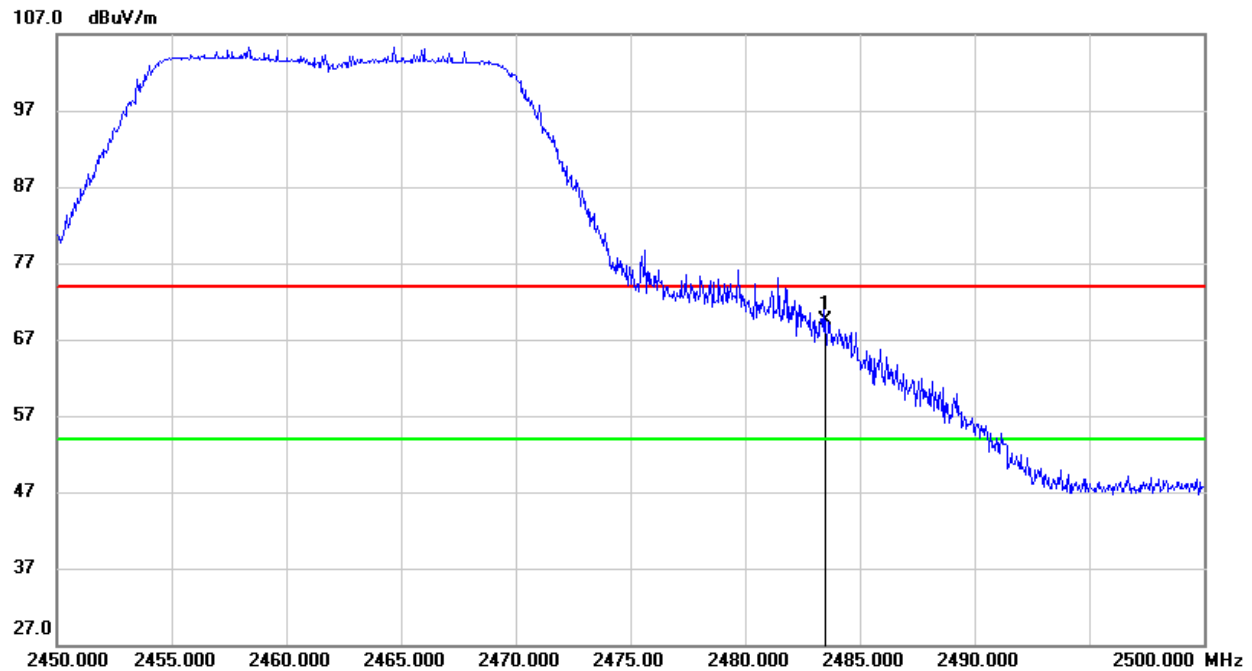
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	16.17	33.58	49.75	54.00	-4.25	AVG
2	2483.550	15.95	33.58	49.53	54.00	-4.47	AVG

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 transmit duration.
4. For transmit duration, please refer to clause 7.1.
5. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

PEAK

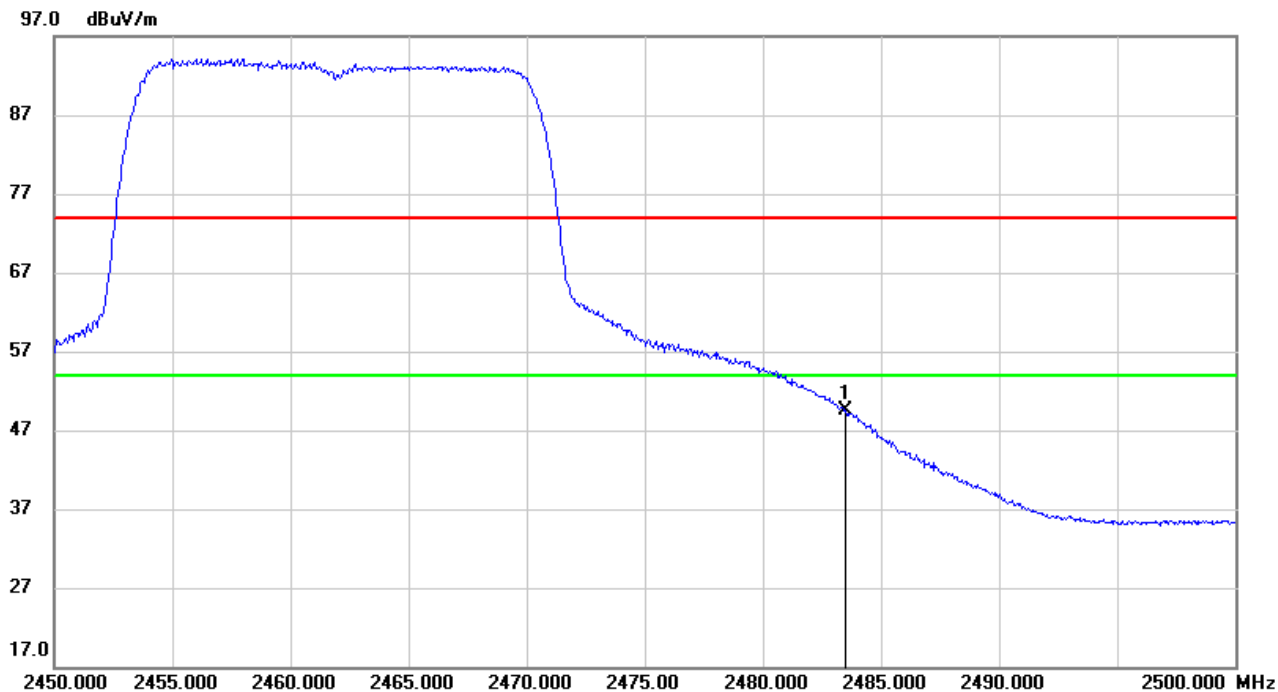


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	36.01	33.58	69.59	74.00	-4.41	peak

- 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 case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	15.93	33.58	49.51	54.00	-4.49	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 transmit duration.
 4. For transmit duration, please refer to clause 7.1.
 5. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

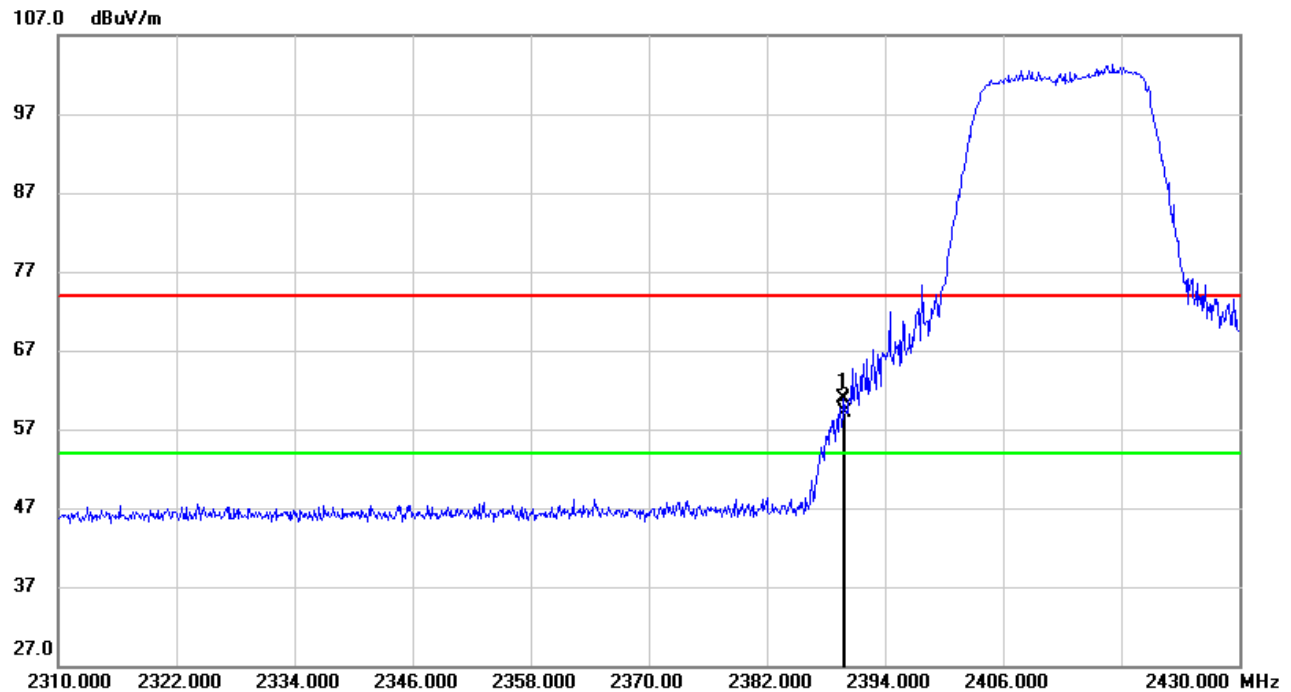
Note: All antennas have been tested, only the worst data record in the report.



7.7.3. 802.11n HT20 MIMO MODE

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

PEAK

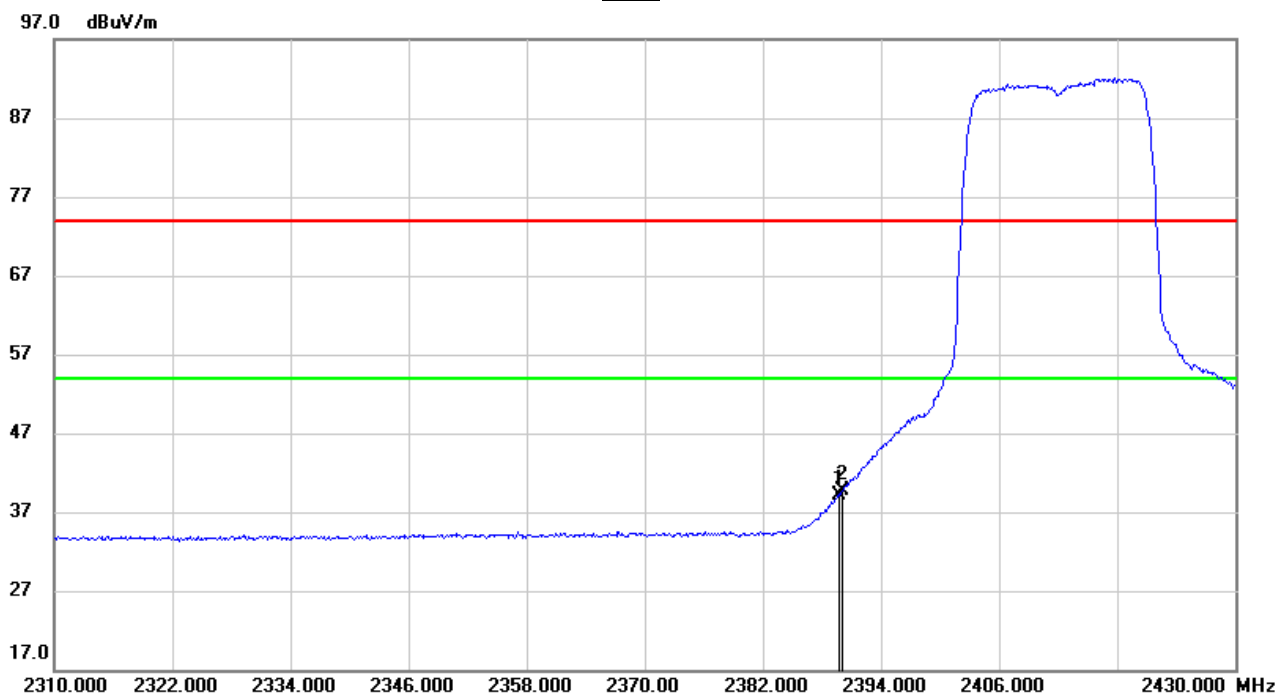


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.800	27.90	32.94	60.84	74.00	-13.16	peak
2	2390.000	26.20	32.94	59.14	74.00	-14.86	peak

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 case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG



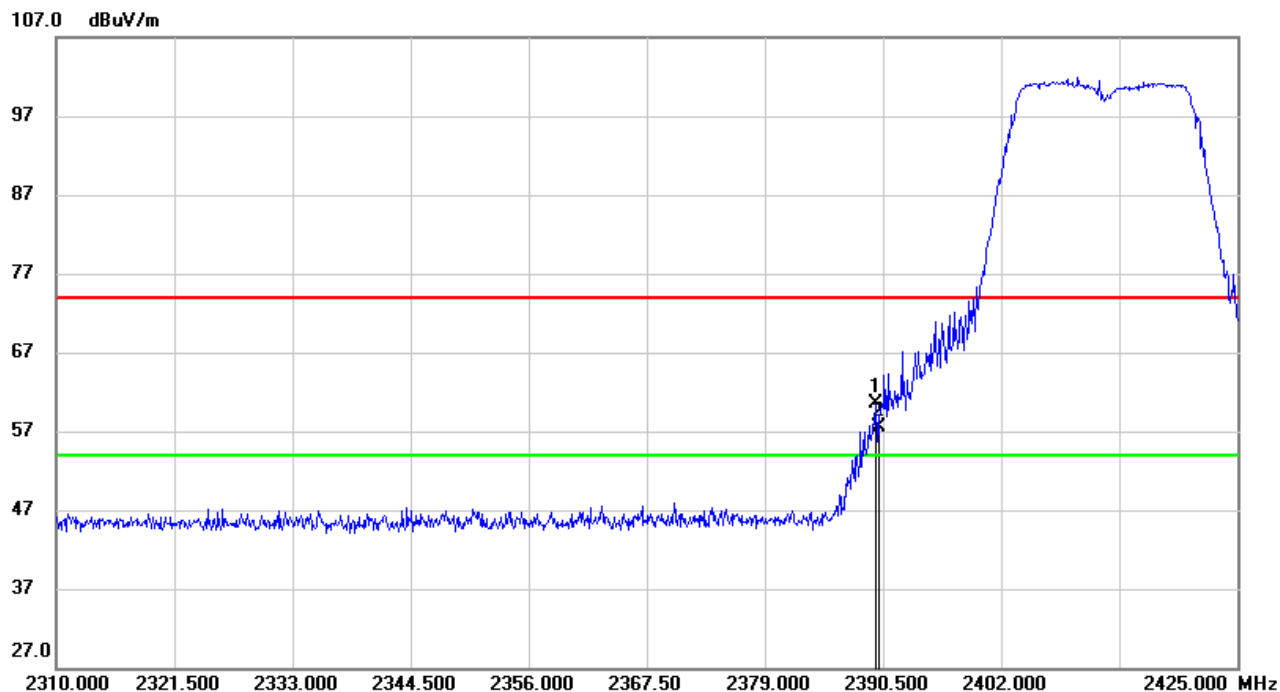
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.800	6.25	32.94	39.19	54.00	-14.81	AVG
2	2390.000	6.72	32.94	39.66	54.00	-14.34	AVG

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 transmit duration.
4. For transmit duration, please refer to clause 7.1.
5. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

PEAK

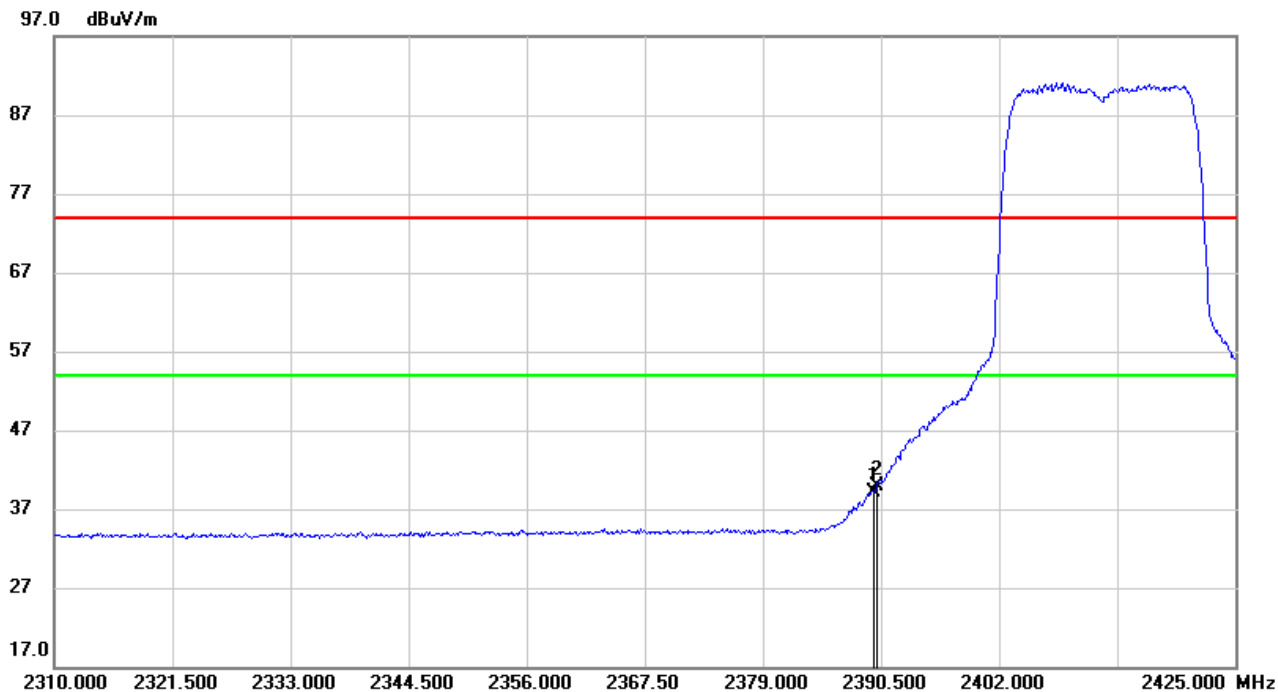


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.810	27.58	32.94	60.52	74.00	-13.48	peak
2	2390.000	24.65	32.94	57.59	74.00	-16.41	peak

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 case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG



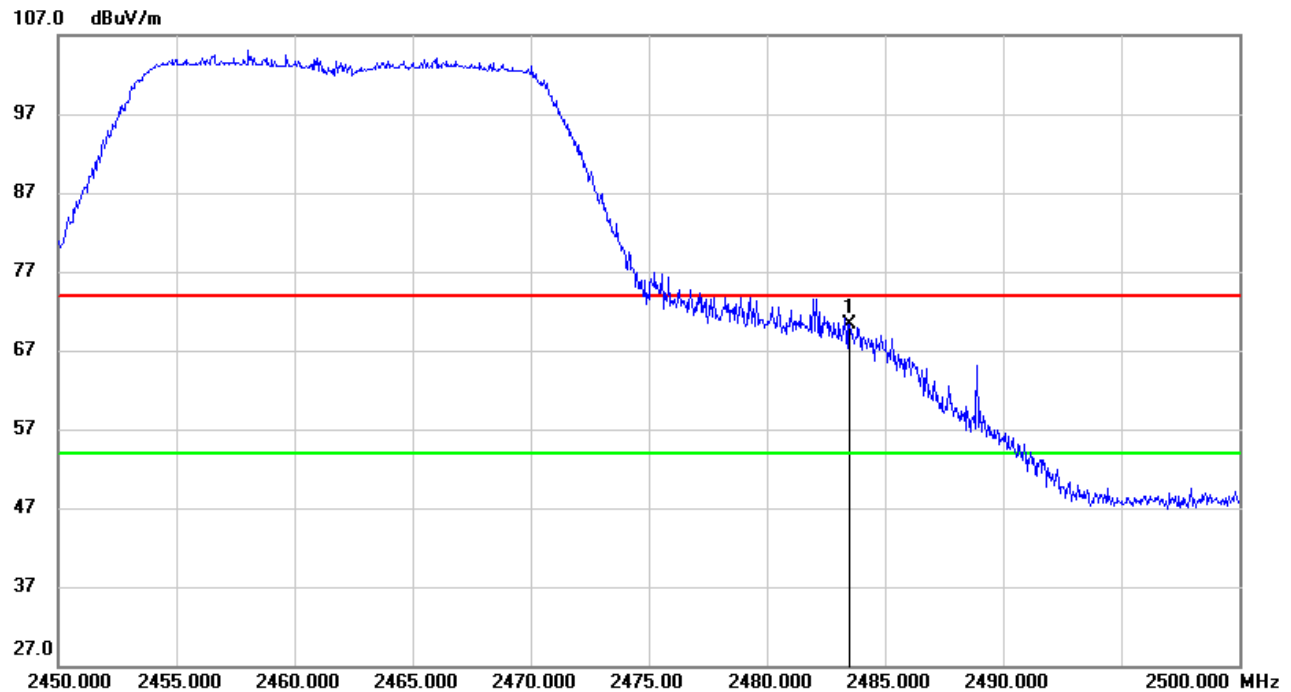
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2389.810	6.12	32.94	39.06	54.00	-14.94	AVG
2	2390.000	6.87	32.94	39.81	54.00	-14.19	AVG

- 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 transmit duration.
4. For transmit duration, please refer to clause 7.1.
5. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

PEAK

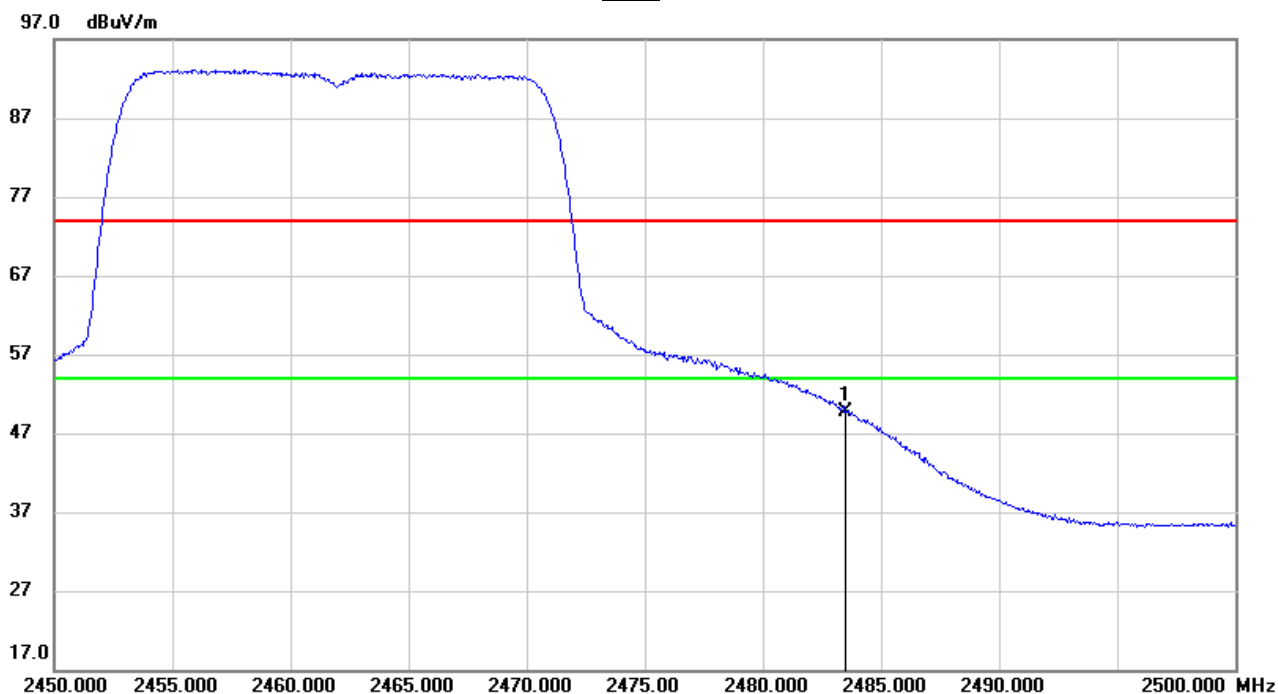


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	36.69	33.58	70.27	74.00	-3.73	peak

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 case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG



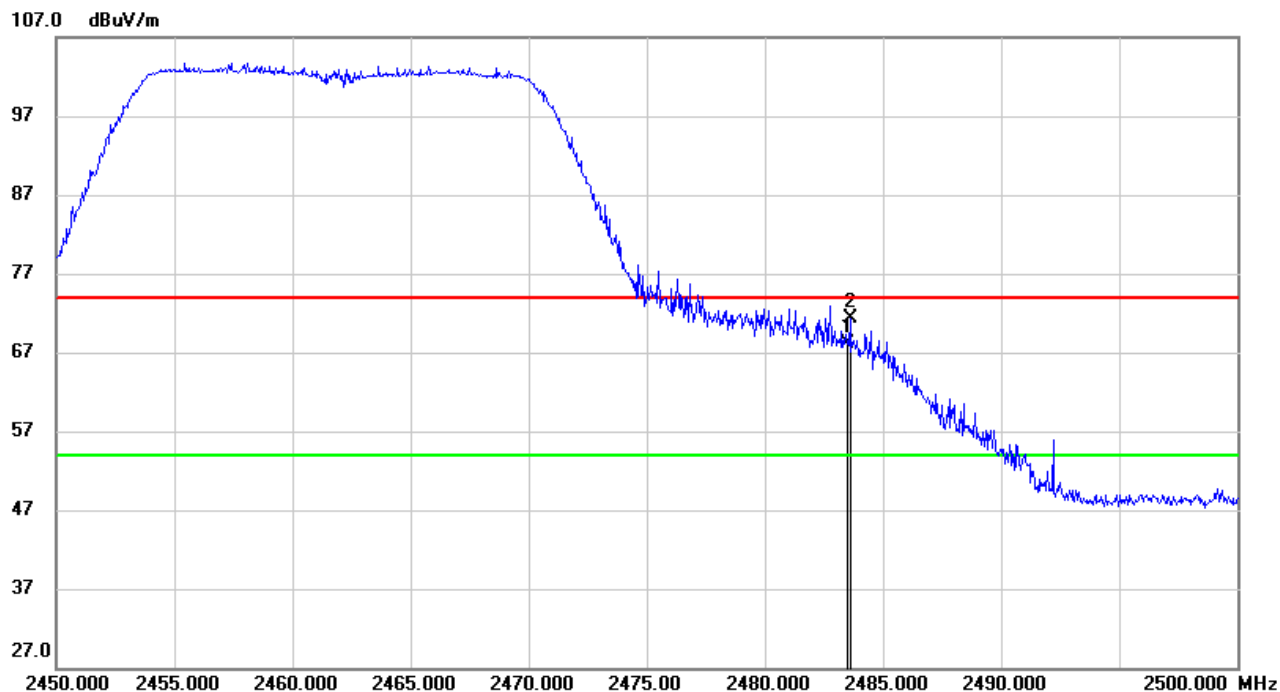
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	16.18	33.58	49.76	54.00	-4.24	AVG

- 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 transmit duration.
4. For transmit duration, please refer to clause 7.1.
5. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

PEAK

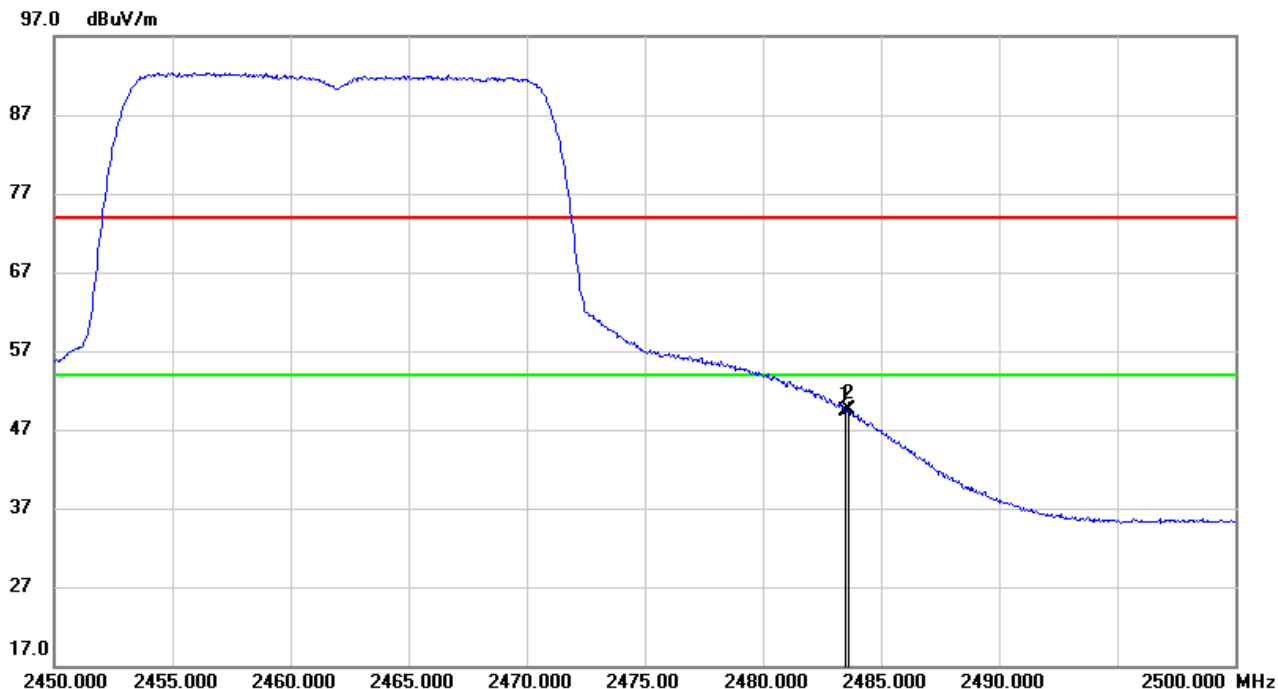


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	34.46	33.58	68.04	74.00	-5.96	peak
2	2483.600	37.74	33.58	71.32	74.00	-2.68	peak

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 case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.



