



**FCC PART 15 SUBPART C
ISED RSS-247 ISSUE 2**

CERTIFICATION TEST REPORT

For

WAC Display

MODEL NUMBER: AEH-W0G2

FCC ID: 2AGCCAEH-W0G2

IC: 20778-AEHW0G2

REPORT NUMBER: 4789810672.1

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Prepared for

**Hisense (Guangdong) Air Conditioning Co., Ltd.
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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	05/07/2021	Initial Issue	--



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



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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Hisense (Guangdong) Air Conditioning Co., Ltd.
Address: No.8 Hisense Road, Advanced Manufacturing Jiangsha Demonstration Park, Jiangmen City, Guangdong Province, P. R. China

Manufacturer Information

Company Name: Same the Applicant
Address: Same the Applicant

EUT Description

EUT Name: WAC Display
Model: AEH-W0G2
Brand Name: N/A
Sample Status: Normal
Sample ID: 210308011-1
Sample Received Date: Mar 11, 2021
Date of Tested: Mar 11, 2021 ~ Mar 30, 2021

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC Part 15 Subpart C	PASS
ISED RSS-247 Issue 2	PASS
ISED RSS-GEN Issue 5	PASS

Prepared By:

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Laboratory Leader



2. TEST METHODOLOGY

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

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p>A2LA (Certificate No.: 4338.01) Shenzhen STS Test Services Co., Ltd. has been assessed and proved to be in compliance with A2LA.</p> <p>CNAS (Registration No.: L7649) Shenzhen STS Test Services Co., Ltd. has been assessed and proved to be in compliance with CNAS.</p> <p>IC(Company No.: 12108A) Shenzhen STS Test Services Co., Ltd. has been registered and fully described in a report filed with Industry Canada. The Company Number is 12108A.</p>
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Note: All tests measurement facilities use to collect the measurement data are located at A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China



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

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	RF output power, conducted	± 0.7 dB
2	Unwanted Emissions, conducted	± 3.0 dB
3	All emissions, radiated 9K-30MHz	± 2.7 dB
4	All emissions, radiated 30M-1GHz	± 4.4 dB
5	All emissions, radiated 1G-6GHz	± 5.1 dB
6	All emissions, radiated >6G	± 5.5 dB
7	Conducted Emission (9KHz-150KHz)	± 2.8 dB
8	Conducted Emission (150KHz-30MHz)	± 2.8 dB

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name	WAC Display
EUT Description	The EUT is a Wi-Fi WAC Display.
Model	AEH-W0G2
PMN	WAC Display
HVIN	AEH-W0G2
FVIN	A-V1.1
Serial number	2119435
HMN	air conditioner
Radio Technology	IEEE802.11b/g/n HT20/n HT40
Operation frequency	IEEE 802.11b: 2412MHz—2462MHz IEEE 802.11g: 2412MHz—2462MHz IEEE 802.11n HT20: 2412MHz—2462MHz IEEE 802.11n HT40: 2422MHz—2452MHz
Modulation	IEEE 802.11b: DSSS(CCK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM (64QAM, 16QAM, QPSK,BPSK) IEEE 802.11n HT40: OFDM (64QAM, 16QAM, QPSK,BPSK)
Power Supply	Input: DC 5V
Hardware Version	C2X-F6428-AC3-KG-DS-A
Software Version	A-V1.1

5.2. MAXIMUM OUTPUT POWER

Frequency Range (MHz)	Number of Transmit Chains (NTX)	IEE Std. 802.11	Frequency (MHz)	Channel Number	Max Peak Conducted Power (dBm)
2400-2483.5	1	IEEE 802.11b	2412-2462	1-11[11]	19.21
2400-2483.5	1	IEEE 802.11g	2412-2462	1-11[11]	17.72
2400-2483.5	1	IEEE 802.11nHT20	2412-2462	1-11[11]	17.60
2400-2483.5	1	IEEE 802.11nHT40	2422-2452	3-9[7]	12.90

5.3. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
802.11b/g/n(20MHz)					
1	2412	5	2432	9	2452
2	2417	6	2437	10	2457
3	2422	7	2442	11	2462
4	2427	8	2447	N/A	N/A
802.11n(40MHz)					



3	2422	6	2437	9	2452
4	2427	7	2442	N/A	N/A
5	2432	8	2447	N/A	N/A

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
WiFi TX(802.11b)	CH 1, CH 6, CH 11	2412MHz, 2437MHz, 2462MHz
WiFi TX(802.11g)	CH 1, CH 6, CH 11	2412MHz, 2437MHz, 2462MHz
WiFi TX(802.11n HT20)	CH 1, CH 6, CH 11	2412MHz, 2437MHz, 2462MHz
WiFi TX(802.11n HT40)	CH 3, CH 6, CH 9	2422MHz, 2437MHz, 2452MHz

5.5. THE WORSE CASE CONFIGURATIONS

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band							
Modulation Mode	Transmit Antenna Number	Test Channel					
		NCB: 20MHz			NCB: 40MHz		
		CH 1	CH 6	CH 11	CH 3	CH 6	CH 09
802.11b	1	48	48	48	38		
802.11g	1	38	38	38			
802.11n HT20	1	39	39	39			

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2412-2462	PCB Antenna	0.1 (Provided by applicant)

Test Mode	Transmit and Receive Mode	Description
IEEE 802.11b	<input checked="" type="checkbox"/> 1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.
IEEE 802.11g	<input checked="" type="checkbox"/> 1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.
IEEE 802.11n HT20	<input checked="" type="checkbox"/> 1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.
IEEE 802.11n HT40	<input checked="" type="checkbox"/> 1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	Notebook	DELL	500-320cx	N/A

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(cm)	Remarks
1	USB Cable	N/A	N/A	110cm	N/A

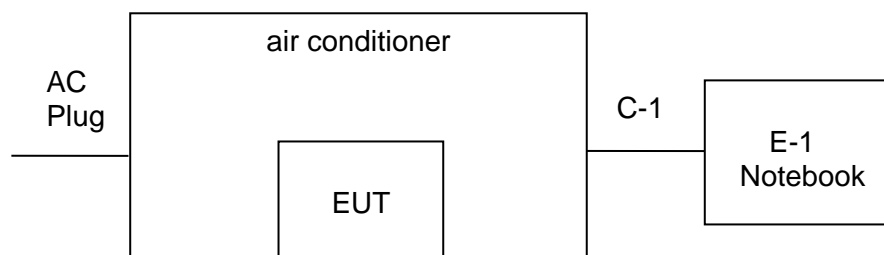
ACCESSORY

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

TEST SETUP

The EUT can work in engineering mode with firmware QRCT from QUALCOMM through a Laptop.

SETUP DIAGRAM FOR TESTS



Note: After finishing the test setting, the notebook will be removed during measurements.



6. MEASURING INSTRUMENT AND SOFTWARE USED

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2020.10.12	2021.10.11
Signal Analyzer	R&S	FSV 40-N	101823	2020.10.10	2021.10.09
Active loop Antenna	ZHINAN	ZN30900C	16035	2019.07.11	2021.07.10
Bilog Antenna	TESEQ	CBL6111D	34678	2020.10.12	2022.10.11
Horn Antenna	SCHWARZBECK	BBHA 9120D	02014	2019.10.15	2021.10.14
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	J211020657	2020.10.12	2022.10.11
Pre-Amplifier (0.1M-3GHz)	EM	EM330	060665	2020.10.12	2021.10.11
Pre-Amplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2020.10.12	2021.10.11
Pre-Amplifier (18G-40GHz)	SKET	LNPA-1840-50	SK2018101801	2020.10.10	2021.10.09
Temperature & Humidity	HH660	Mieo	N/A	2020.10.12	2021.10.11
Turn table	EM	SC100_1	60531	N/A	N/A
Antenna mast	EM	SC100	N/A	N/A	N/A
Band Reject Filter (2.4-2.5GHz)	COM-MW	ZBSF-2400-2500	N/A	2020.10.12	2021.10.11
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 RE)			

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2020.10.12	2021.10.11
LISN	R&S	ENV216	101242	2020.10.12	2021.10.11
LISN	EMCO	3810/2NM	23625	2020.10.12	2021.10.11
Temperature & Humidity	HH660	Mieo	N/A	2020.10.13	2021.10.12
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 RE)			



RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Power Sensor	Keysight	U2021XA	MY55520005	2020.10.10	2021.10.09
			MY55520006	2020.10.10	2021.10.09
			MY56120038	2020.10.10	2021.10.09
			MY56280002	2020.10.10	2021.10.09
Signal Analyzer	Agilent	N9020A	MY51110105	2021.03.04	2022.03.03
Temperature & Humidity	HH660	Mieo	N/A	2020.10.13	2021.10.12
MIMO Power measurement test Set	Keysight	U2021XA	MY55520005	2020.10.10	2021.10.09
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 RE)			



7. MEASUREMENT METHODS

No.	Test Item	KDB Name	Section
1	6 dB Bandwidth and 99% Bandwidth	558074 D01 15.247 Meas Guidance v05r02	8.2
2	Output Power	558074 D01 15.247 Meas Guidance v05r02	8.3.1
3	Power Spectral Density	558074 D01 15.247 Meas Guidance v05r02	8.4
4	Out-of-band emissions in non-restricted bands	558074 D01 15.247 Meas Guidance v05r02	8.5
5	Out-of-band emissions in restricted bands	558074 D01 15.247 Meas Guidance v05r02	8.6
6	Band-edge	558074 D01 15.247 Meas Guidance v05r02	8.7
7	Conducted Emission Test For AC Power Port	ANSI C63.10-2013	6.2



8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

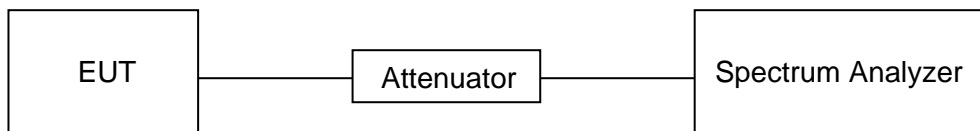
LIMITS

None; for reporting purposes only

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



TEST ENVIRONMENT

Temperature	25°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	DC 5V

RESULTS

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/B Minimum VBW (KHz)
11b	12.470	12.570	0.9920	99.20	0.03	10
11g	2.076	2.196	0.9454	94.54	0.24	2
11n20	1.935	2.045	0.9462	94.62	0.24	2
11n40	0.954	1.074	0.8883	88.83	0.51	2

Note: Duty Cycle Correction Factor=10log(1/x).

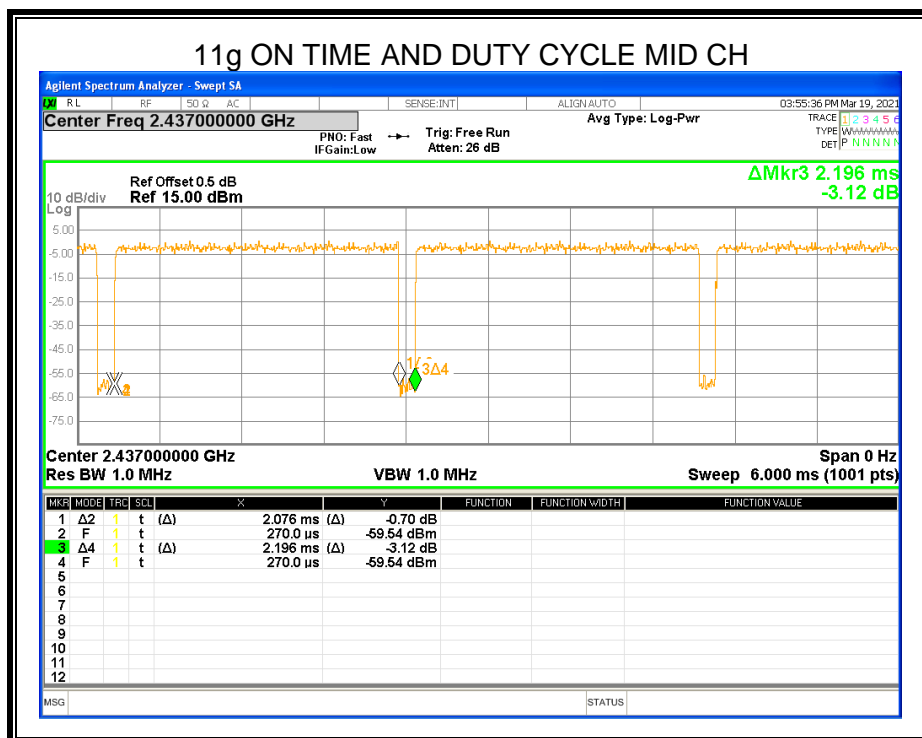
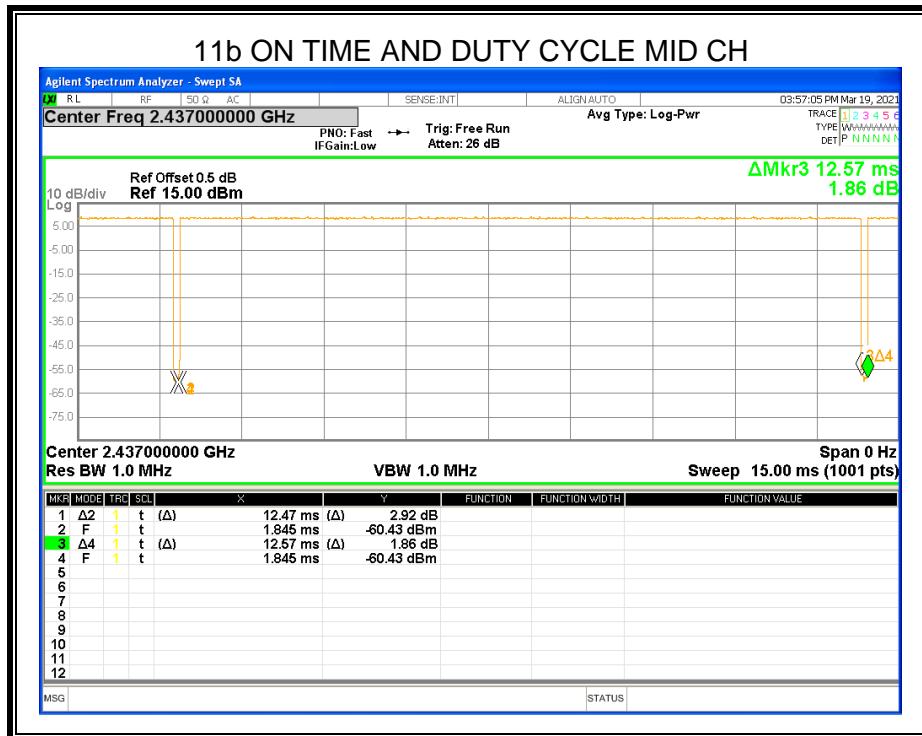
Where: x is Duty Cycle(Linear)

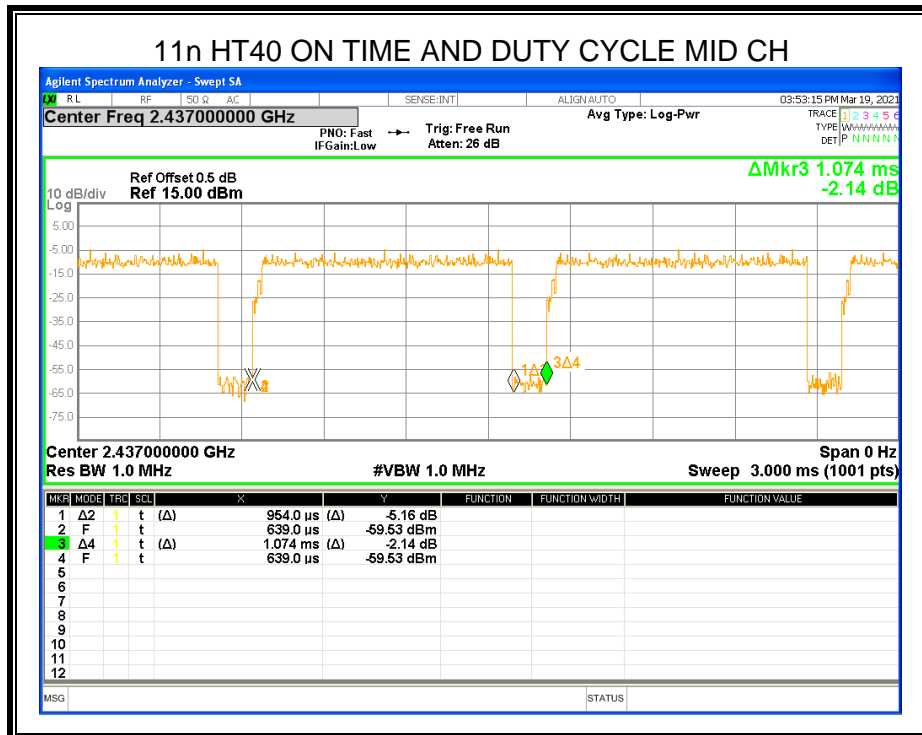
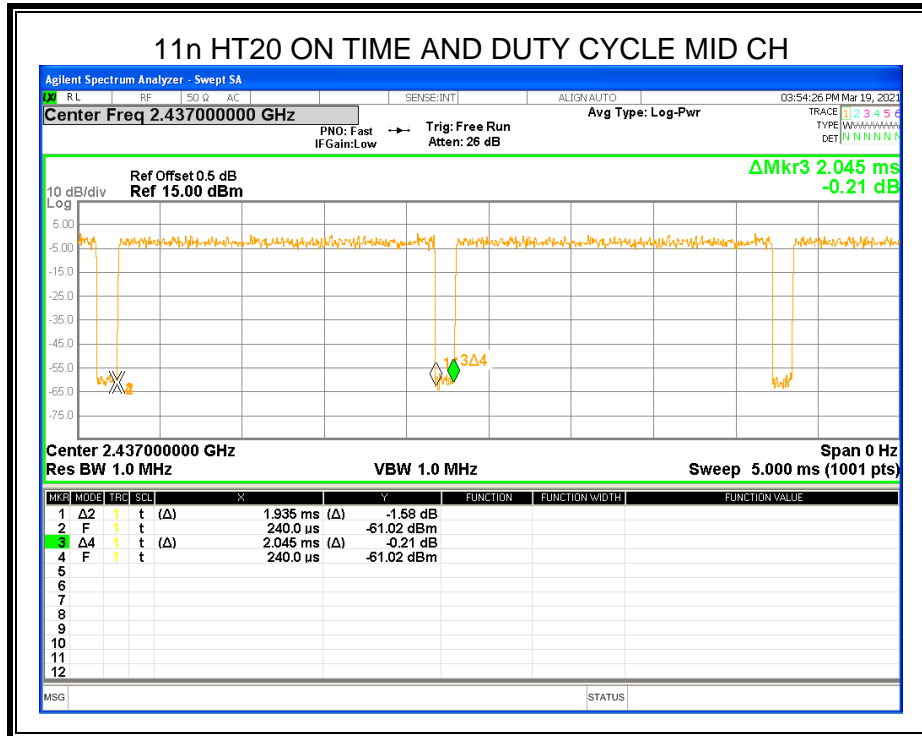
Where: B is On Time

11b mode Duty Cycle > 98%, set the final test VBW = 10KHz ($VBW \leq RBW/100$)

11g/11n20/11n40 mode Duty Cycle < 98%, set the final test VBW = 2KHz ($VBW \geq$

1/T)





8.2. 6 dB DTS BANDWIDTH AND 99% BANDWIDTH

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247(a)(2) RSS-247 5.2 (a)	6 dB Bandwidth	$\geq 500\text{KHz}$	2400-2483.5
RSS-Gen Clause 6.7	99% Bandwidth	For reporting purposes only.	2400-2483.5

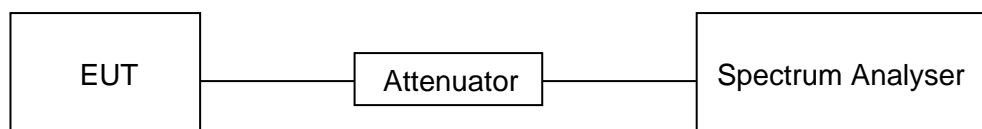
TEST PROCEDURE

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

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	For 6dB Bandwidth :100K For 99% Bandwidth :1% to 5% of the occupied bandwidth
VBW	For 6dB Bandwidth : $\geq 3 \times \text{RBW}$ For 99% Bandwidth : approximately $3 \times \text{RBW}$
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





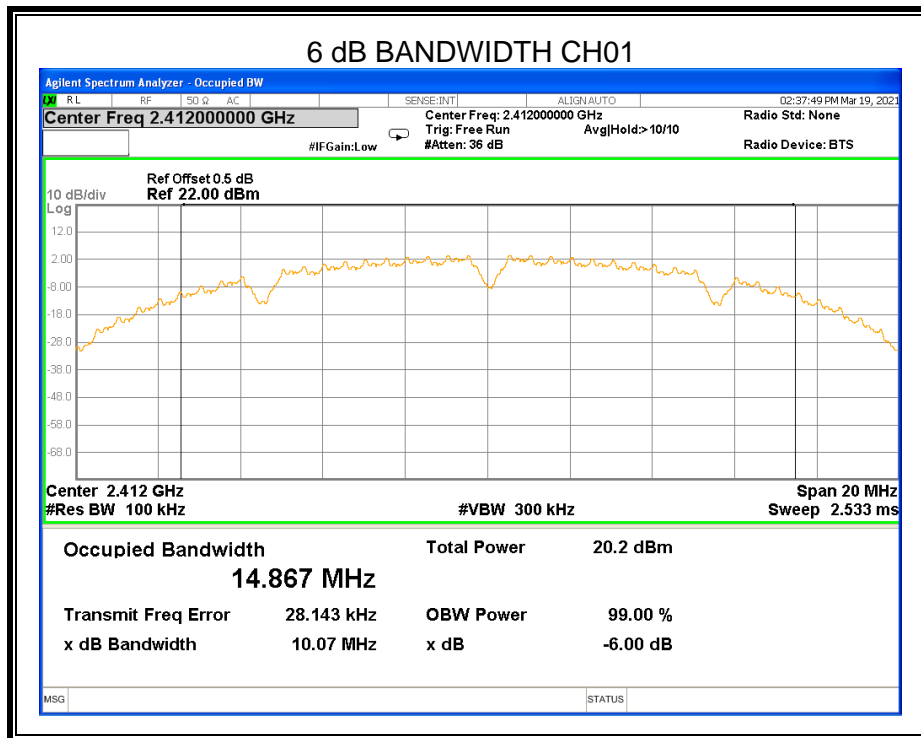
TEST ENVIRONMENT

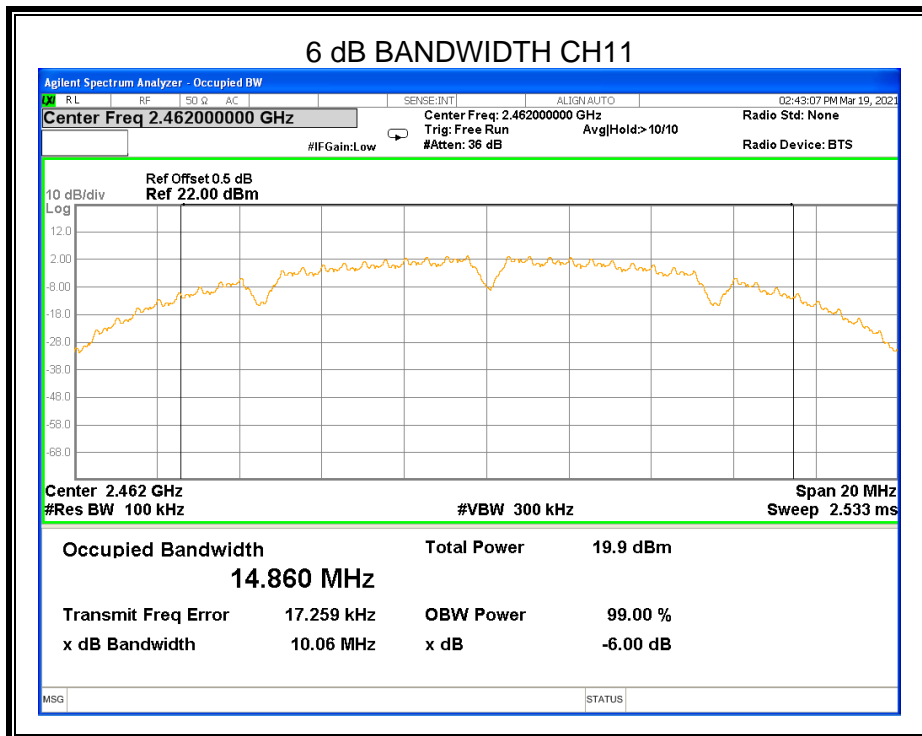
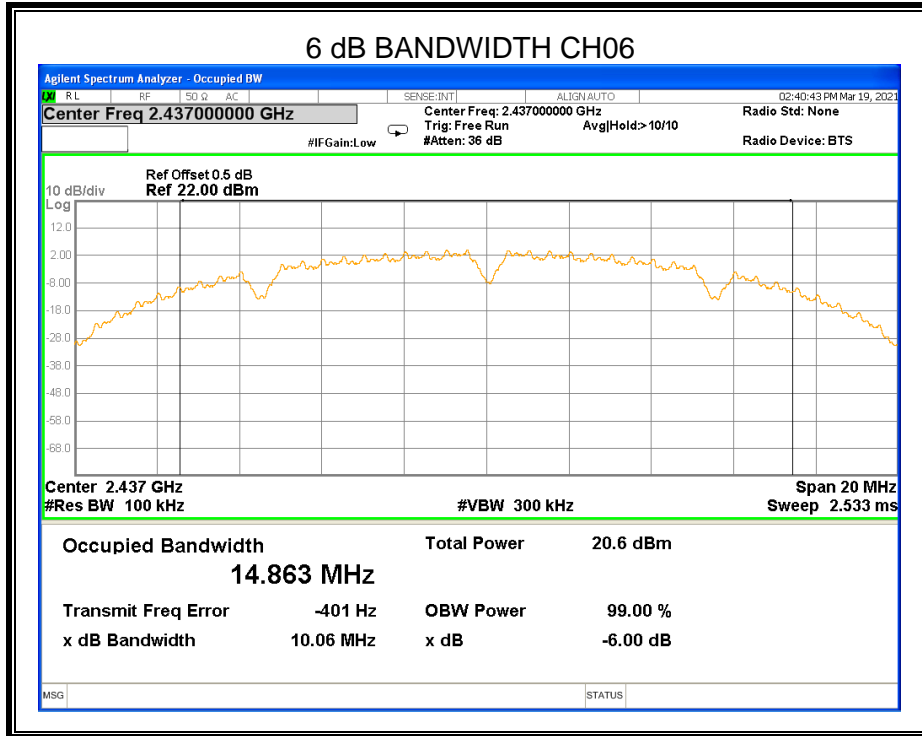
Temperature	25°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	DC 5V