AVG



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	15.67	33.58	49.25	54.00	-4.75	AVG
2	2483.600	15.95	33.58	49.53	54.00	-4.47	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 transmit duration.
4. For transmit duration, please refer to clause 7.1.
5. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.

Note: All antennas have been tested, only the worst data record in the report.

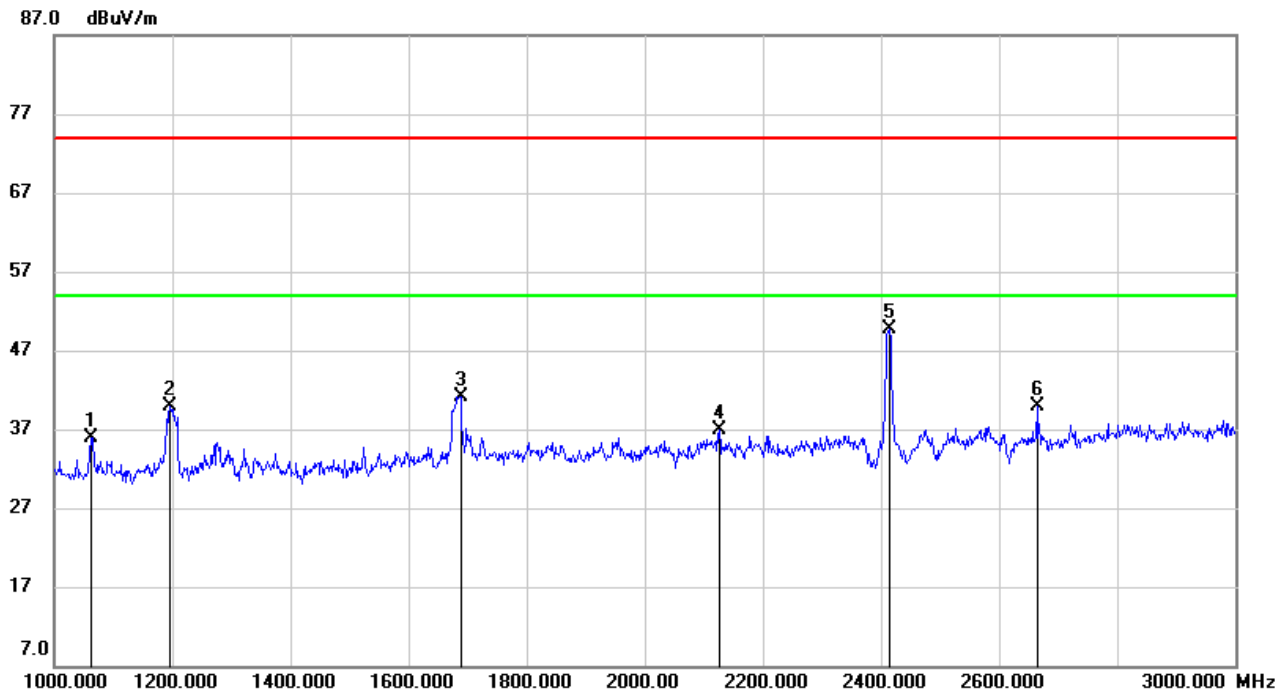


7.8. SPURIOUS EMISSIONS (1~3GHz)

7.8.1. 802.11b SISO MODE

ANTENNA1

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1062.000	49.51	-13.55	35.96	74.00	-38.04	peak
2	1196.000	52.53	-12.72	39.81	74.00	-34.19	peak
3	1688.000	52.17	-10.97	41.20	74.00	-32.80	peak
4	2126.000	45.85	-9.02	36.83	74.00	-37.17	peak
5	2414.000	57.44	-7.76	49.68	74.00	-24.32	peak
6	2664.000	47.27	-7.34	39.93	74.00	-34.07	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.

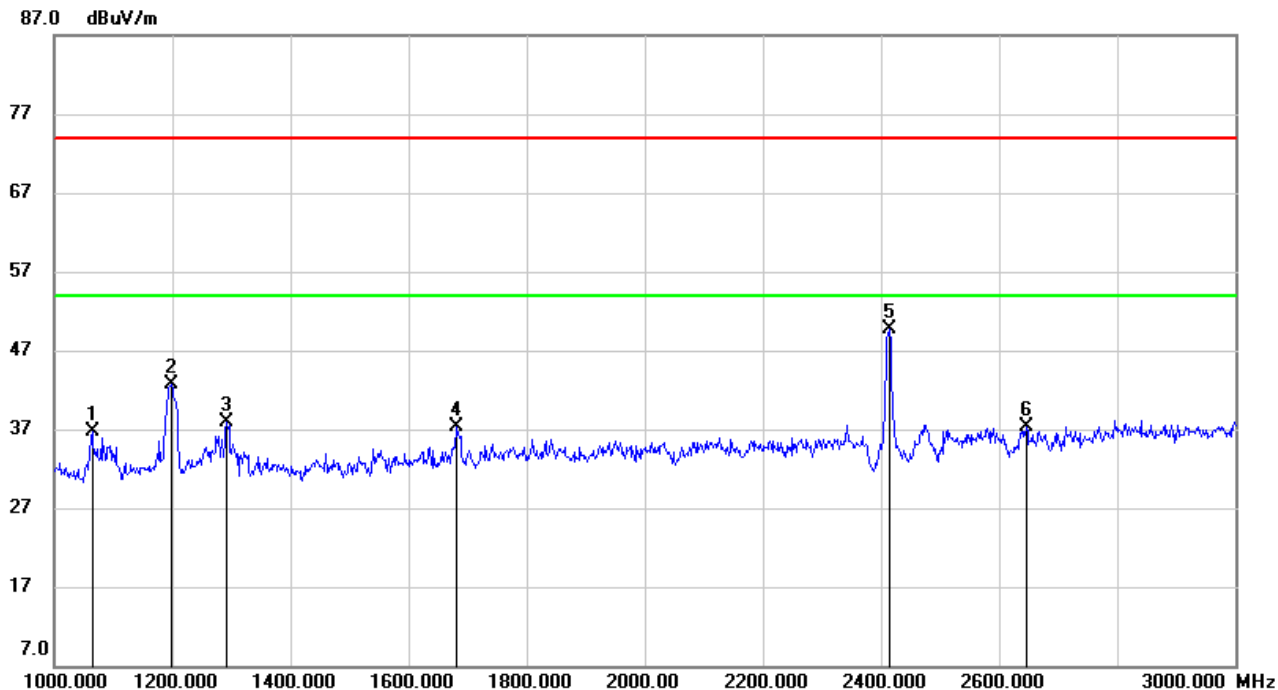
3. Peak: Peak detector.

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

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



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

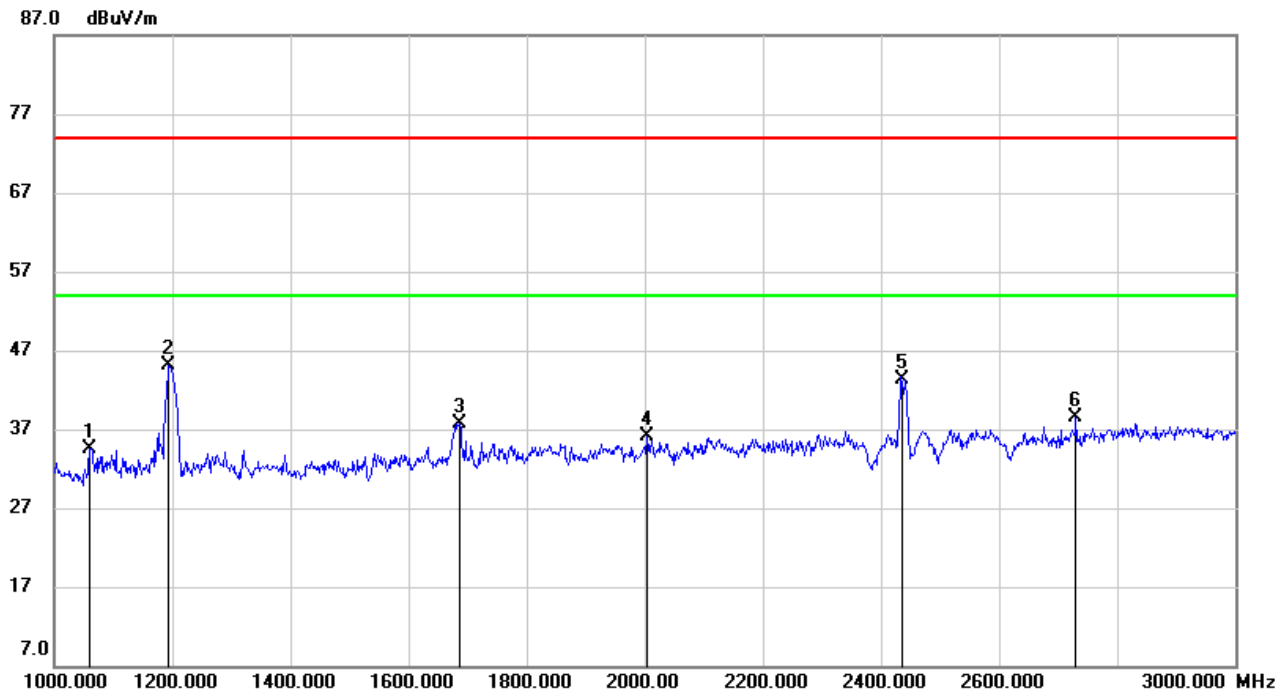


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1064.000	50.18	-13.54	36.64	74.00	-37.36	peak
2	1198.000	55.35	-12.69	42.66	74.00	-31.34	peak
3	1292.000	50.34	-12.36	37.98	74.00	-36.02	peak
4	1680.000	48.39	-11.01	37.38	74.00	-36.62	peak
5	2414.000	57.41	-7.76	49.65	74.00	-24.35	peak
6	2646.000	44.67	-7.44	37.23	74.00	-36.77	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.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

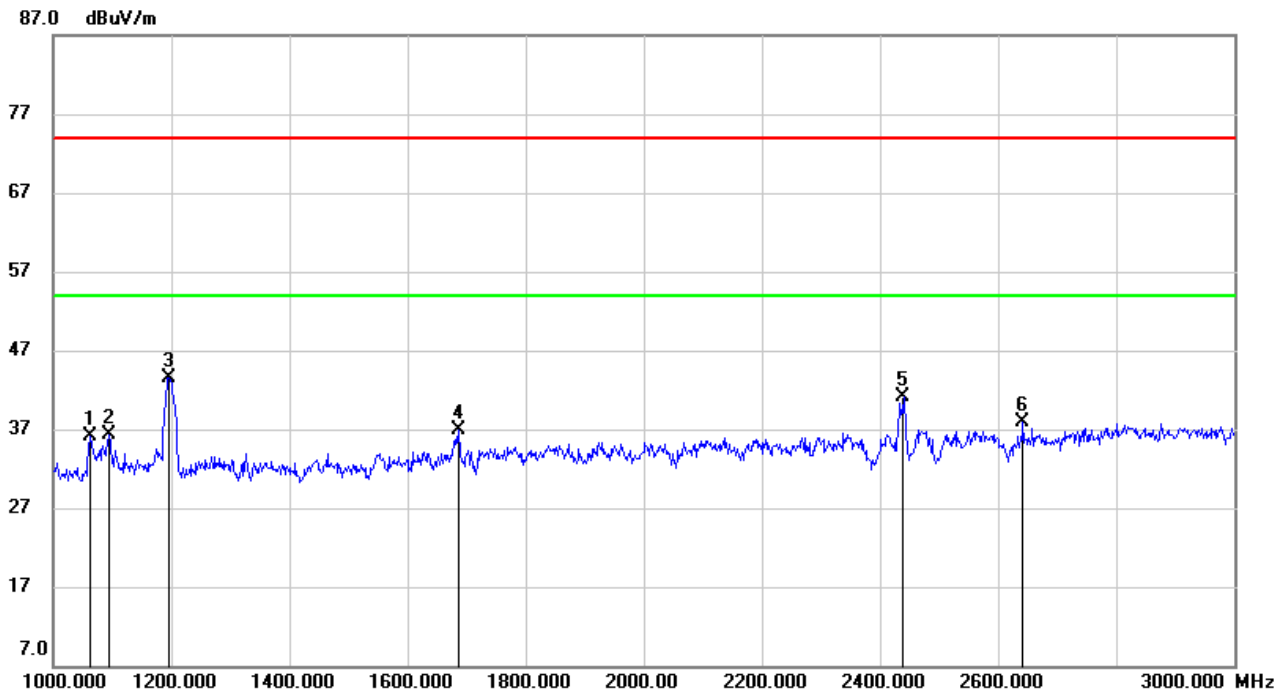


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1060.000	47.97	-13.54	34.43	74.00	-39.57	peak
2	1194.000	57.78	-12.72	45.06	74.00	-28.94	peak
3	1686.000	48.65	-10.97	37.68	74.00	-36.32	peak
4	2004.000	45.85	-9.79	36.06	74.00	-37.94	peak
5	2437.000	50.83	-7.60	43.23	74.00	-30.77	peak
6	2730.000	45.21	-6.80	38.41	74.00	-35.59	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.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

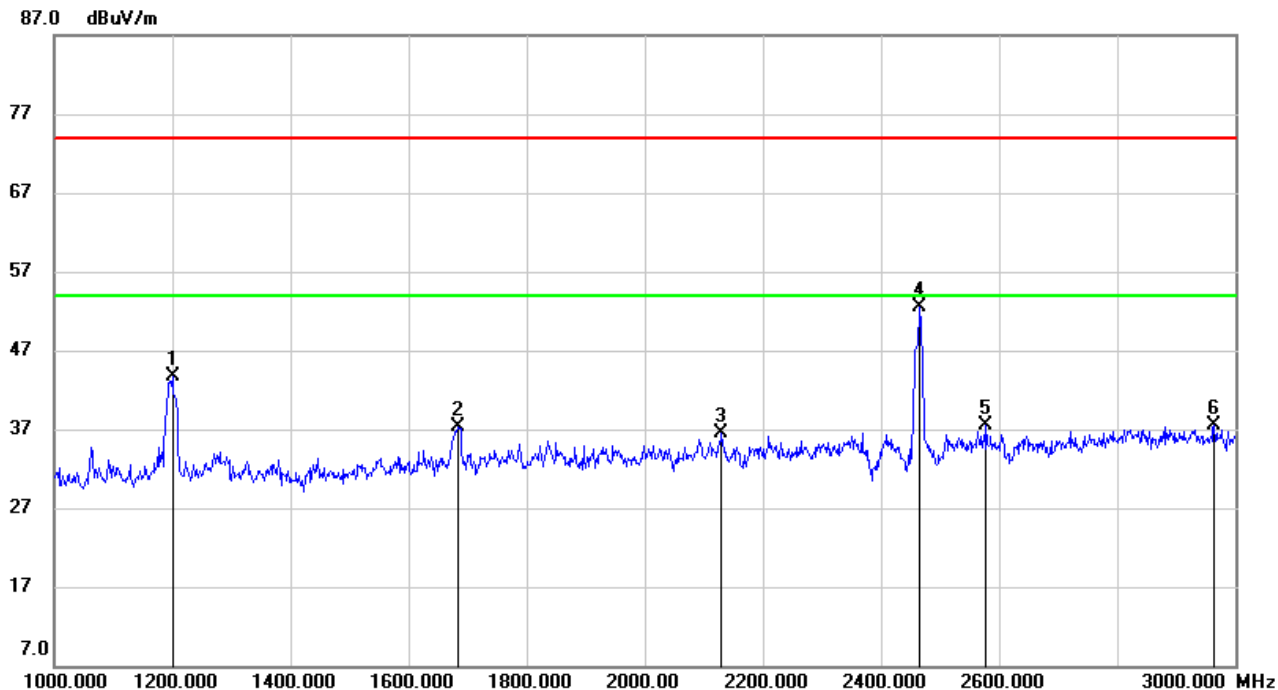


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1062.000	49.67	-13.55	36.12	74.00	-37.88	peak
2	1094.000	49.74	-13.52	36.22	74.00	-37.78	peak
3	1196.000	56.19	-12.72	43.47	74.00	-30.53	peak
4	1686.000	47.87	-10.97	36.90	74.00	-37.10	peak
5	2437.000	48.66	-7.60	41.06	74.00	-32.94	peak
6	2642.000	45.40	-7.46	37.94	74.00	-36.06	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.
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.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)

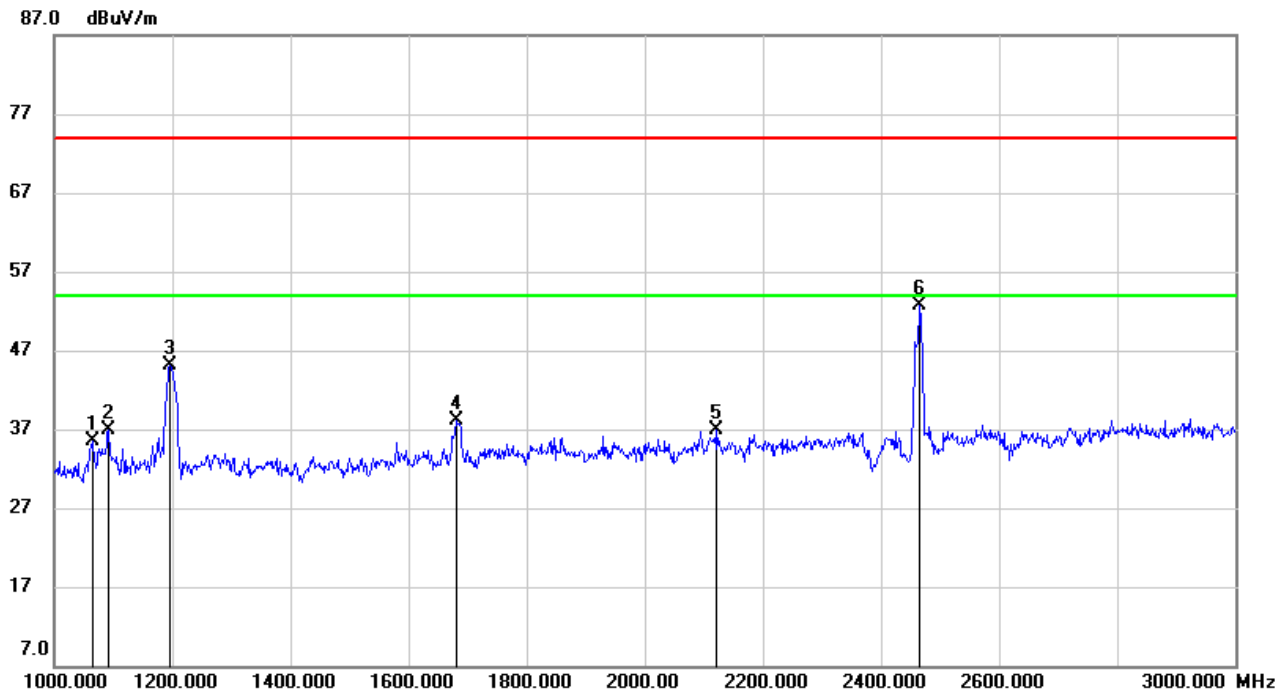


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1200.000	56.29	-12.68	43.61	74.00	-30.39	peak
2	1684.000	48.20	-10.98	37.22	74.00	-36.78	peak
3	2130.000	45.59	-9.01	36.58	74.00	-37.42	peak
4	2466.000	59.91	-7.40	52.51	74.00	-21.49	peak
5	2578.000	45.05	-7.58	37.47	74.00	-36.53	peak
6	2964.000	42.95	-5.38	37.57	74.00	-36.43	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.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1064.000	49.10	-13.54	35.56	74.00	-38.44	peak
2	1092.000	50.47	-13.52	36.95	74.00	-37.05	peak
3	1196.000	57.75	-12.72	45.03	74.00	-28.97	peak
4	1682.000	49.12	-10.99	38.13	74.00	-35.87	peak
5	2122.000	45.91	-9.05	36.86	74.00	-37.14	peak
6	2466.000	60.19	-7.40	52.79	74.00	-21.21	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.

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

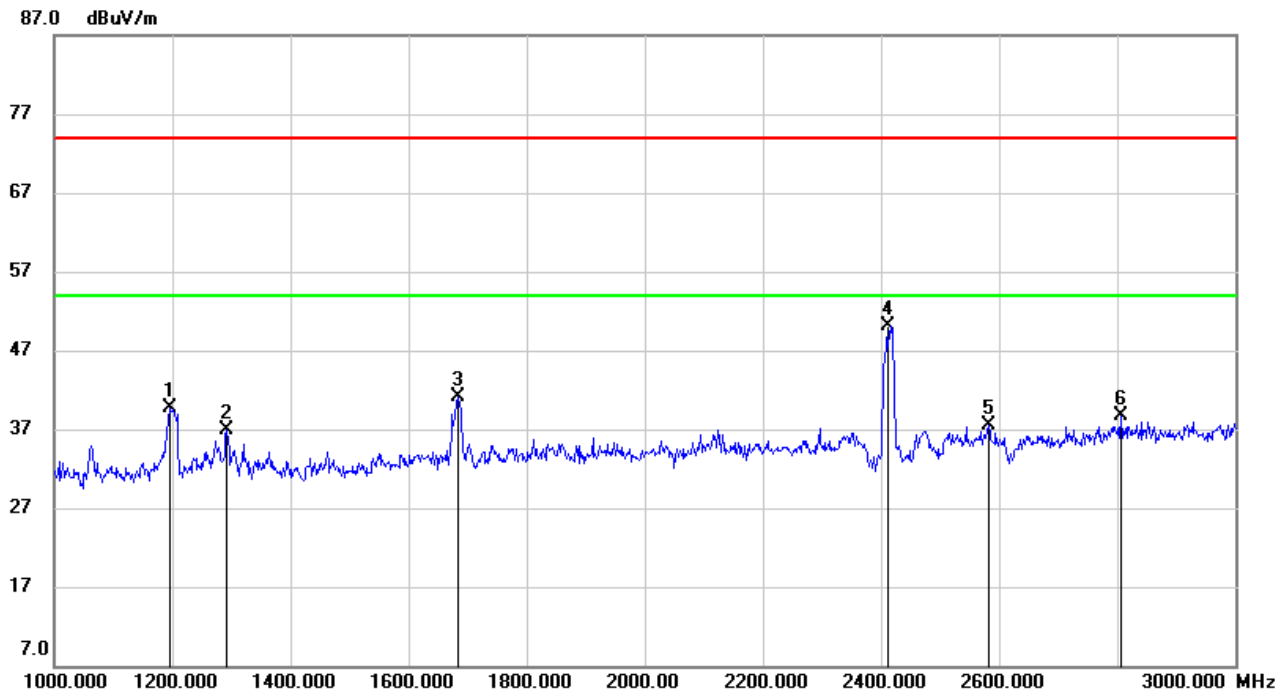
Note: All antennas have been tested, only the worst data record in the report.



7.8.2. 802.11g SISO MODE

ANTENNA1

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

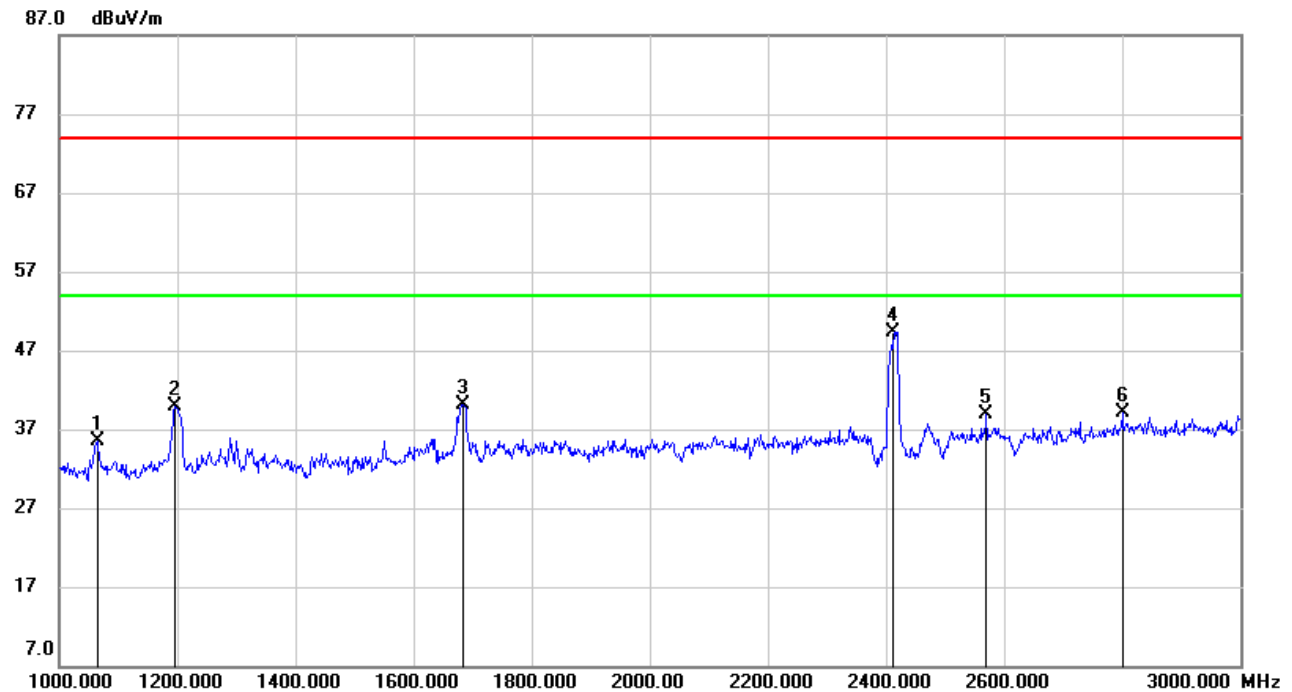


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1196.000	52.40	-12.72	39.68	74.00	-34.32	peak
2	1292.000	49.19	-12.36	36.83	74.00	-37.17	peak
3	1684.000	52.01	-10.98	41.03	74.00	-32.97	peak
4	2412.000	57.92	-7.77	50.15	74.00	-23.85	peak
5	2582.000	45.04	-7.60	37.44	74.00	-36.56	peak
6	2806.000	44.64	-6.02	38.62	74.00	-35.38	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.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

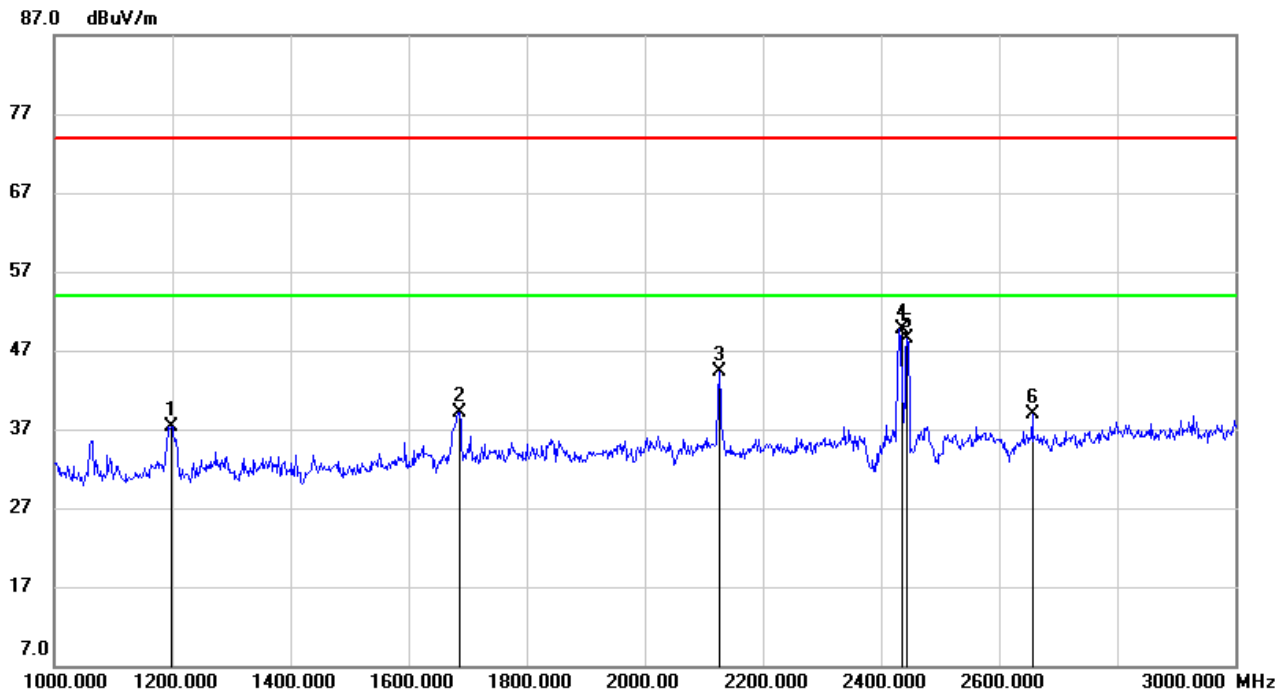


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1064.000	49.12	-13.54	35.58	74.00	-38.42	peak
2	1196.000	52.56	-12.72	39.84	74.00	-34.16	peak
3	1684.000	51.13	-10.98	40.15	74.00	-33.85	peak
4	2412.000	57.04	-7.77	49.27	74.00	-24.73	peak
5	2570.000	46.49	-7.54	38.95	74.00	-35.05	peak
6	2800.000	45.12	-6.06	39.06	74.00	-34.94	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.
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.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

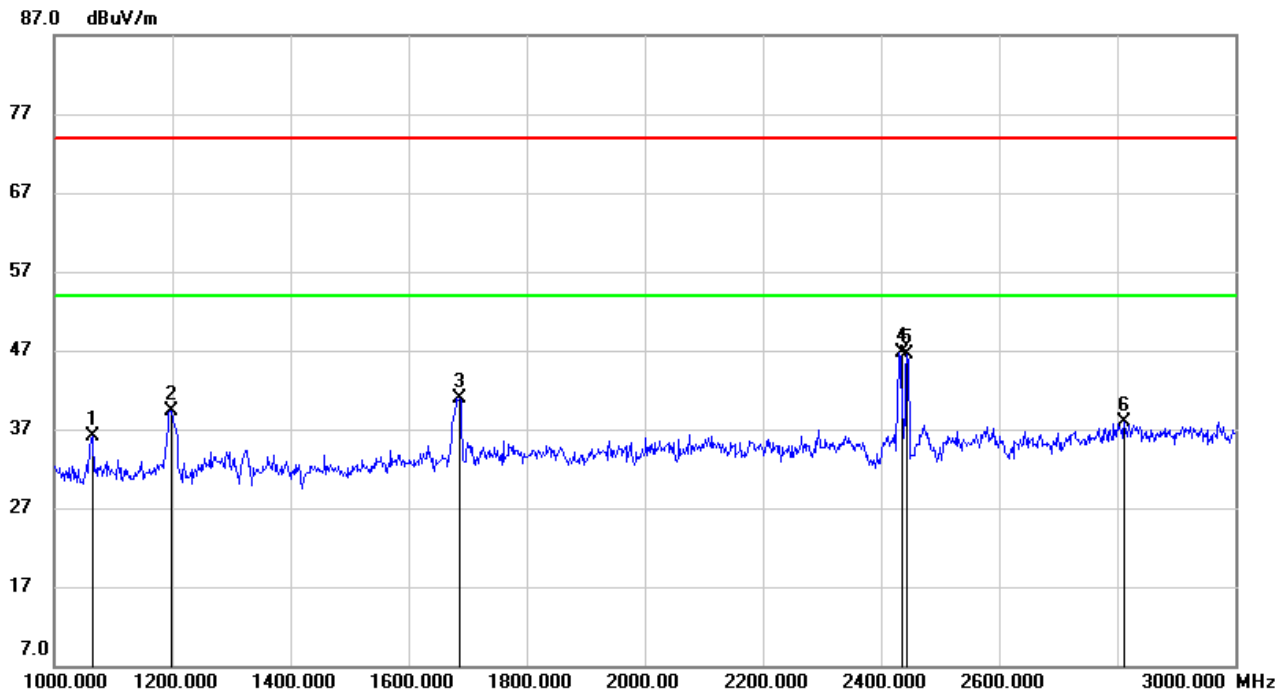


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1198.000	49.97	-12.69	37.28	74.00	-36.72	peak
2	1686.000	50.15	-10.97	39.18	74.00	-34.82	peak
3	2126.000	53.28	-9.02	44.26	74.00	-29.74	peak
4	2437.000	57.29	-7.60	49.69	74.00	-24.31	peak
5	2444.000	56.04	-7.55	48.49	74.00	-25.51	peak
6	2656.000	46.33	-7.38	38.95	74.00	-35.05	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.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

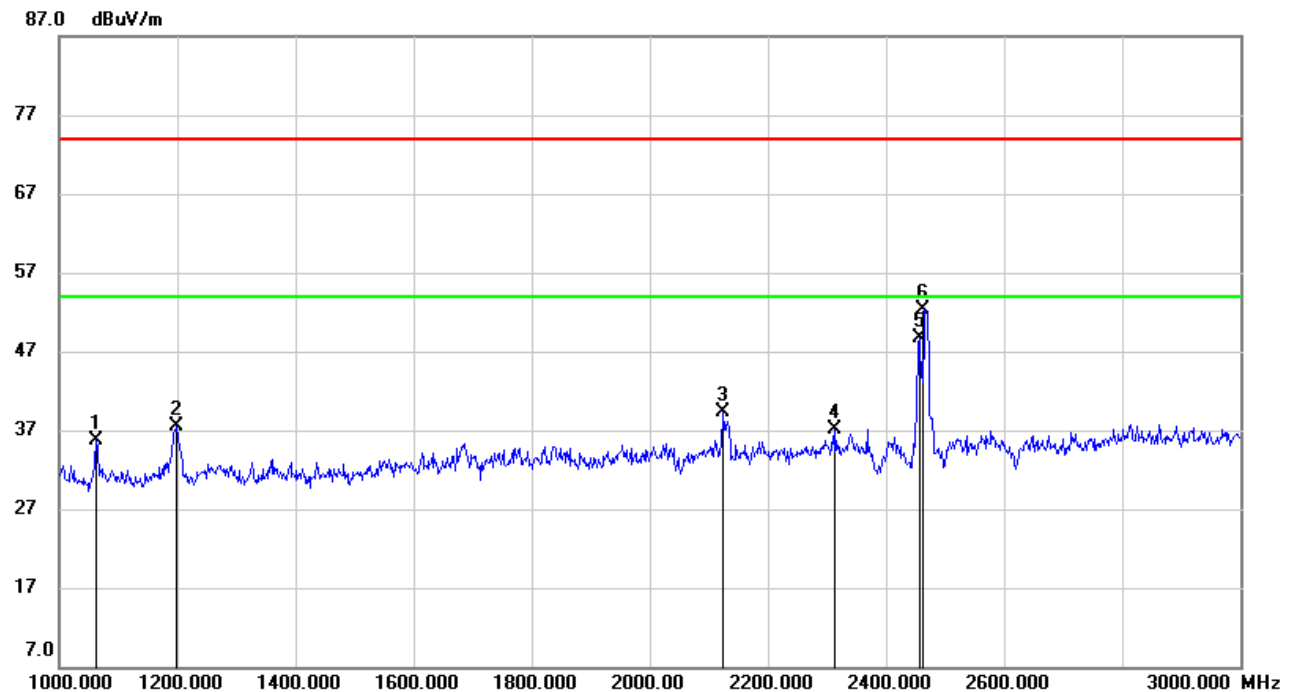


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1064.000	49.68	-13.54	36.14	74.00	-37.86	peak
2	1198.000	52.02	-12.69	39.33	74.00	-34.67	peak
3	1686.000	51.85	-10.97	40.88	74.00	-33.12	peak
4	2437.000	54.37	-7.60	46.77	74.00	-27.23	peak
5	2444.000	54.01	-7.55	46.46	74.00	-27.54	peak
6	2812.000	43.95	-6.00	37.95	74.00	-36.05	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.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)

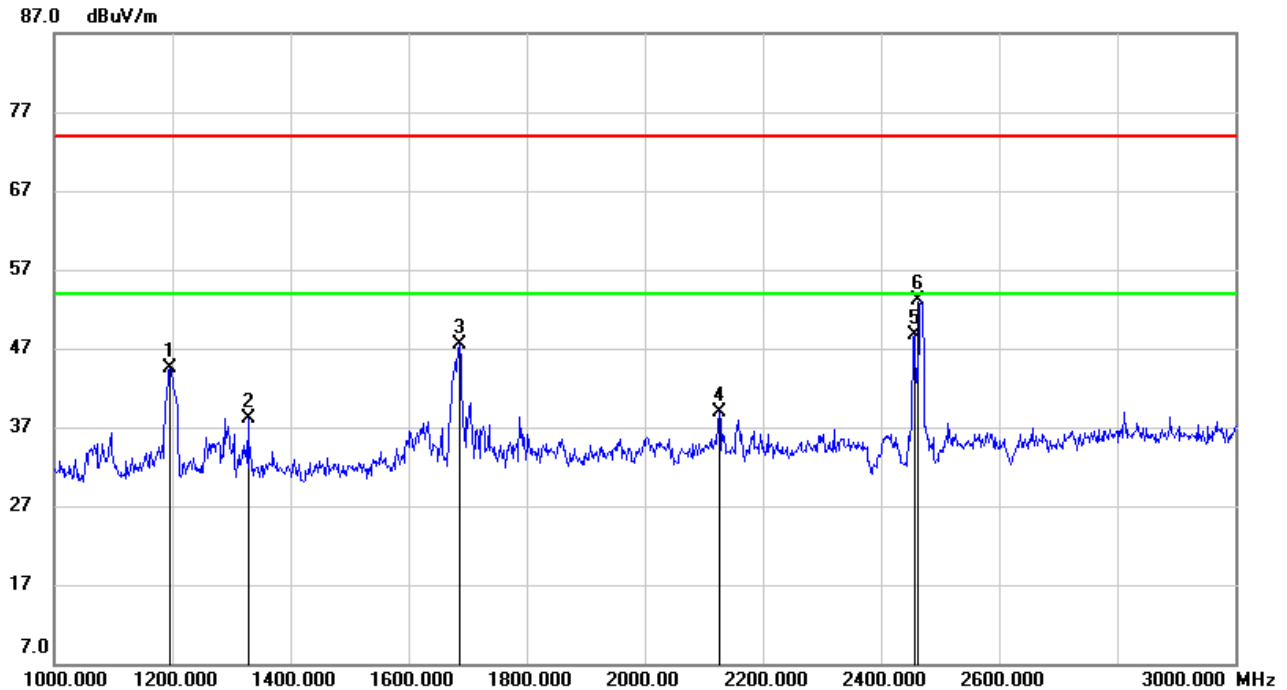


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1062.000	49.26	-13.55	35.71	74.00	-38.29	peak
2	1198.000	50.29	-12.69	37.60	74.00	-36.40	peak
3	2124.000	48.35	-9.04	39.31	74.00	-34.69	peak
4	2314.000	45.25	-8.14	37.11	74.00	-36.89	peak
5	2456.000	56.24	-7.47	48.77	74.00	-25.23	peak
6	2462.000	59.75	-7.43	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. 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.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1196.000	57.27	-12.72	44.55	74.00	-29.45	peak
2	1328.000	50.39	-12.36	38.03	74.00	-35.97	peak
3	1686.000	58.40	-10.97	47.43	74.00	-26.57	peak
4	2126.000	47.96	-9.02	38.94	74.00	-35.06	peak
5	2456.000	56.14	-7.47	48.67	74.00	-25.33	peak
6	2462.000	60.45	-7.43	53.02	74.00	-20.98	peak

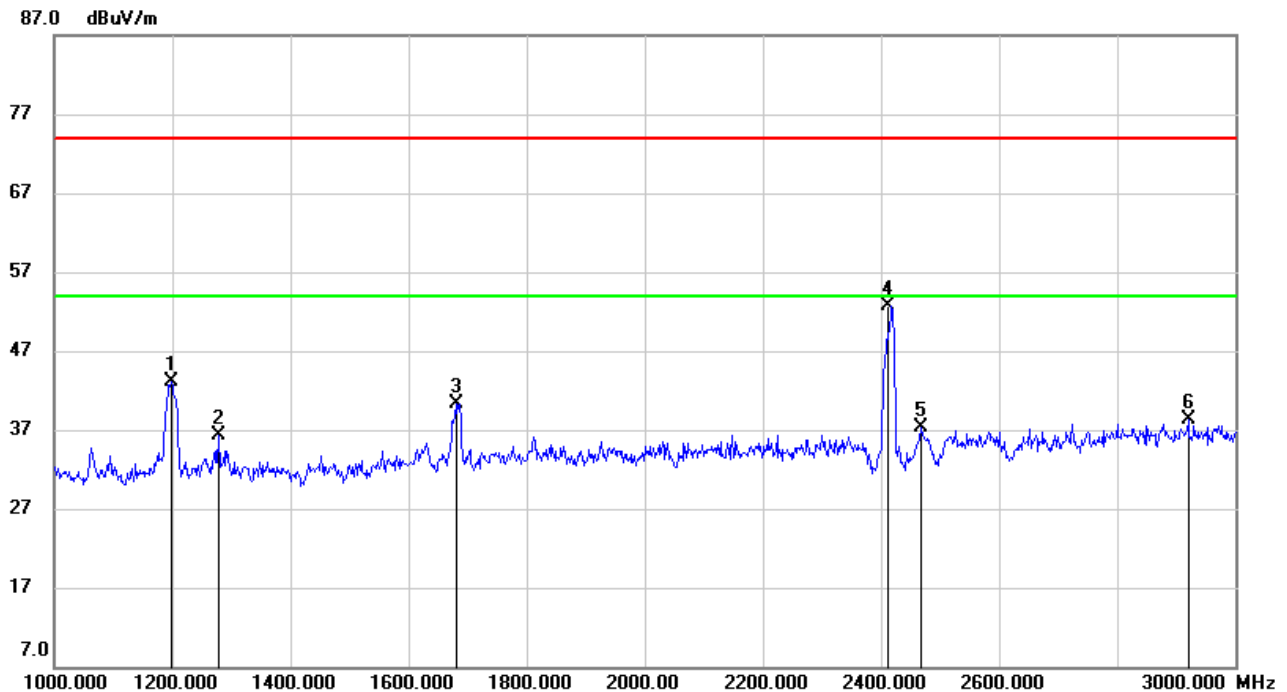
- Note: 1. Measurement = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for Band reject filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Note: All antennas have been tested, only the worst data record in the report.



7.8.3. 802.11n HT20 MIMO MODE

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

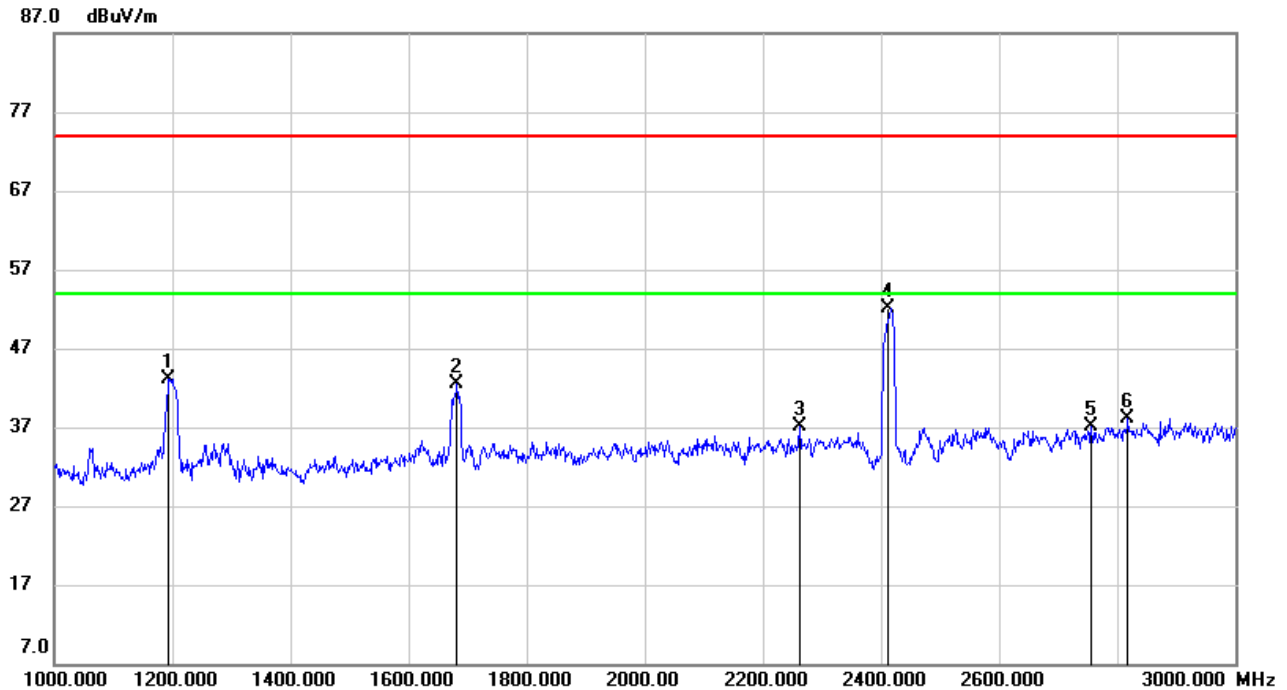


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1198.000	55.86	-12.69	43.17	74.00	-30.83	peak
2	1278.000	48.67	-12.42	36.25	74.00	-37.75	peak
3	1680.000	51.37	-11.01	40.36	74.00	-33.64	peak
4	2412.000	60.50	-7.77	52.73	74.00	-21.27	peak
5	2468.000	44.74	-7.39	37.35	74.00	-36.65	peak
6	2920.000	43.85	-5.48	38.37	74.00	-35.63	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.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

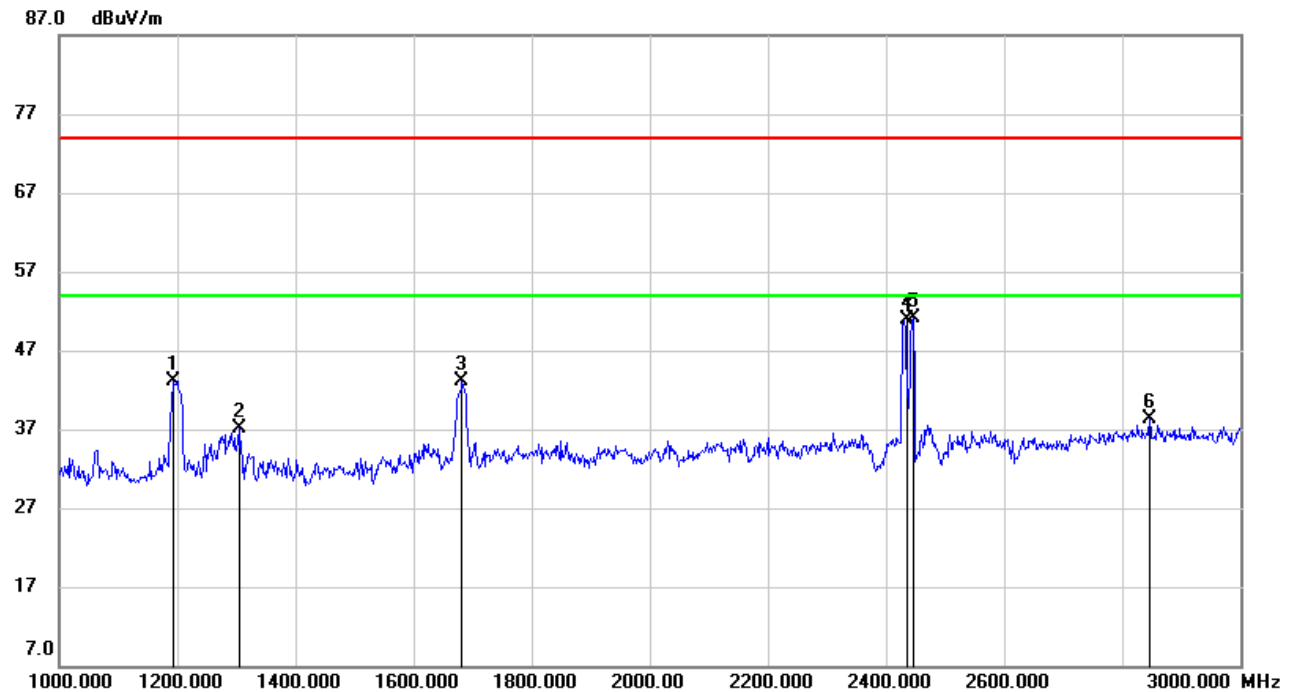


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1194.000	55.91	-12.72	43.19	74.00	-30.81	peak
2	1682.000	53.53	-10.99	42.54	74.00	-31.46	peak
3	2262.000	45.53	-8.37	37.16	74.00	-36.84	peak
4	2412.000	59.82	-7.77	52.05	74.00	-21.95	peak
5	2756.000	43.68	-6.53	37.15	74.00	-36.85	peak
6	2818.000	44.15	-5.97	38.18	74.00	-35.82	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.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

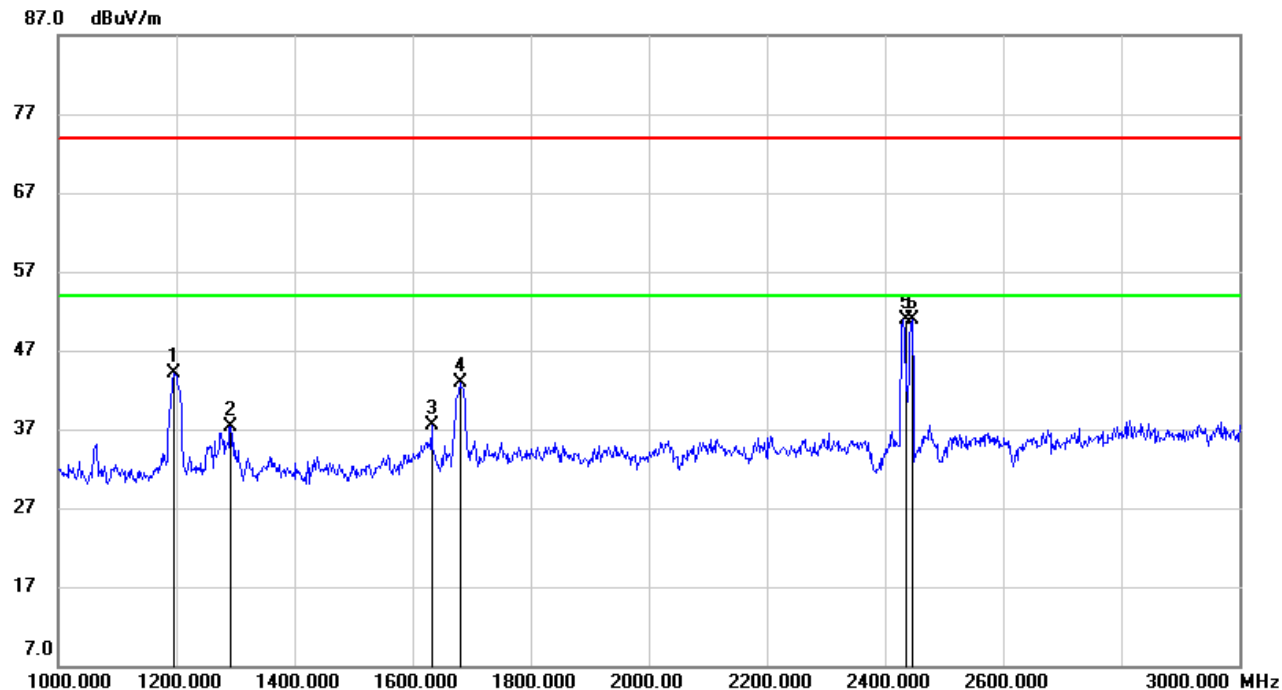


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1194.000	55.79	-12.72	43.07	74.00	-30.93	peak
2	1304.000	49.38	-12.34	37.04	74.00	-36.96	peak
3	1682.000	54.13	-10.99	43.14	74.00	-30.86	peak
4	2437.000	58.49	-7.60	50.89	74.00	-23.11	peak
5	2446.000	58.69	-7.54	51.15	74.00	-22.85	peak
6	2846.000	44.14	-5.80	38.34	74.00	-35.66	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.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