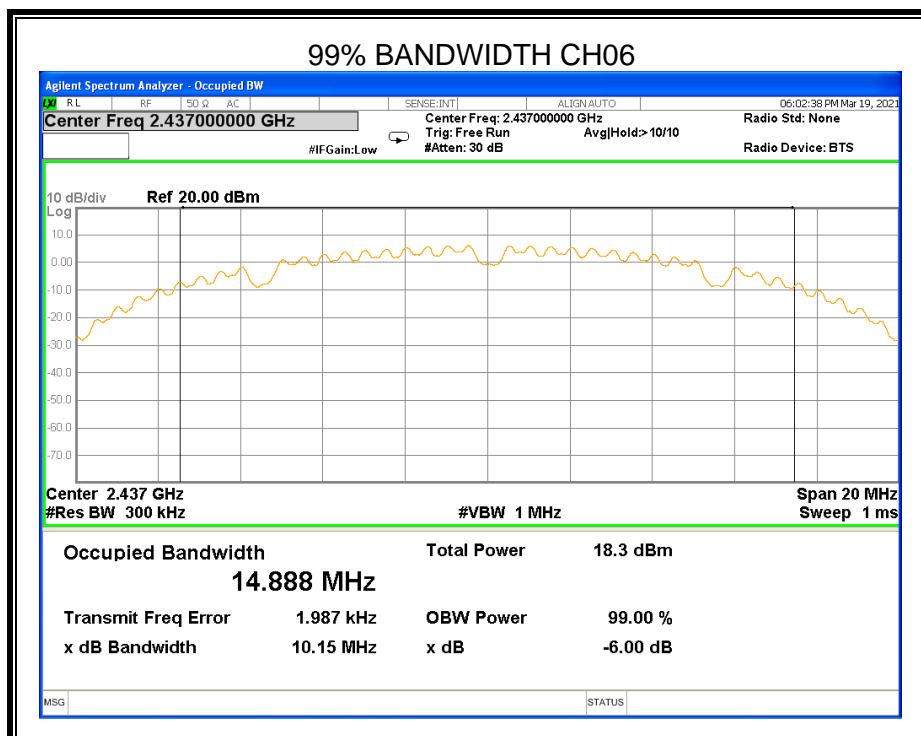
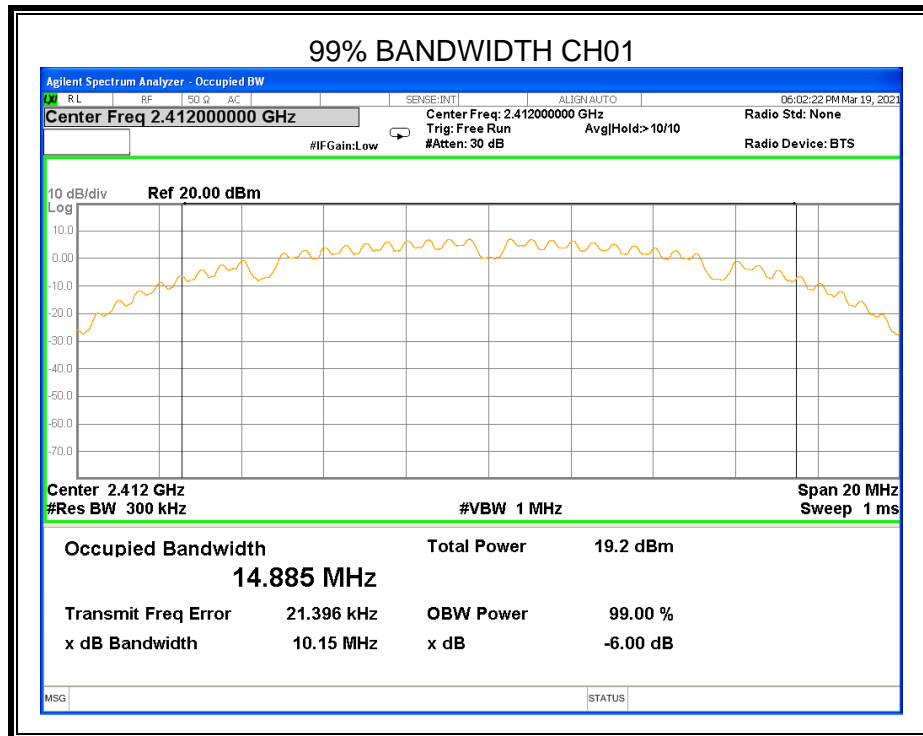
RESULTS

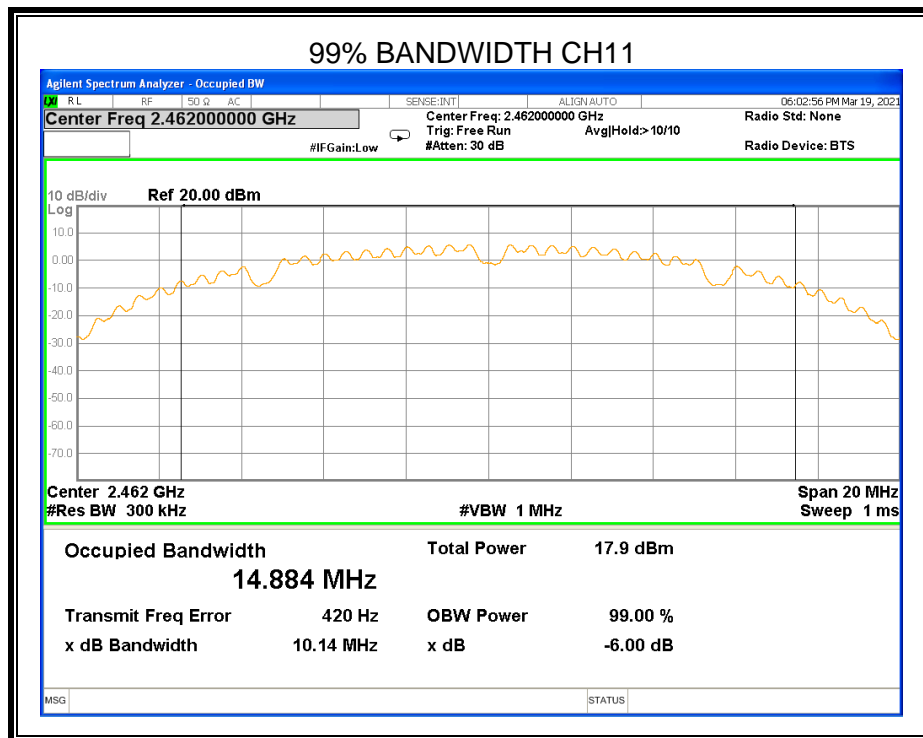
8.2.1. 802.11b MODE

Channel	Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit (kHz)	Result
CH01	2412	10.070	14.885	≥500KHz	Pass
CH06	2437	10.060	14.888	≥500KHz	Pass
CH11	2462	10.060	14.884	≥500KHz	Pass





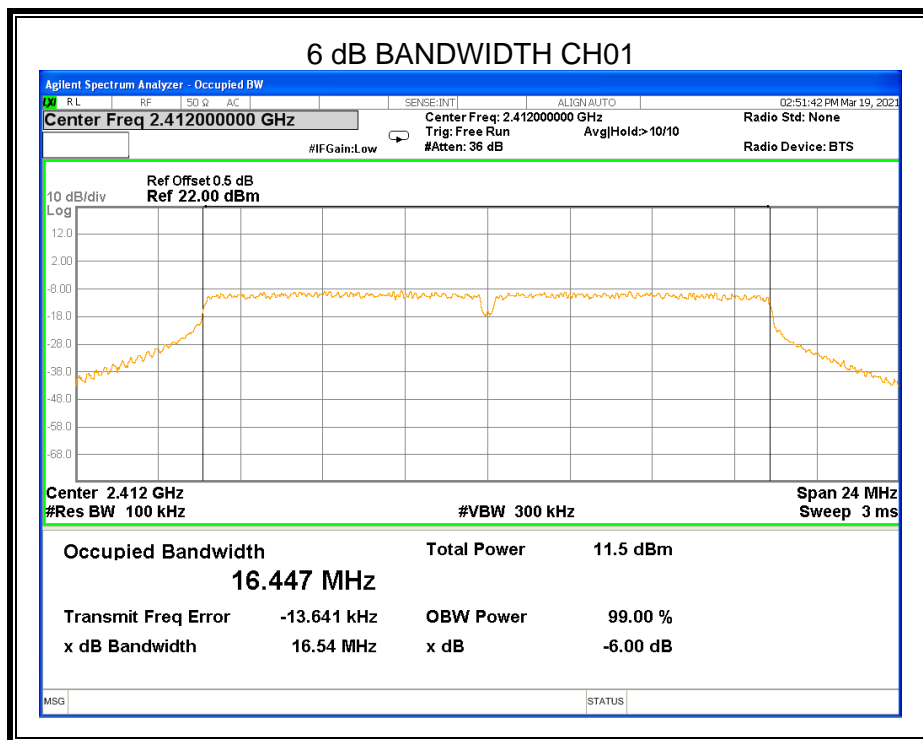


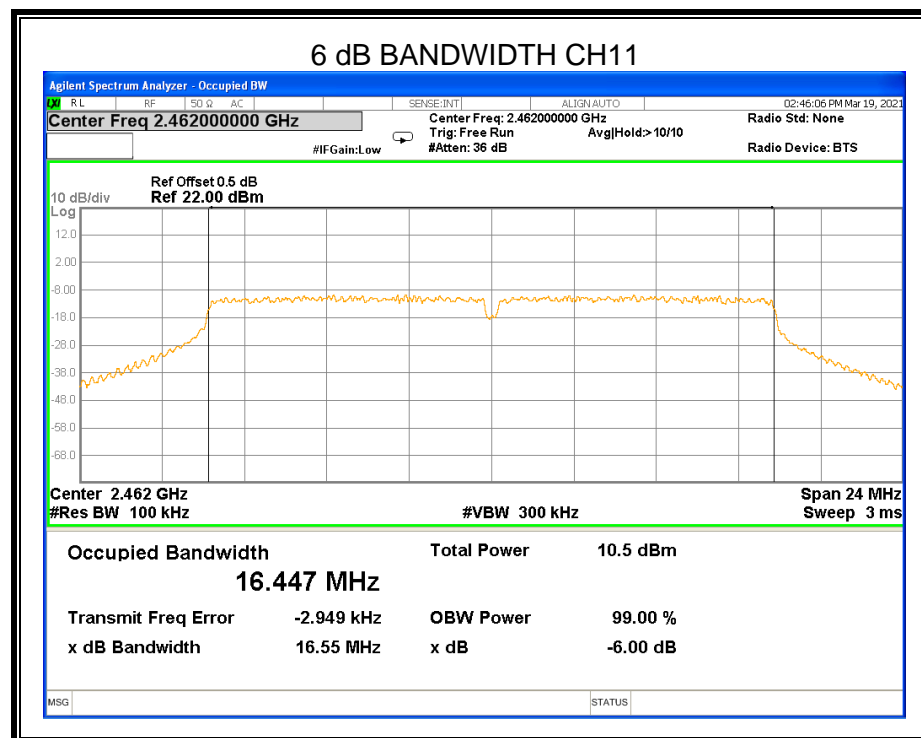
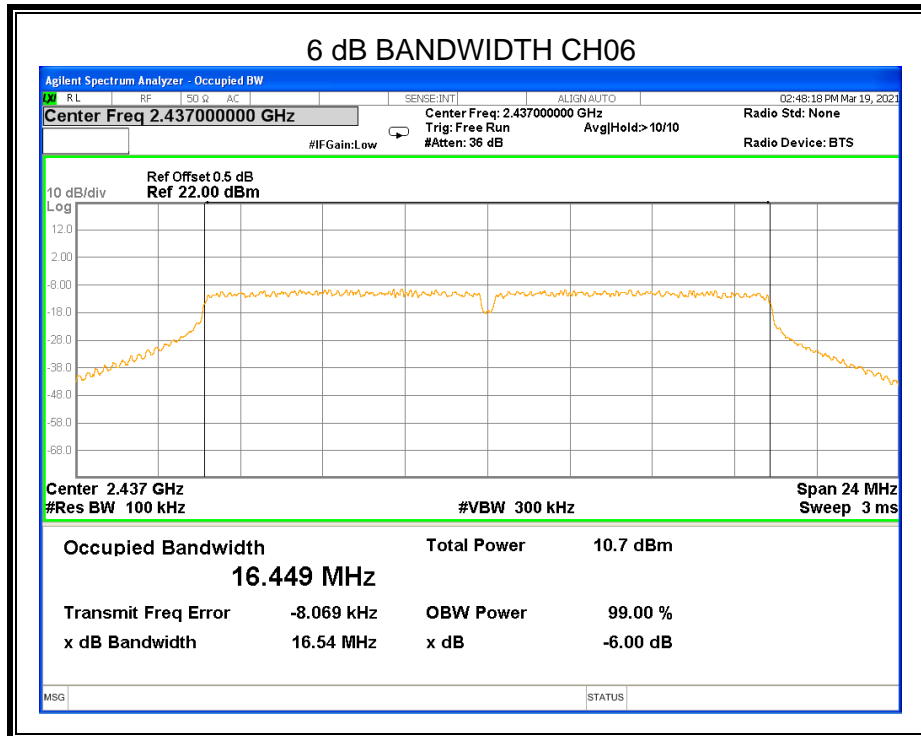


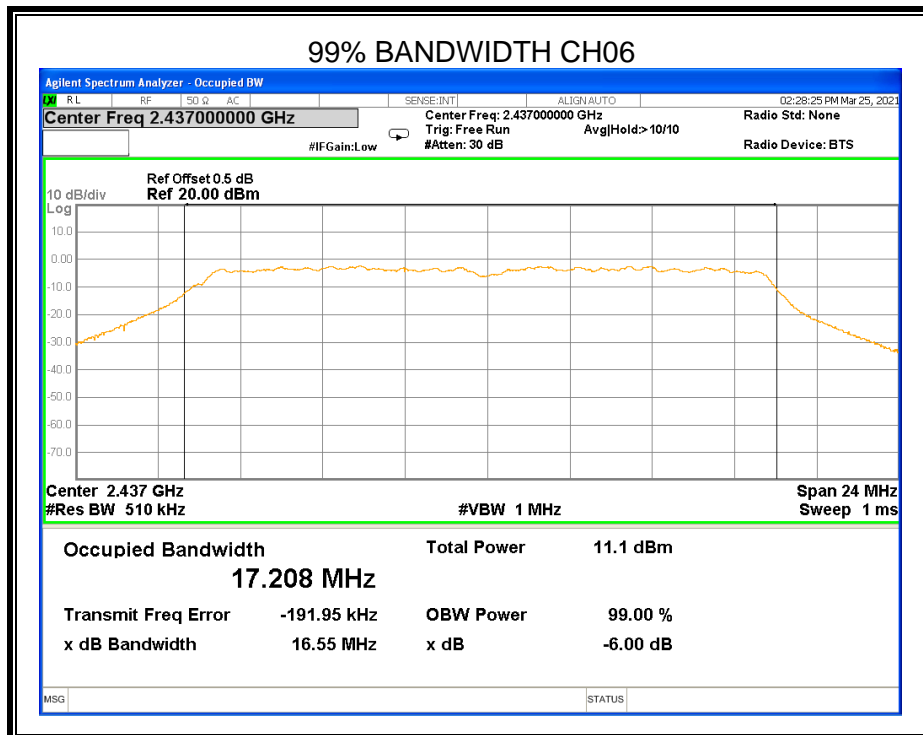
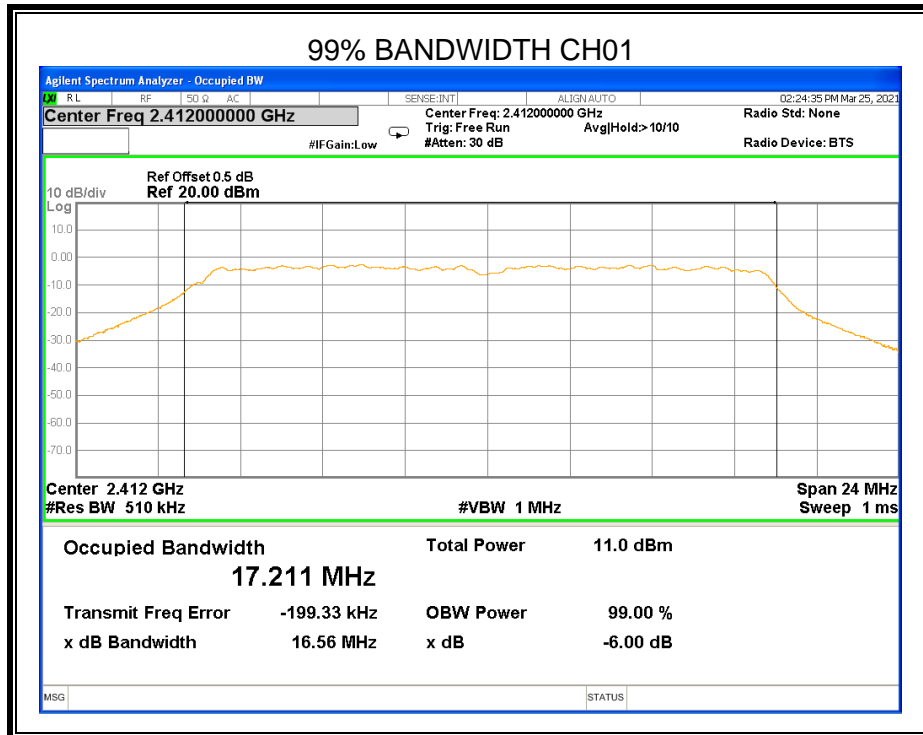


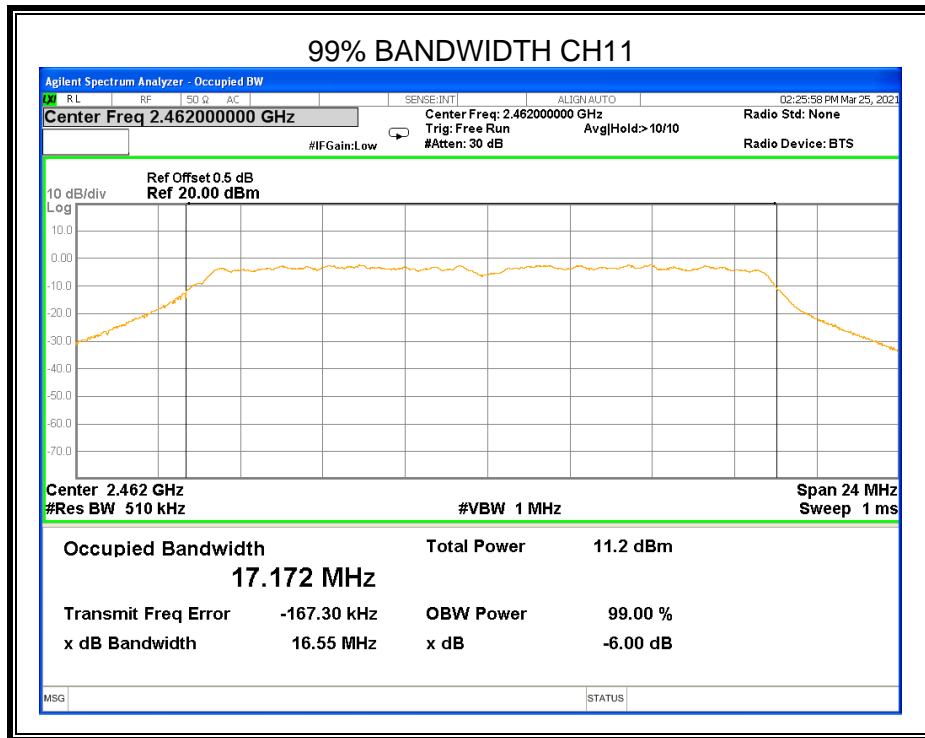
8.2.2. 802.11g MODE

Channel	Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit (kHz)	Result
CH01	2412	16.54	17.21	≥500KHz	Pass
CH06	2437	16.54	17.21	≥500KHz	Pass
CH11	2462	16.55	17.17	≥500KHz	Pass





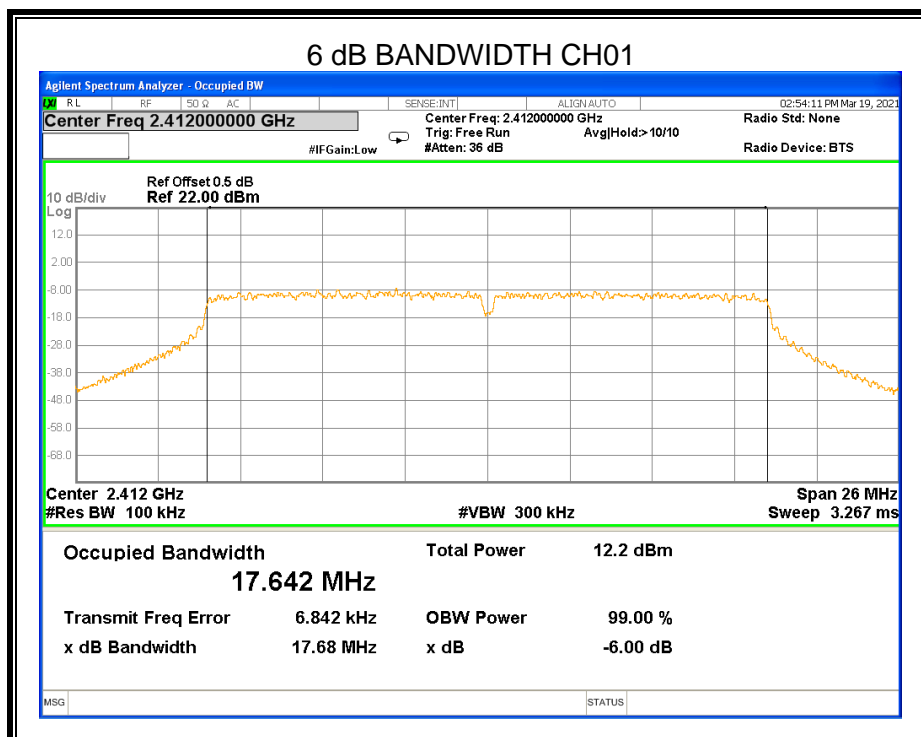


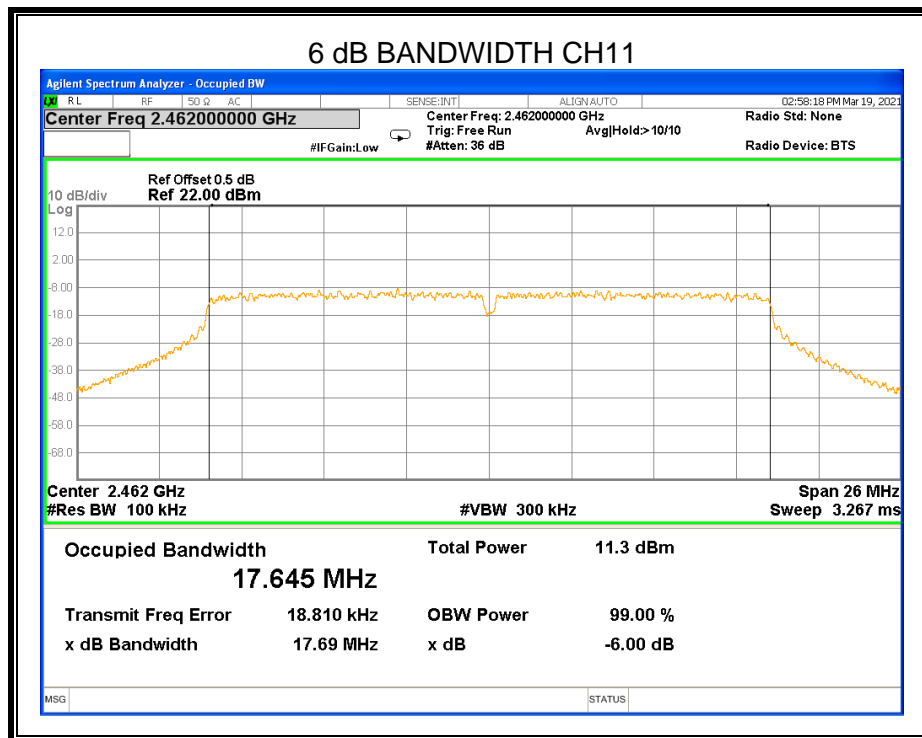
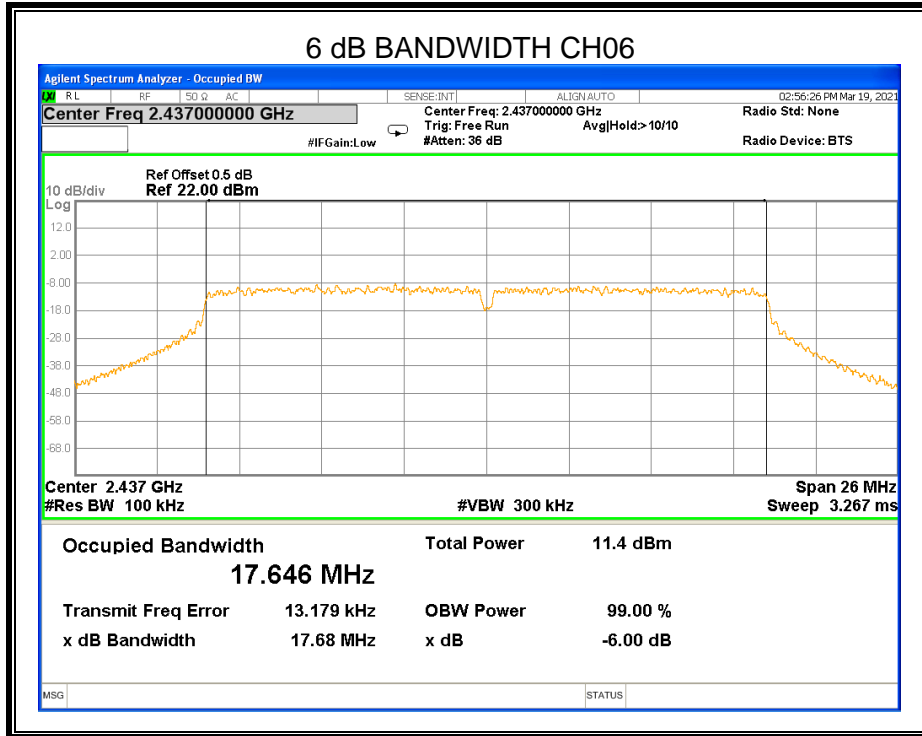