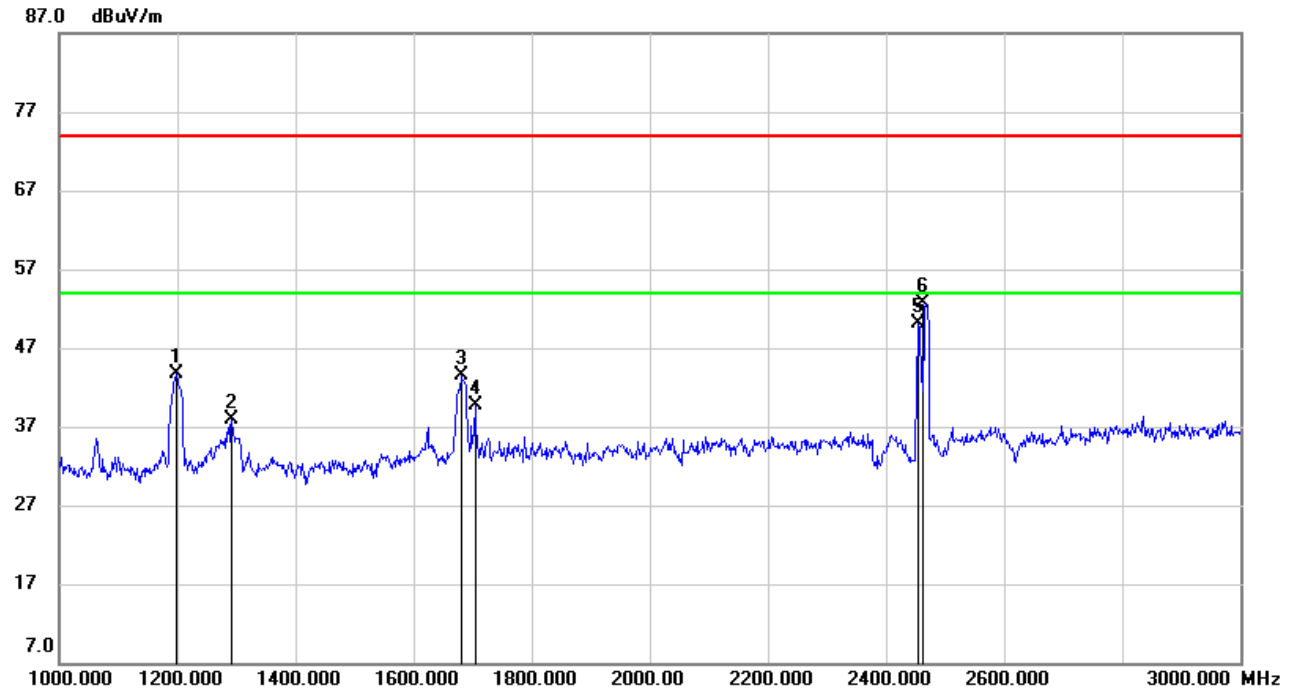


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1196.000	56.76	-12.72	44.04	74.00	-29.96	peak
2	1292.000	49.75	-12.36	37.39	74.00	-36.61	peak
3	1632.000	48.76	-11.24	37.52	74.00	-36.48	peak
4	1680.000	53.95	-11.01	42.94	74.00	-31.06	peak
5	2437.000	58.42	-7.60	50.82	74.00	-23.18	peak
6	2446.000	58.38	-7.54	50.84	74.00	-23.16	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. 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.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)

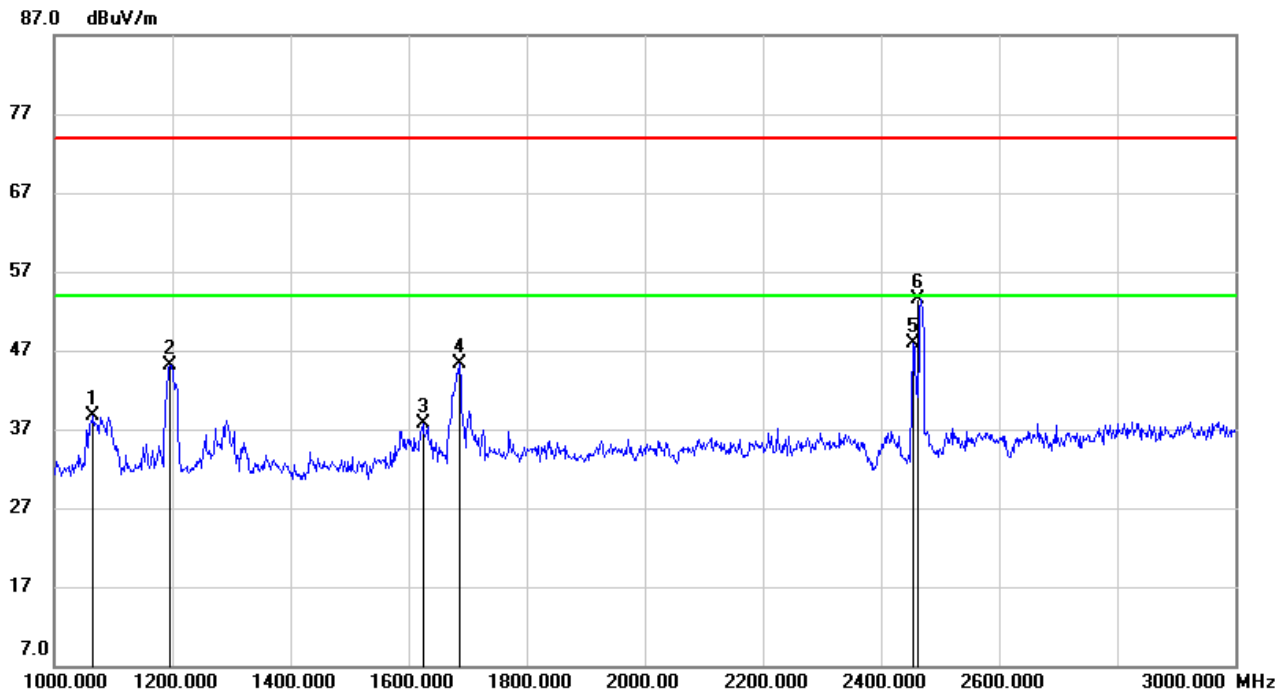


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1198.000	56.31	-12.69	43.62	74.00	-30.38	peak
2	1292.000	50.25	-12.36	37.89	74.00	-36.11	peak
3	1680.000	54.45	-11.01	43.44	74.00	-30.56	peak
4	1704.000	50.55	-10.86	39.69	74.00	-34.31	peak
5	2454.000	57.51	-7.48	50.03	74.00	-23.97	peak
6	2462.000	60.22	-7.43	52.79	74.00	-21.21	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.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1066.000	52.17	-13.54	38.63	74.00	-35.37	peak
2	1196.000	57.81	-12.72	45.09	74.00	-28.91	peak
3	1624.000	48.94	-11.28	37.66	74.00	-36.34	peak
4	1686.000	56.19	-10.97	45.22	74.00	-28.78	peak
5	2454.000	55.47	-7.48	47.99	74.00	-26.01	peak
6	2462.000	60.89	-7.43	53.46	74.00	-20.54	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.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Note: All antennas have been tested, only the worst data record in the report.

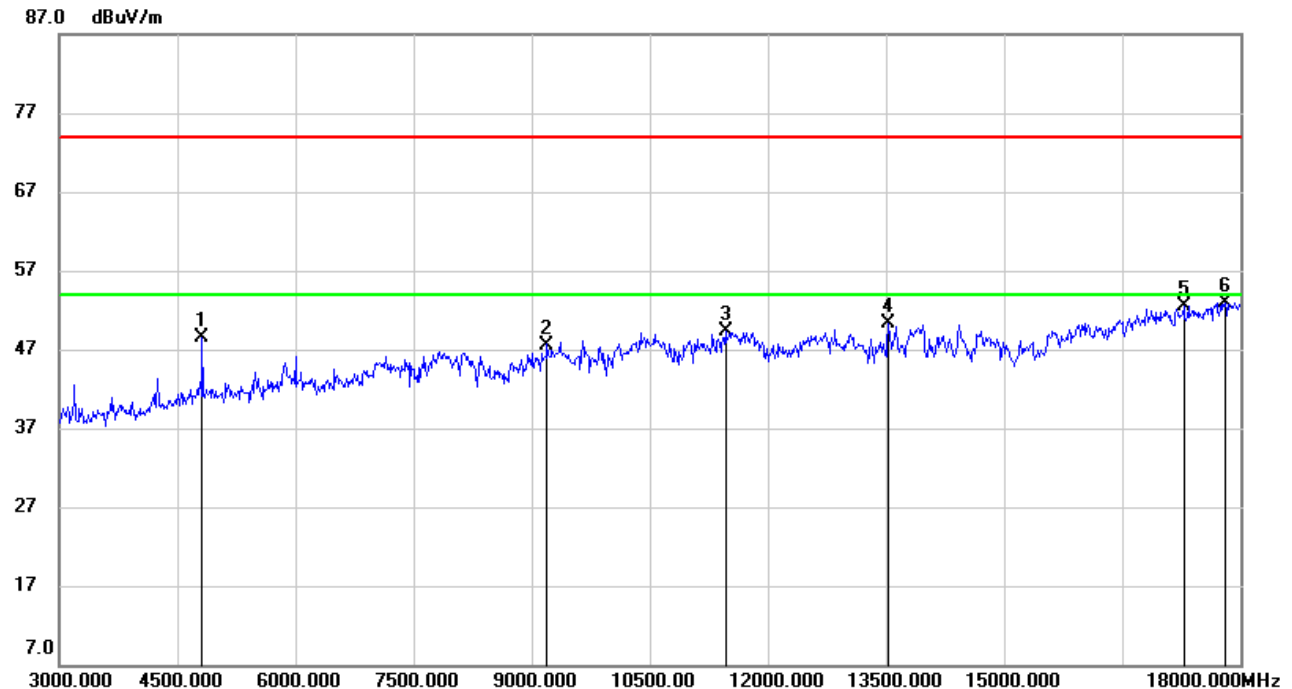


7.9. SPURIOUS EMISSIONS (3~18GHz)

7.9.1. 802.11b SISO MODE

ANTENNA1

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4815.000	47.99	0.51	48.50	74.00	-25.50	peak
2	9195.000	38.90	8.70	47.60	74.00	-26.40	peak
3	11460.000	36.26	13.11	49.37	74.00	-24.63	peak
4	13530.000	34.36	15.86	50.22	74.00	-23.78	peak
5	17280.000	30.85	21.59	52.44	74.00	-21.56	peak
6	17805.000	29.62	23.31	52.93	74.00	-21.07	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. AVG: VBW=1/Ton where: ton is transmit duration.

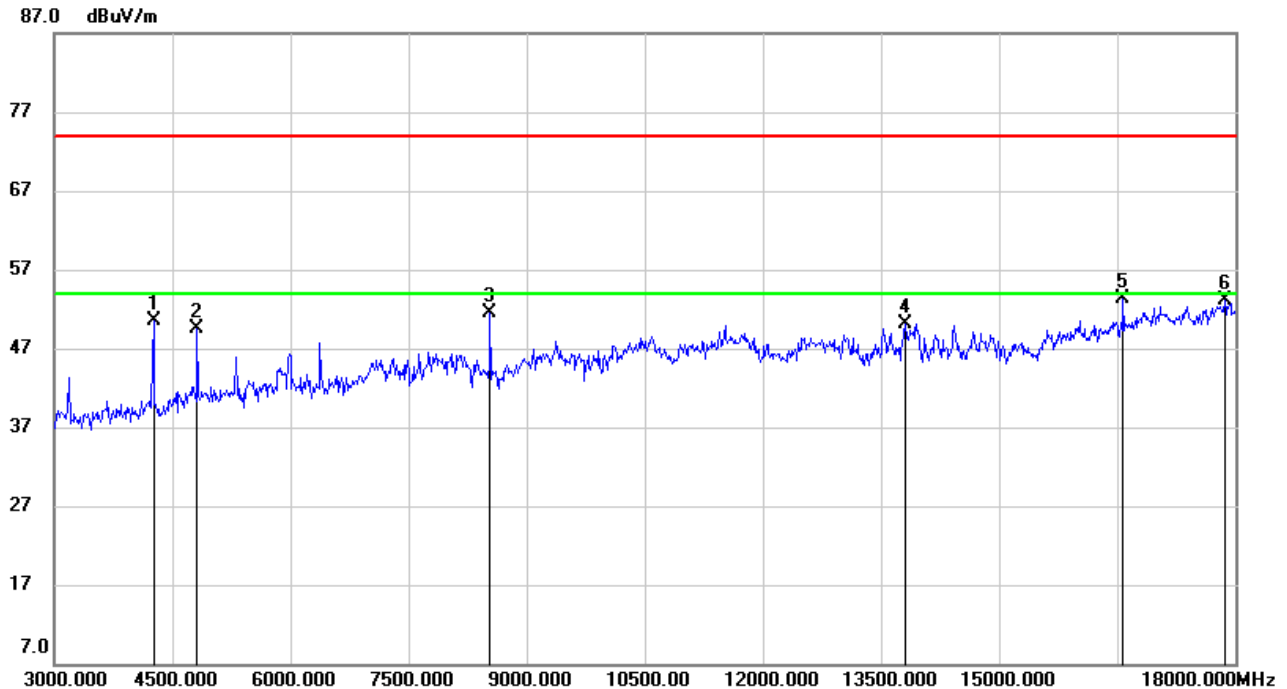
5. For transmit duration, please refer to clause 7.1.

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

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



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

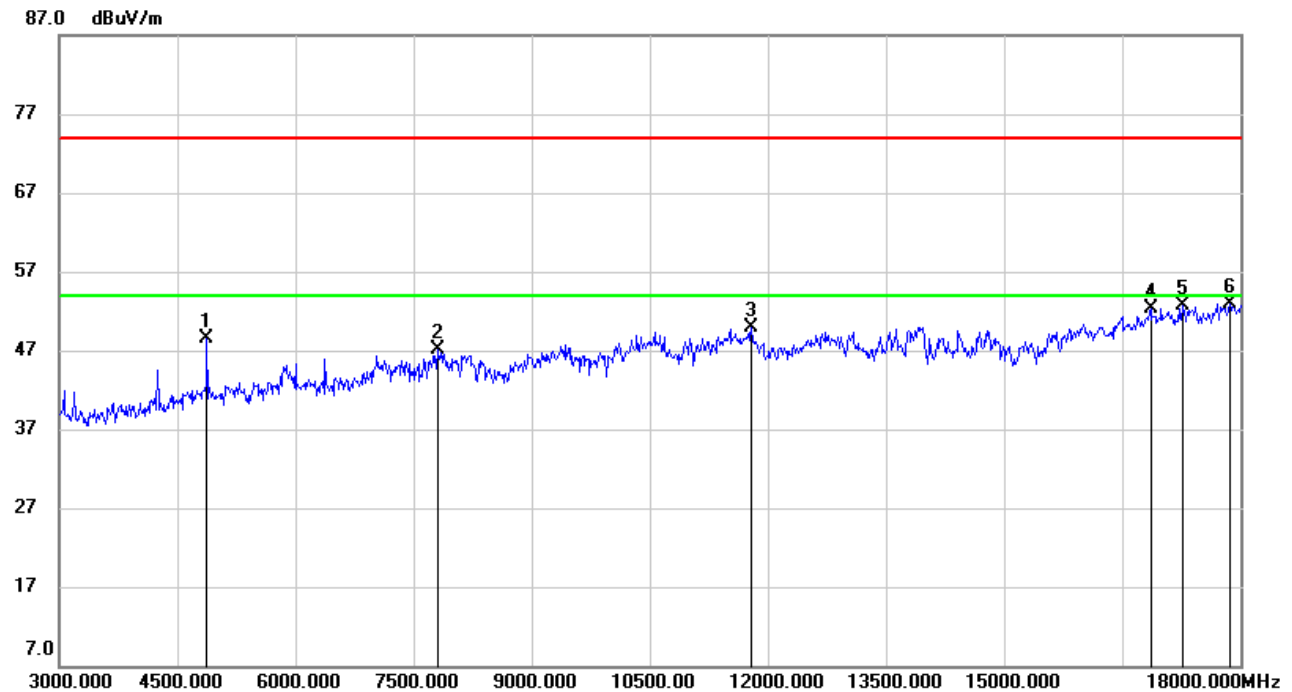


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4260.000	52.23	-1.71	50.52	74.00	-23.48	peak
2	4815.000	48.92	0.51	49.43	74.00	-24.57	peak
3	8535.000	44.20	7.39	51.59	74.00	-22.41	peak
4	13815.000	33.17	16.97	50.14	74.00	-23.86	peak
5	16575.000	33.97	19.40	53.37	74.00	-20.63	peak
6	17865.000	29.70	23.33	53.03	74.00	-20.97	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. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

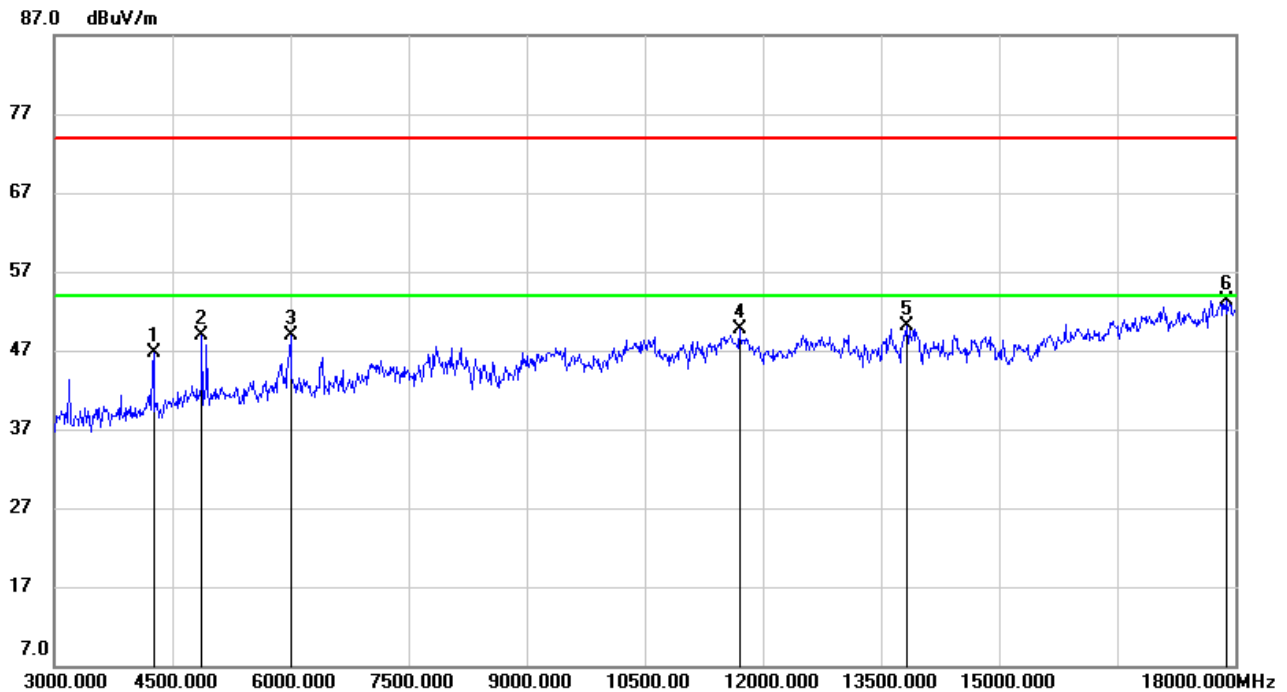


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4875.000	47.76	0.76	48.52	74.00	-25.48	peak
2	7800.000	39.23	7.93	47.16	74.00	-26.84	peak
3	11790.000	36.82	13.17	49.99	74.00	-24.01	peak
4	16860.000	32.43	19.95	52.38	74.00	-21.62	peak
5	17265.000	31.19	21.46	52.65	74.00	-21.35	peak
6	17865.000	29.61	23.33	52.94	74.00	-21.06	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.
4. AVG: VBW=1/Ton where: ton is transmit duration.
5. For transmit 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 High Pass Filter losses.
7. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

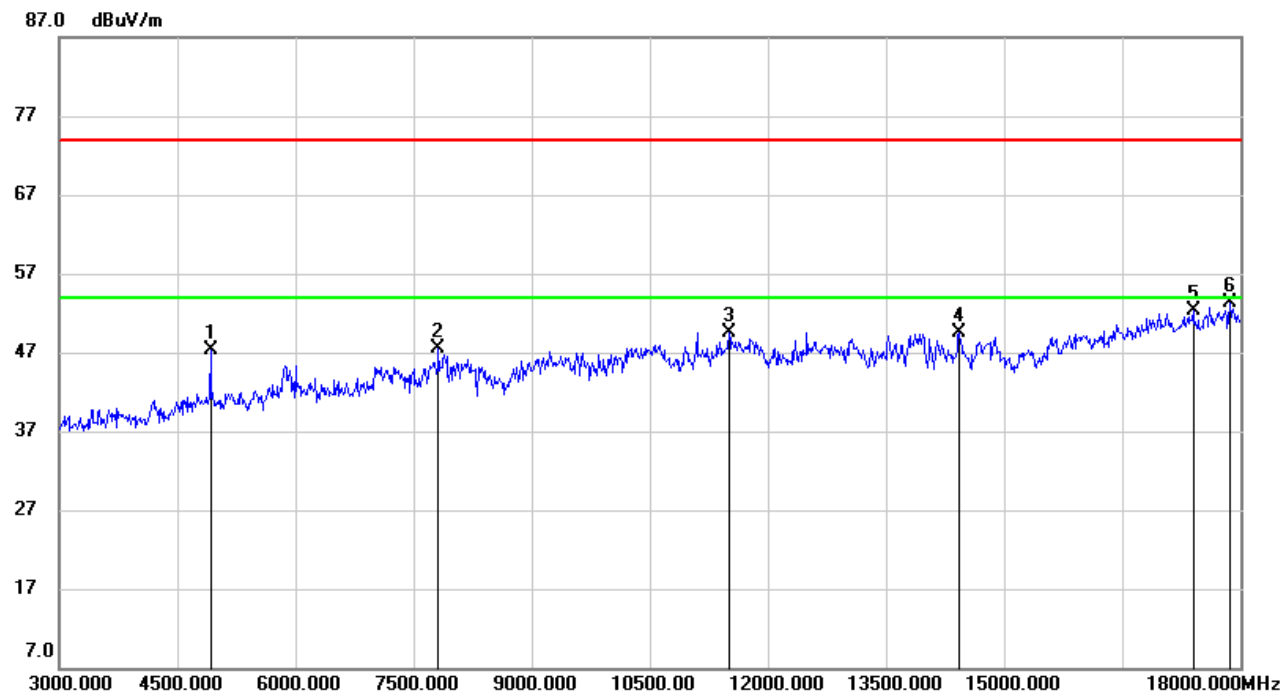


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4260.000	48.46	-1.71	46.75	74.00	-27.25	peak
2	4875.000	48.22	0.76	48.98	74.00	-25.02	peak
3	6000.000	45.58	3.29	48.87	74.00	-25.13	peak
4	11700.000	36.71	12.95	49.66	74.00	-24.34	peak
5	13830.000	33.35	16.84	50.19	74.00	-23.81	peak
6	17895.000	29.98	23.34	53.32	74.00	-20.68	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. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	46.34	0.96	47.30	74.00	-26.70	peak
2	7815.000	39.72	7.83	47.55	74.00	-26.45	peak
3	11505.000	36.16	13.42	49.58	74.00	-24.42	peak
4	14430.000	33.24	16.35	49.59	74.00	-24.41	peak
5	17400.000	30.96	21.41	52.37	74.00	-21.63	peak
6	17865.000	29.89	23.33	53.22	74.00	-20.78	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. AVG: VBW=1/Ton where: ton is transmit duration.

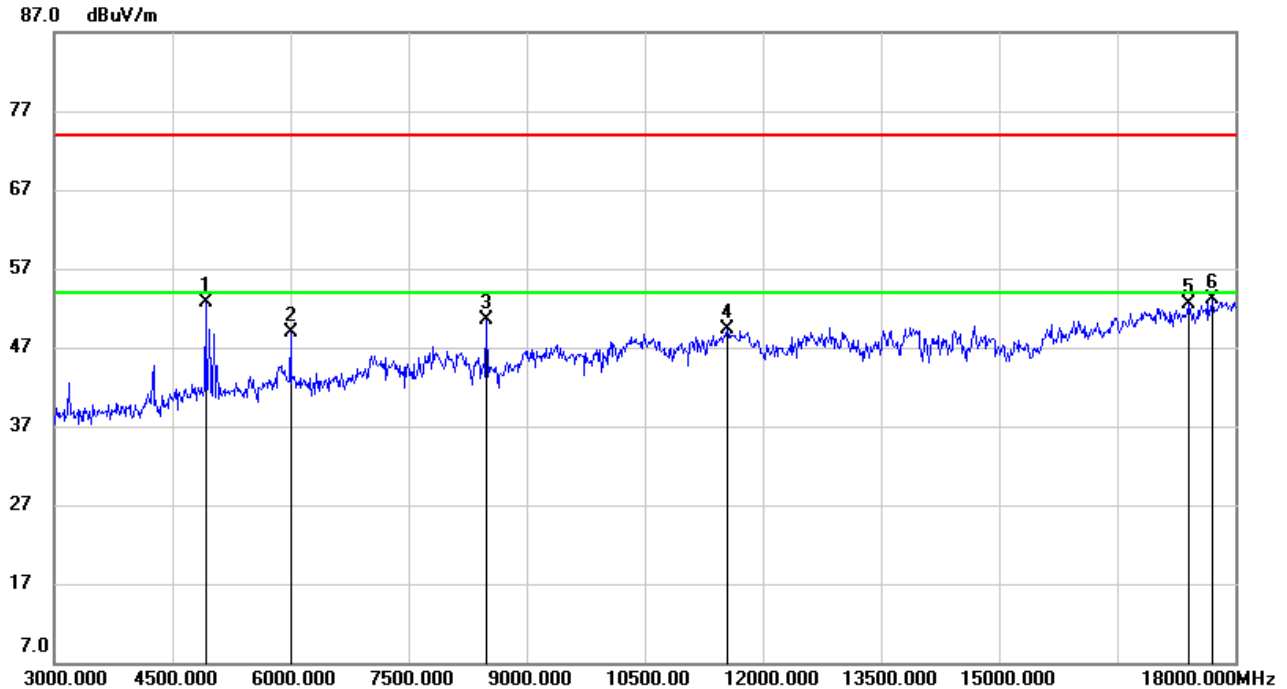
5. For transmit duration, please refer to clause 7.1.

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

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



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4920.000	51.80	0.96	52.76	74.00	-21.24	peak
2	6000.000	45.66	3.29	48.95	74.00	-25.05	peak
3	8490.000	43.10	7.44	50.54	74.00	-23.46	peak
4	11550.000	35.94	13.30	49.24	74.00	-24.76	peak
5	17400.000	31.11	21.41	52.52	74.00	-21.48	peak
6	17715.000	30.57	22.56	53.13	74.00	-20.87	peak

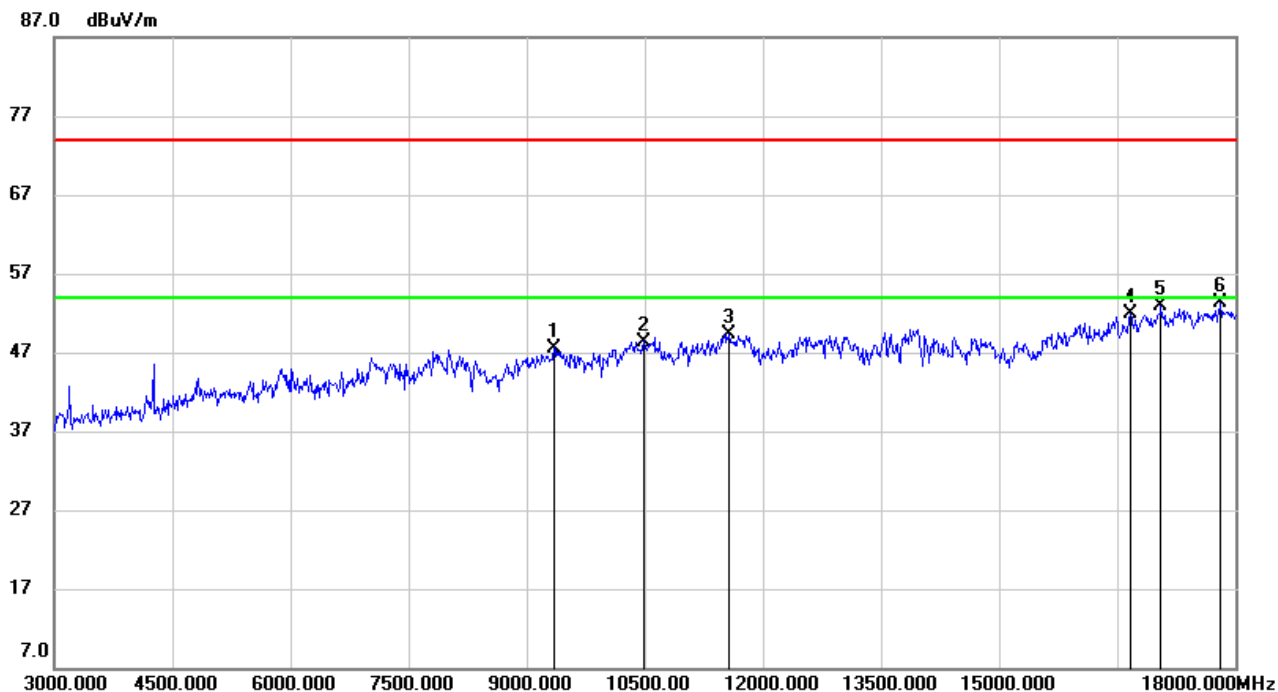
Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Note: All antennas have been tested, only the worst data record in the report.