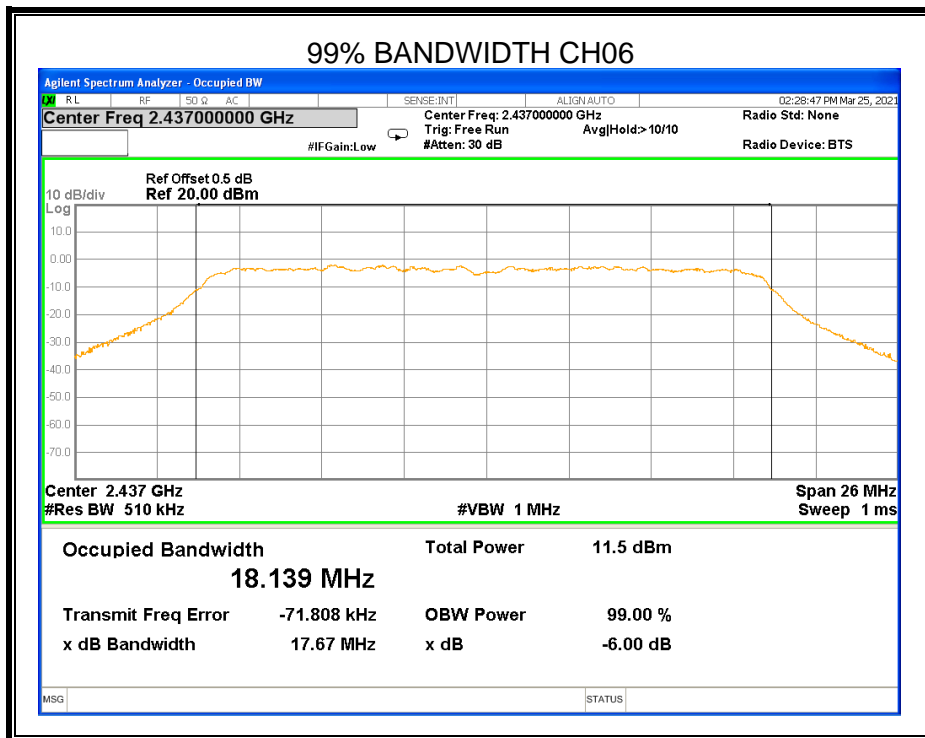
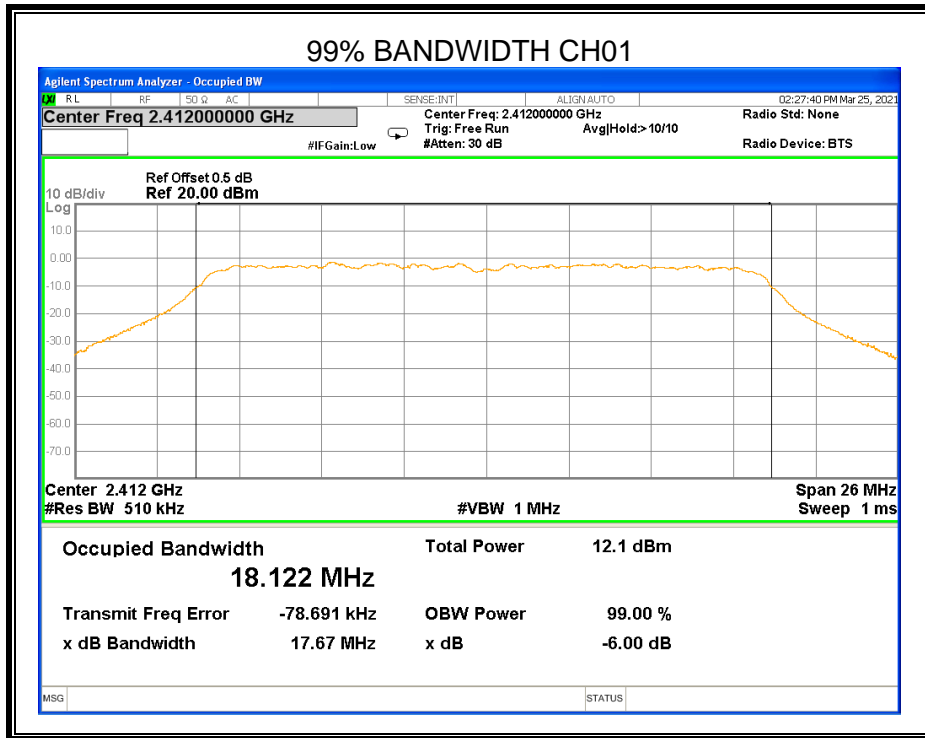


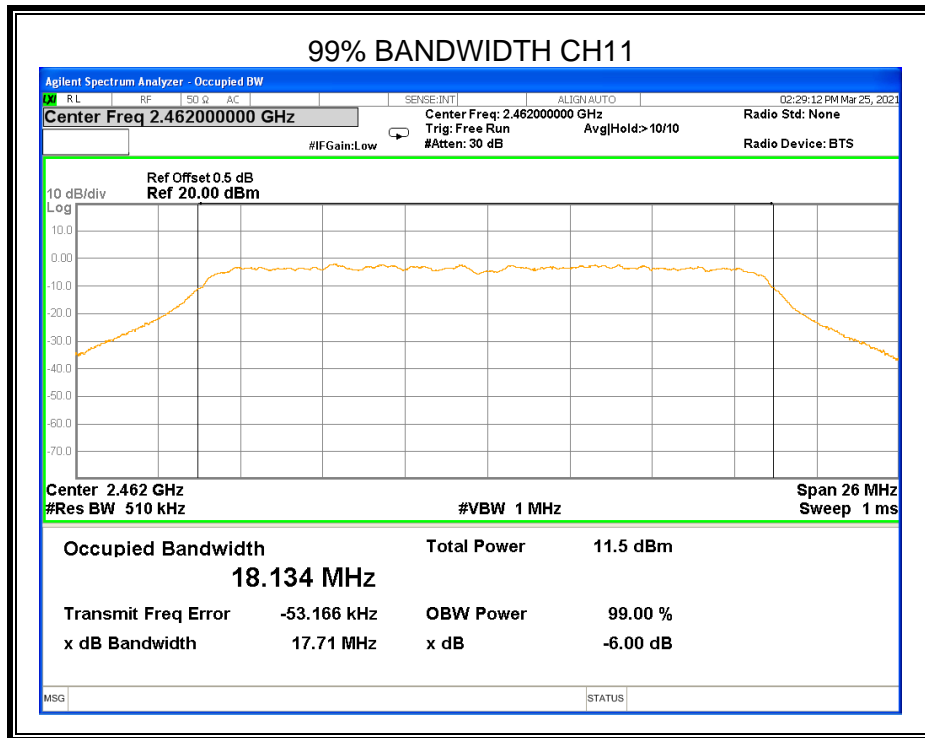
8.2.3. 802.11n HT20 MODE

Channel	Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit (kHz)	Result
CH01	2412	17.68	18.12	≥500KHz	Pass
CH06	2437	17.68	18.14	≥500KHz	Pass
CH11	2462	17.69	18.13	≥500KHz	Pass



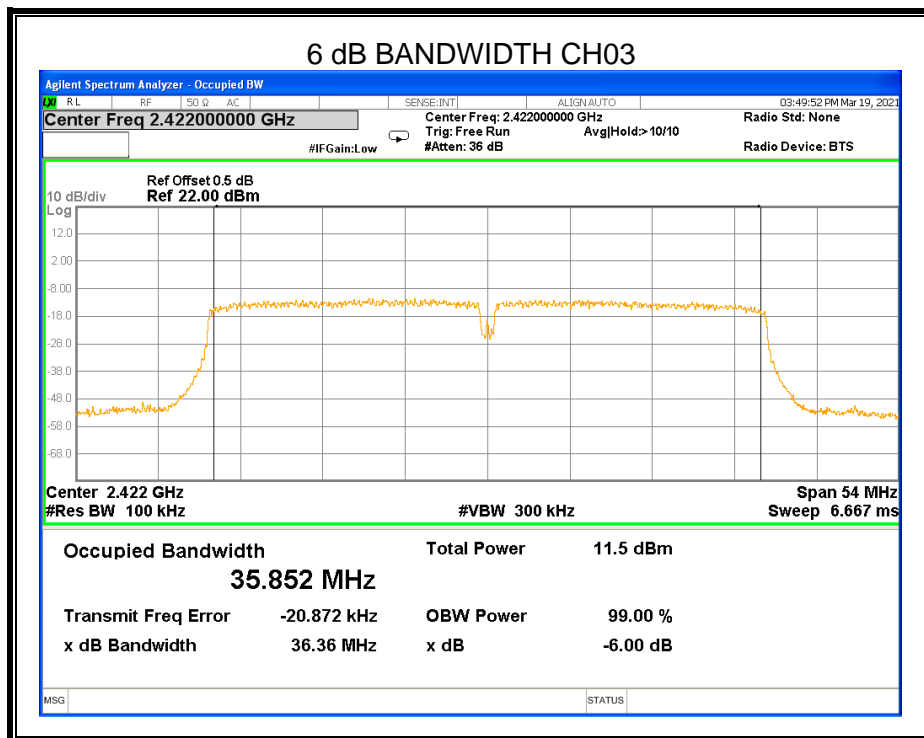


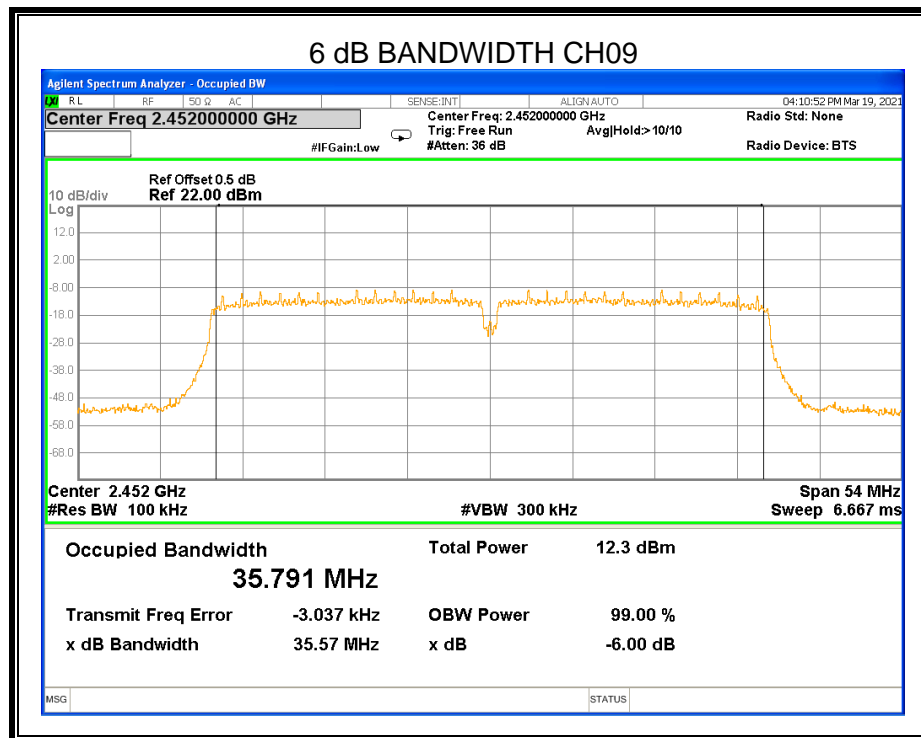
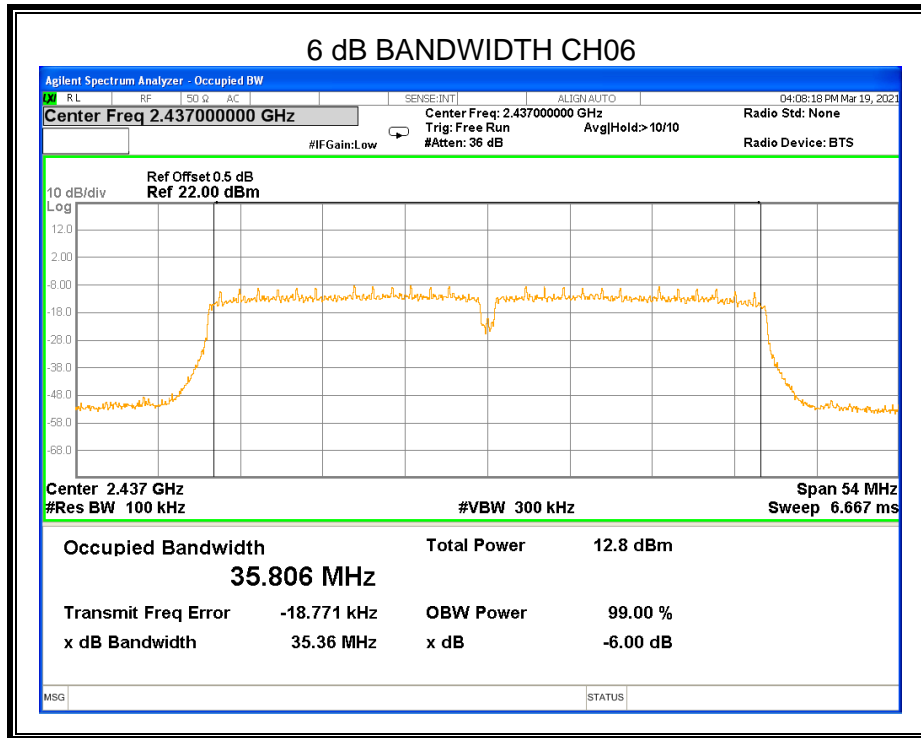


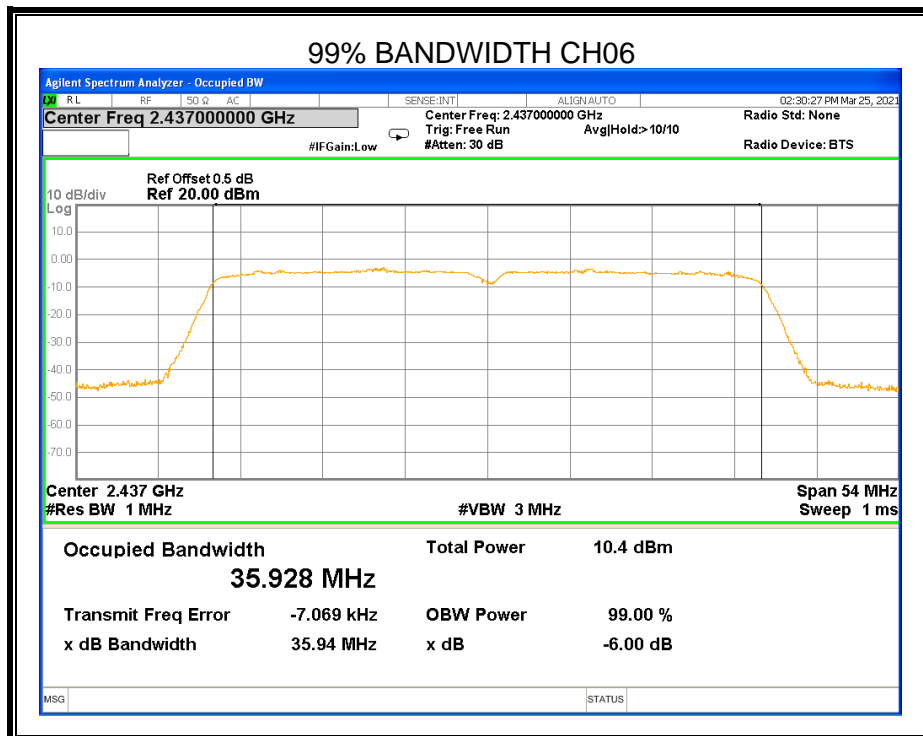
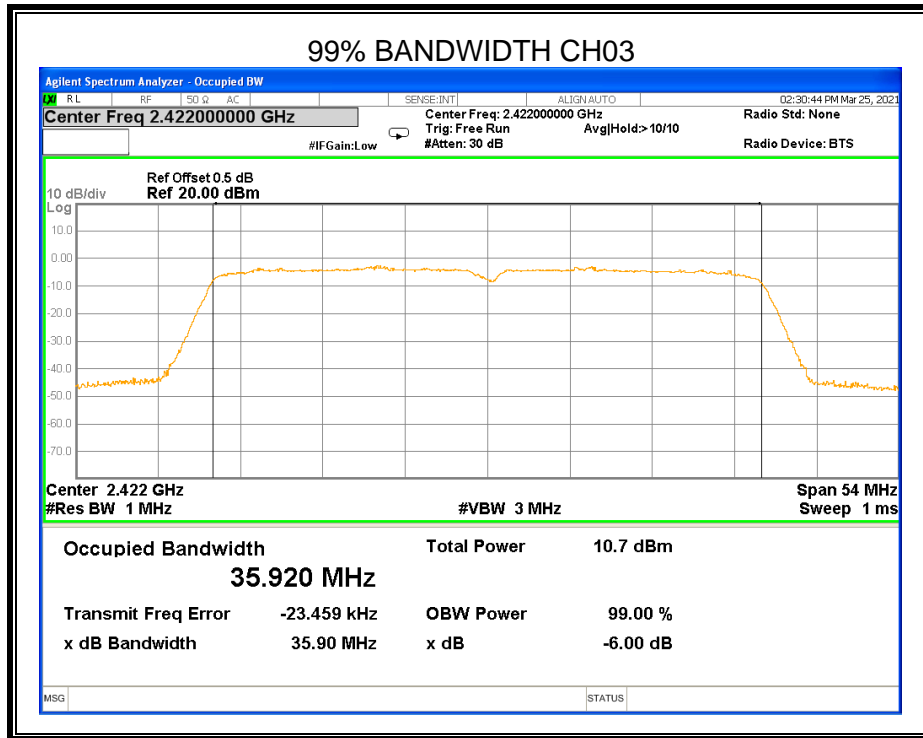


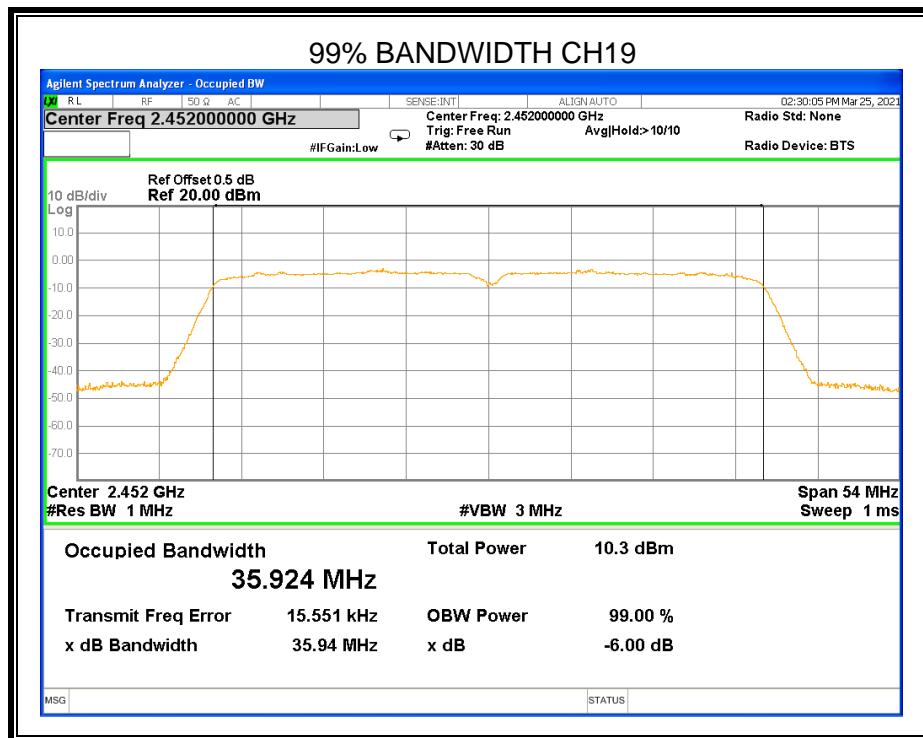
8.2.4. 802.11n HT40 MODE

Channel	Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit (kHz)	Result
CH03	2422	36.36	35.92	≥500KHz	Pass
CH06	2437	35.36	35.93	≥500KHz	Pass
CH09	2452	35.57	35.92	≥500KHz	Pass









8.3. CONDUCTED OUTPUT POWER

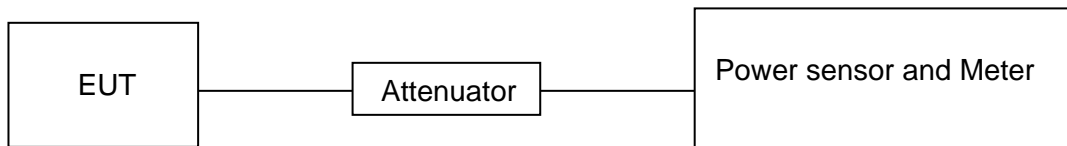
LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247(b)(3) RSS-247 5.4 (d)	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 peak power each channel.

TEST SETUP



TEST ENVIRONMENT

Temperature	25°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	DC 5V



RESULTS

8.3.1. 802.11b MODE

Test Channel	Frequency	Maximum Conducted Output Power (PK)	Maximum Conducted Output Power (AVG)	LIMIT
	(MHz)	(dBm)		dBm
CH01	2412	19.21	17.09	30
CH06	2437	19.12	16.55	30
CH11	2462	18.45	15.91	30

8.3.2. 802.11g MODE

Test Channel	Frequency	Maximum Conducted Output Power (PK)	Maximum Conducted Output Power (AVG)	LIMIT
	(MHz)	(dBm)		dBm
CH01	2412	17.72	8.08	30
CH06	2437	17.36	7.67	30
CH11	2462	16.87	7.34	30

8.3.3. 802.11n HT20 MODE

Test Channel	Frequency	Maximum Conducted Output Power (PK)	Maximum Conducted Output Power (AVG)	LIMIT
	(MHz)	(dBm)		dBm
CH01	2412	17.60	8.52	30
CH06	2437	17.10	8.02	30
CH11	2462	16.64	7.63	30

8.3.4. 802.11 n HT40 MODE

Test Channel	Frequency	Maximum Conducted Output Power (PK)	Maximum Conducted Output Power (AVG)	LIMIT
	(MHz)	(dBm)		dBm
CH03	2422	12.90	11.54	30
CH06	2437	12.85	11.19	30
CH09	2452	12.59	11.01	30



RSS-247 EIRP Power

TX 802.11b Mode					
Test Channel	Frequency	Peak Power	Antenna Gain	EIRP Power	LIMIT
	(MHz)	(dBm)	(dBi)	(dBm)	dBm
CH01	2412	19.21	0.10	19.31	36.02
CH06	2437	19.12	0.10	19.22	36.02
CH11	2462	18.45	0.10	18.55	36.02
TX 802.11g Mode					
Test Channel	Frequency	Peak Power	Antenna Gain	EIRP Power	LIMIT
	(MHz)	(dBm)	(dBi)	(dBm)	dBm
CH01	2412	17.72	0.10	17.82	36.02
CH06	2437	17.36	0.10	17.46	36.02
CH11	2462	16.87	0.10	16.97	36.02
TX 802.11n20 Mode					
Test Channel	Frequency	Peak Power	Antenna Gain	EIRP Power	LIMIT
	(MHz)	(dBm)	(dBi)	(dBm)	dBm
CH01	2412	17.60	0.10	17.70	36.02
CH06	2437	17.10	0.10	17.20	36.02
CH11	2462	16.64	0.10	16.74	36.02
TX 802.11n40 Mode					
Test Channel	Frequency	Peak Power	Antenna Gain	EIRP Power	LIMIT
	(MHz)	(dBm)	(dBi)	(dBm)	dBm
CH03	2422	12.90	0.10	13.00	36.02
CH06	2437	12.85	0.10	12.95	36.02
CH09	2452	12.59	0.10	12.69	36.02

8.4. POWER SPECTRAL DENSITY

LIMITS

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

TEST PROCEDURE

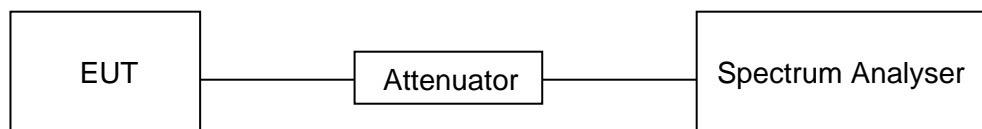
Connect the UUT to the spectrum analyser and use the following settings:

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

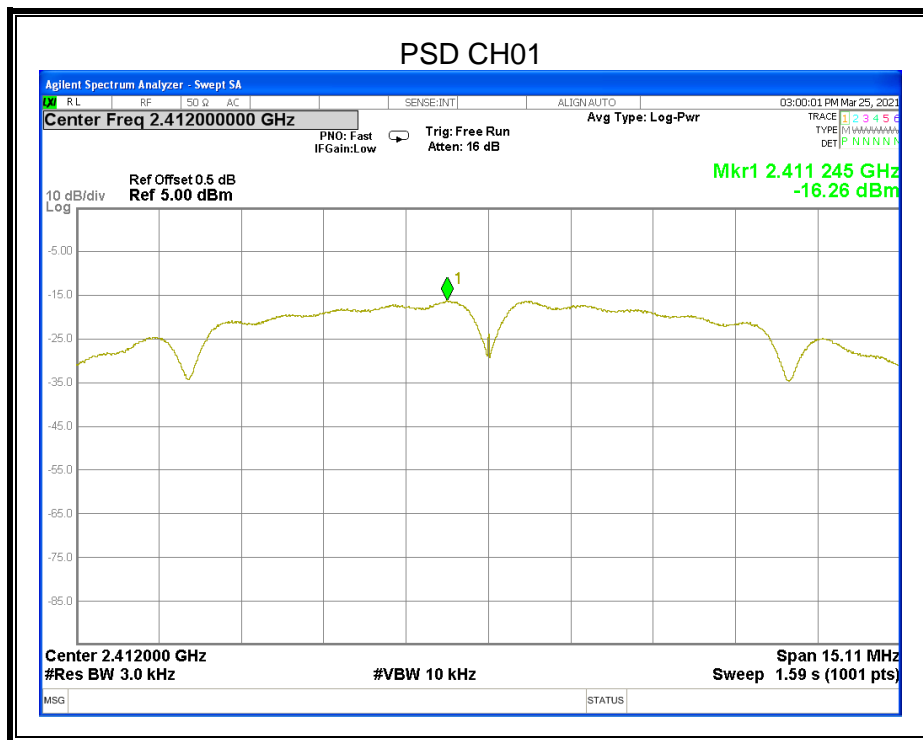
Temperature	25°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	DC 5V

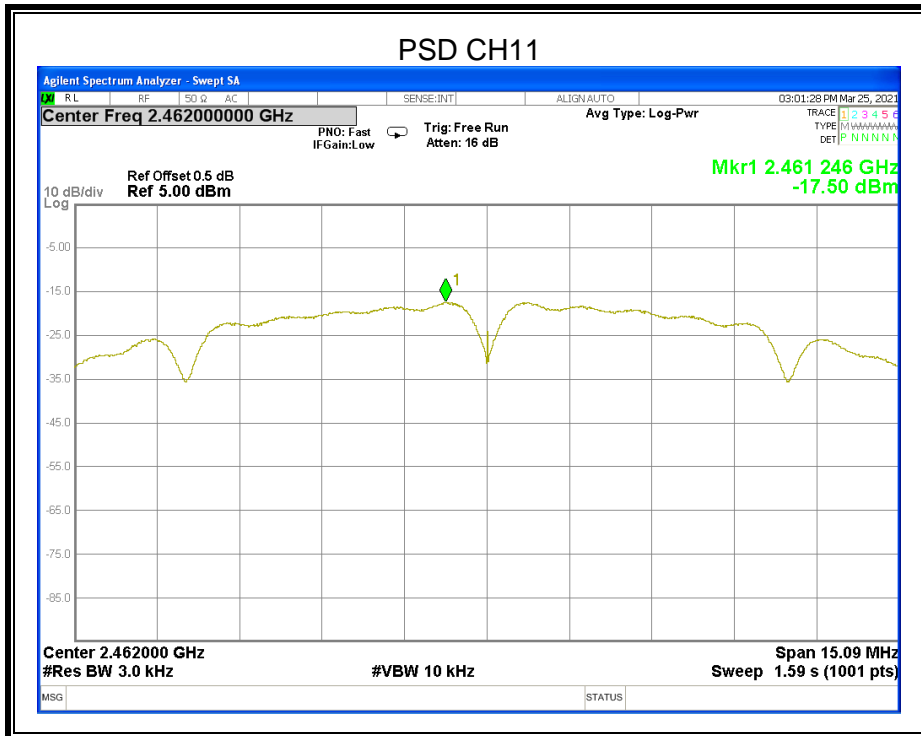
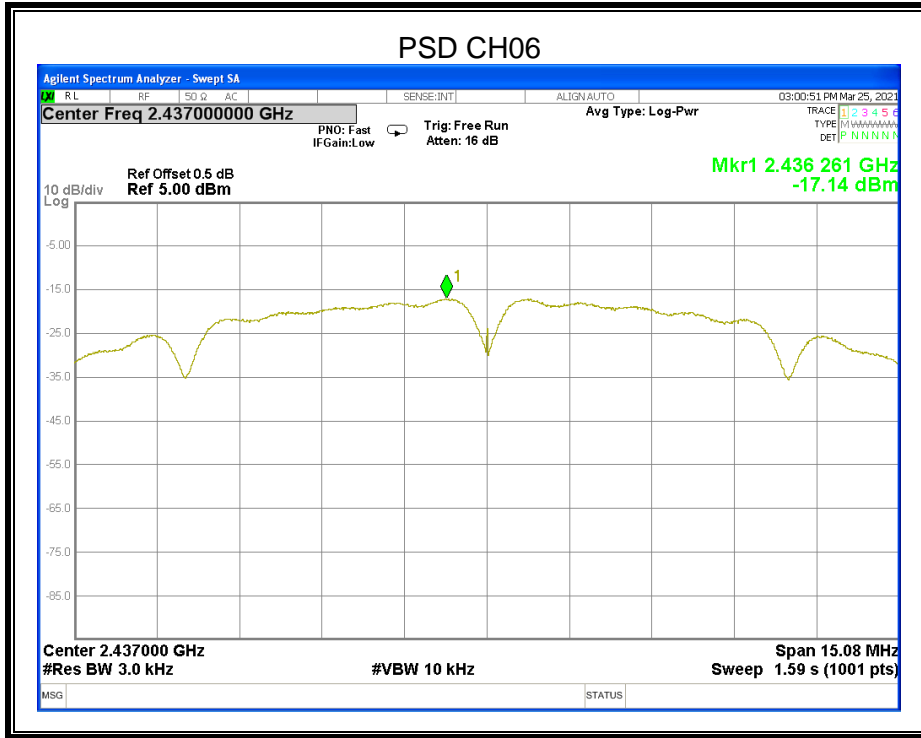
RESULTS



8.4.1. 802.11b MODE

Test Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
CH01	2412	-16.260	≤8	PASS
CH06	2437	-17.140	≤8	PASS
CH11	2462	-17.500	≤8	PASS

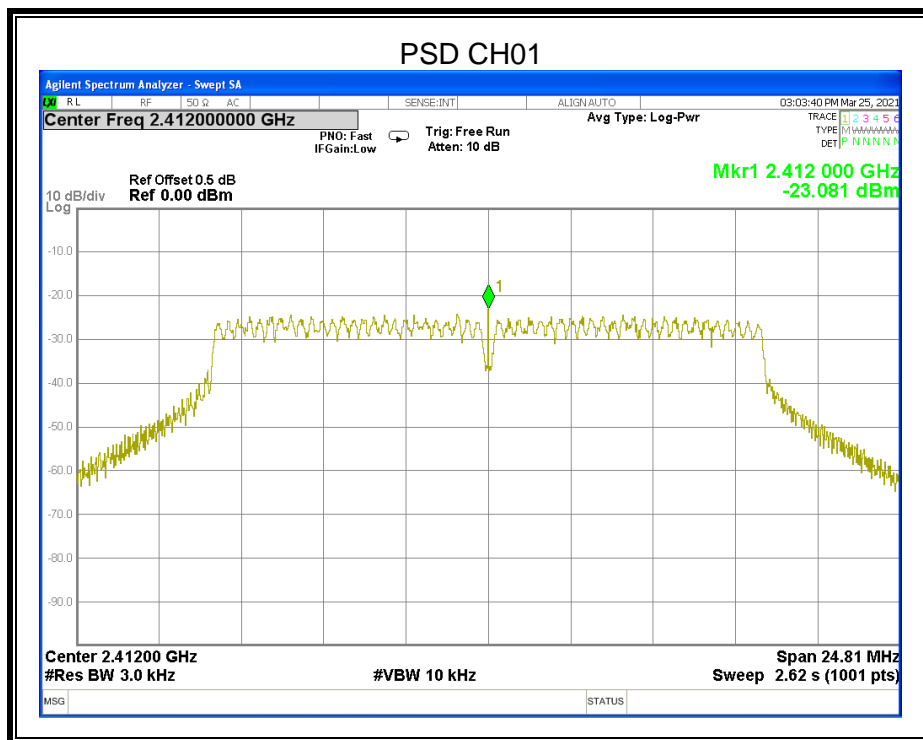


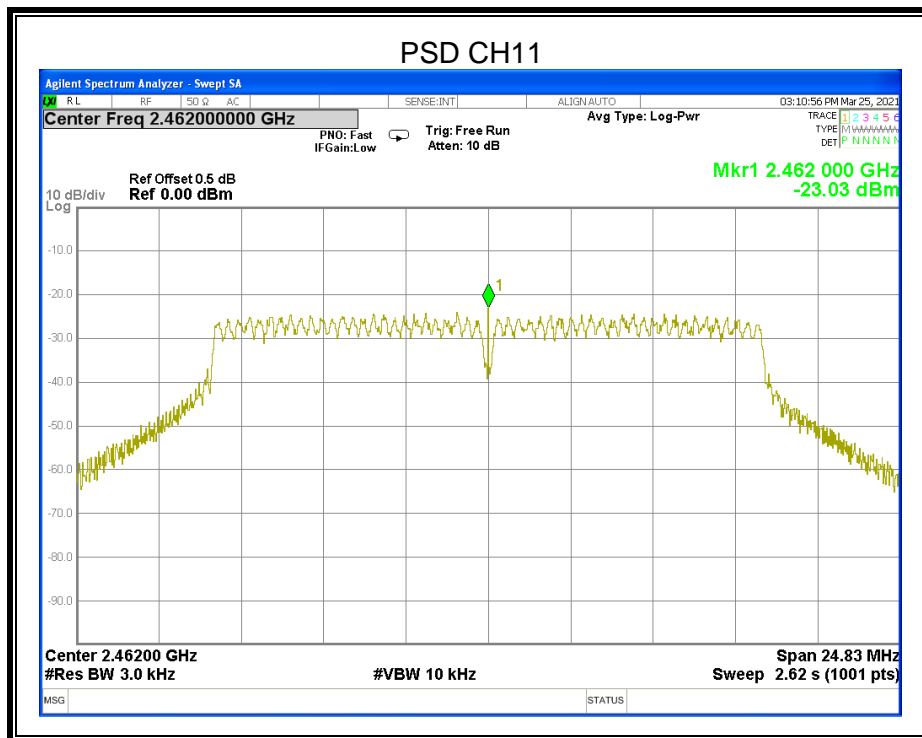
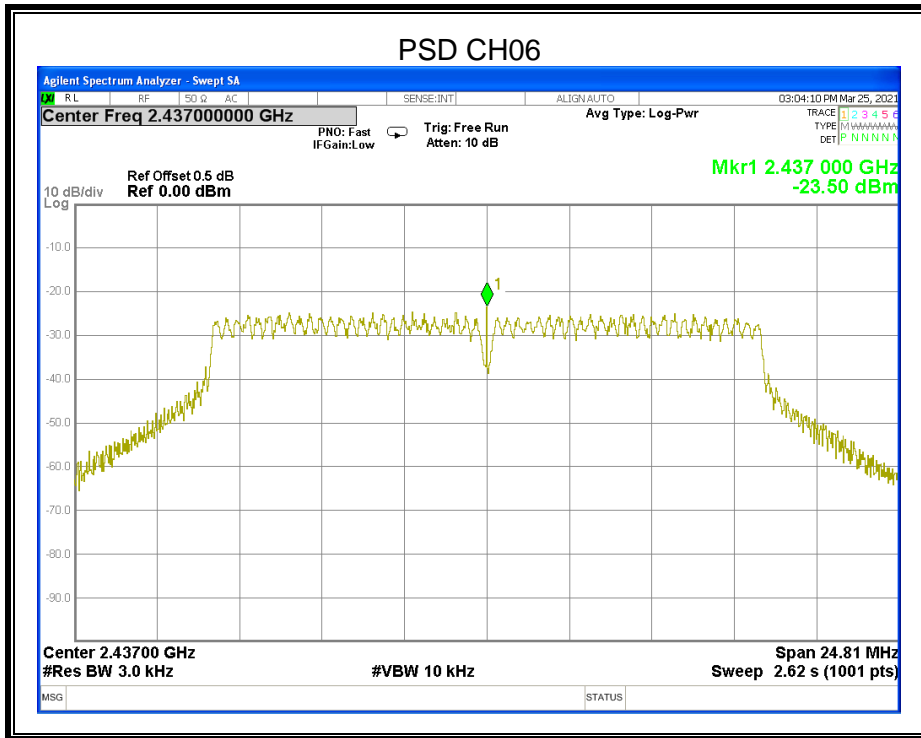




8.4.2. 802.11g MODE

Test Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
CH01	2412	-23.0810	≤8	PASS
CH06	2437	-23.5000	≤8	PASS
CH11	2462	-23.0300	≤8	PASS

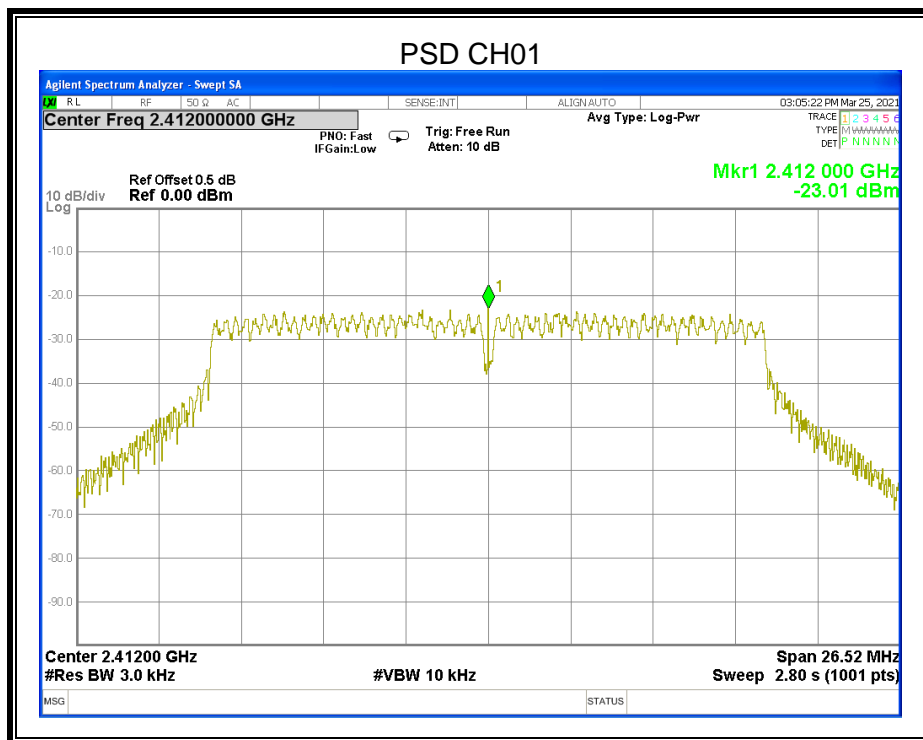


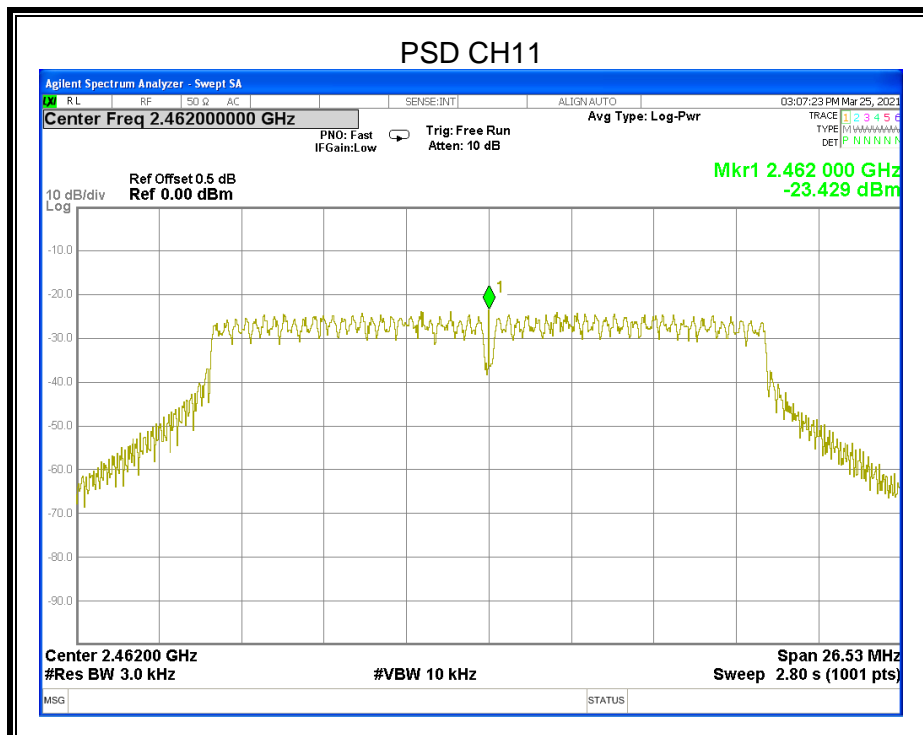
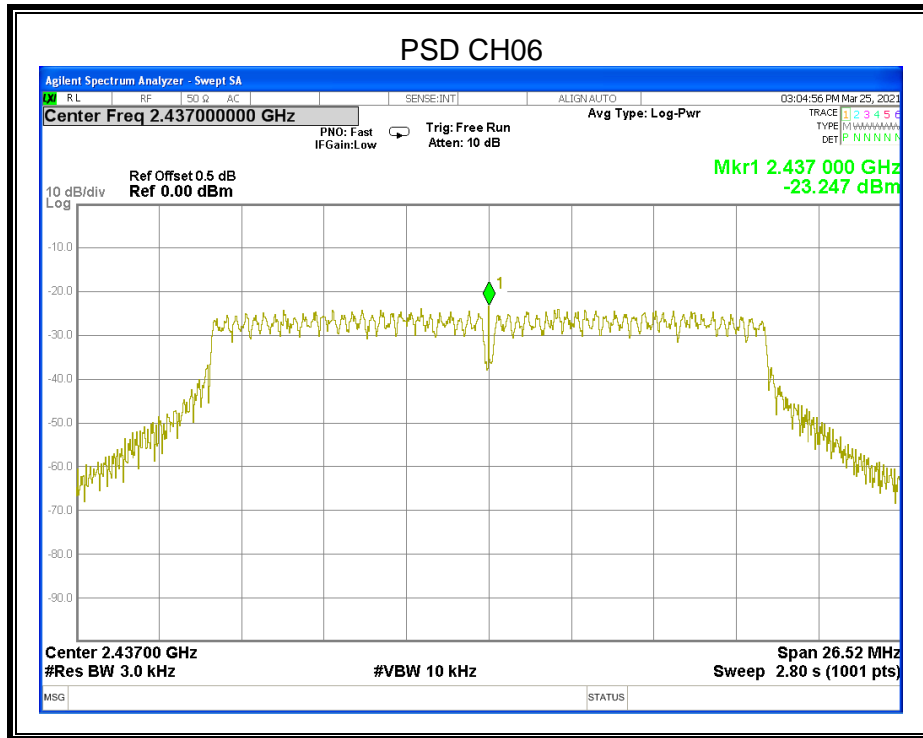




8.4.3. 802.11n HT20 MODE

Test Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
CH01	2412	-23.0100	≤8	PASS
CH06	2437	-23.2470	≤8	PASS
CH11	2462	-23.4290	≤8	PASS

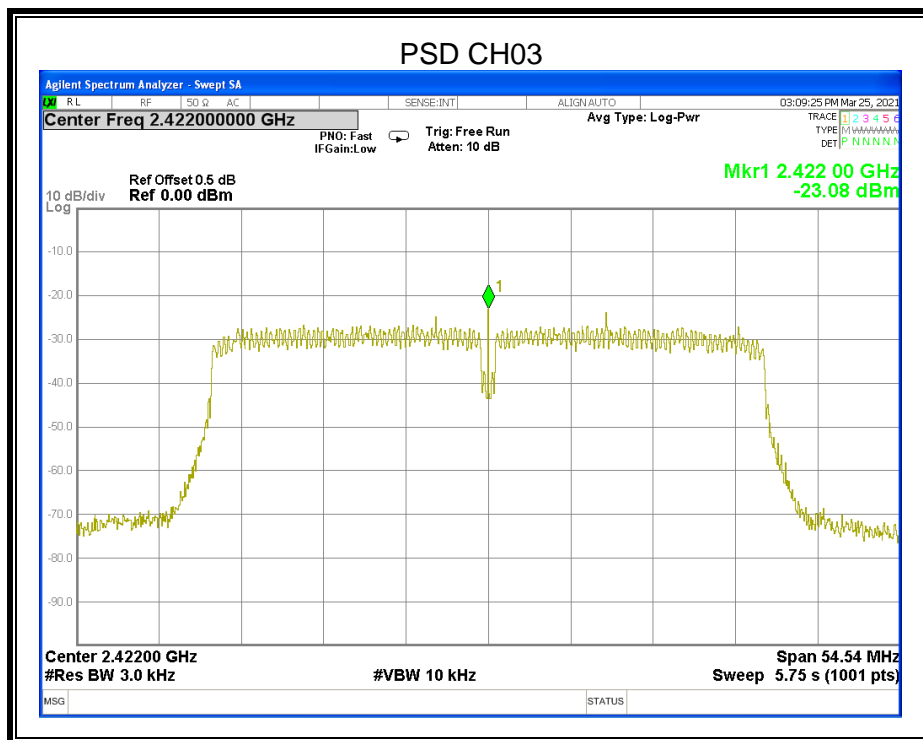


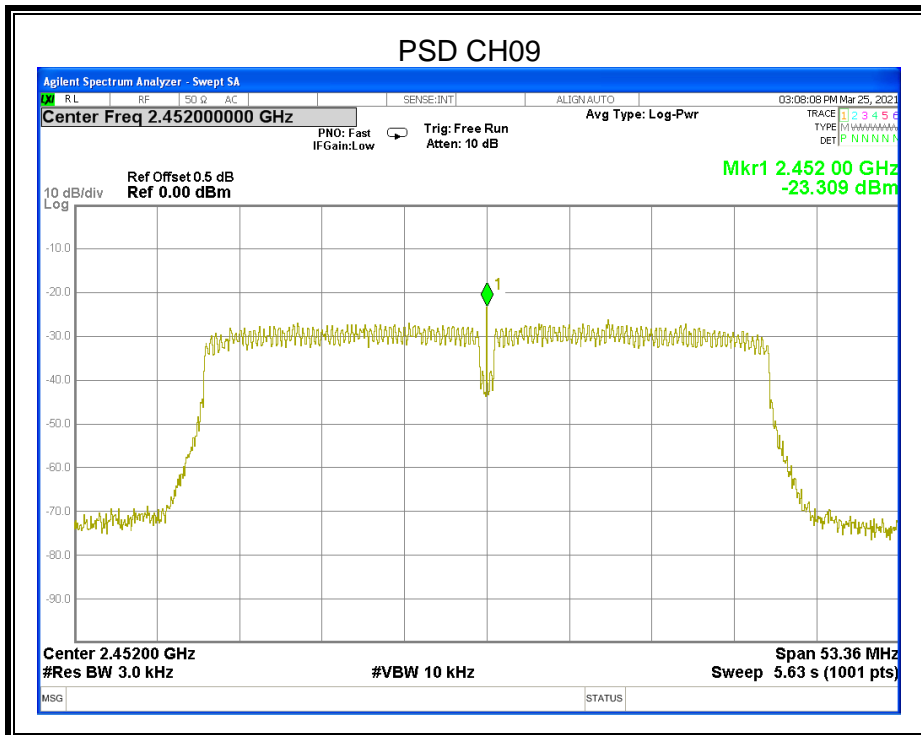
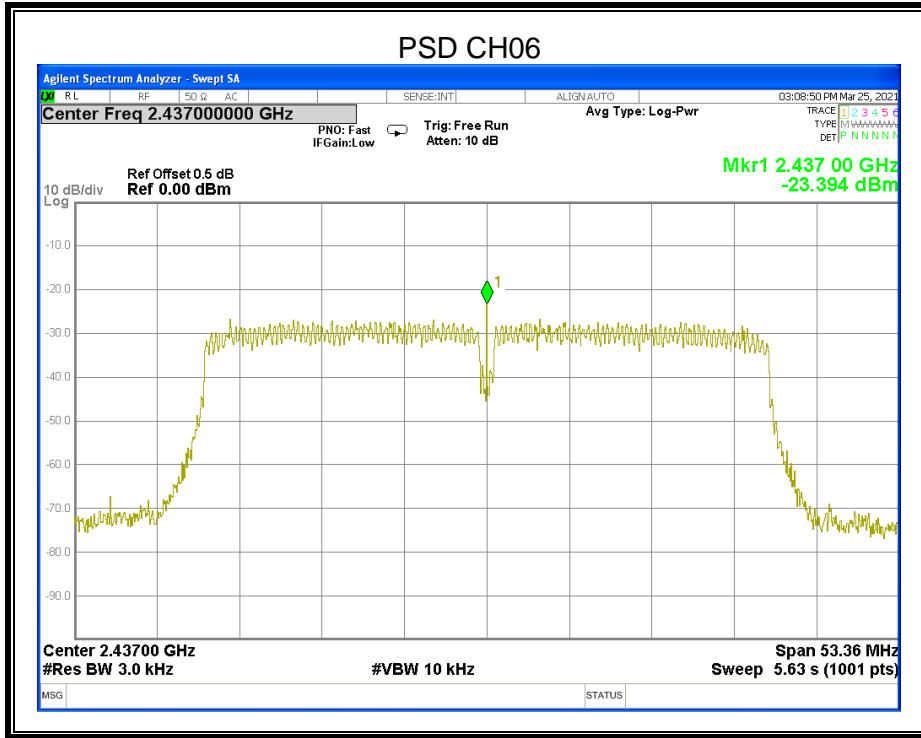




8.4.4. 802.11n HT40 MODE

Test Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
CH03	2442	-23.0800	≤8	PASS
CH06	2437	-23.3940	≤8	PASS
CH09	2452	-23.3090	≤8	PASS







8.5. CONDUCTED BANDEGE AND SPURIOUS EMISSIONS

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2		
Section	Test Item	Limit
FCC §15.247 (d) RSS-247 5.5	Conducted Bandedge and Spurious Emissions	at least 20 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:

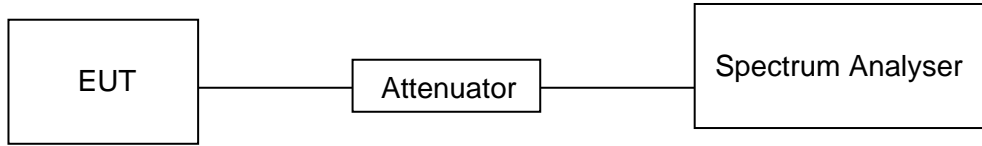
Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	100K
VBW	$\geq 3 \times \text{RBW}$
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

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	100K
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