7.9.2. 802.11g SISO MODE

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)

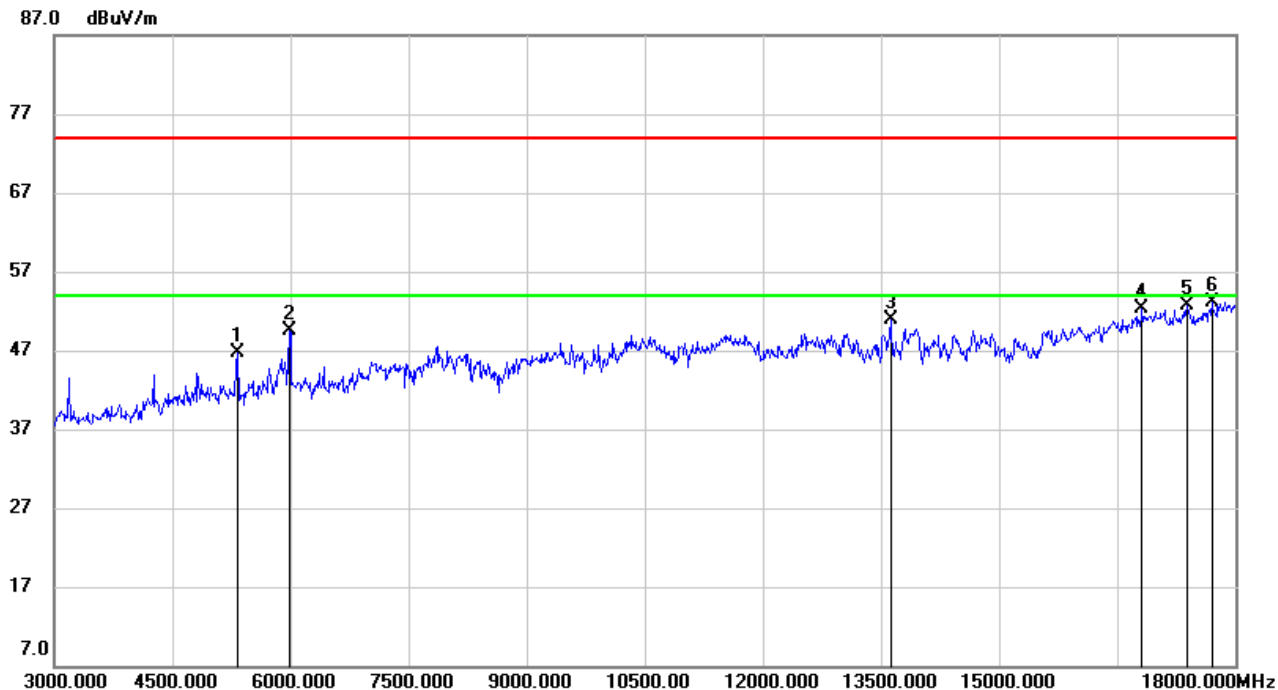


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	9345.000	38.34	9.26	47.60	74.00	-26.40	peak
2	10485.000	37.08	11.32	48.40	74.00	-25.60	peak
3	11565.000	36.12	13.26	49.38	74.00	-24.62	peak
4	16665.000	32.04	19.78	51.82	74.00	-22.18	peak
5	17055.000	32.34	20.53	52.87	74.00	-21.13	peak
6	17805.000	29.92	23.31	53.23	74.00	-20.77	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. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

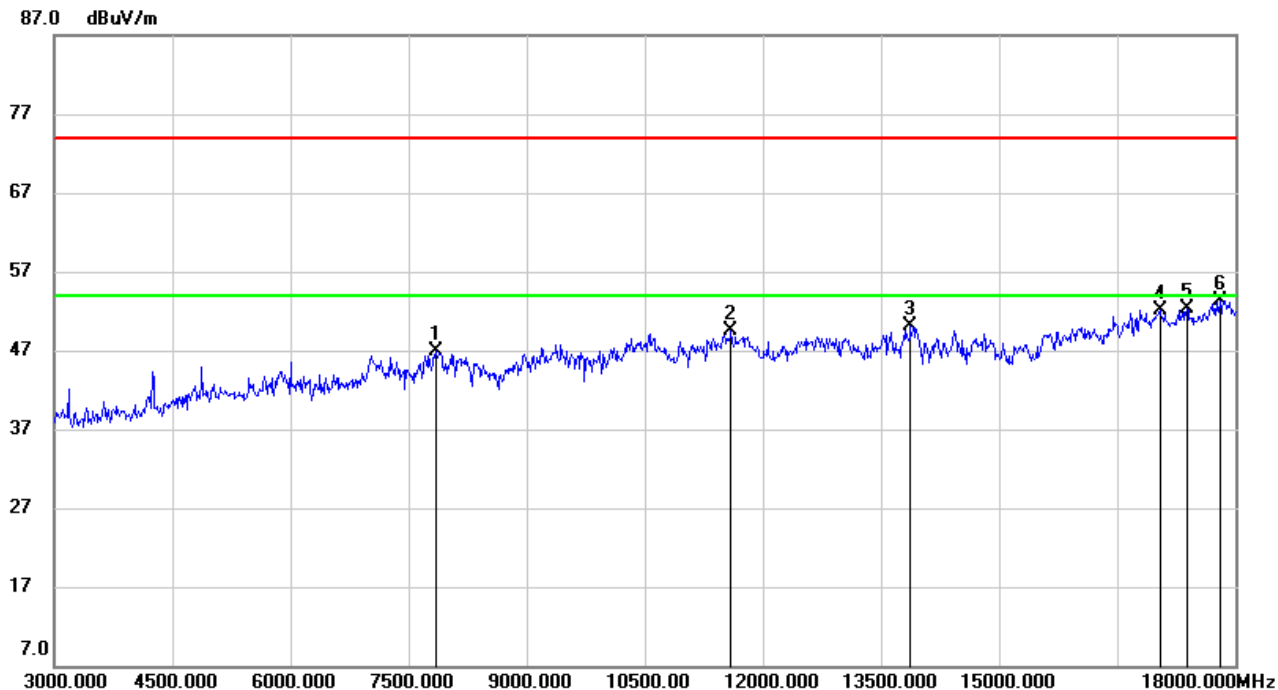


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5325.000	44.69	1.99	46.68	74.00	-27.32	peak
2	5985.000	45.87	3.54	49.41	74.00	-24.59	peak
3	13620.000	34.88	15.99	50.87	74.00	-23.13	peak
4	16815.000	32.44	19.96	52.40	74.00	-21.60	peak
5	17385.000	31.31	21.46	52.77	74.00	-21.23	peak
6	17700.000	30.63	22.43	53.06	74.00	-20.94	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. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

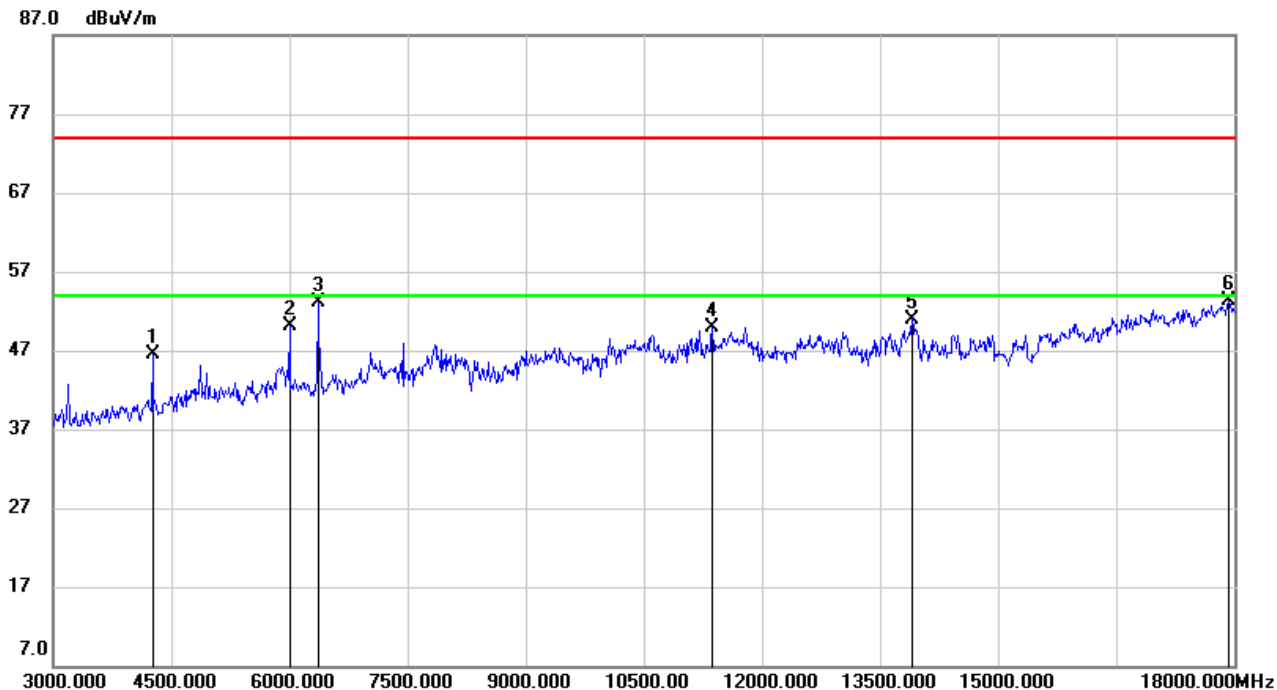


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7845.000	39.24	7.62	46.86	74.00	-27.14	peak
2	11595.000	36.23	13.19	49.42	74.00	-24.58	peak
3	13875.000	33.69	16.44	50.13	74.00	-23.87	peak
4	17040.000	31.70	20.49	52.19	74.00	-21.81	peak
5	17385.000	30.87	21.46	52.33	74.00	-21.67	peak
6	17805.000	30.03	23.31	53.34	74.00	-20.66	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. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

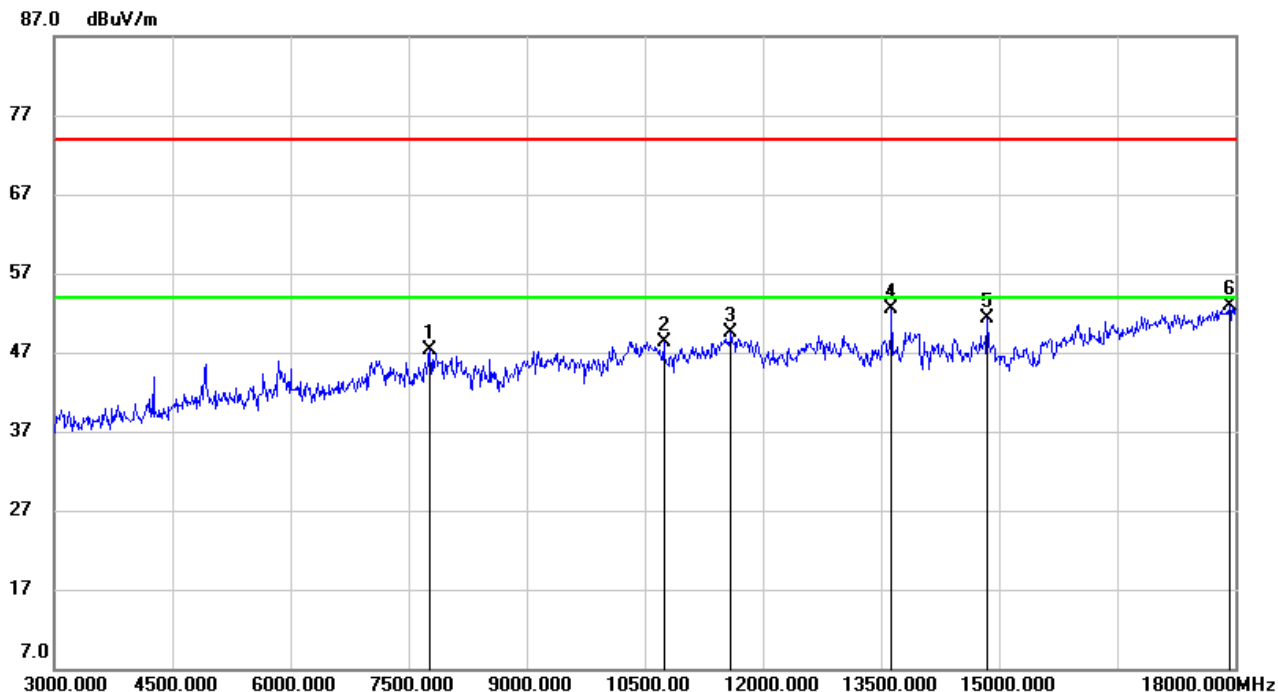


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4260.000	48.23	-1.71	46.52	74.00	-27.48	peak
2	6000.000	46.78	3.29	50.07	74.00	-23.93	peak
3	6360.000	48.97	4.17	53.14	74.00	-20.86	peak
4	11370.000	37.38	12.54	49.92	74.00	-24.08	peak
5	13905.000	34.80	16.20	51.00	74.00	-23.00	peak
6	17925.000	29.85	23.37	53.22	74.00	-20.78	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. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)

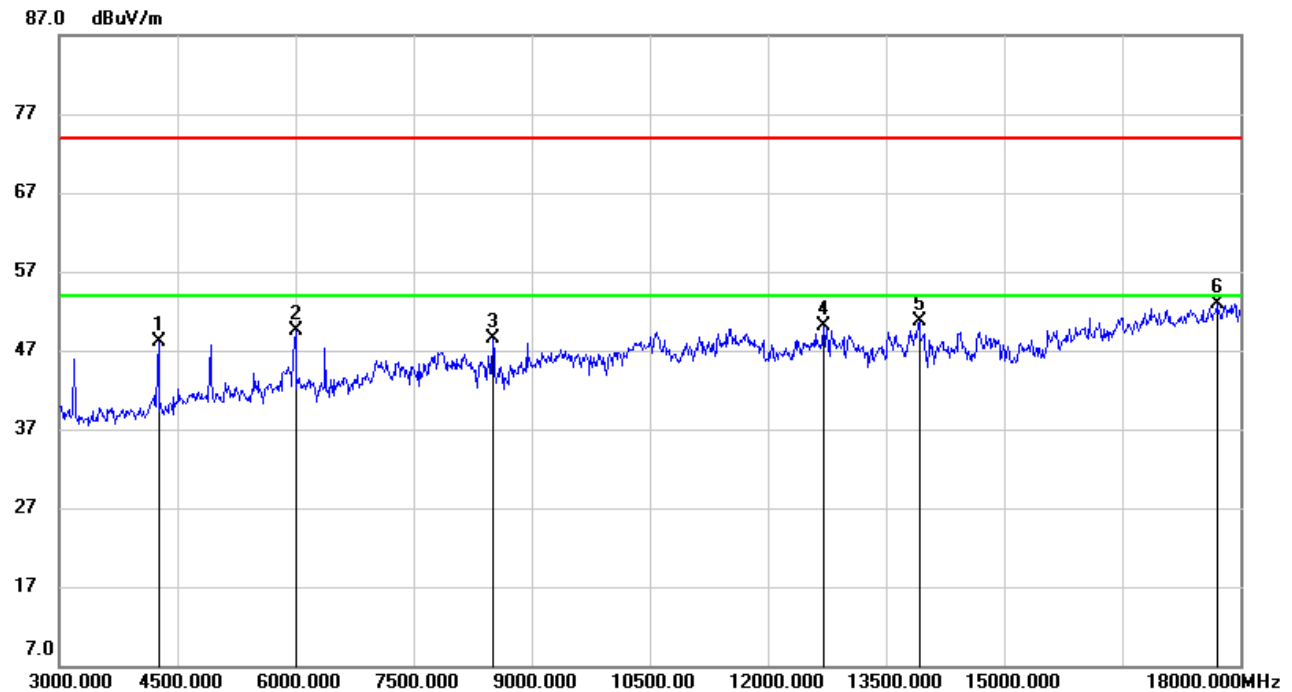


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7770.000	39.89	7.50	47.39	74.00	-26.61	peak
2	10740.000	36.69	11.64	48.33	74.00	-25.67	peak
3	11595.000	36.26	13.19	49.45	74.00	-24.55	peak
4	13635.000	36.57	15.97	52.54	74.00	-21.46	peak
5	14850.000	35.29	15.97	51.26	74.00	-22.74	peak
6	17925.000	29.53	23.37	52.90	74.00	-21.10	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. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4260.000	49.75	-1.71	48.04	74.00	-25.96	peak
2	6000.000	46.27	3.29	49.56	74.00	-24.44	peak
3	8505.000	41.11	7.41	48.52	74.00	-25.48	peak
4	12705.000	35.77	14.35	50.12	74.00	-23.88	peak
5	13920.000	34.45	16.17	50.62	74.00	-23.38	peak
6	17700.000	30.49	22.43	52.92	74.00	-21.08	peak

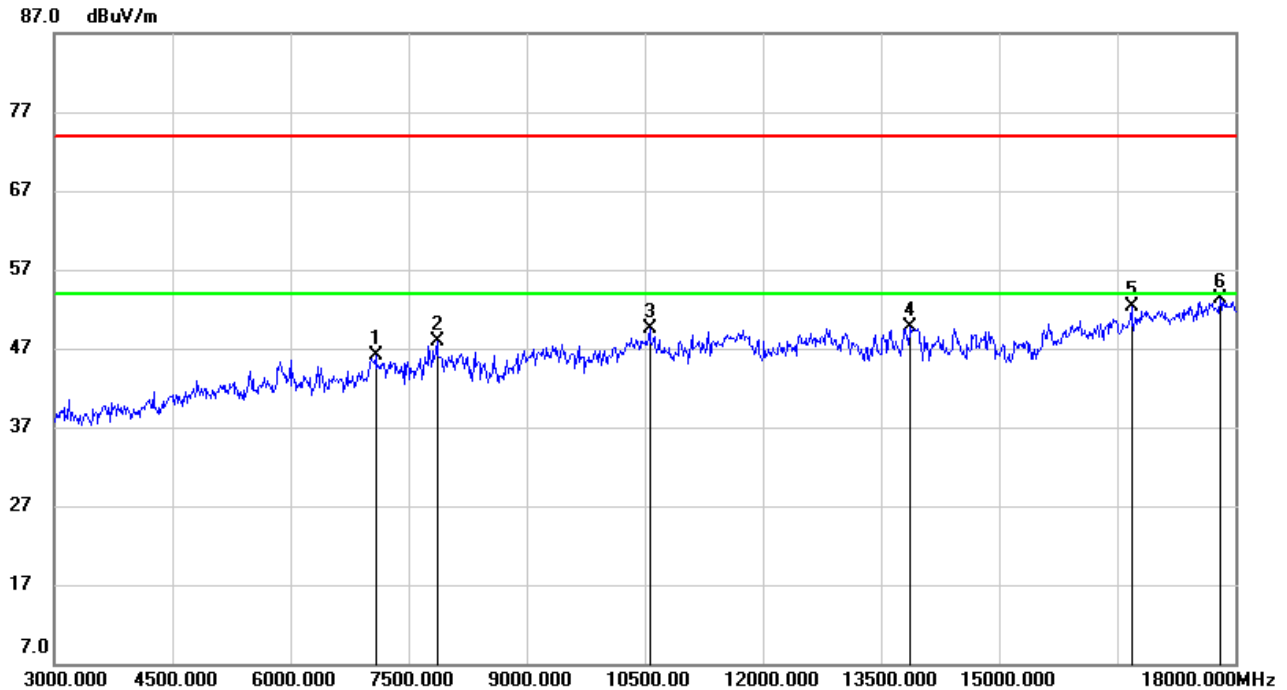
- Note: 1. Peak Result = Reading Level + Correct Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Peak: Peak detector.
4. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Note: All antennas have been tested, only the worst data record in the report.



7.9.3. 802.11n HT20 MIMO MODE

HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7080.000	40.29	5.89	46.18	74.00	-27.82	peak
2	7860.000	40.30	7.51	47.81	74.00	-26.19	peak
3	10560.000	37.85	11.73	49.58	74.00	-24.42	peak
4	13875.000	33.20	16.44	49.64	74.00	-24.36	peak
5	16680.000	32.51	19.84	52.35	74.00	-21.65	peak
6	17805.000	29.92	23.31	53.23	74.00	-20.77	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. AVG: VBW=1/Ton where: ton is transmit duration.

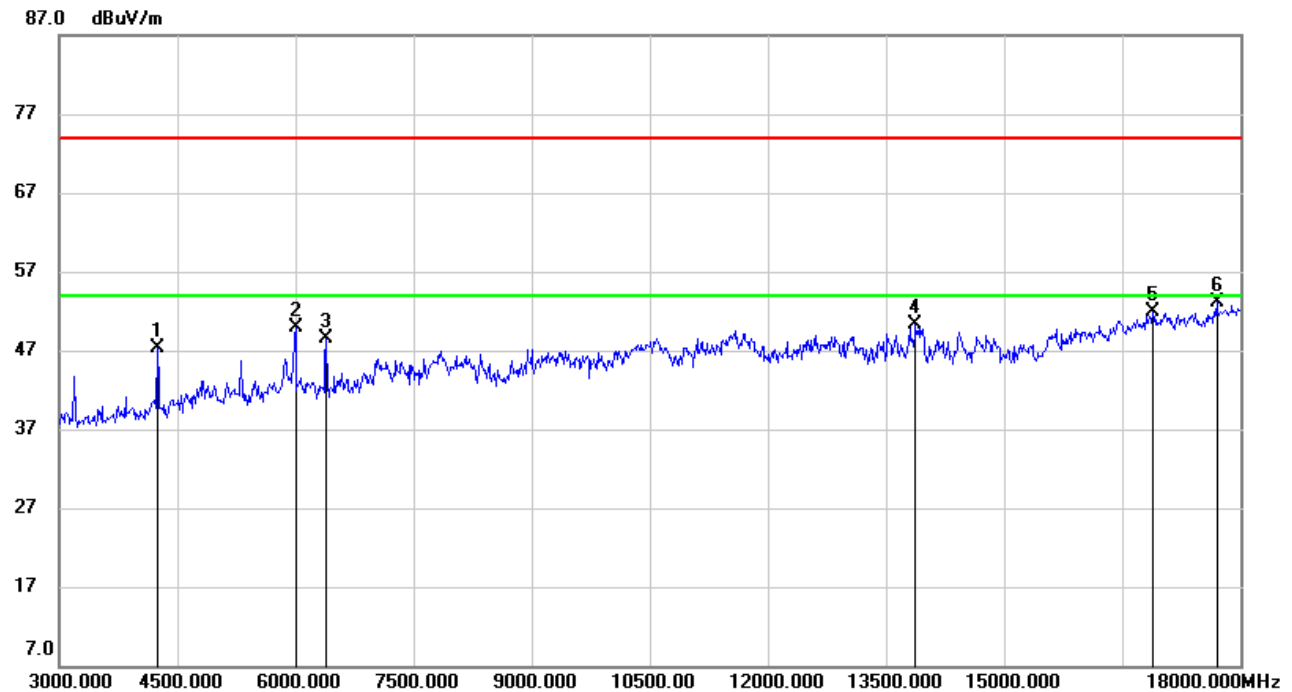
5. For transmit duration, please refer to clause 7.1.

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

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



HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL, VERTICAL)

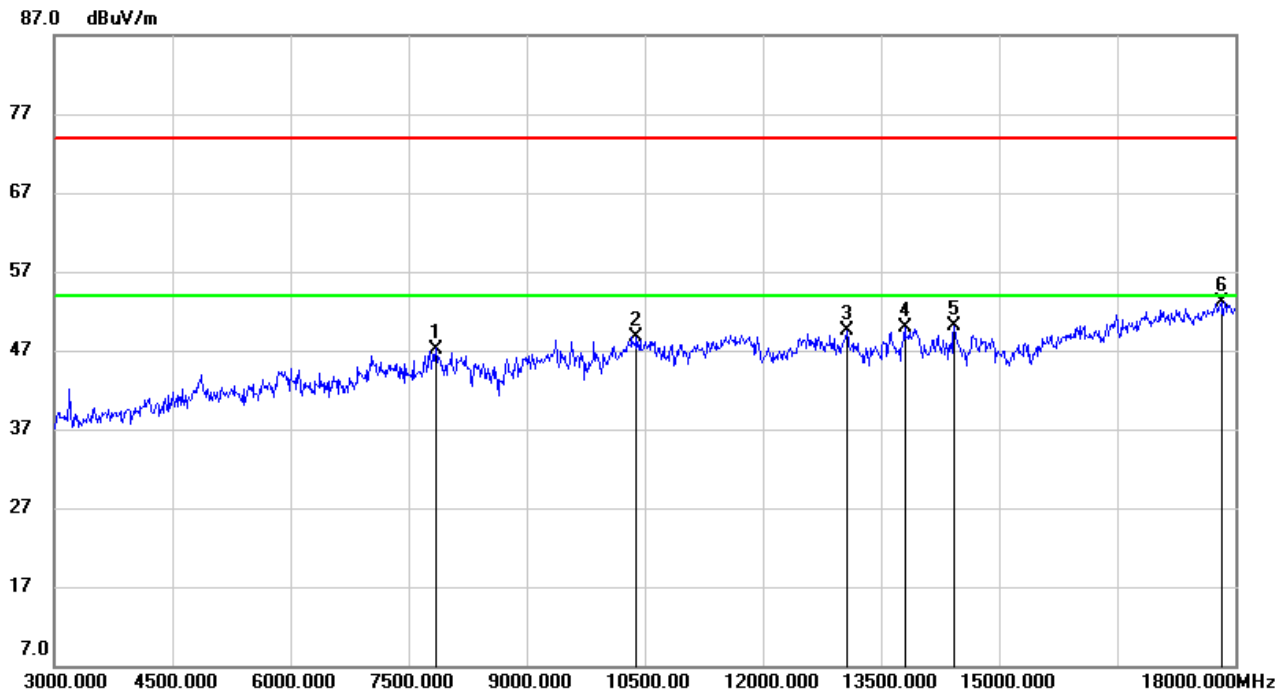


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4245.000	48.82	-1.59	47.23	74.00	-26.77	peak
2	6000.000	46.69	3.29	49.98	74.00	-24.02	peak
3	6390.000	44.15	4.28	48.43	74.00	-25.57	peak
4	13875.000	33.80	16.44	50.24	74.00	-23.76	peak
5	16890.000	31.90	19.97	51.87	74.00	-22.13	peak
6	17700.000	30.64	22.43	53.07	74.00	-20.93	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. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

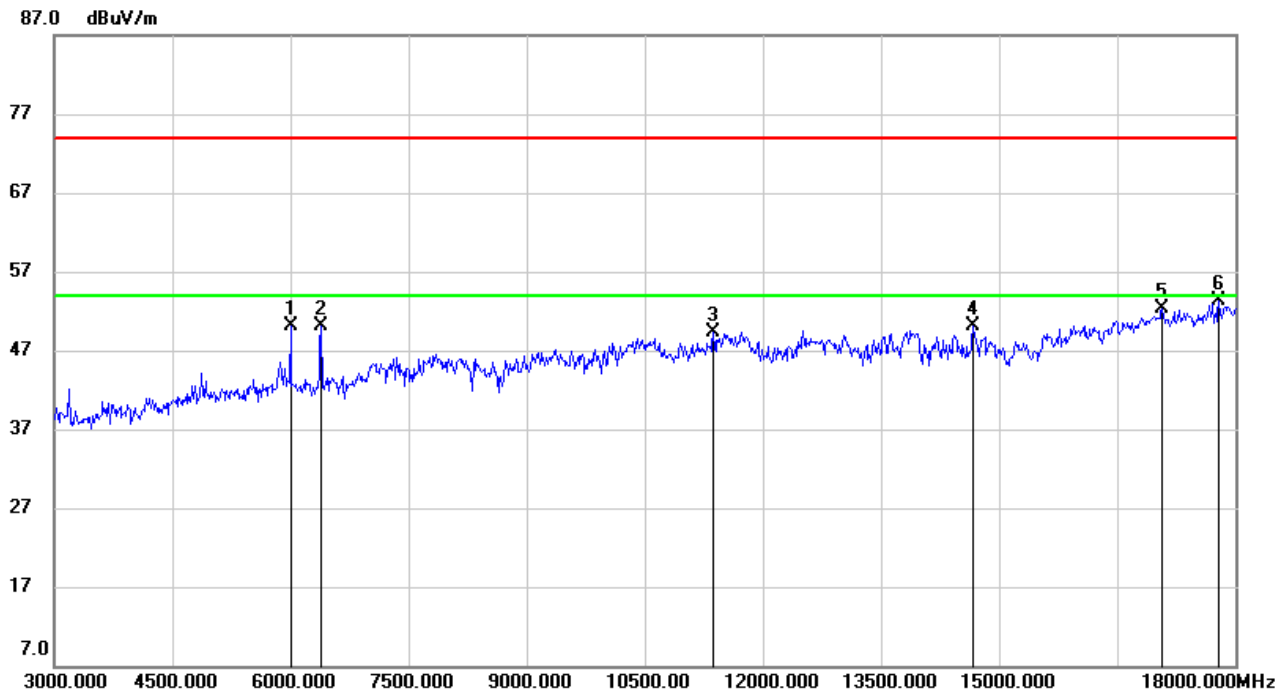


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	7845.000	39.58	7.62	47.20	74.00	-26.80	peak
2	10395.000	37.68	10.98	48.66	74.00	-25.34	peak
3	13065.000	34.31	15.11	49.42	74.00	-24.58	peak
4	13800.000	32.79	17.10	49.89	74.00	-24.11	peak
5	14430.000	33.66	16.35	50.01	74.00	-23.99	peak
6	17820.000	29.85	23.30	53.15	74.00	-20.85	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. AVG: VBW=1/Ton where: ton is transmit duration.
5. For transmit 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 High Pass Filter losses.
7. Proper operation of the transmitter prior to adding the filter to the measurement chain.



HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL, VERTICAL)

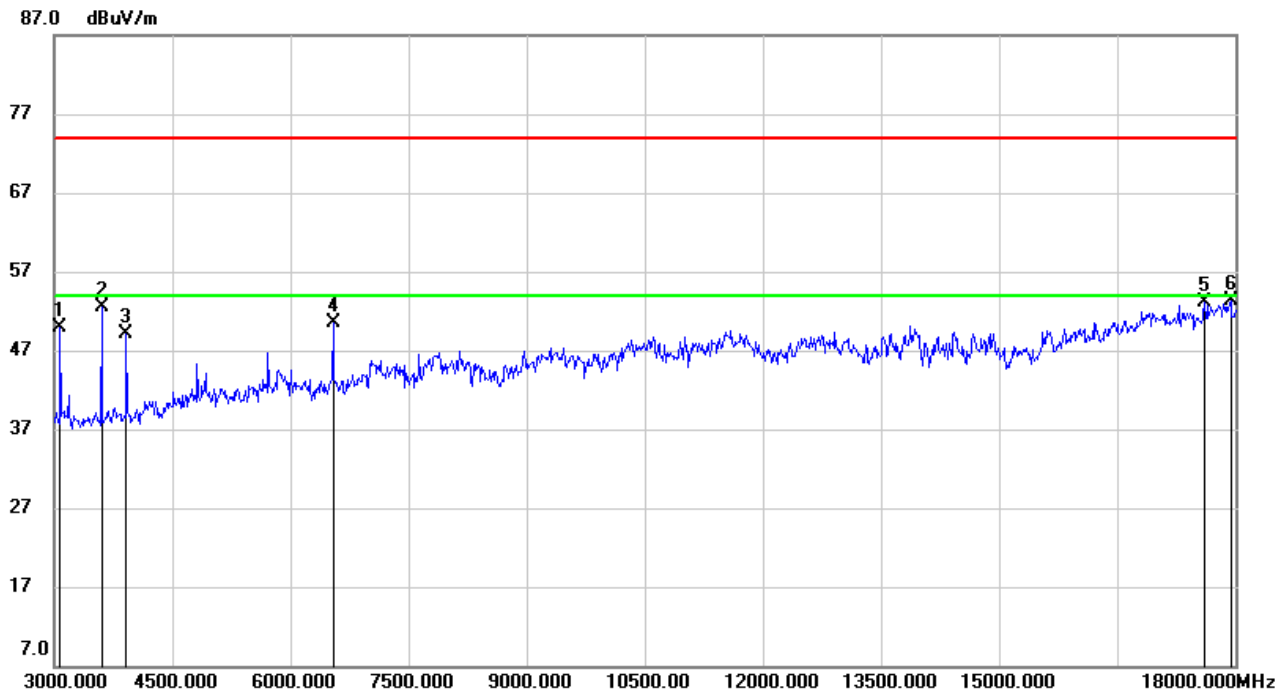


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6000.000	46.77	3.29	50.06	74.00	-23.94	peak
2	6390.000	45.79	4.28	50.07	74.00	-23.93	peak
3	11370.000	36.77	12.54	49.31	74.00	-24.69	peak
4	14670.000	34.04	16.01	50.05	74.00	-23.95	peak
5	17070.000	31.77	20.57	52.34	74.00	-21.66	peak
6	17790.000	30.05	23.22	53.27	74.00	-20.73	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. Filter losses were only considered in the spurious frequency bands and the authorized band was not corrected for High Pass Filter losses.
5. Proper operation of the transmitter prior to adding the filter to the measurement chain.



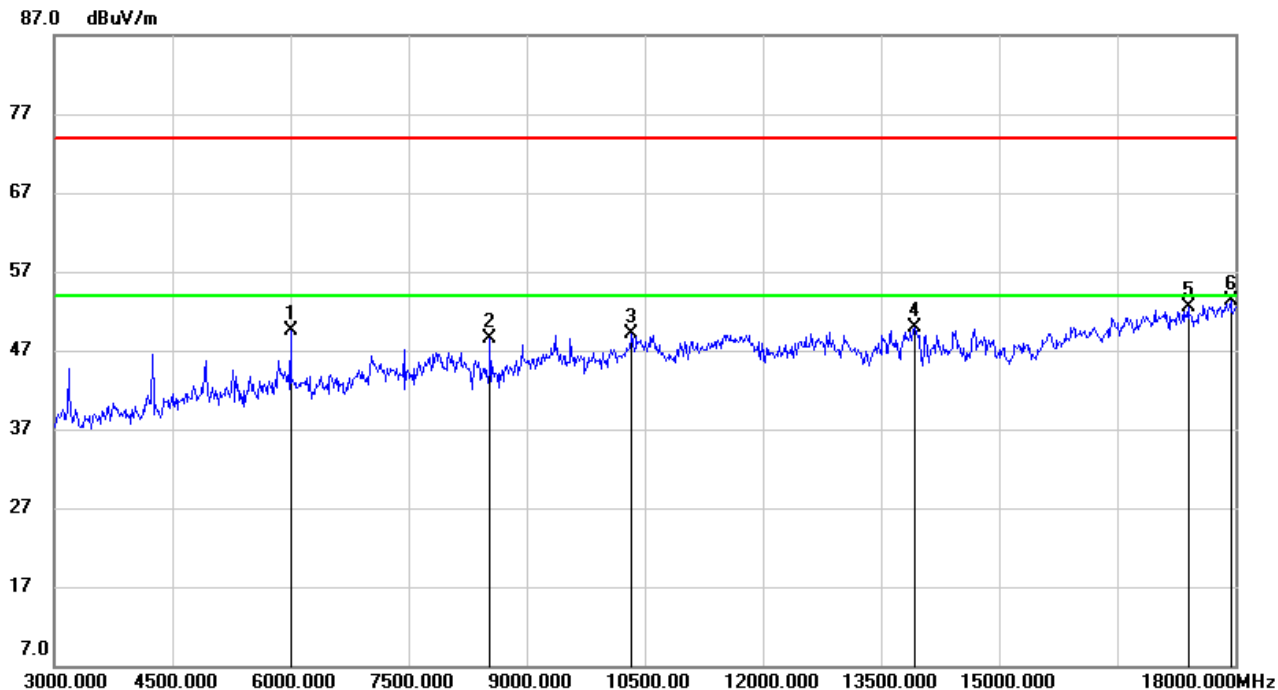
HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	3075.000	53.83	-3.91	49.92	74.00	-24.08	peak
2	3600.000	56.02	-3.52	52.50	74.00	-21.50	peak
3	3915.000	52.05	-2.93	49.12	74.00	-24.88	peak
4	6540.000	45.10	5.37	50.47	74.00	-23.53	peak
5	17610.000	31.30	21.86	53.16	74.00	-20.84	peak
6	17940.000	29.83	23.39	53.22	74.00	-20.78	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. AVG: $VBW=1/Ton$ where: ton is transmit duration.
5. For transmit 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 High Pass Filter losses.
7. Proper operation of the transmitter prior to adding the filter to the measurement chain.

HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	6000.000	46.27	3.29	49.56	74.00	-24.44	peak
2	8535.000	41.11	7.39	48.50	74.00	-25.50	peak
3	10335.000	38.04	11.04	49.08	74.00	-24.92	peak
4	13920.000	33.74	16.17	49.91	74.00	-24.09	peak
5	17400.000	31.10	21.41	52.51	74.00	-21.49	peak
6	17940.000	29.90	23.39	53.29	74.00	-20.71	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. AVG: VBW=1/Ton where: ton is transmit duration.
5. For transmit 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 High Pass Filter losses.
7. Proper operation of the transmitter prior to adding the filter to the measurement chain.

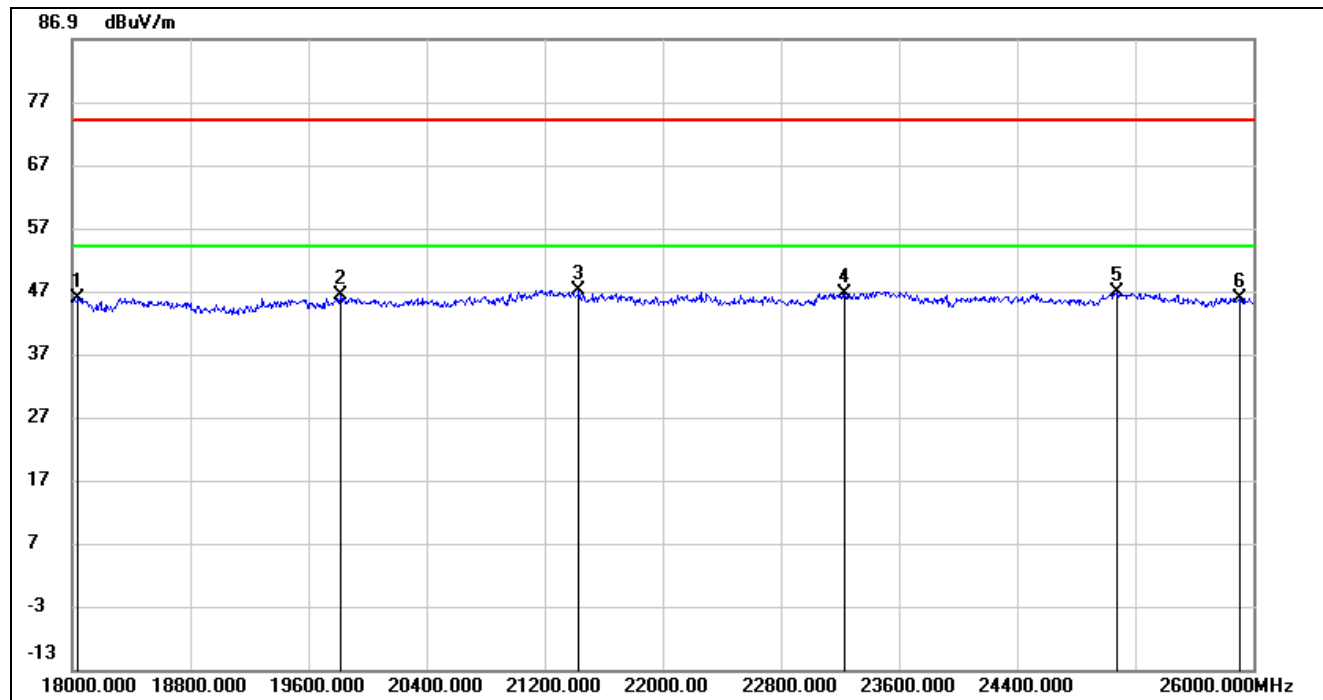
Note: All antennas have been tested, only the worst data record in the report.



7.10. SPURIOUS EMISSIONS (18~26GHz)

7.10.1. 802.11n HT20 MIMO MODE

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



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18040.000	49.85	-3.95	45.90	74.00	-28.10	peak
2	19816.000	50.63	-4.34	46.29	74.00	-27.71	peak
3	21432.000	52.85	-5.71	47.14	74.00	-26.86	peak
4	23232.000	51.88	-5.28	46.60	74.00	-27.40	peak
5	25072.000	47.98	-1.11	46.87	74.00	-27.13	peak
6	25912.000	47.94	-2.06	45.88	74.00	-28.12	peak

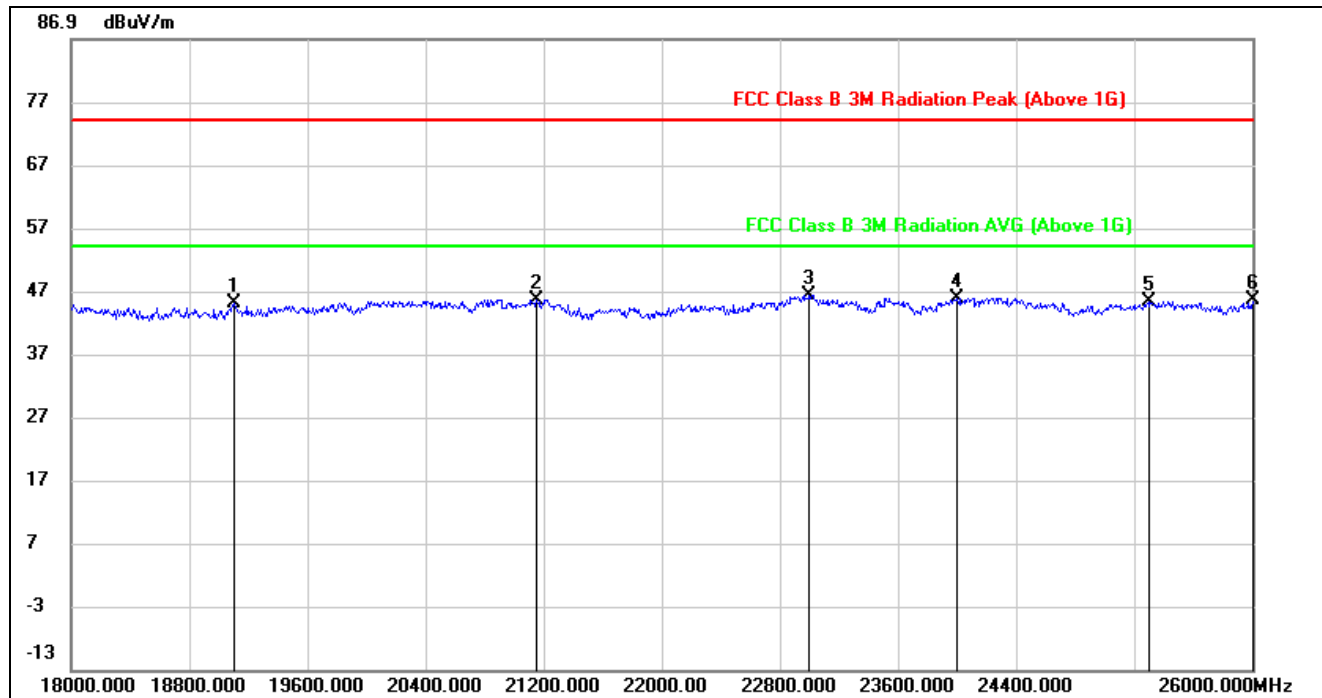
Note: 1. Peak Result = Reading Level + Correct Factor.

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

3. Peak: Peak detector.



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



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	19104.000	49.89	-4.96	44.93	74.00	-29.07	peak
2	21152.000	51.06	-5.42	45.64	74.00	-28.36	peak
3	23000.000	51.95	-5.61	46.34	74.00	-27.66	peak
4	24000.000	49.91	-4.01	45.90	74.00	-28.10	peak
5	25296.000	46.65	-1.30	45.35	74.00	-28.65	peak
6	26000.000	47.88	-2.46	45.42	74.00	-28.58	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.

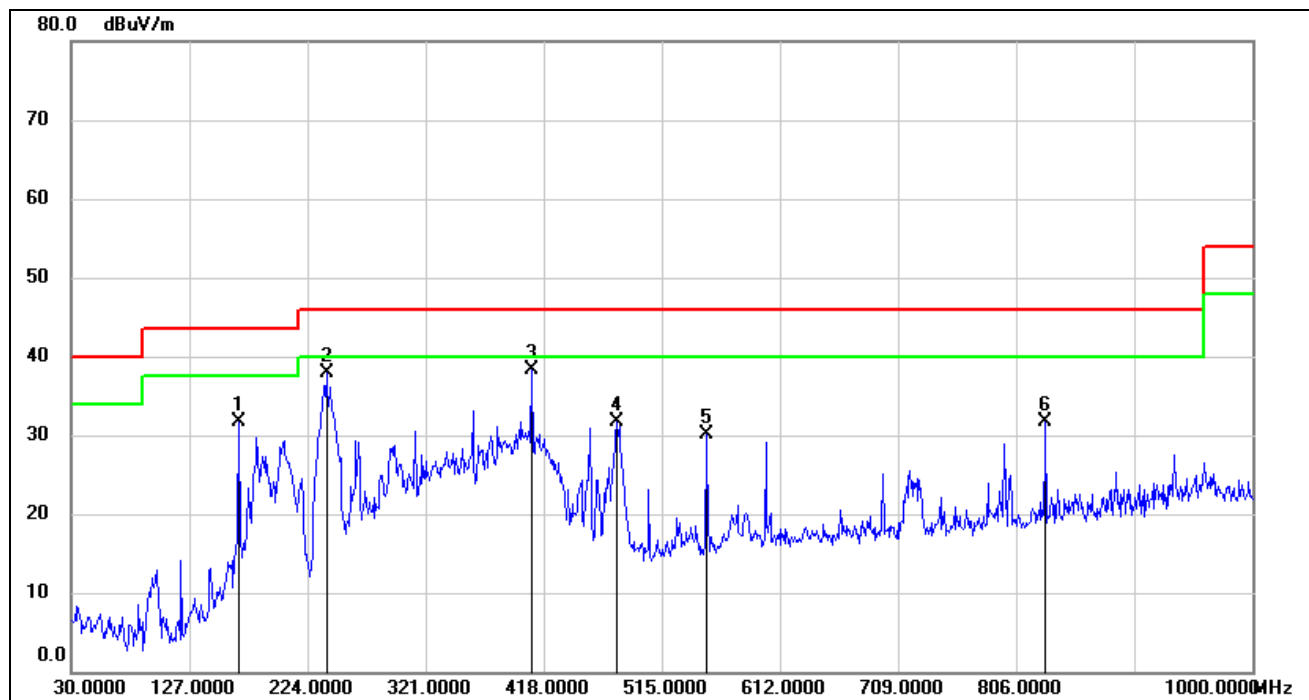
3. Peak: Peak detector.

Note: All the test modes have been tested, only the worst data record in the report.

7.11. SPURIOUS EMISSIONS (0.03 ~ 1 GHz)

7.11.1. 802.11n HT20 MIMO MODE

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

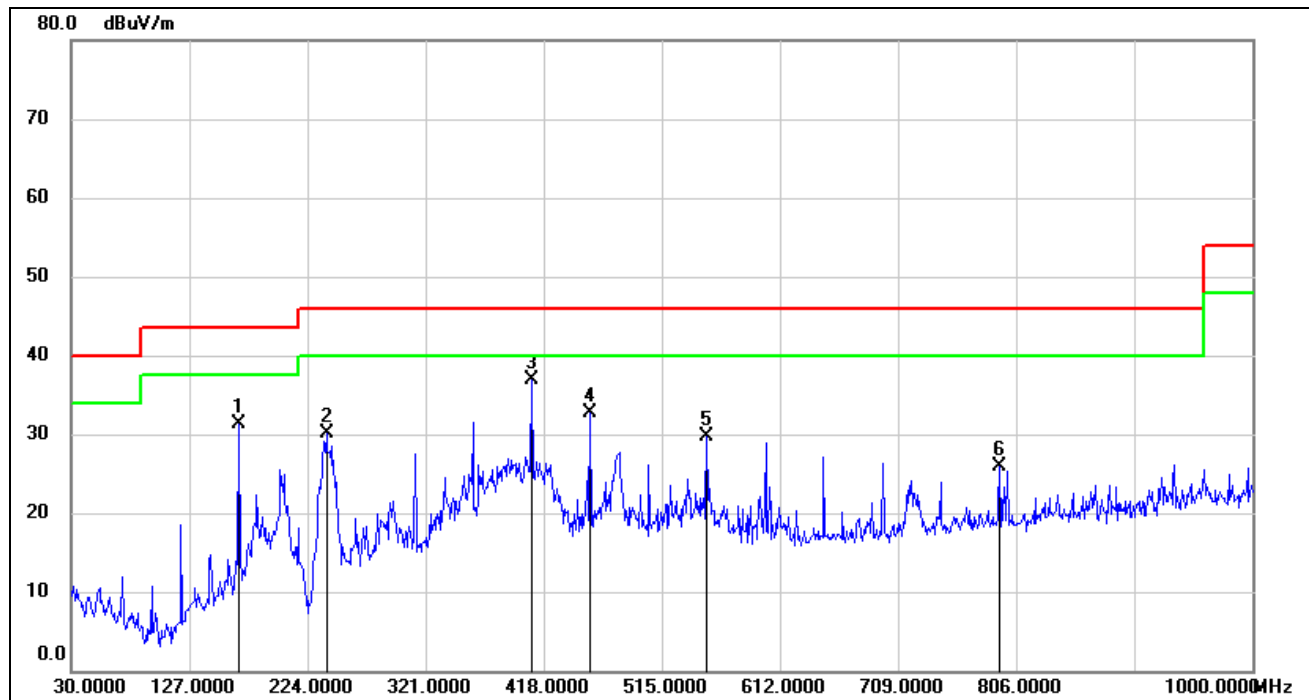


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	167.7400	48.84	-17.10	31.74	43.50	-11.76	QP
2	239.5200	55.05	-17.05	38.00	46.00	-8.00	QP
3	408.3000	50.93	-12.57	38.36	46.00	-7.64	QP
4	478.1400	43.02	-11.29	31.73	46.00	-14.27	QP
5	551.8600	40.01	-9.88	30.13	46.00	-15.87	QP
6	830.2500	36.79	-5.11	31.68	46.00	-14.32	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 (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	167.7400	48.40	-17.10	31.30	43.50	-12.20	QP
2	239.5200	47.21	-17.05	30.16	46.00	-15.84	QP
3	408.3000	49.56	-12.57	36.99	46.00	-9.01	QP
4	455.8300	44.55	-11.83	32.72	46.00	-13.28	QP
5	551.8600	39.54	-9.88	29.66	46.00	-16.34	QP
6	792.4200	31.58	-5.76	25.82	46.00	-20.18	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

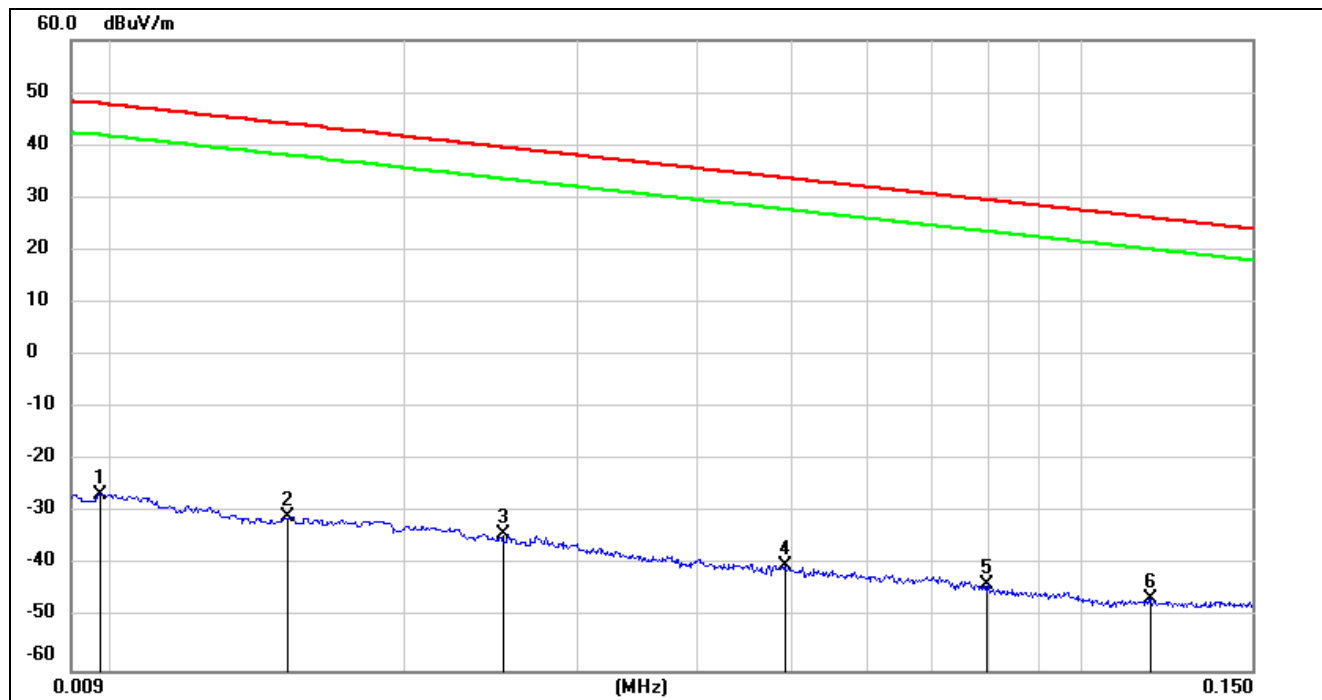
Note: All the test modes have been tested, only the worst data record in the report.