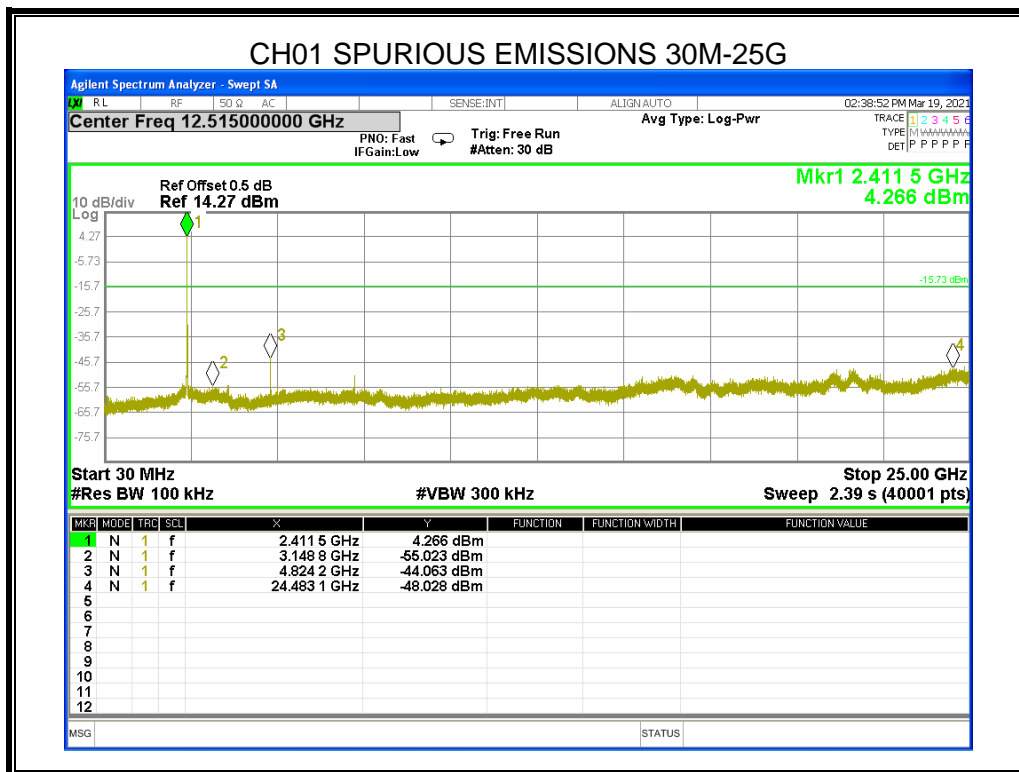


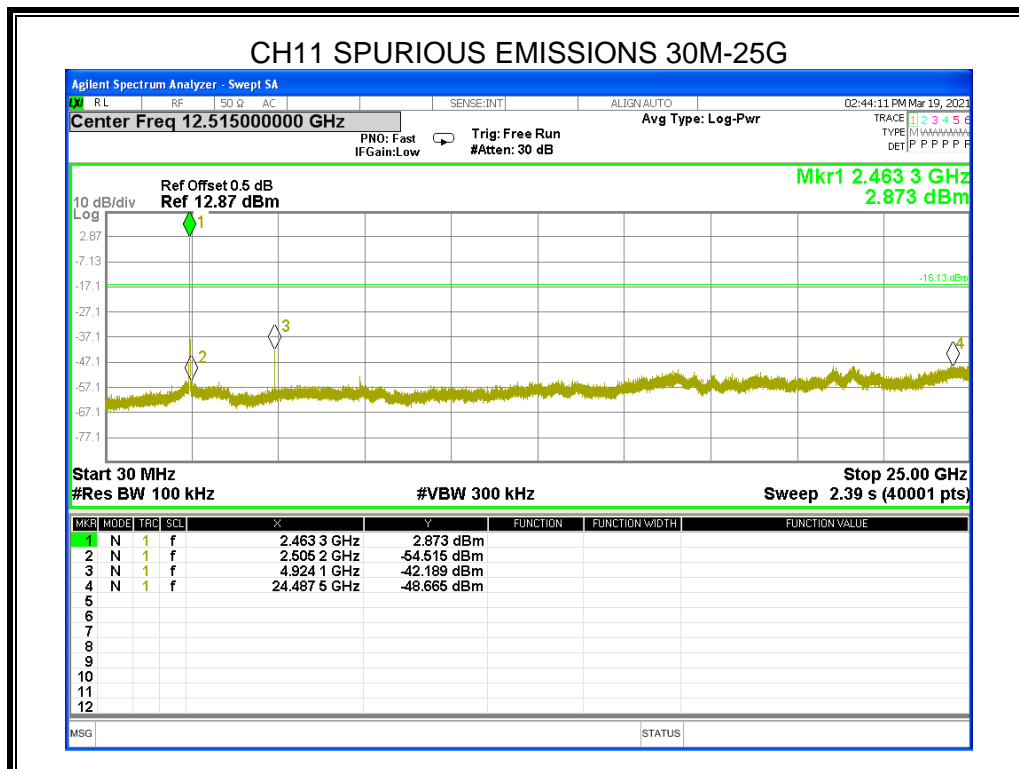
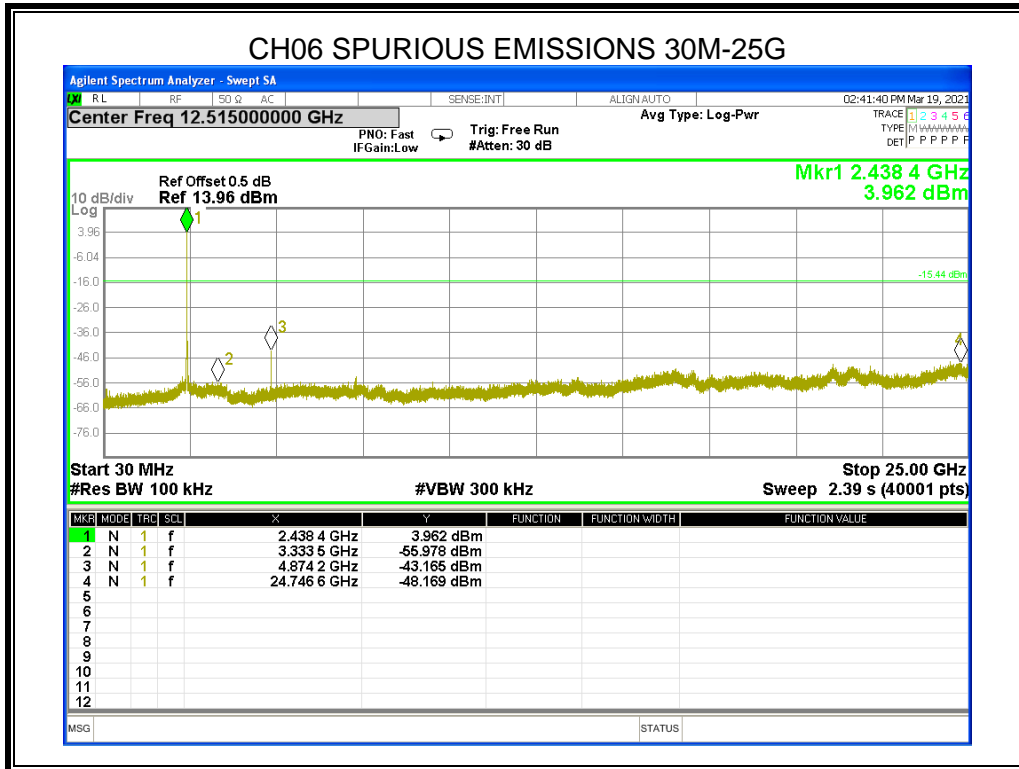
TEST ENVIRONMENT

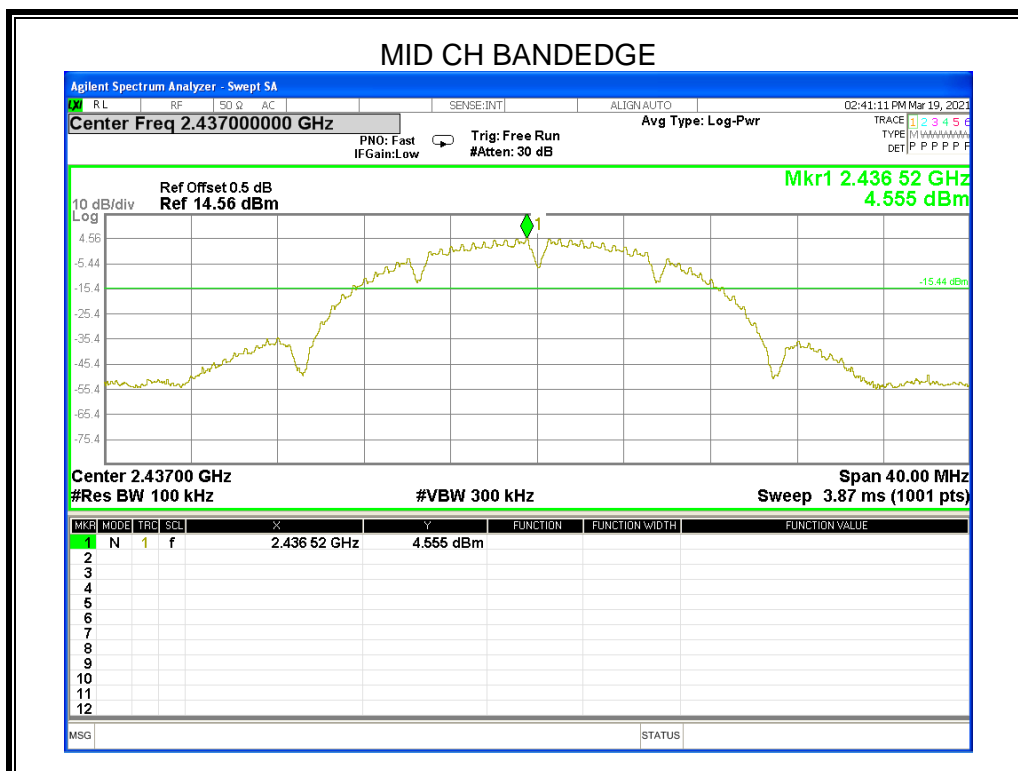
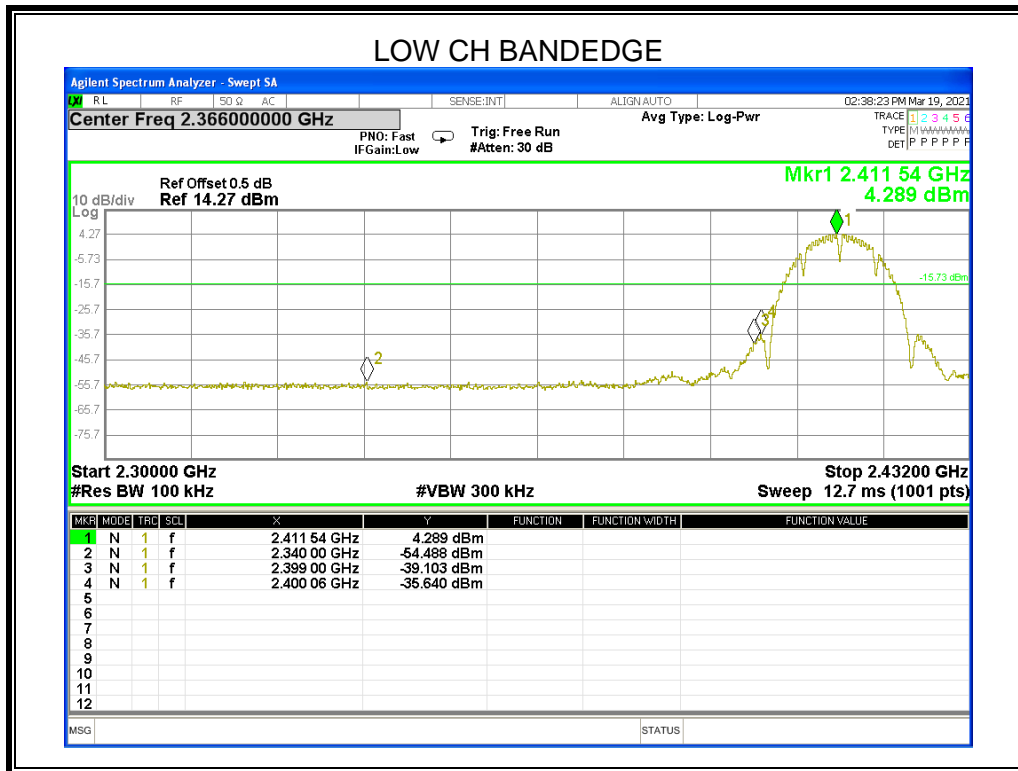
Temperature	25°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	DC 5V

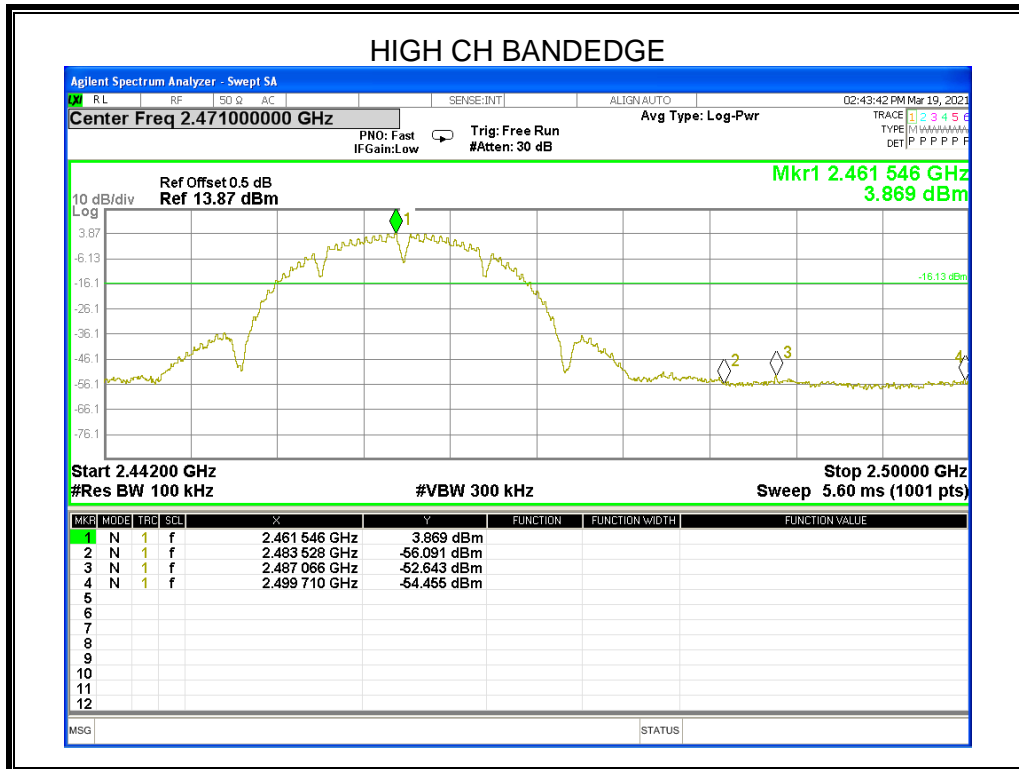
RESULTS

8.5.1. 802.11b MODE

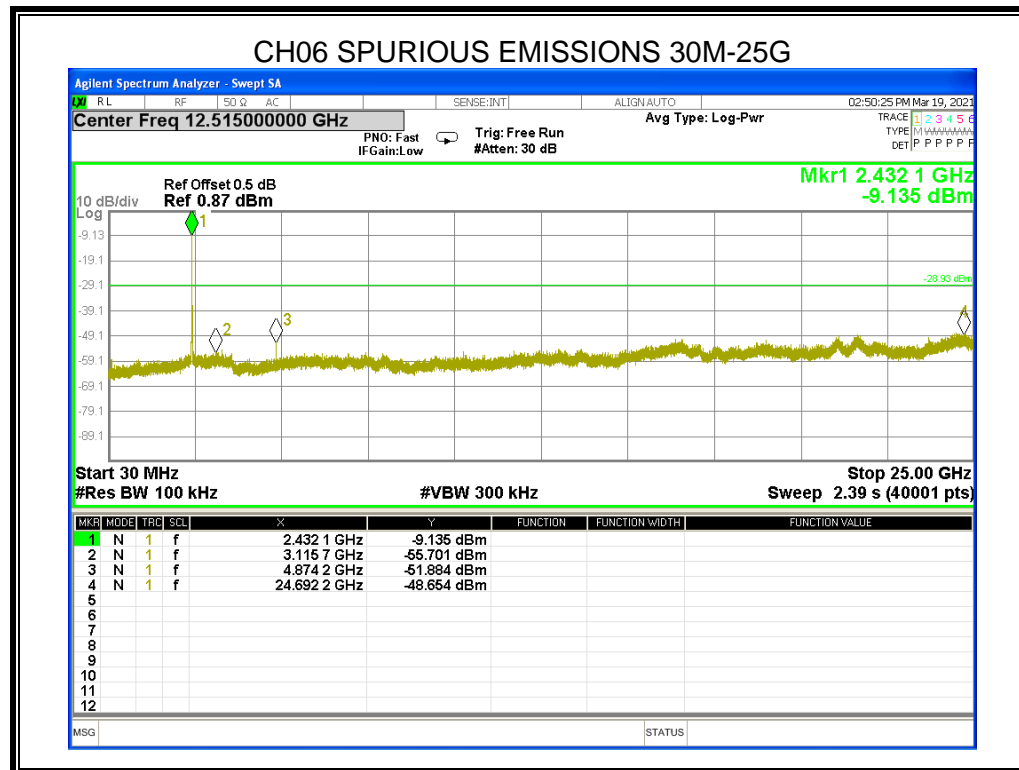
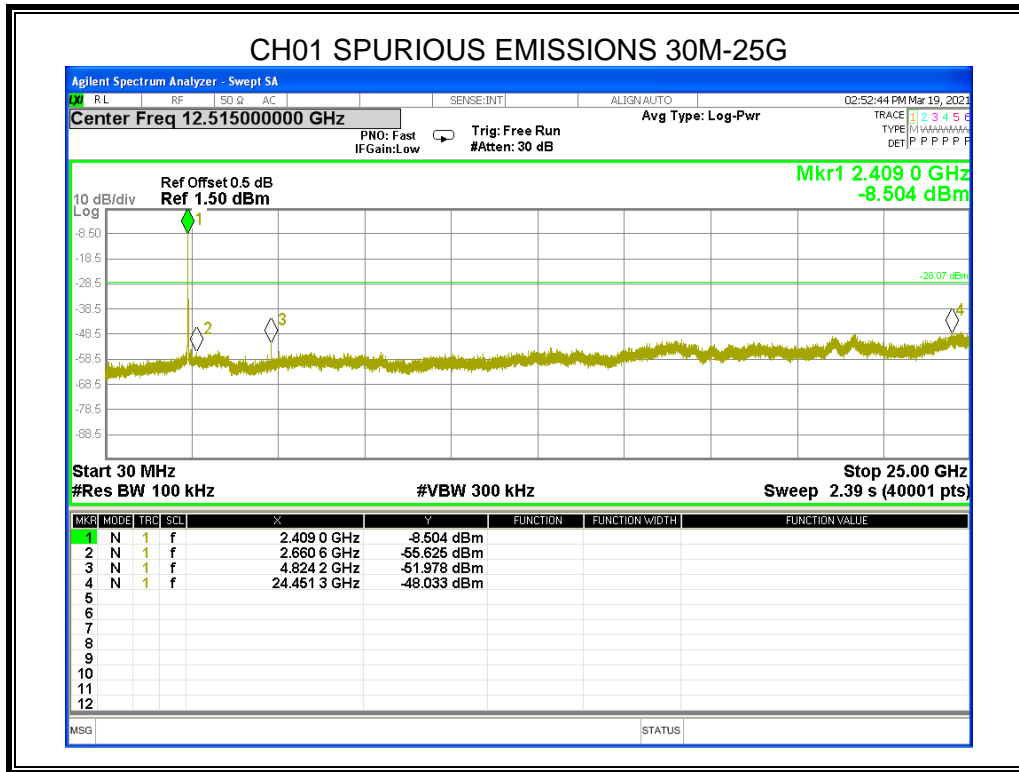


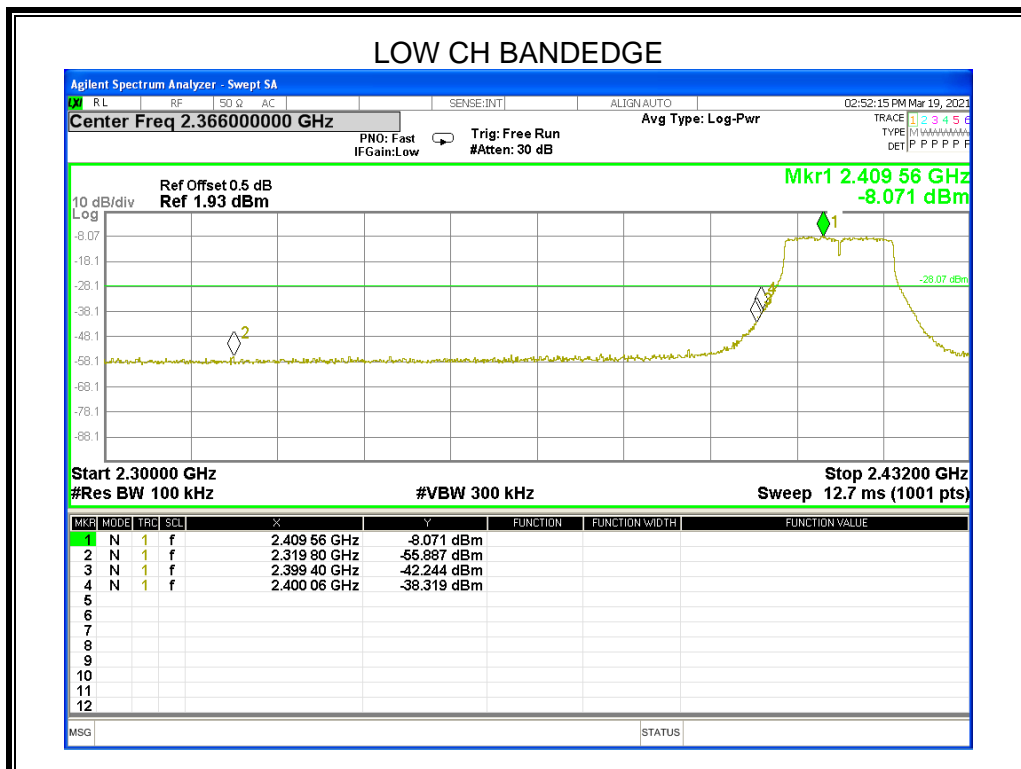
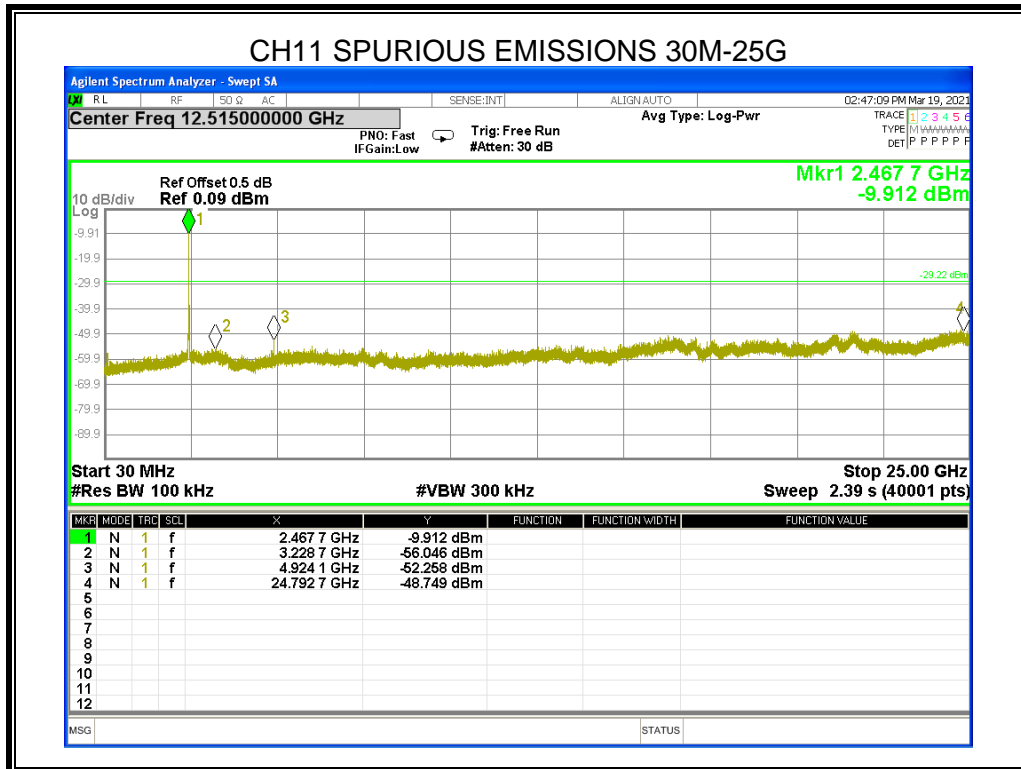


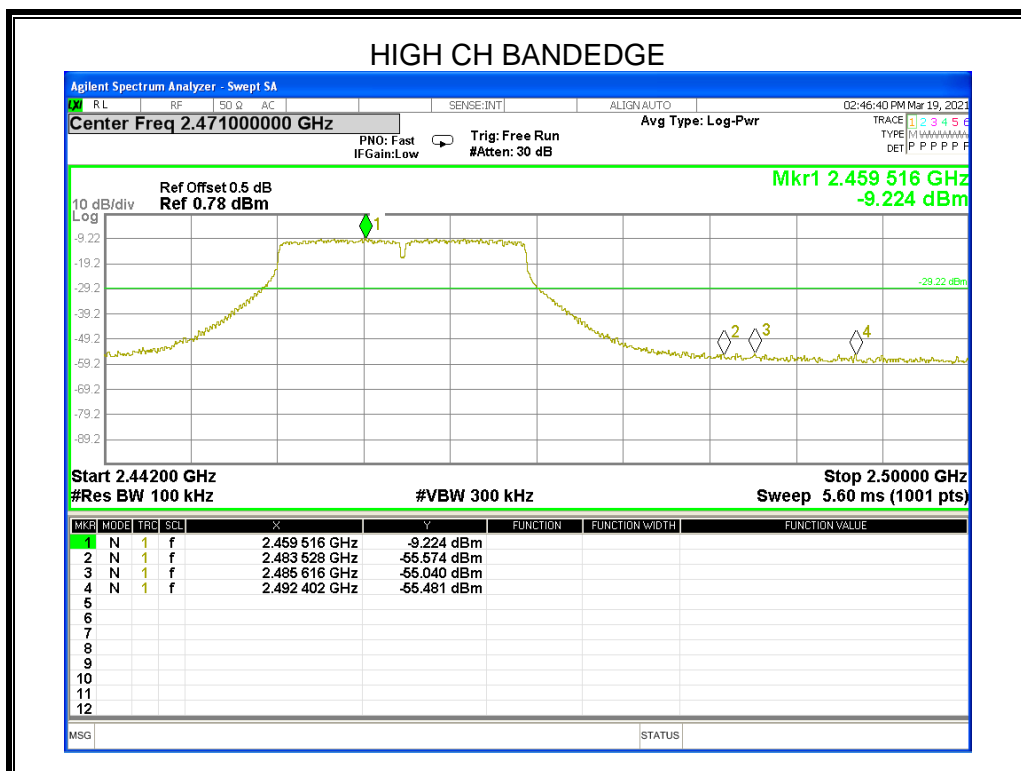
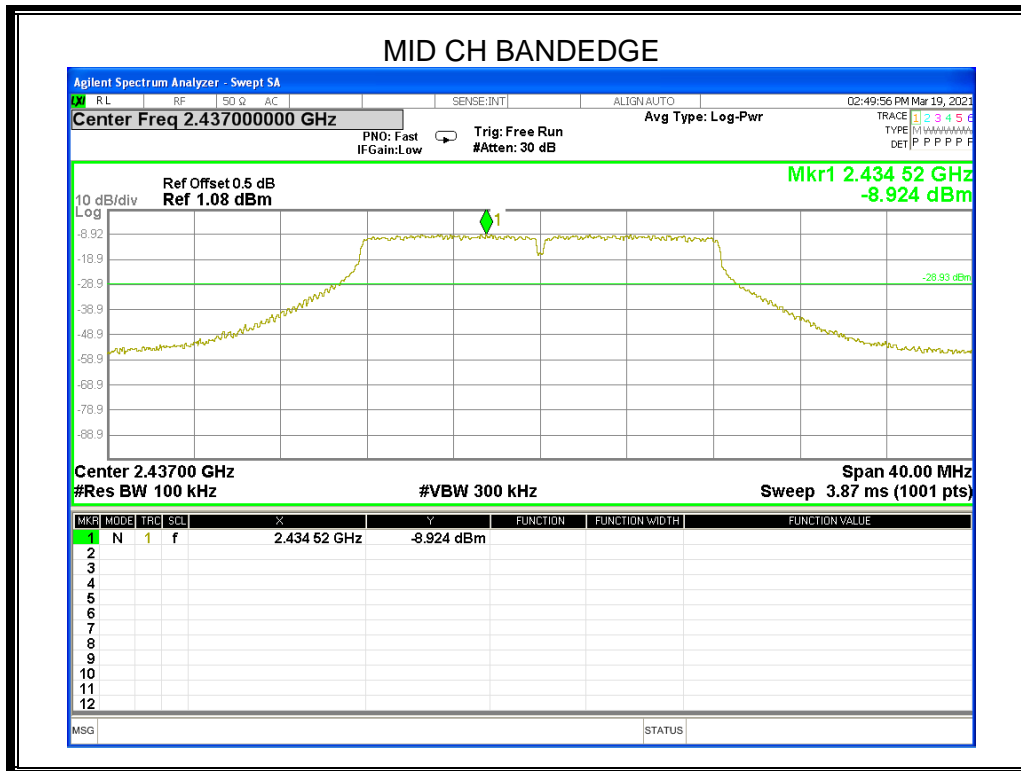




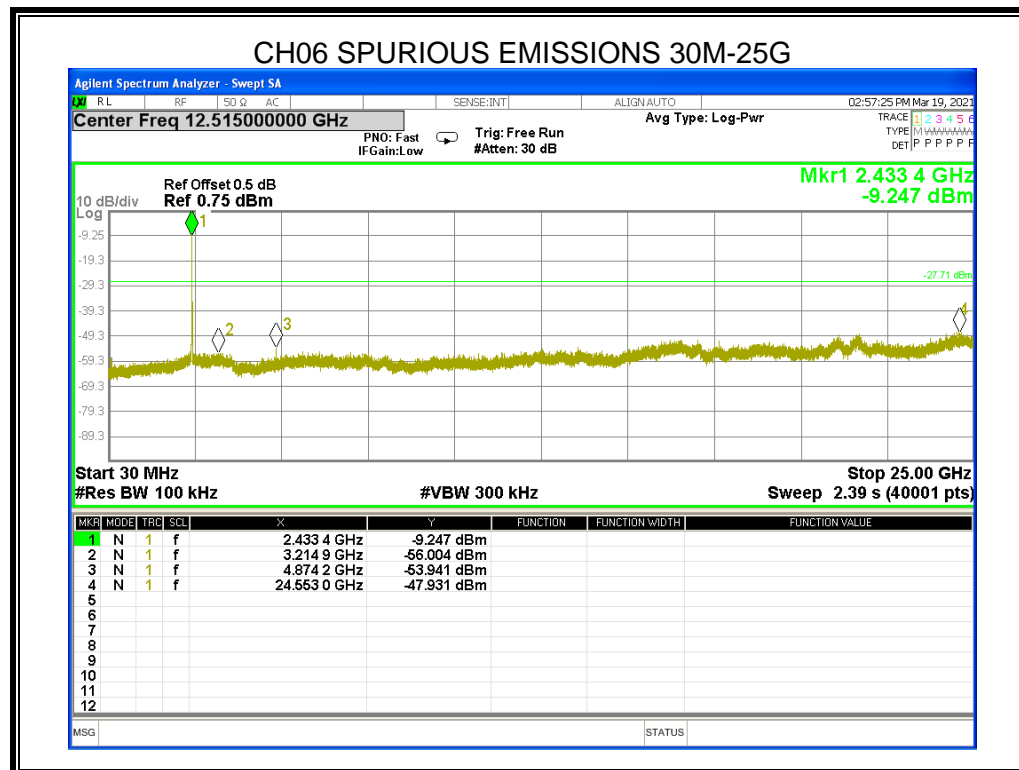
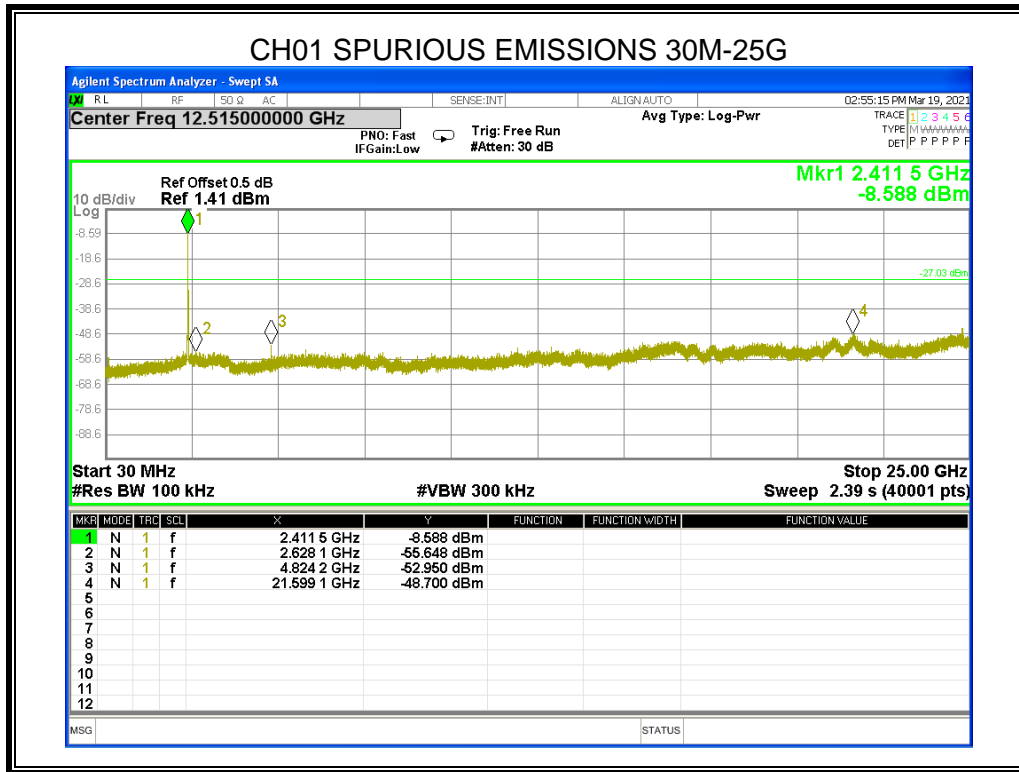
8.5.2. 802.11g MODE

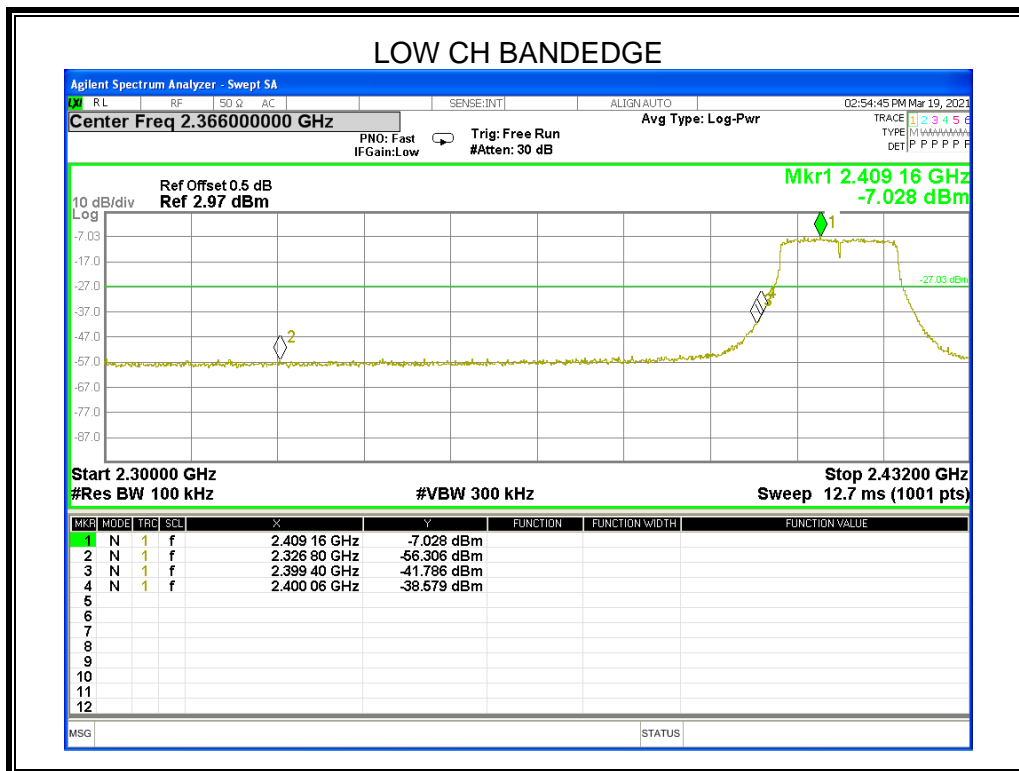
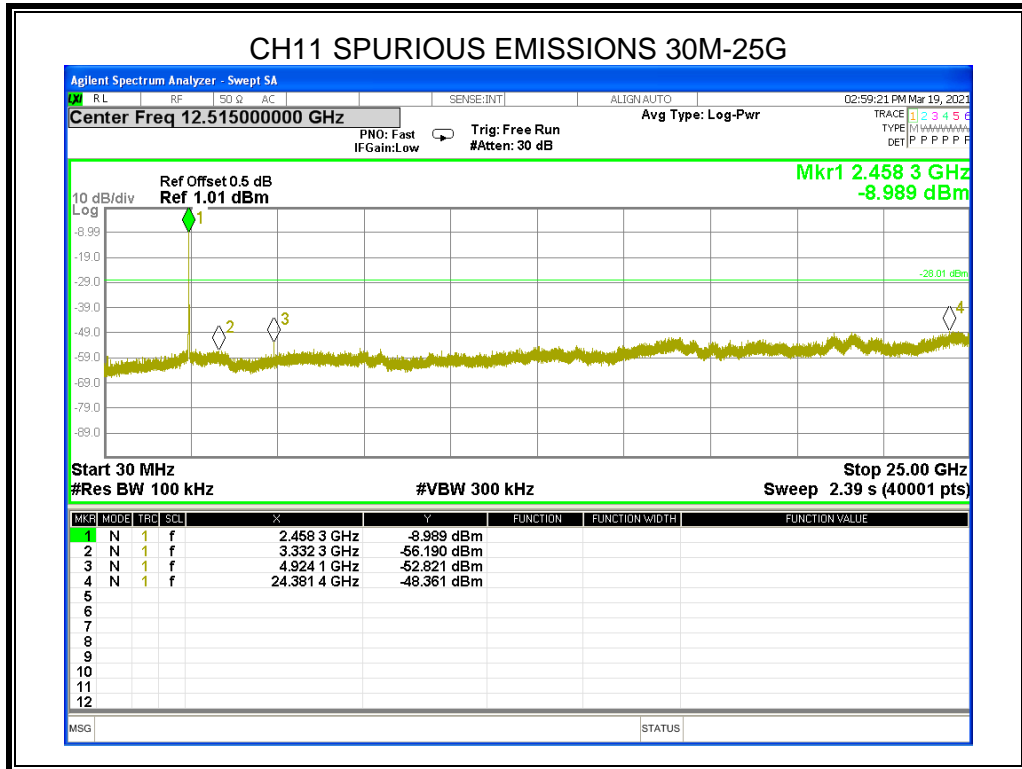


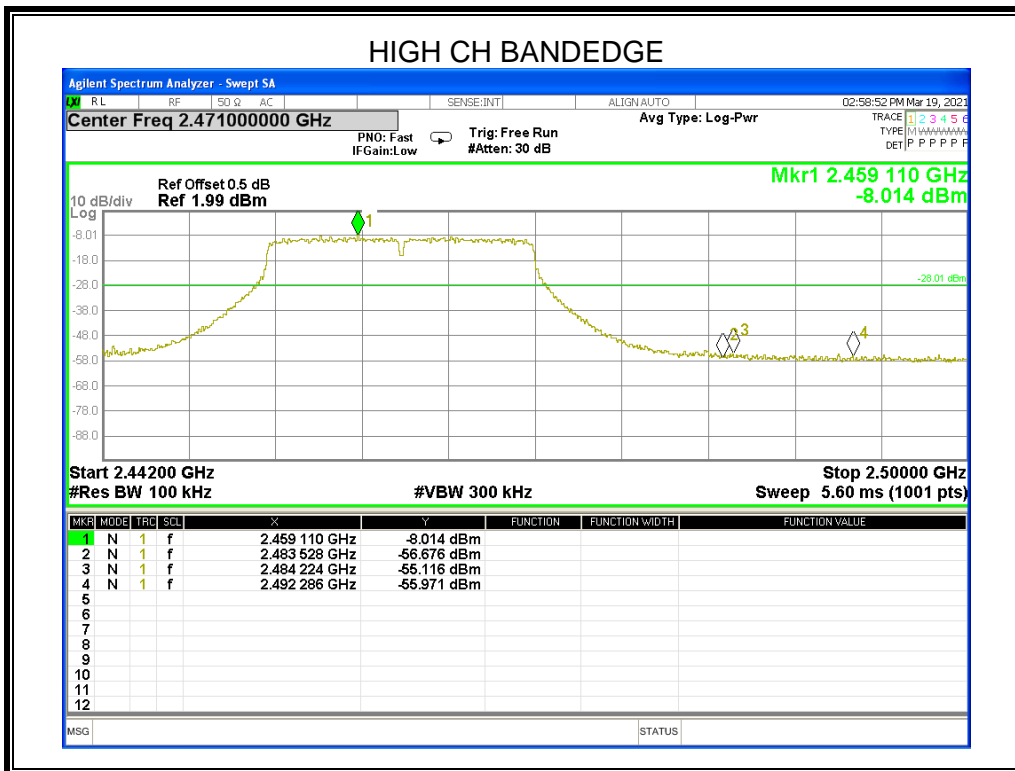
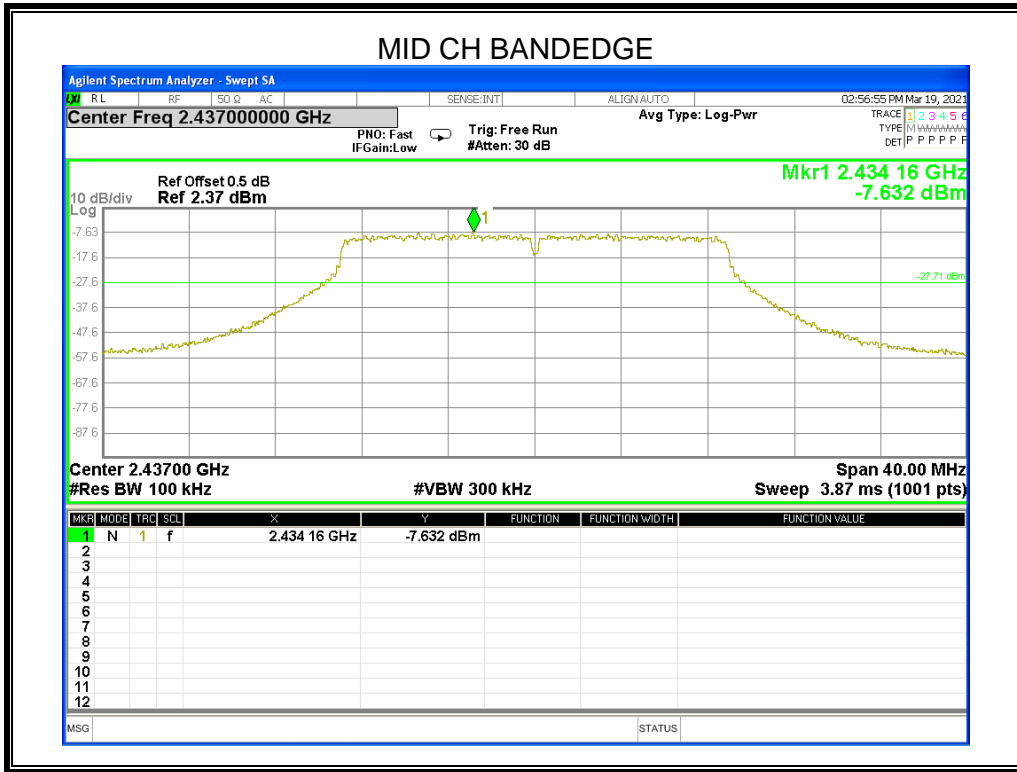




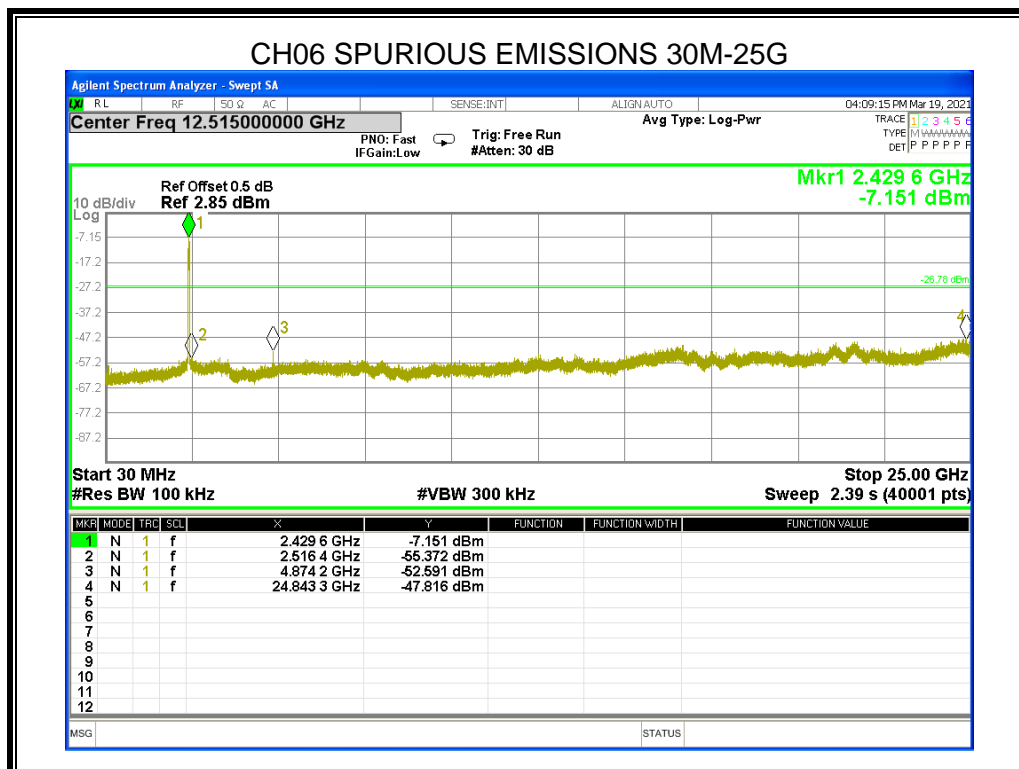
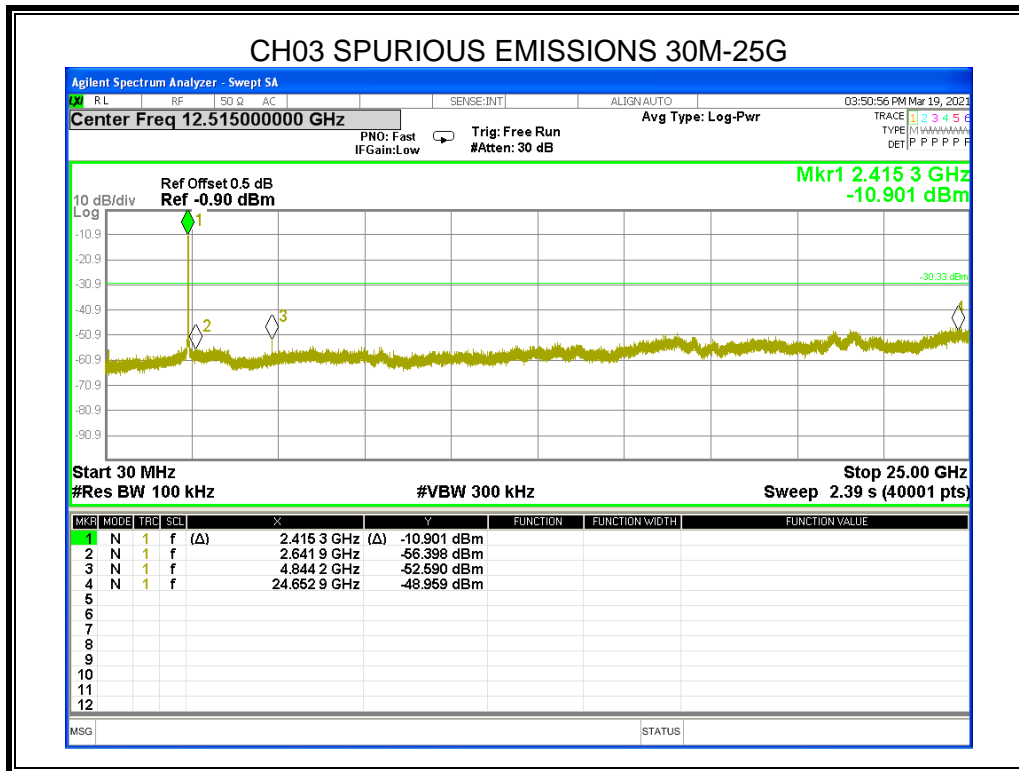
8.5.3. 802.11n HT20 MODE

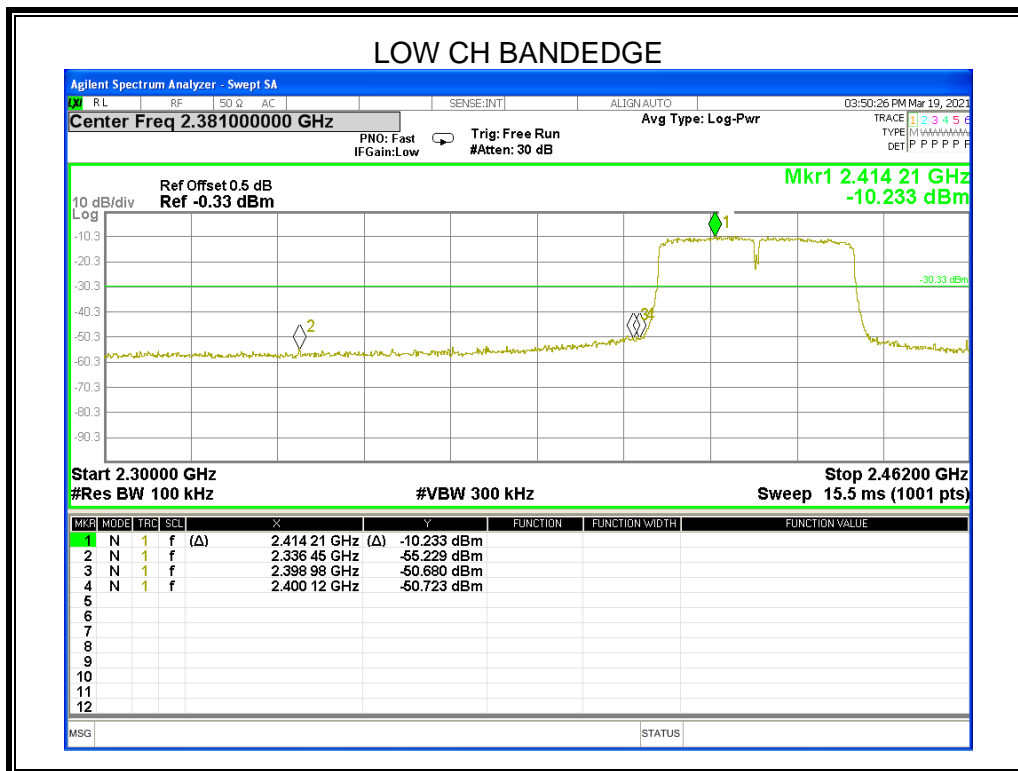
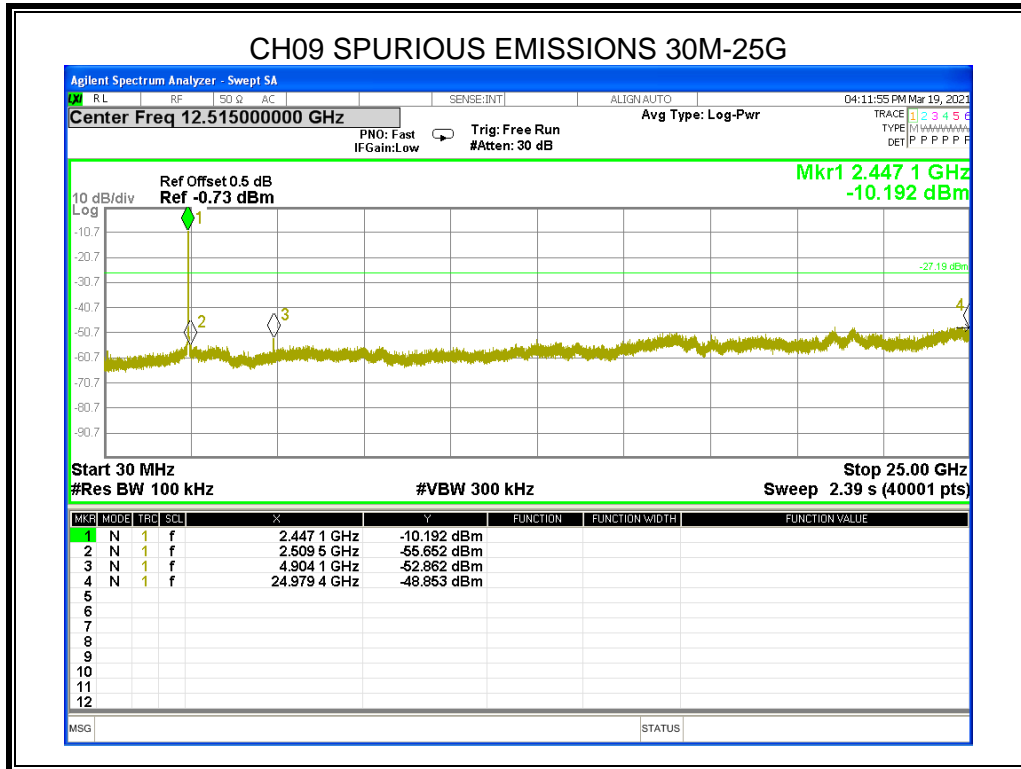