7.12. SPURIOUS EMISSIONS BELOW 30M

7.12.1. 802.11n HT20 MIMO MODE

SPURIOUS EMISSIONS (LOW CHANNEL, LOOP ANTENNA FACE ON TO THE EUT, WORST-CASE CONFIGURATION)

9kHz~ 150kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.0097	74.93	-101.38	-26.45	47.82	-77.95	-3.68	-74.27	peak
2	0.0151	70.71	-101.37	-30.66	44.02	-82.16	-7.48	-74.68	peak
3	0.0252	67.32	-101.37	-34.05	39.57	-85.55	-11.93	-73.62	peak
4	0.0492	61.55	-101.47	-39.92	33.76	-91.42	-17.74	-73.68	peak
5	0.0796	58.03	-101.63	-43.60	29.58	-95.10	-21.92	-73.18	peak
6	0.1179	55.33	-101.74	-46.41	26.17	-97.91	-25.33	-72.58	peak

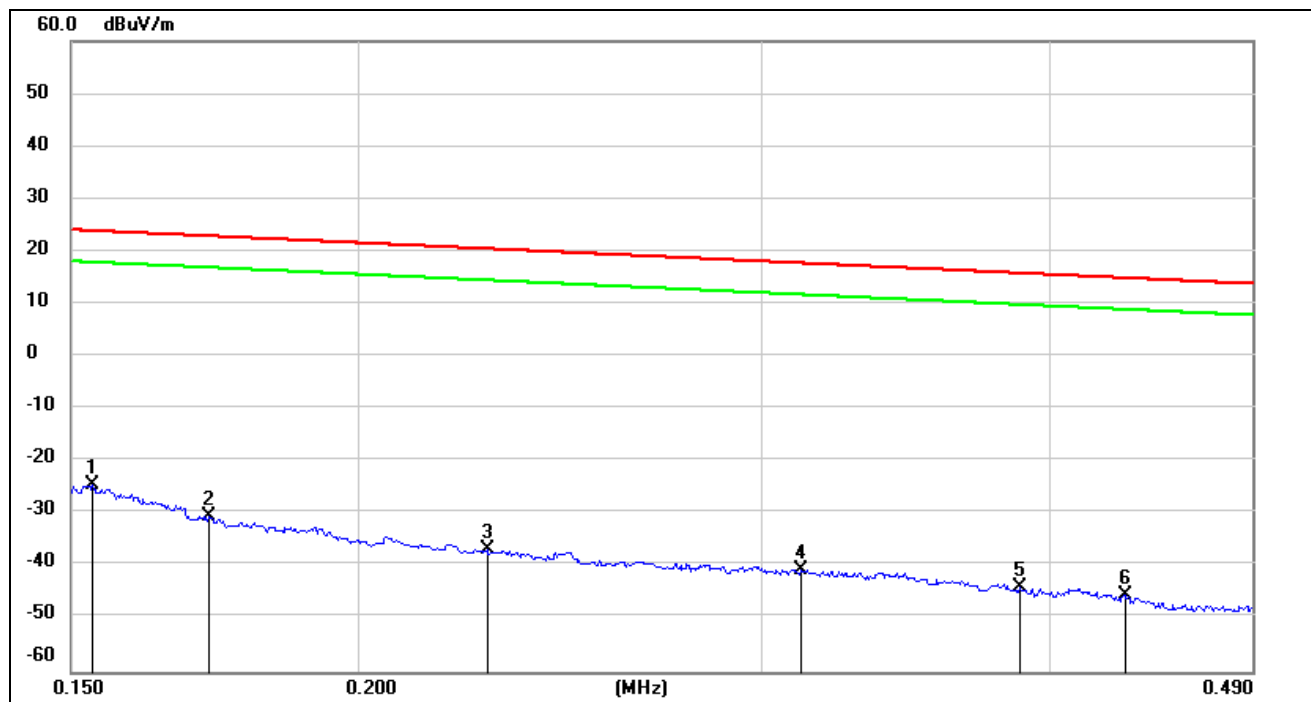
Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).

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.



150kHz ~ 490kHz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	FCC Result (dBuV/m)	FCC Limit (dBuV/m)	ISED Result (dBuA/m)	ISED Limit (dBuA/m)	Margin (dB)	Remark
1	0.1532	77.23	-101.64	-24.41	23.90	-75.91	-27.60	-48.31	peak
2	0.1720	71.19	-101.67	-30.48	22.90	-81.98	-28.60	-53.38	peak
3	0.2275	64.93	-101.77	-36.84	20.46	-88.34	-31.04	-57.30	peak
4	0.3118	61.09	-101.86	-40.77	17.72	-92.27	-33.78	-58.49	peak
5	0.3881	57.90	-101.95	-44.05	15.82	-95.55	-35.68	-59.87	peak
6	0.4314	56.47	-101.99	-45.52	14.90	-97.02	-36.60	-60.42	peak

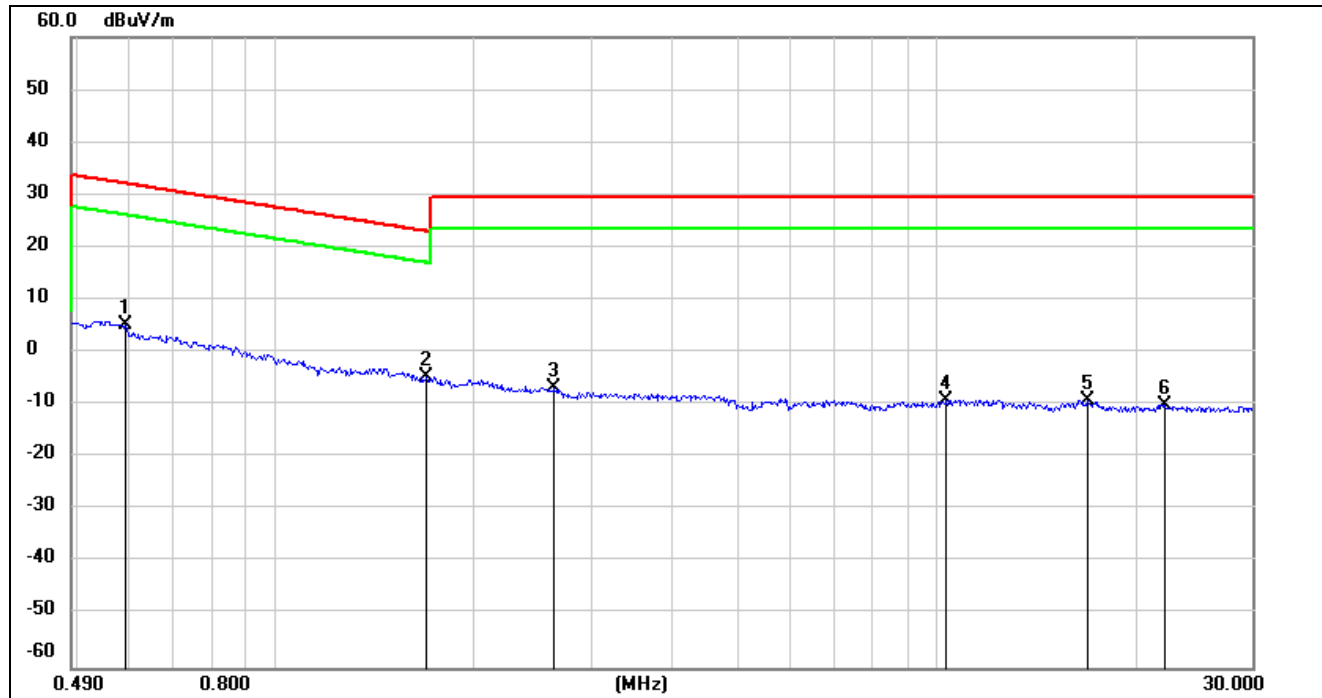
Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = dBuV/m- 51.5).

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.



490kHz ~ 30MHz



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	0.5917	67.24	-62.08	5.16	32.16	-46.34	-19.34	-27.00	peak
2	1.6907	57.20	-61.96	-4.76	23.04	-56.26	-28.46	-27.80	peak
3	2.6442	54.80	-61.67	-6.87	29.54	-58.37	-21.96	-36.41	peak
4	10.3460	51.77	-60.81	-9.04	29.54	-60.54	-21.96	-38.58	peak
5	16.8976	51.78	-60.94	-9.16	29.54	-60.66	-21.96	-38.70	peak
6	22.1503	50.70	-60.67	-9.97	29.54	-61.47	-21.96	-39.51	peak

Note: 1. Measurement = Reading Level + Correct Factor (dBuA/m= dBuV/m- 20Log10[120π] = 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.

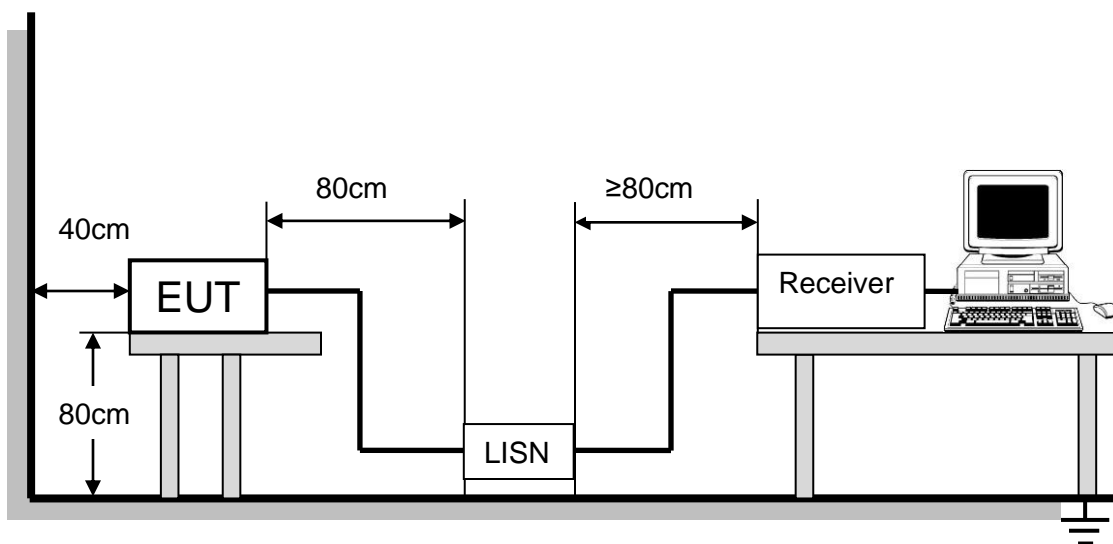
Note: All the test modes have been tested, only the worst data record in the report.

LIMITS

Please refer to CFR 47 FCC §15.207 (a)

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



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 an 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

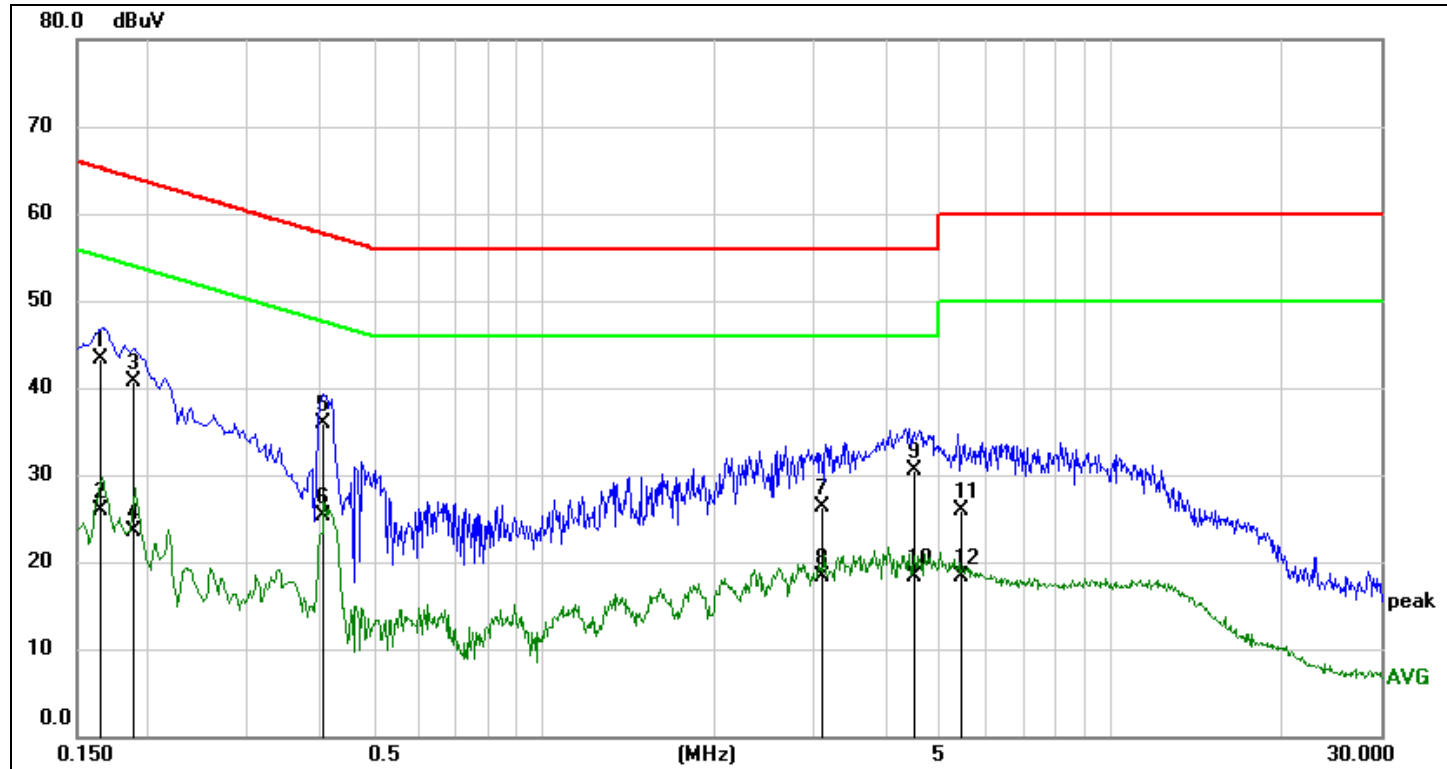
Temperature	23°C	Relative Humidity	58%
Atmosphere Pressure	101kPa	Test Voltage	120V/60Hz



TEST RESULTS

8.1. 802.11n HT20 MIMO MODE

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



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1650	33.71	9.61	43.32	65.21	-21.89	QP
2	0.1650	16.31	9.61	25.92	55.21	-29.29	AVG
3	0.1875	31.12	9.60	40.72	64.15	-23.43	QP
4	0.1875	13.81	9.60	23.41	54.15	-30.74	AVG
5	0.4093	26.24	9.60	35.84	57.66	-21.82	QP
6	0.4093	15.78	9.60	25.38	47.66	-22.28	AVG
7	3.1037	16.64	9.64	26.28	56.00	-29.72	QP
8	3.1037	8.74	9.64	18.38	46.00	-27.62	AVG
9	4.5195	20.77	9.67	30.44	56.00	-25.56	QP
10	4.5195	8.61	9.67	18.28	46.00	-27.72	AVG
11	5.4582	16.28	9.69	25.97	60.00	-34.03	QP
12	5.4582	8.57	9.69	18.26	50.00	-31.74	AVG

Note: 1. Result = Reading +Correct Factor.

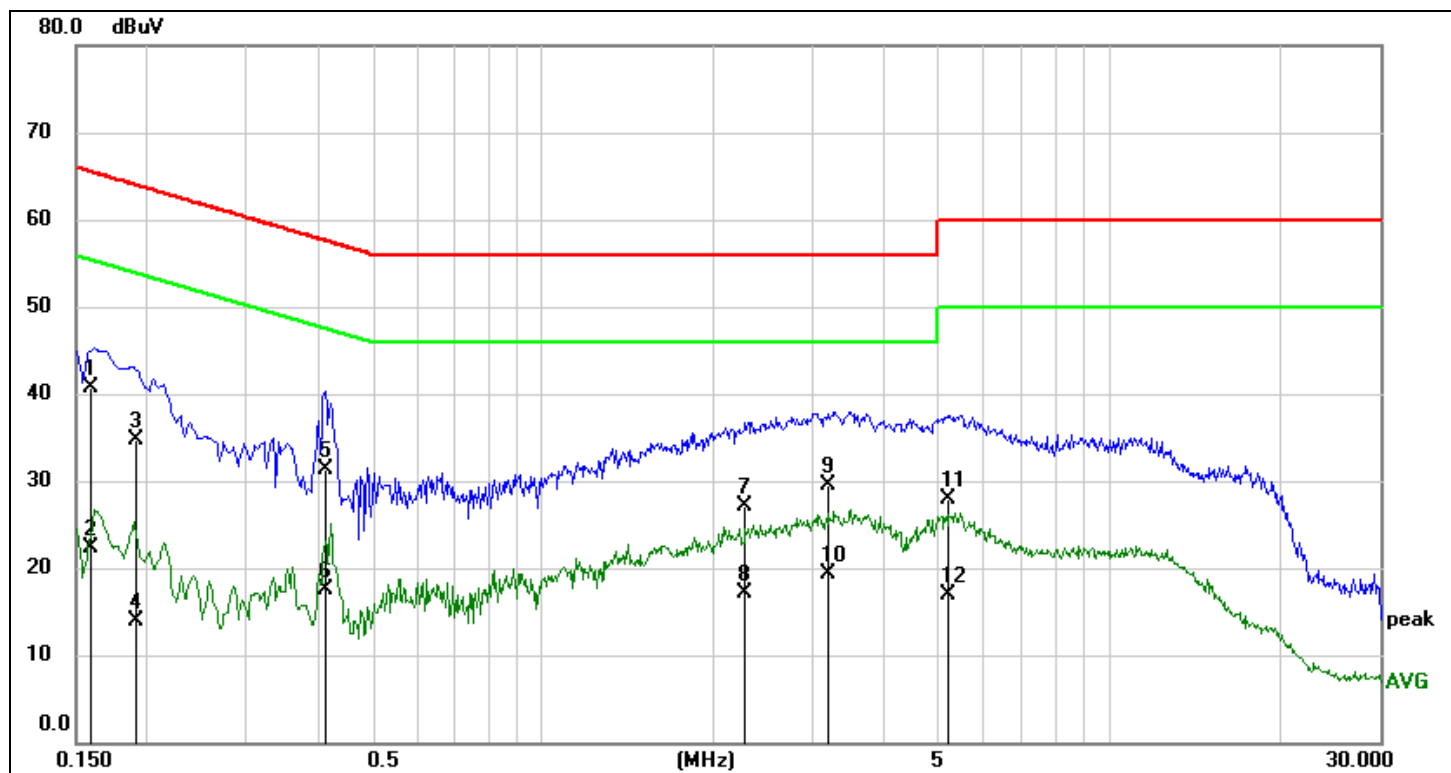
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

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.



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



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1587	31.13	9.60	40.73	65.53	-24.80	QP
2	0.1587	12.68	9.60	22.28	55.53	-33.25	AVG
3	0.1918	25.16	9.60	34.76	63.96	-29.20	QP
4	0.1918	4.30	9.60	13.90	53.96	-40.06	AVG
5	0.4105	21.76	9.60	31.36	57.64	-26.28	QP
6	0.4105	7.87	9.60	17.47	47.64	-30.17	AVG
7	2.2843	17.52	9.63	27.15	56.00	-28.85	QP
8	2.2843	7.40	9.63	17.03	46.00	-28.97	AVG
9	3.2174	19.79	9.65	29.44	56.00	-26.56	QP
10	3.2174	9.62	9.65	19.27	46.00	-26.73	AVG
11	5.1753	18.27	9.67	27.94	60.00	-32.06	QP
12	5.1753	7.27	9.67	16.94	50.00	-33.06	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 test modes have been tested, only the worst data record in the report.



9. 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

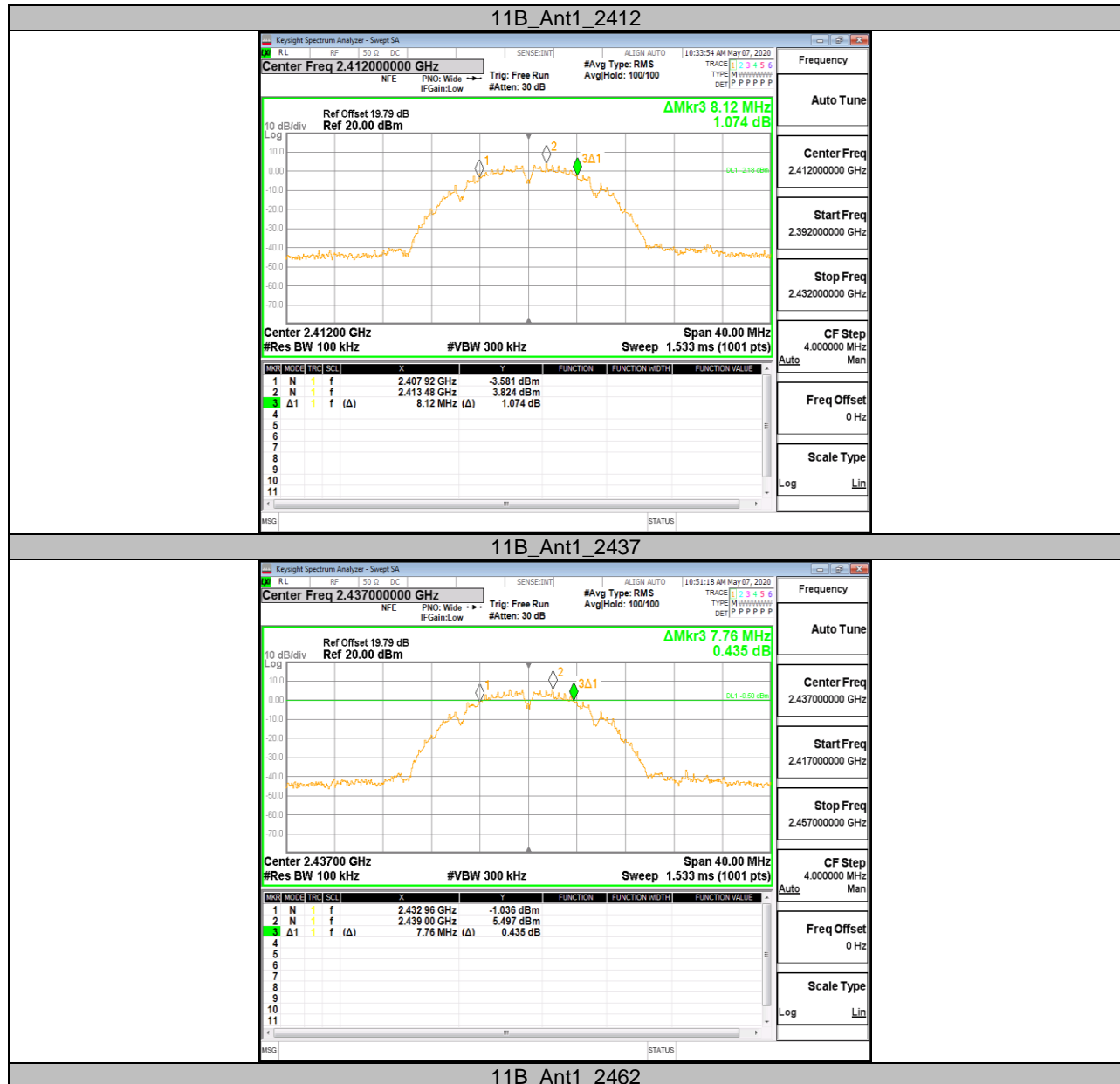


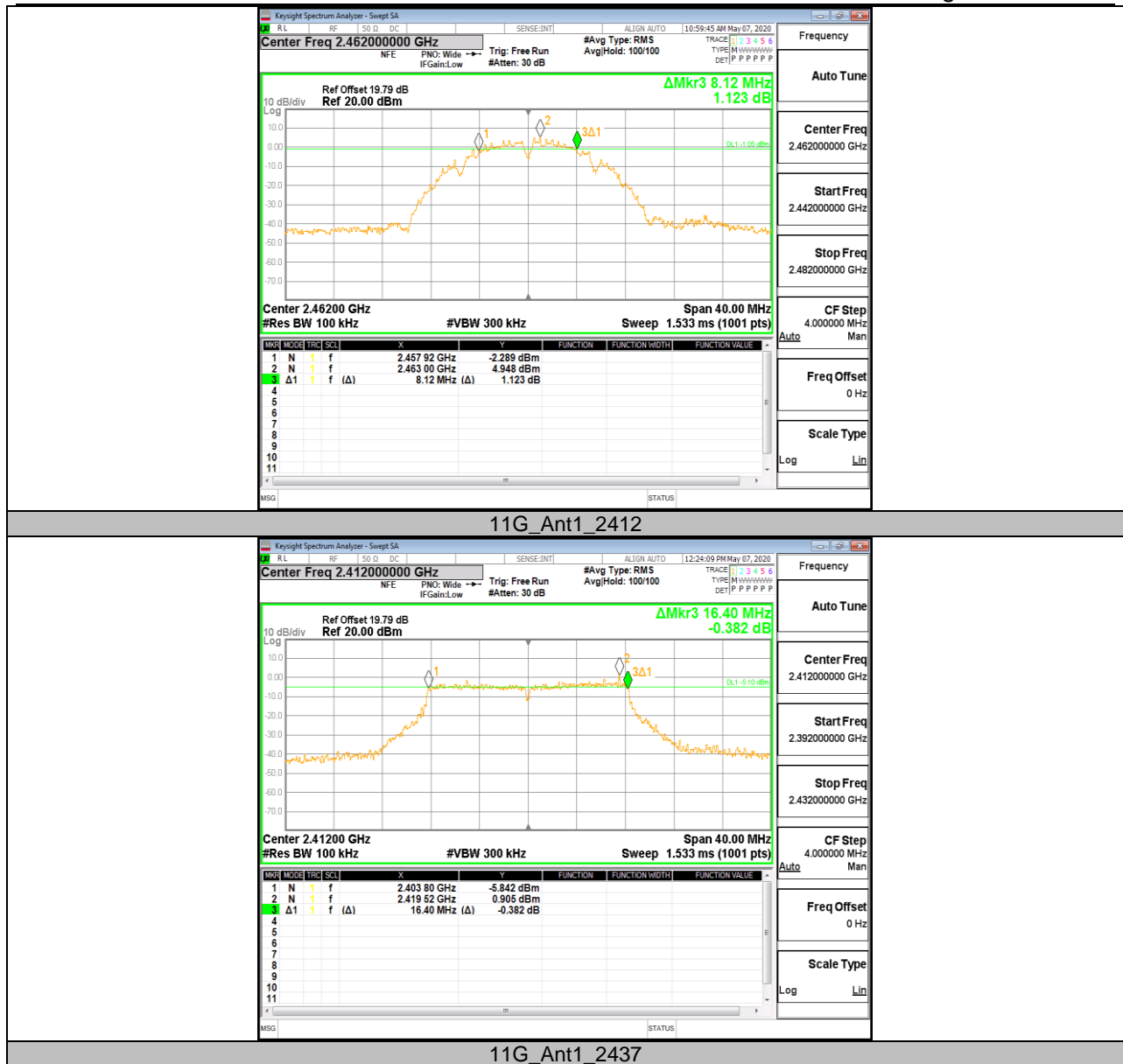
Appendix A: DTS Bandwidth Test Result

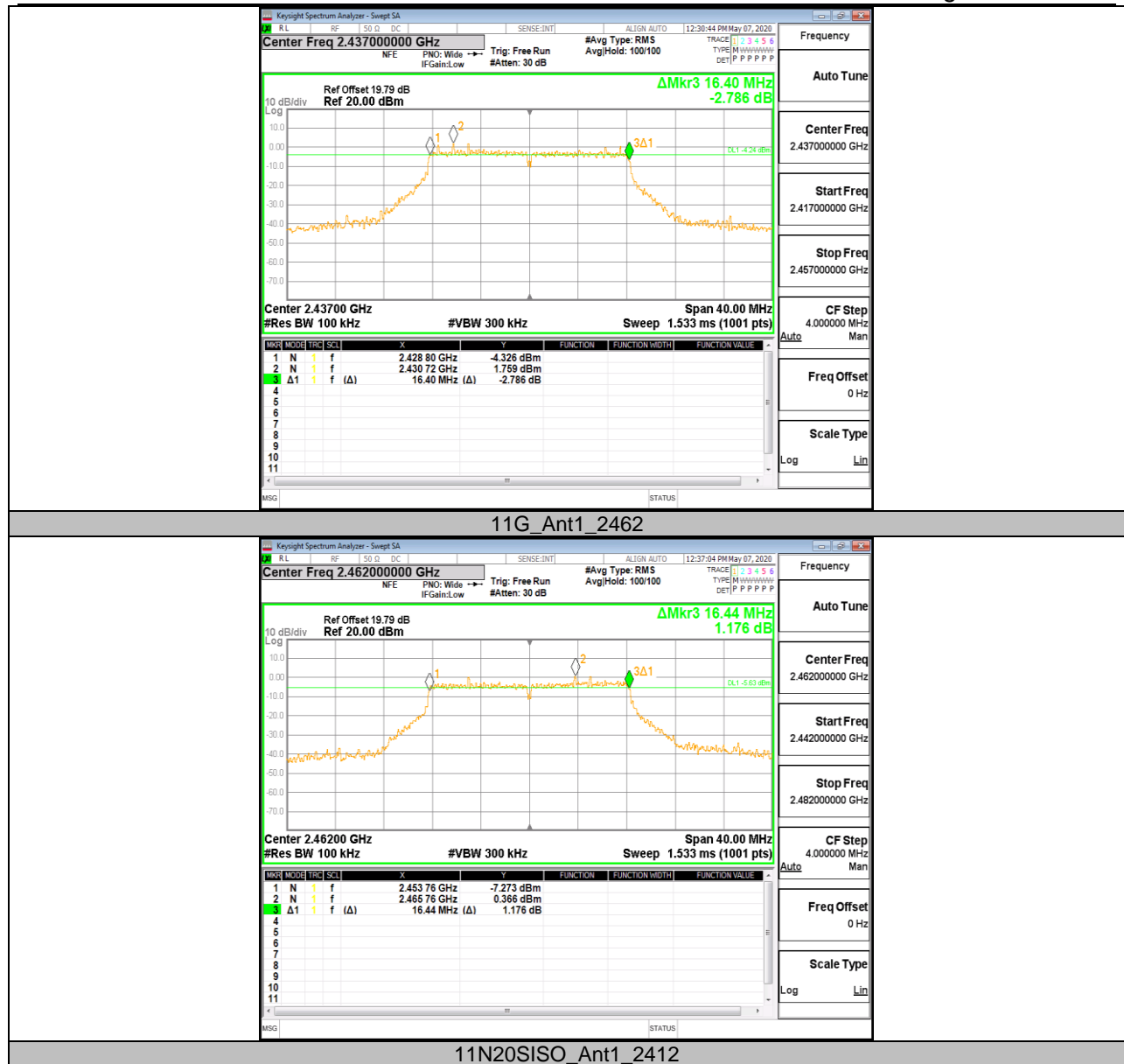
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	8.120	2407.920	2416.040	0.5	PASS
		2437	7.760	2432.960	2440.720	0.5	PASS
		2462	8.120	2457.920	2466.040	0.5	PASS
11G	Ant1	2412	16.400	2403.800	2420.200	0.5	PASS
		2437	16.400	2428.800	2445.200	0.5	PASS
		2462	16.440	2453.760	2470.200	0.5	PASS
11N20SISO	Ant1	2412	17.640	2403.160	2420.800	0.5	PASS
		2437	17.600	2428.160	2445.760	0.5	PASS
		2462	17.000	2453.800	2470.800	0.5	PASS