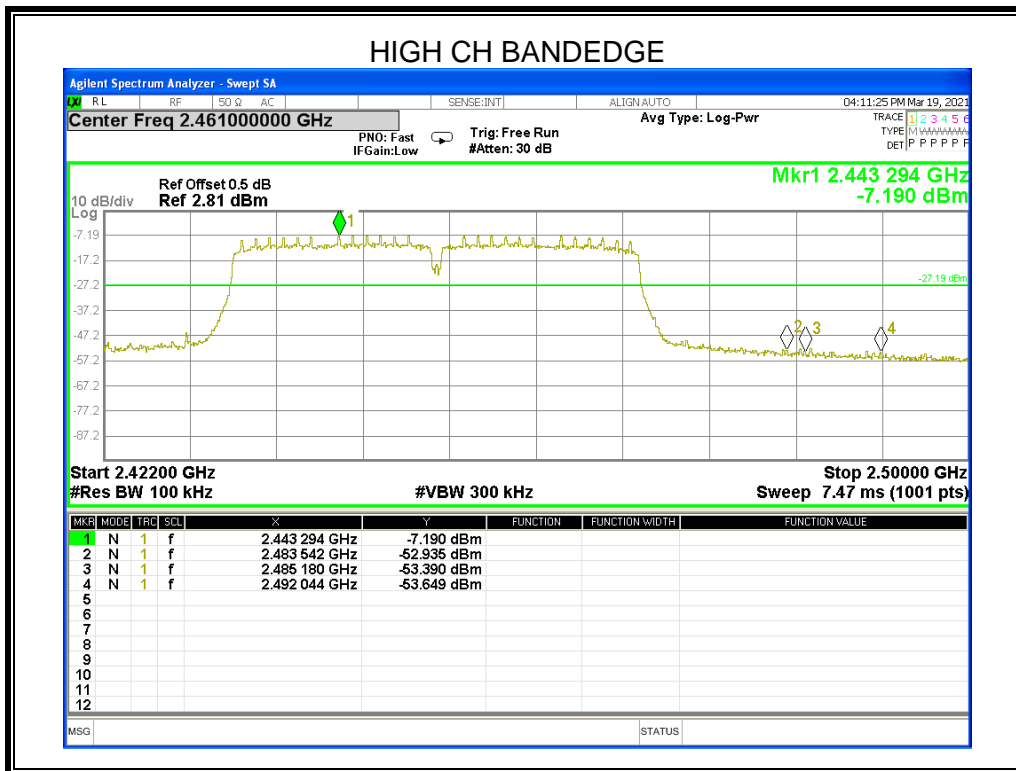
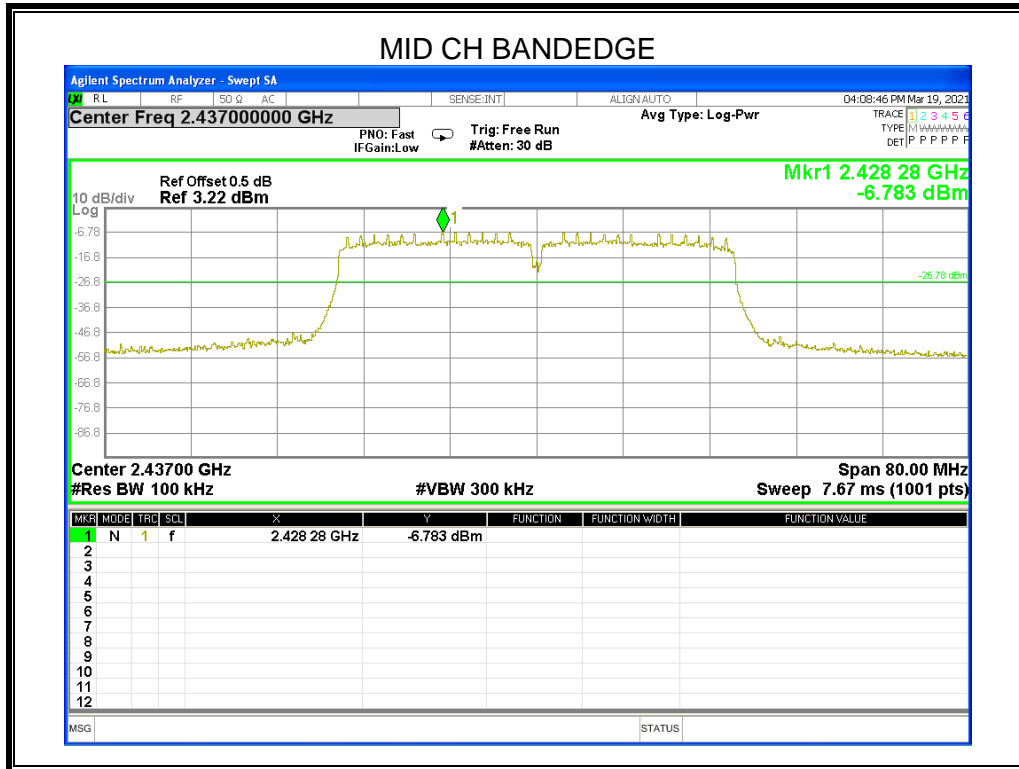




8.5.4. 802.11n HT40 MODE







9. RADIATED TEST RESULTS

LIMITS

Please refer to FCC §15.205 and §15.209

Please refer to RSS-GEN Clause 8.9 (Transmitter)

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

Restricted bands of operation

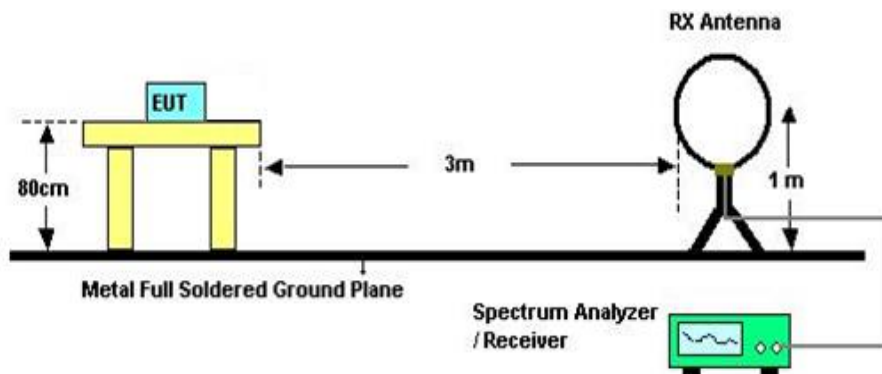
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218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



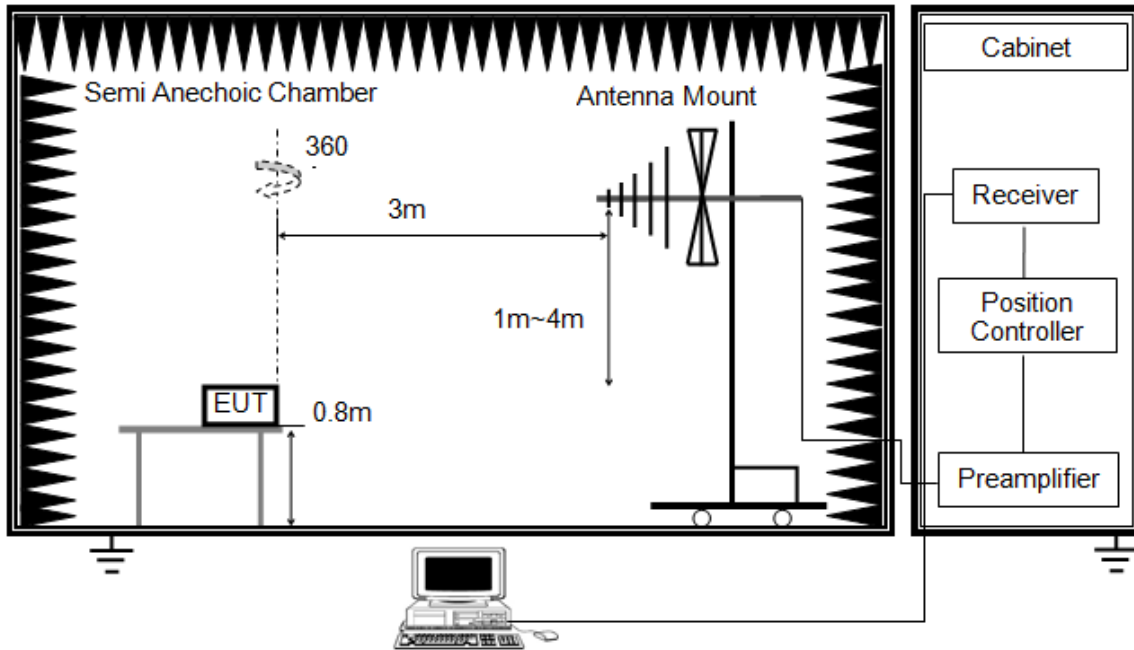
The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
Sweep	Auto
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. 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.
6. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

Note: Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30m open are test 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 based on KDB 414788.

Below 1G

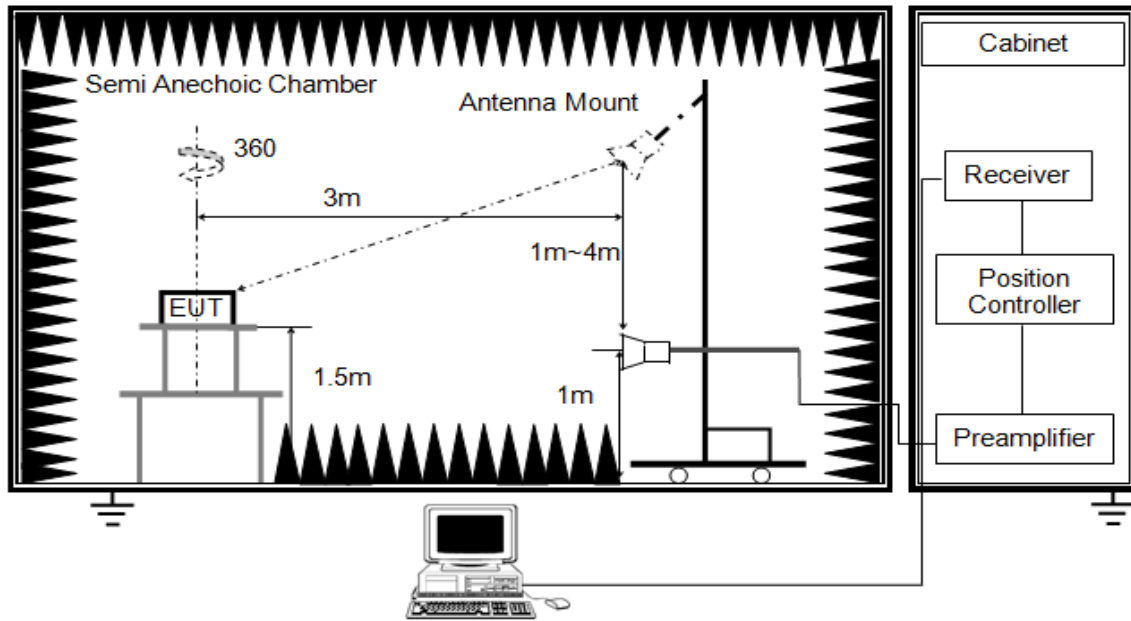


The setting of the spectrum analyser

RBW	120K
VBW	300K
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.
6. For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration)

ABOVE 1G

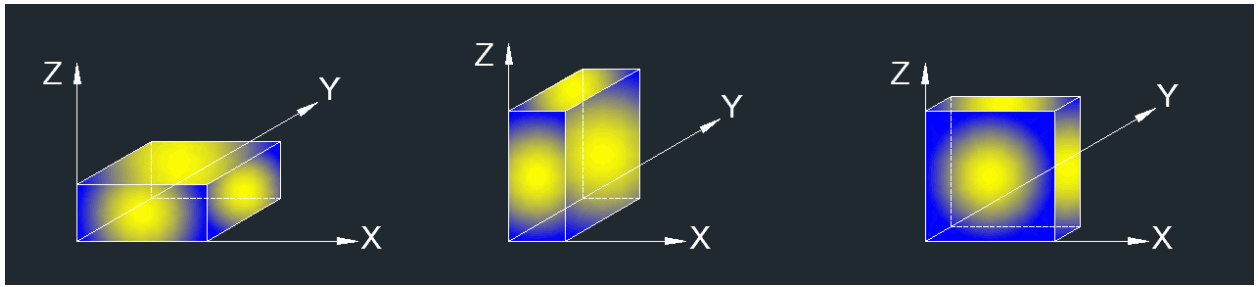


The setting of the spectrum analyser

RBW	1M
VBW	PEAK: 3M 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 peak measurements, the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz with peak detector; For average measurements, the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 10KHz for 802.11b mode and 2KHz for 802.11g/nHT20/nHT40 modes with peak detector.
7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

X axis, Y axis, Z axis positions:



8.The EUT as shown in Figure 1 is the worst mode, the report only shown the worst mode data.

TEST ENVIRONMENT

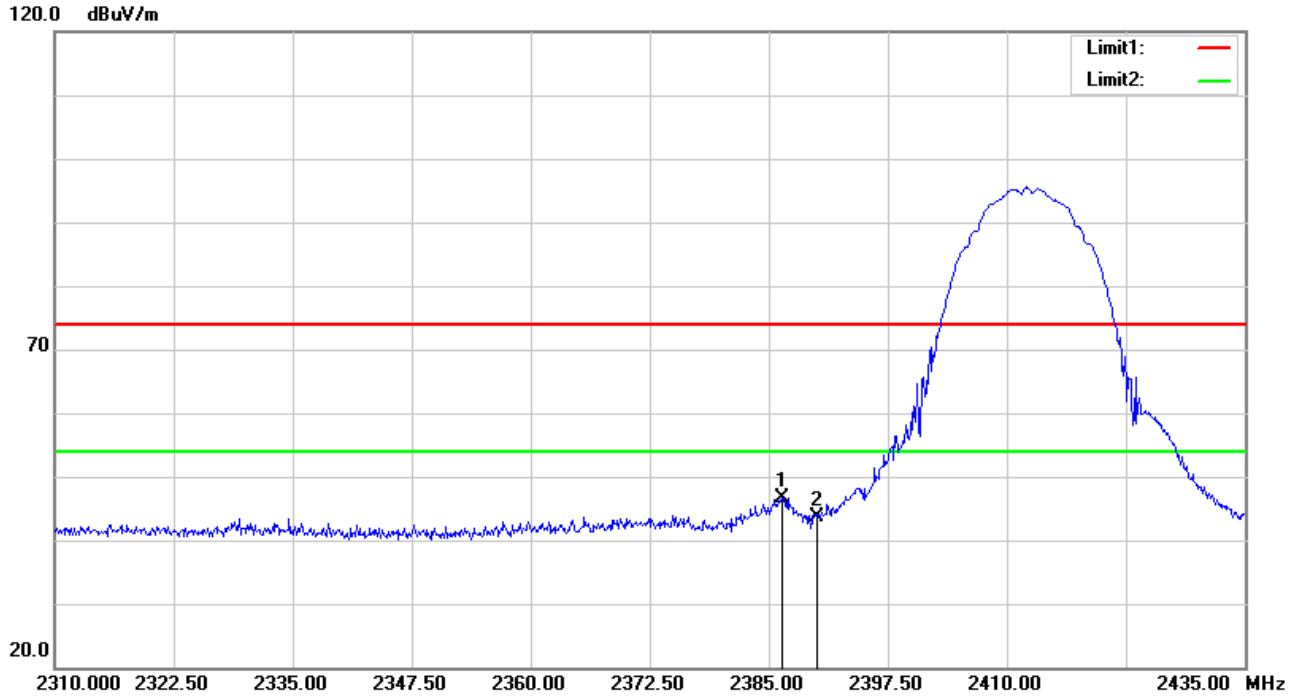
Temperature	25°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	DC 5V



9.1. RESTRICTED BANDEDGE

802.11 b mode

RESTRICTED BANDEDGE (01 CHANNEL, HORIZONTAL)

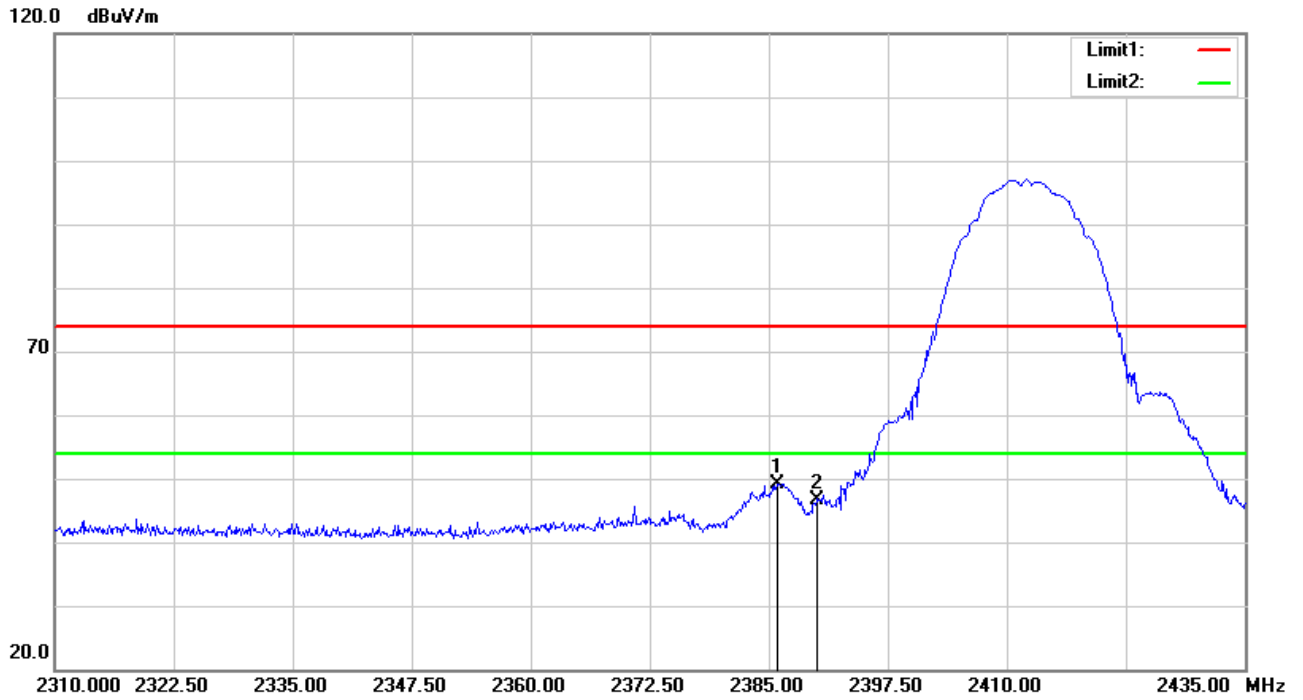


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2386.375	42.27	4.28	46.55	74.00	-27.45	peak
2	2390.000	39.25	4.34	43.59	74.00	-30.41	peak

Note: Measurement = Reading Level + Correct Factor.



RESTRICTED BANDEDGE (01 CHANNEL, VERTICAL)

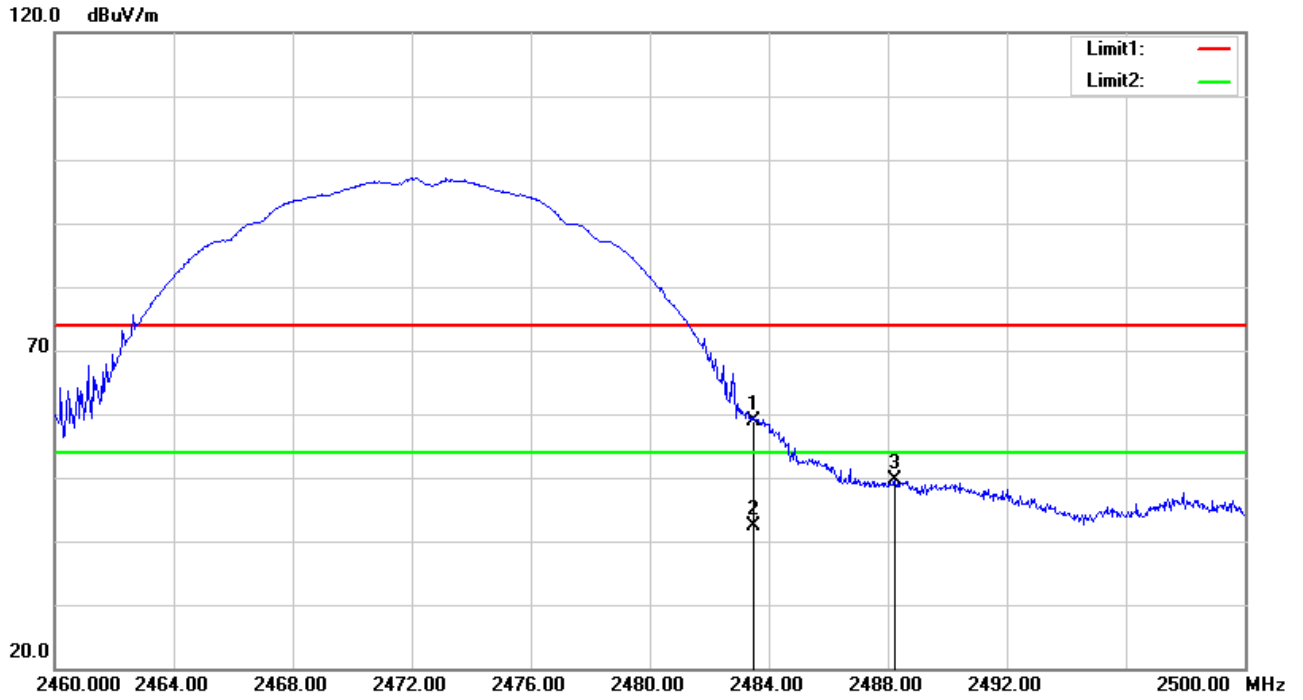


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2385.875	44.96	4.28	49.24	74.00	-24.76	peak
2	2390.000	42.18	4.34	46.52	74.00	-27.48	peak

Note: Measurement = Reading Level + Correct Factor.



RESTRICTED BANDEDGE (11 CHANNEL, HORIZONTAL)

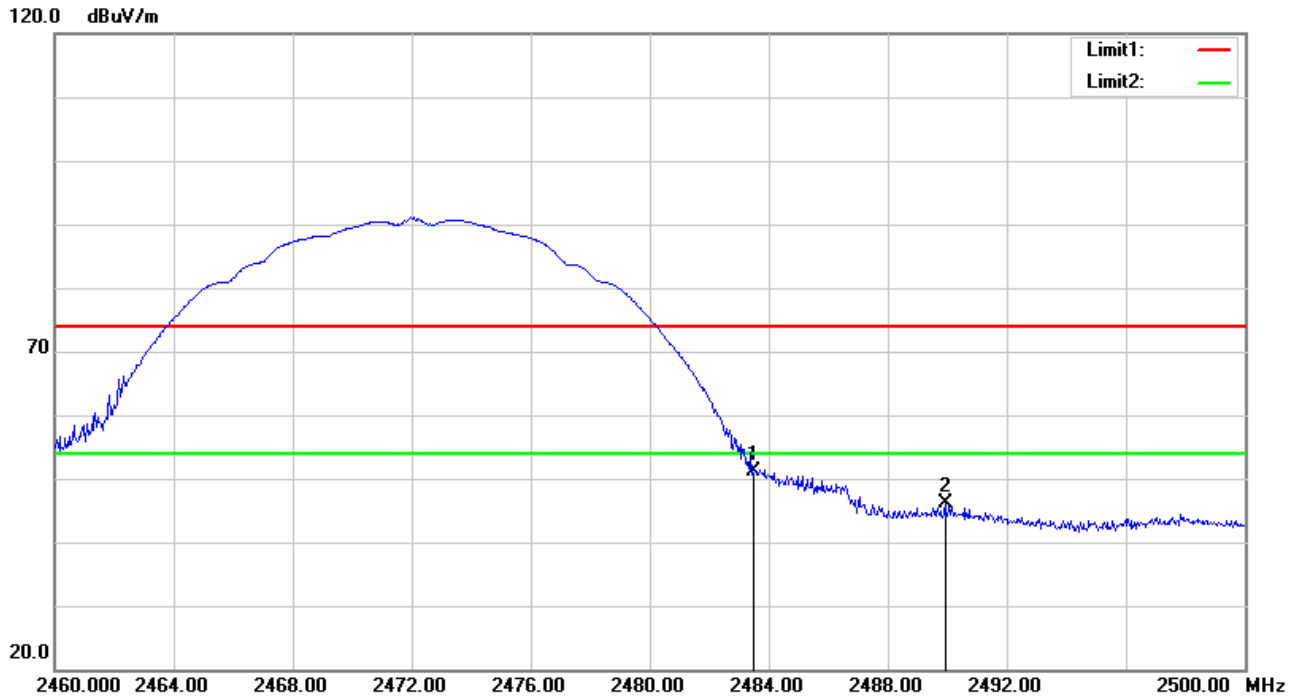


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	54.28	4.60	58.88	74.00	-15.12	peak
2	2483.500	37.81	4.60	42.41	54.00	-11.59	AVG
3	2488.240	44.97	4.62	49.59	74.00	-24.41	peak

Note: Measurement = Reading Level + Correct Factor.