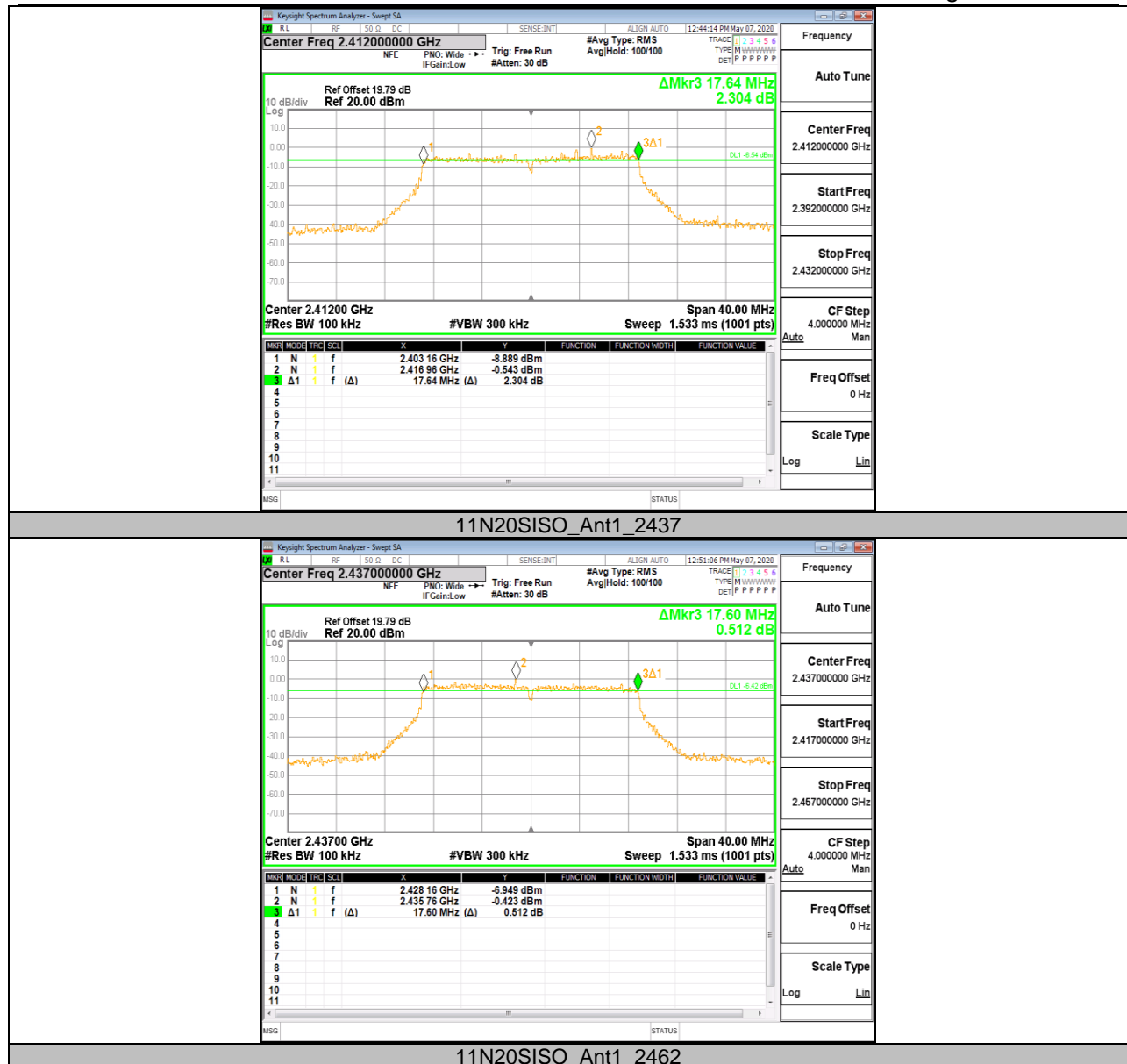


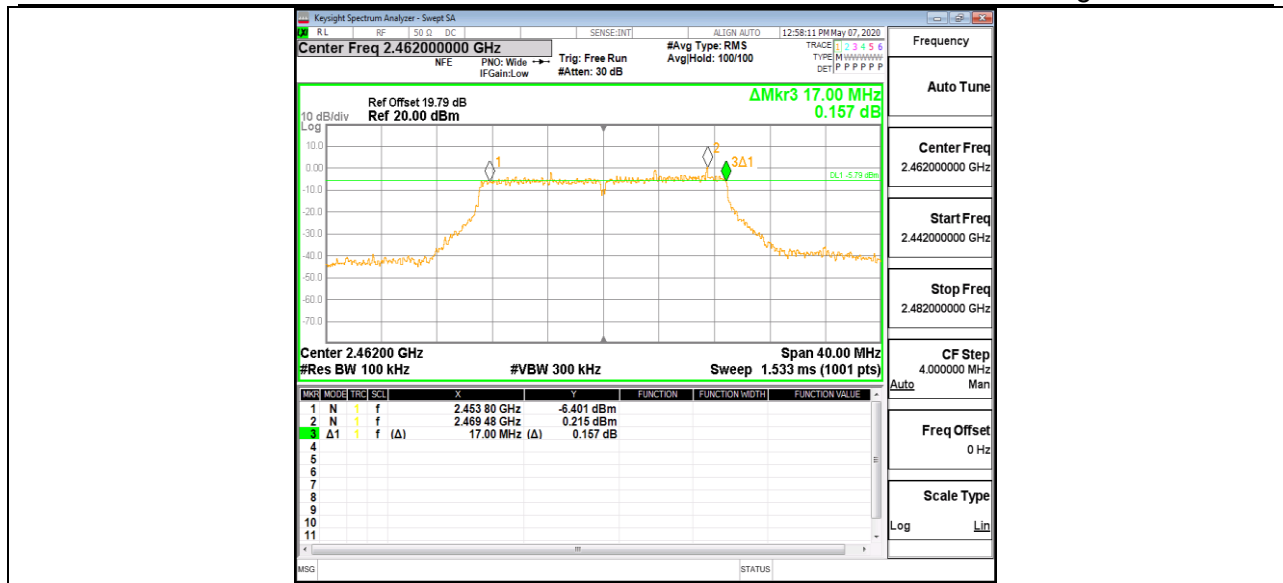
Test Graphs











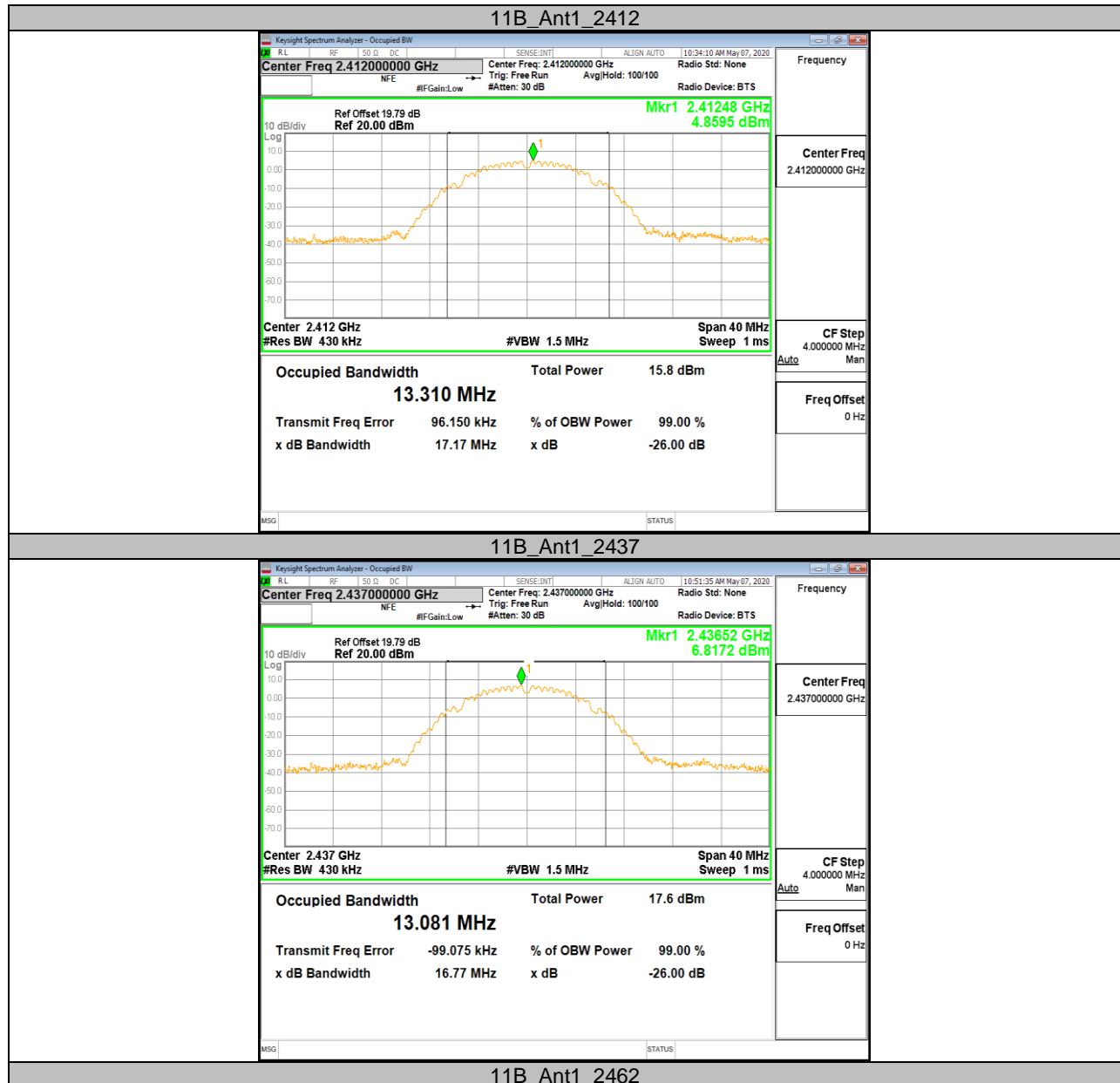


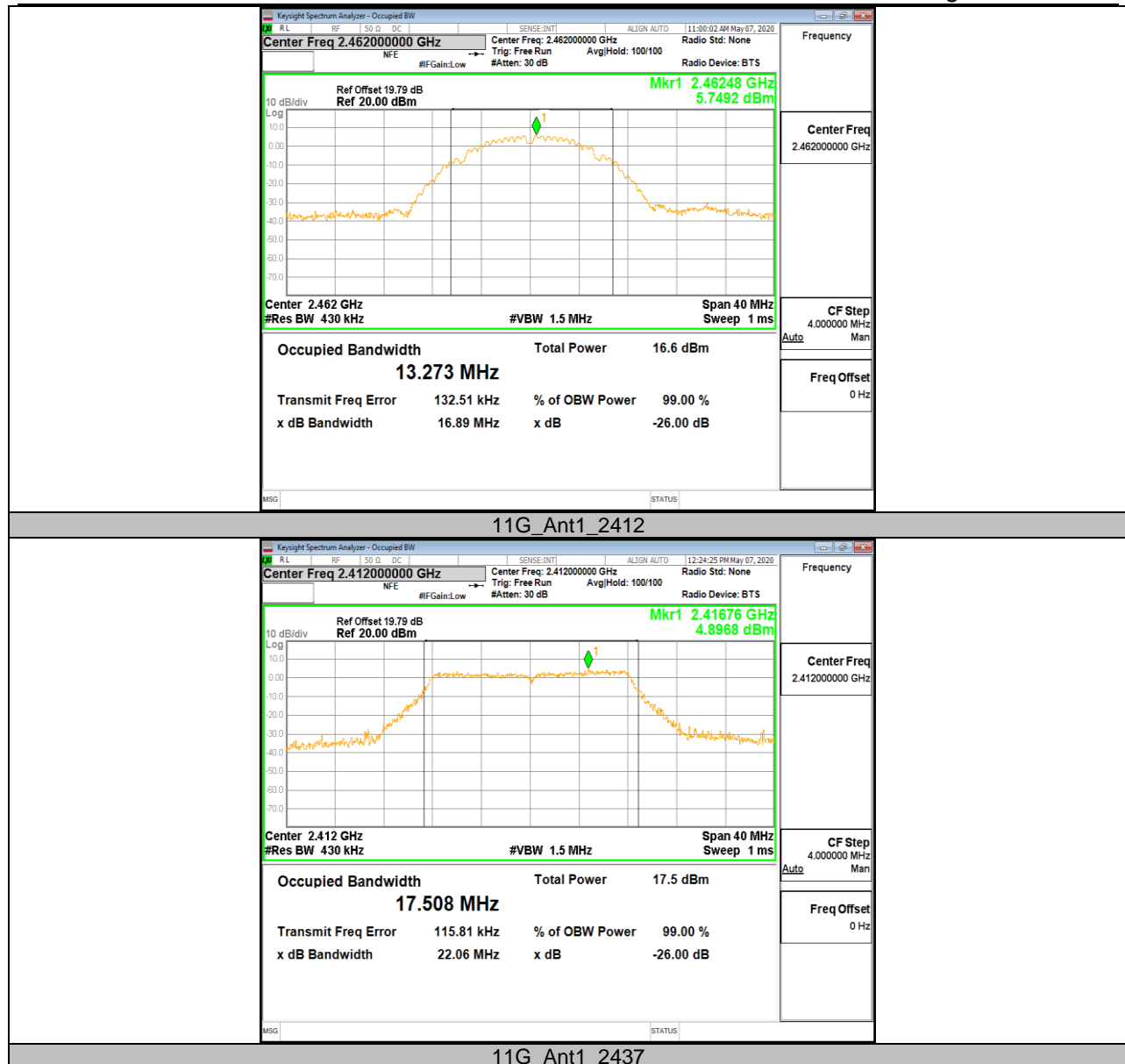
Appendix B: Occupied Channel Bandwidth Test Result

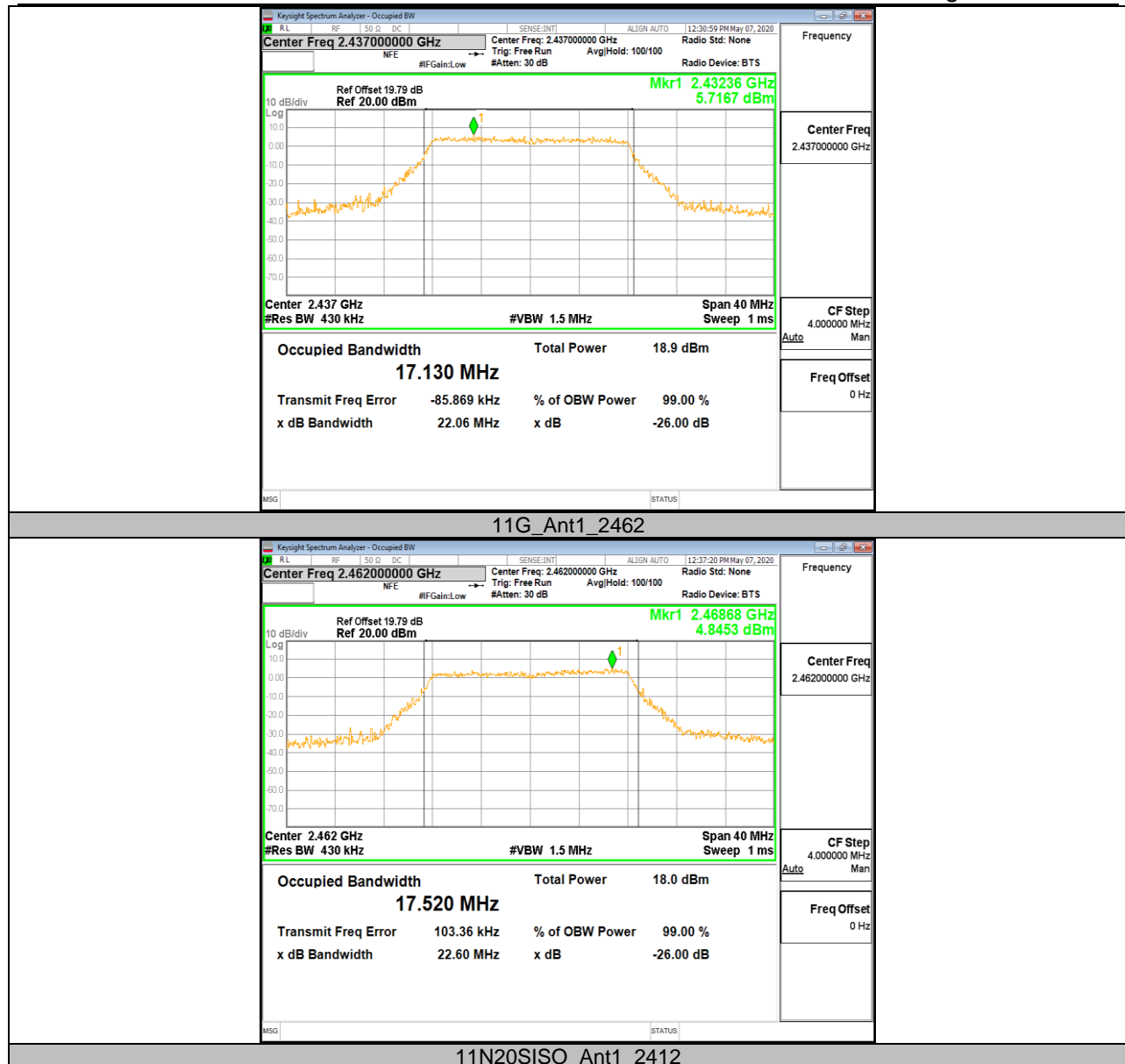
TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	13.310	2405.441	2418.751	---	PASS
		2437	13.081	2430.360	2443.441	---	PASS
		2462	13.273	2455.496	2468.769	---	PASS
11G	Ant1	2412	17.508	2403.362	2420.870	---	PASS
		2437	17.130	2428.349	2445.479	---	PASS
		2462	17.520	2453.343	2470.863	---	PASS
11N20SISO	Ant1	2412	18.380	2402.897	2421.277	---	PASS
		2437	18.137	2427.835	2445.972	---	PASS
		2462	18.339	2452.907	2471.246	---	PASS

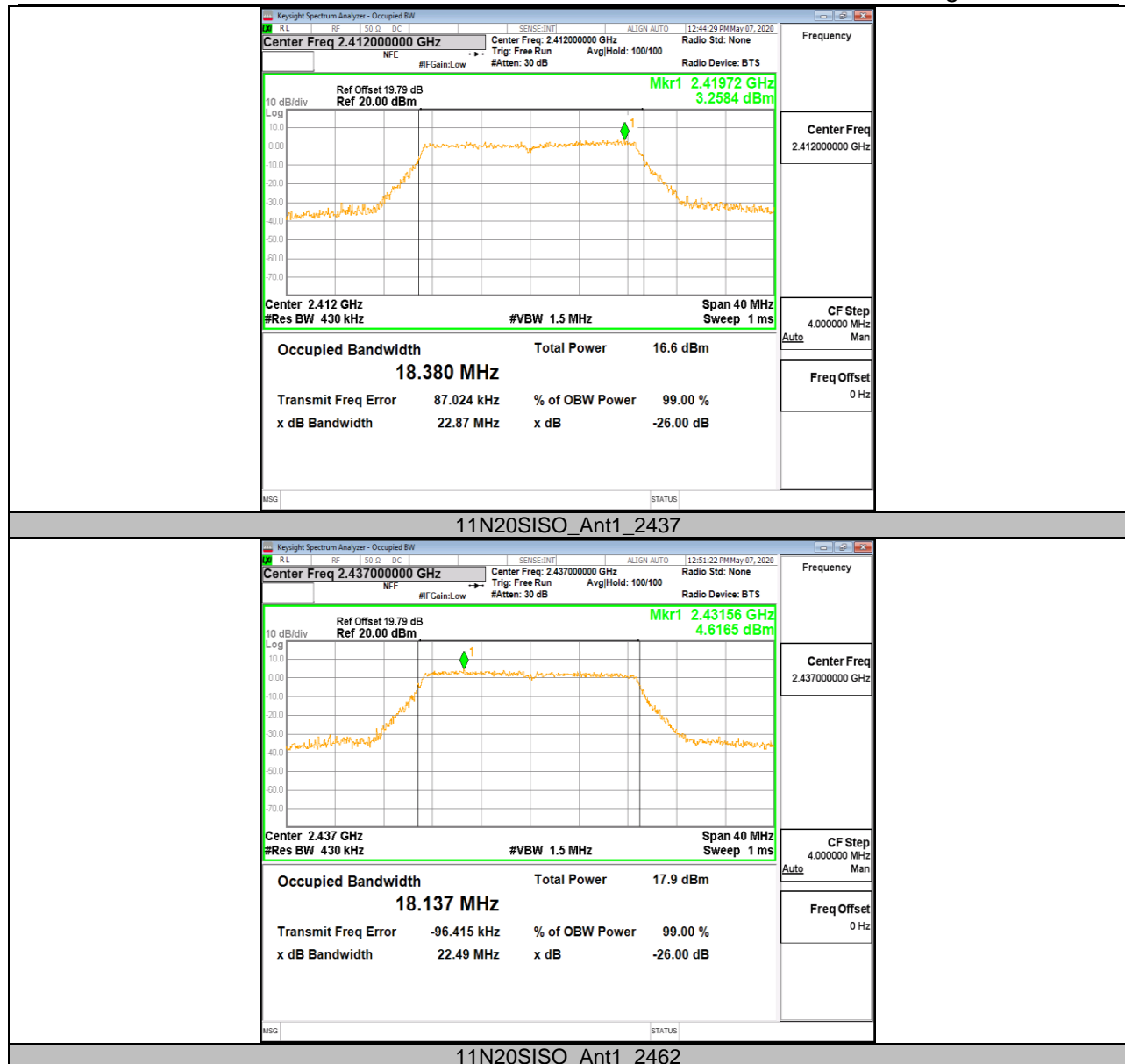


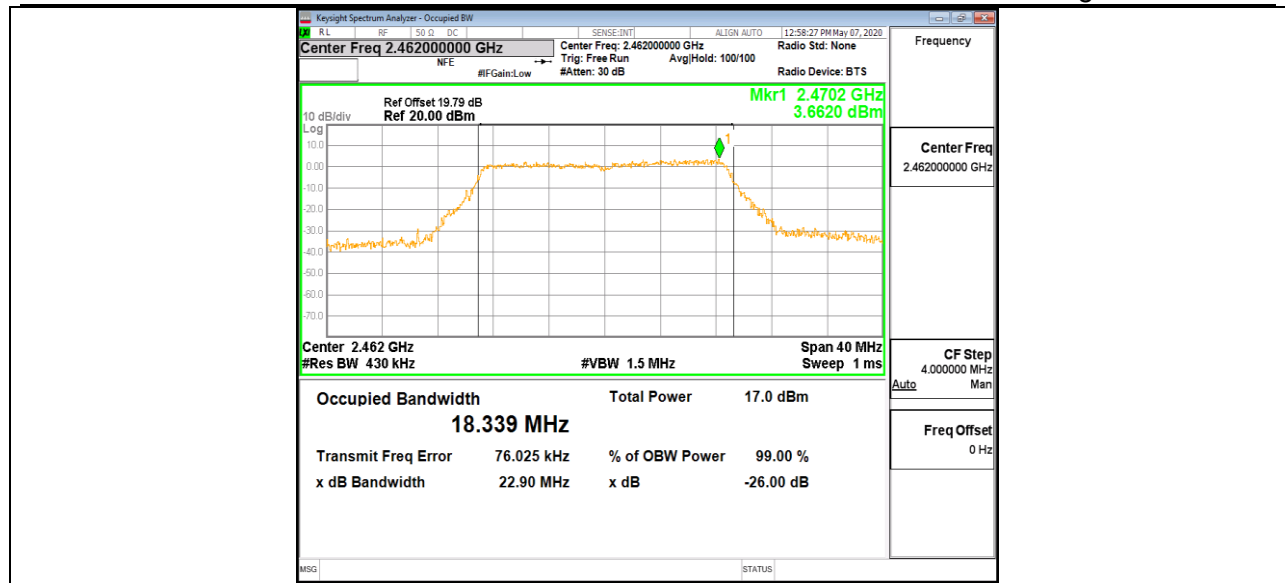
Test Graphs













Appendix C: Maximum average conducted output power Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	13.16	<=30	PASS
		2437	14.77	<=30	PASS
		2462	13.74	<=30	PASS
11G	Ant1	2412	11.53	<=30	PASS
		2437	12.53	<=30	PASS
		2462	12.11	<=30	PASS
11N20SISO	Ant1	2412	10.55	<=30	PASS
		2437	11.88	<=30	PASS
		2462	10.99	<=30	PASS

- Note: 1. Conducted Power=Meas. Level+ Correction Factor
2. The Duty Cycle Factor (refer to section 7.1) had already compensated to the test data.



**Appendix D: Maximum power spectral density
Test Result**

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-8.32	<=8	PASS
		2437	-7.67	<=8	PASS
		2462	-8.5	<=8	PASS
11G	Ant1	2412	-13.14	<=8	PASS
		2437	-11.93	<=8	PASS
		2462	-11.98	<=8	PASS
11N20SISO	Ant1	2412	-13.92	<=8	PASS
		2437	-12.7	<=8	PASS
		2462	-13.25	<=8	PASS



Test Graphs