RESTRICTED BANDEDGE (11 CHANNEL, VERTICAL)



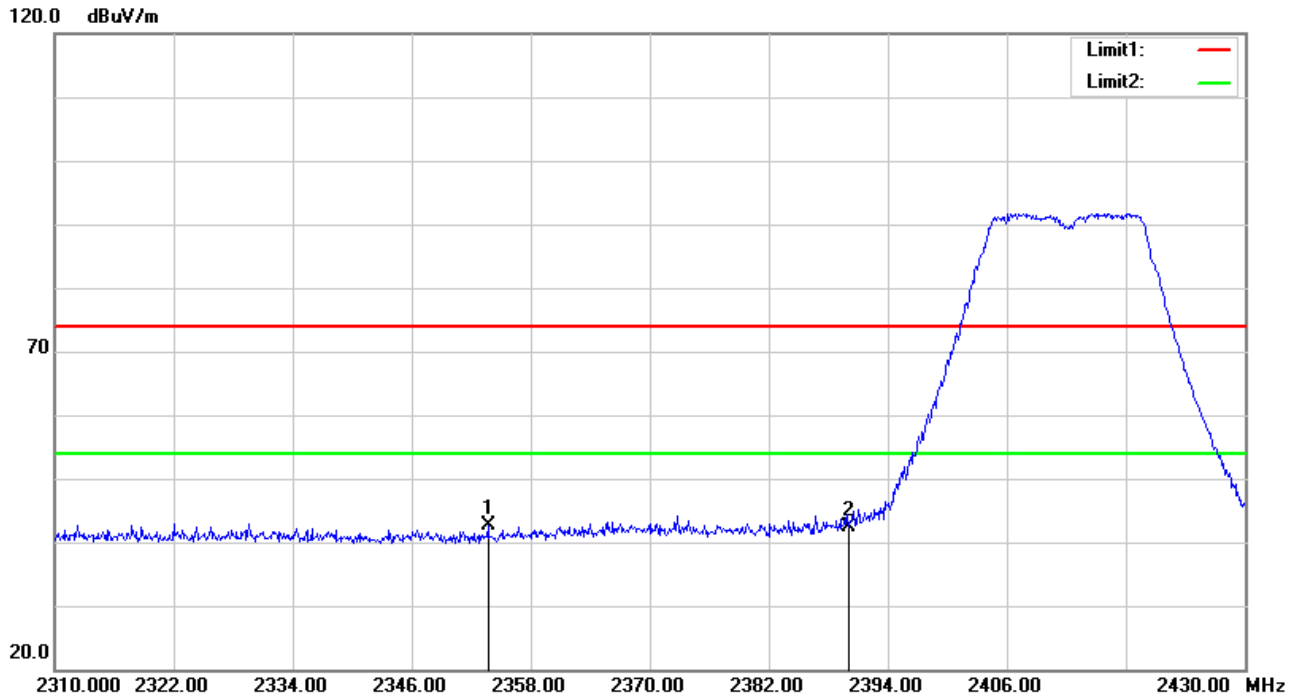
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	46.60	4.60	51.20	74.00	-22.80	peak
2	2489.920	41.56	4.63	46.19	74.00	-27.81	peak

Note: Measurement = Reading Level + Correct Factor.



802.11 g mode

RESTRICTED BANDEDGE (01 CHANNEL, HORIZONTAL)

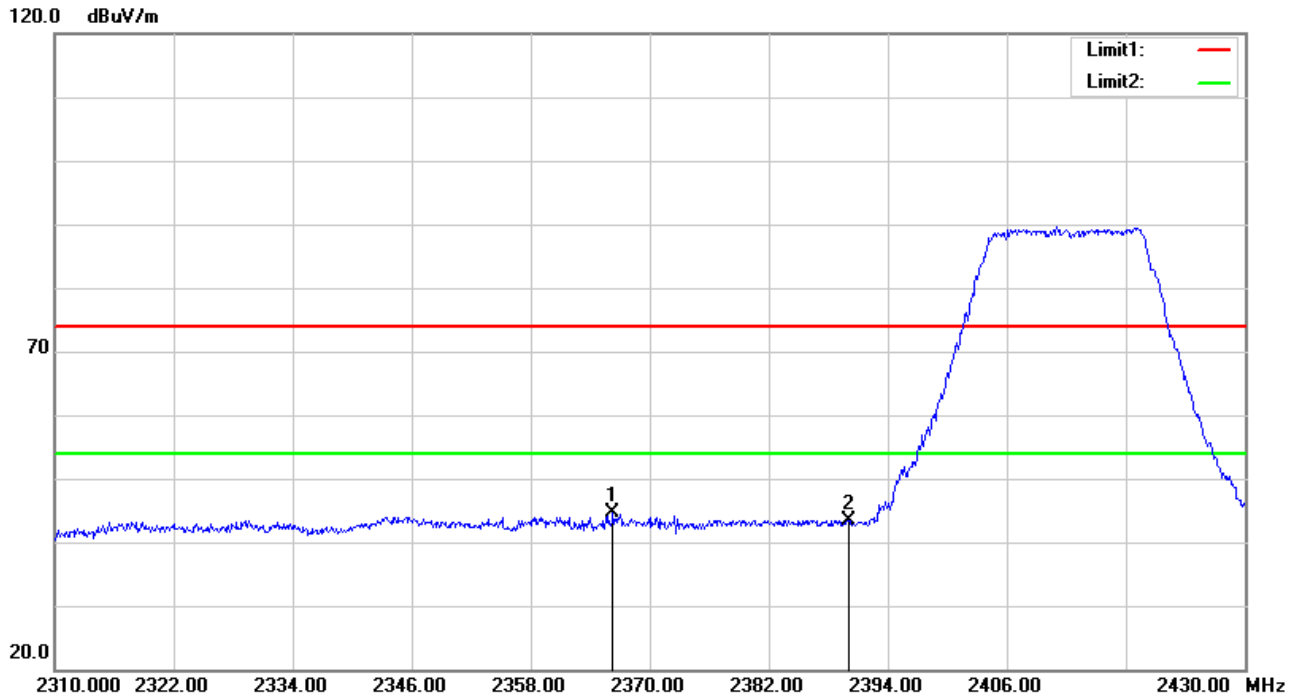


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2353.680	38.86	3.79	42.65	74.00	-31.35	peak
2	2390.000	37.99	4.34	42.33	74.00	-31.67	peak

Note: Measurement = Reading Level + Correct Factor.



RESTRICTED BANDEDGE (01 CHANNEL, VERTICAL)

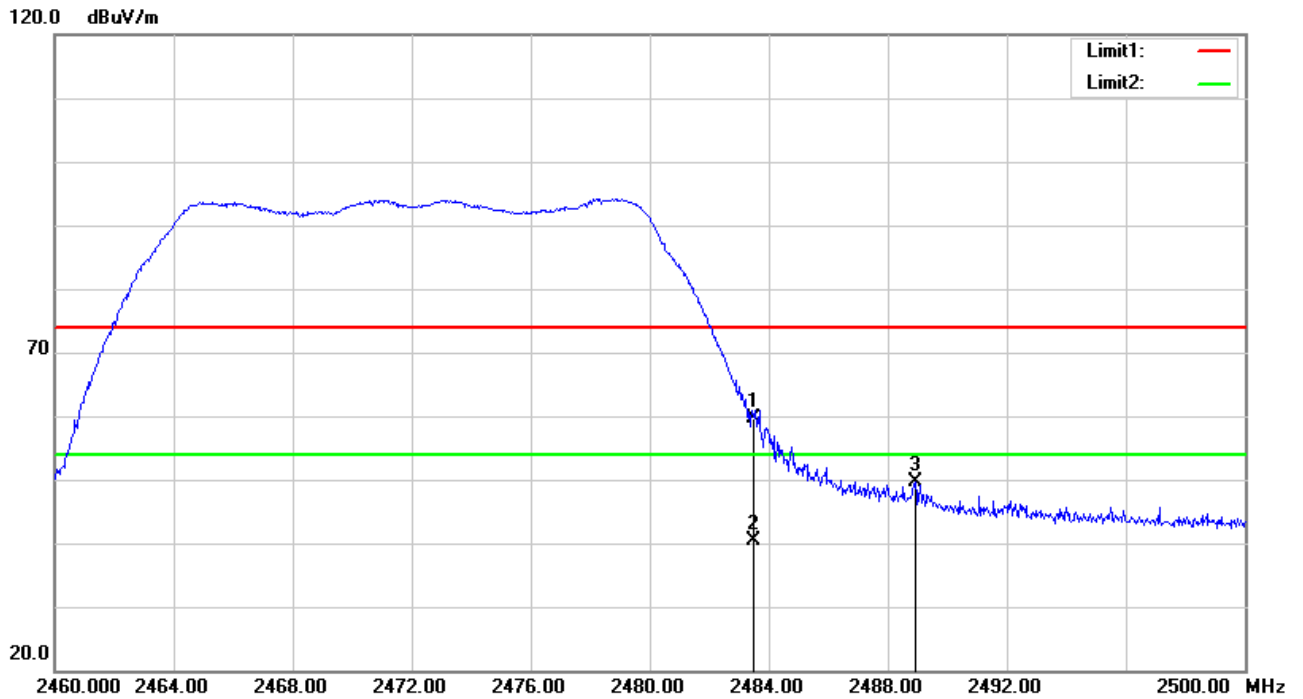


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2366.280	40.63	3.99	44.62	74.00	-29.38	peak
2	2390.000	38.99	4.34	43.33	74.00	-30.67	peak

Note: Measurement = Reading Level + Correct Factor.



RESTRICTED BANDEDGE (11 CHANNEL, HORIZONTAL)

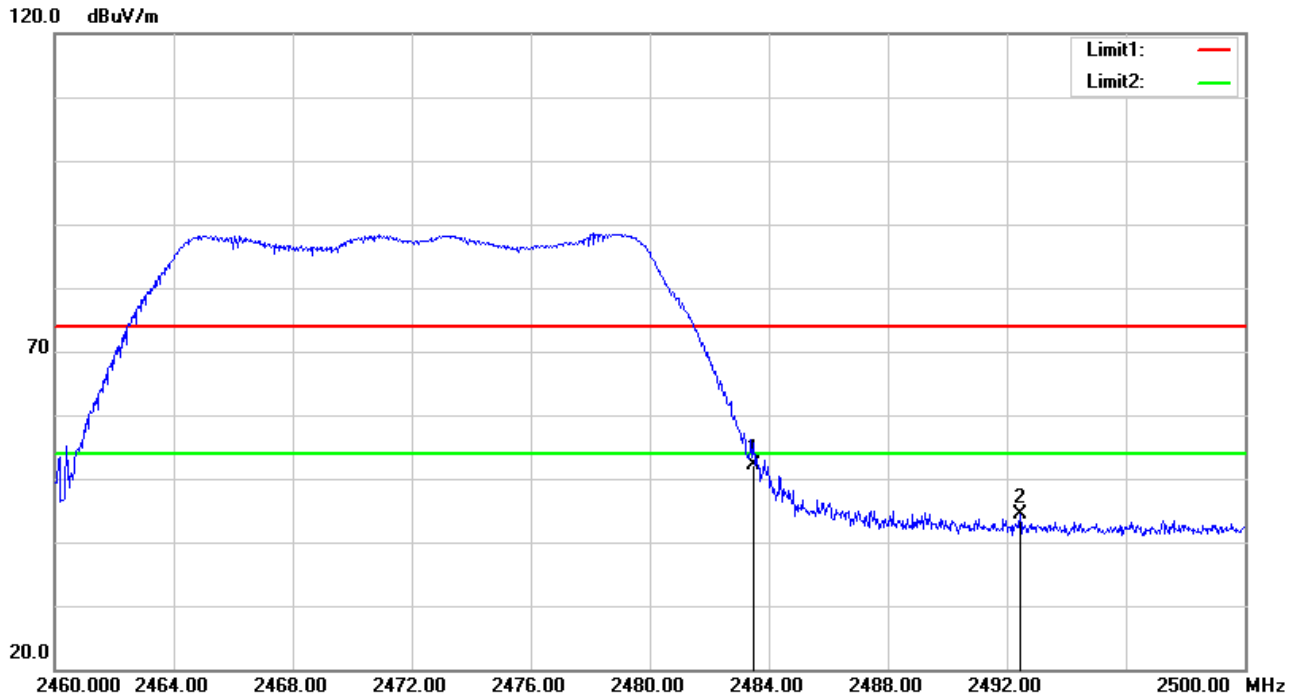


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	55.06	4.60	59.66	74.00	-14.34	peak
2	2483.500	35.88	4.60	40.48	54.00	-13.52	AVG
3	2488.920	45.06	4.62	49.68	74.00	-24.32	peak

Note: Measurement = Reading Level + Correct Factor.



RESTRICTED BANDEDGE (11 CHANNEL, VERTICAL)



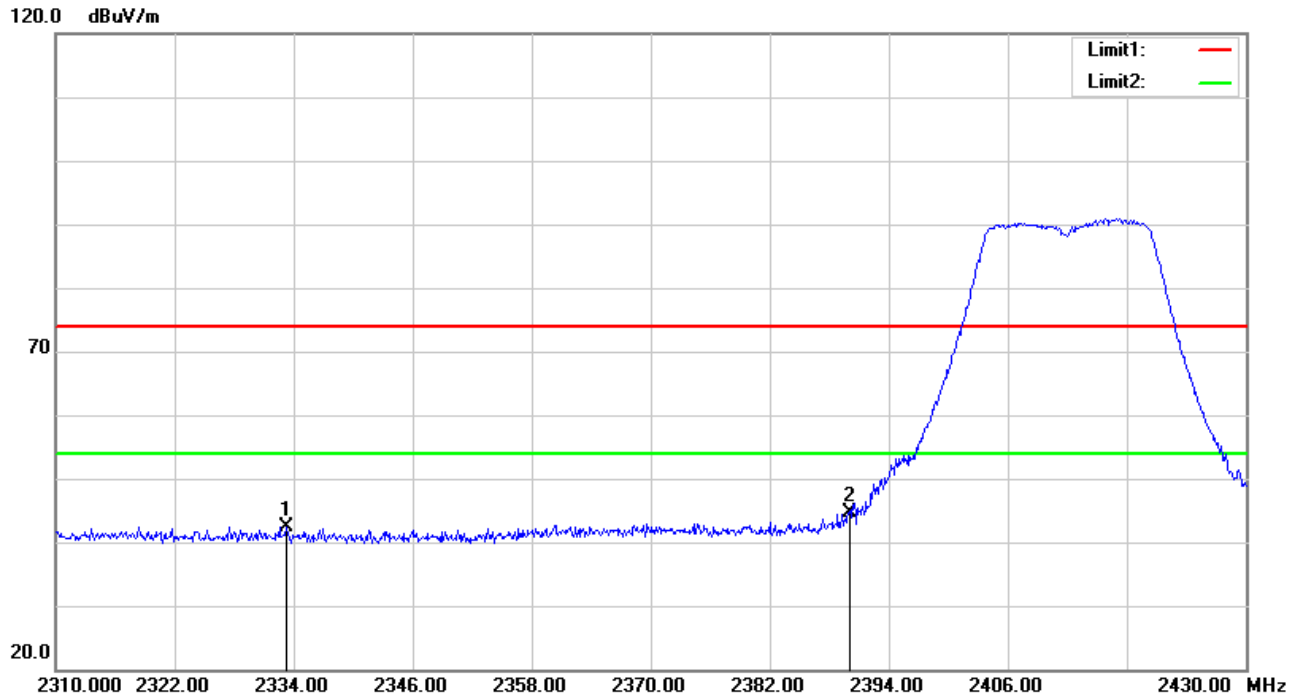
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	47.45	4.60	52.05	74.00	-21.95	peak
2	2492.440	39.70	4.63	44.33	74.00	-29.67	peak

Note: Measurement = Reading Level + Correct Factor.



802.11 n20 mode

RESTRICTED BANDEDGE (01 CHANNEL, HORIZONTAL)

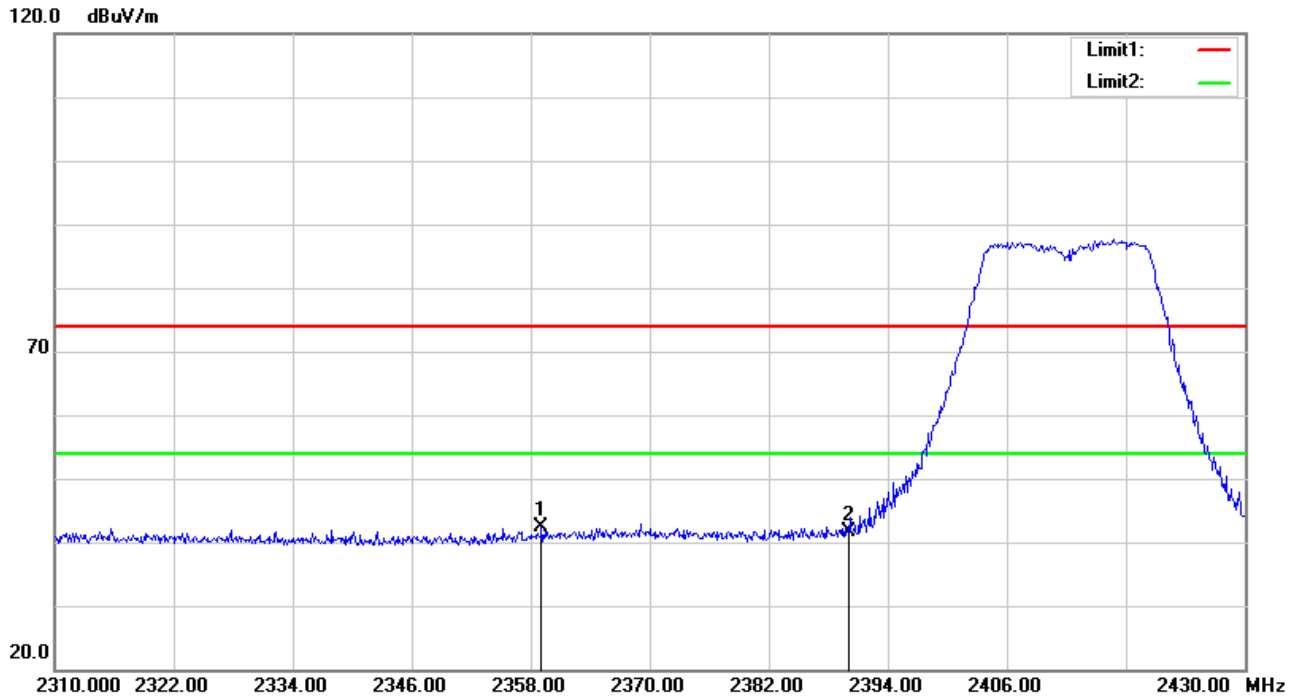


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2333.280	38.81	3.65	42.46	74.00	-31.54	peak
2	2390.000	40.26	4.34	44.60	74.00	-29.40	peak

Note: Measurement = Reading Level + Correct Factor.



RESTRICTED BANDEDGE (01 CHANNEL, VERTICAL)

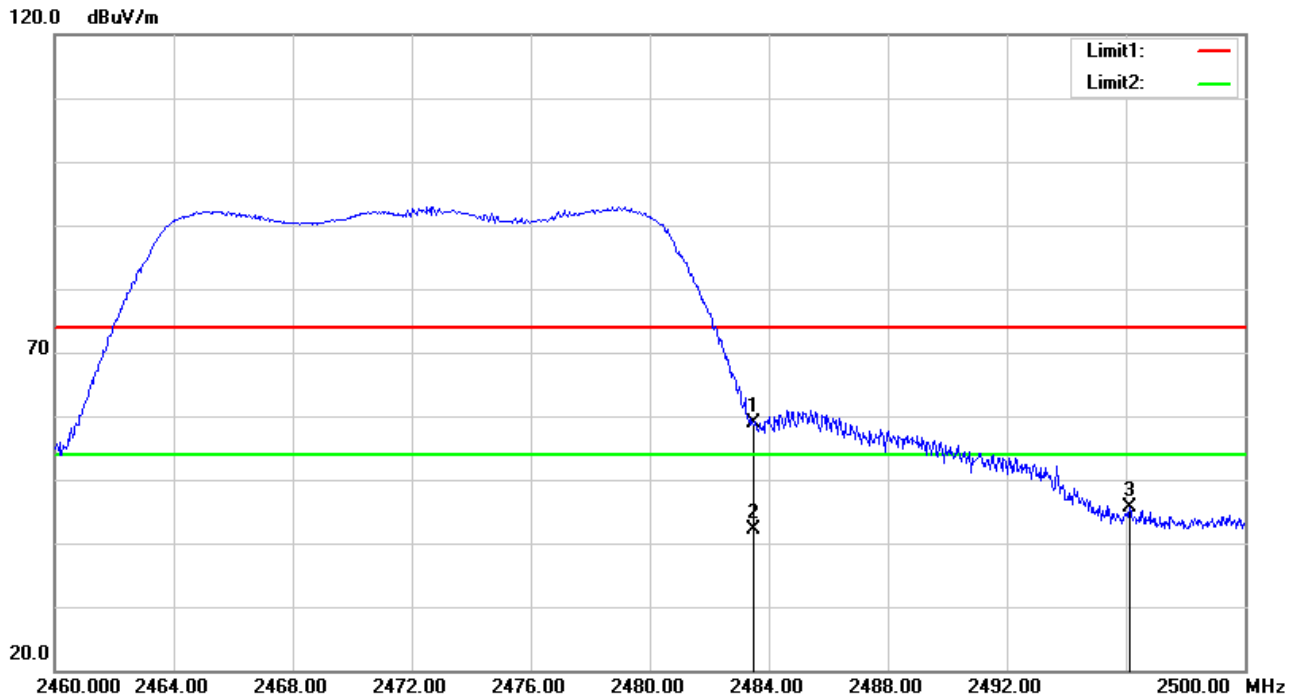


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2359.080	38.50	3.88	42.38	74.00	-31.62	peak
2	2390.000	37.40	4.34	41.74	74.00	-32.26	peak

Note: Measurement = Reading Level + Correct Factor.



RESTRICTED BANDEDGE (11 CHANNEL, HORIZONTAL)

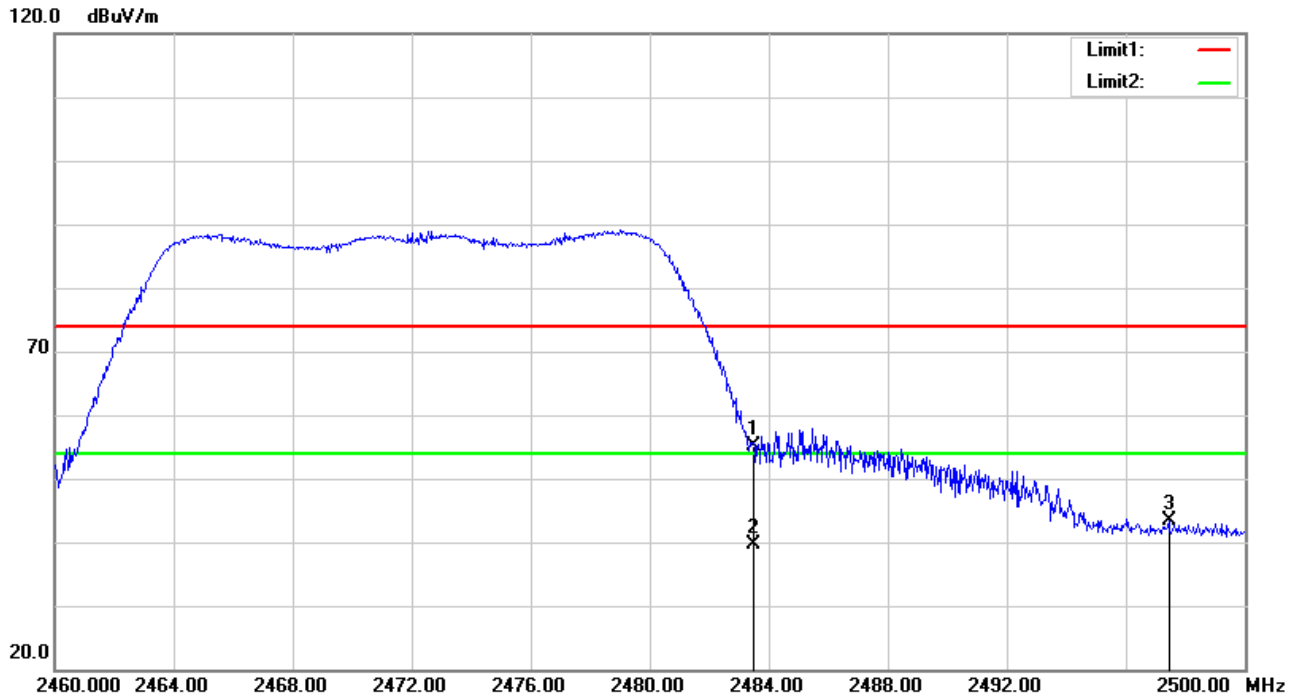


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	54.38	4.60	58.98	74.00	-15.02	peak
2	2483.500	37.58	4.60	42.18	54.00	-11.82	AVG
3	2496.120	41.11	4.64	45.75	74.00	-28.25	peak

Note: Measurement = Reading Level + Correct Factor.



RESTRICTED BANDEDGE (11 CHANNEL, VERTICAL)



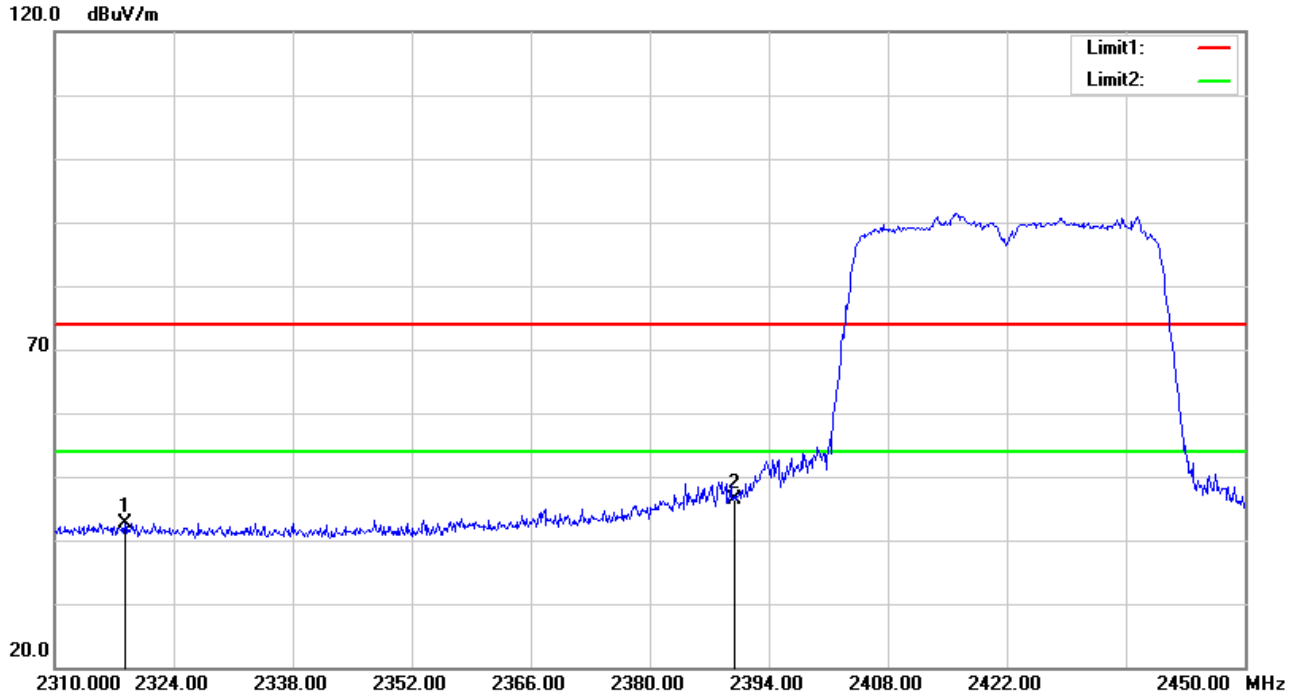
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	50.49	4.60	55.09	74.00	-18.91	peak
2	2483.500	35.04	4.60	39.64	54.00	-14.36	AVG
3	2497.440	38.73	4.64	43.37	74.00	-30.63	peak

Note: Measurement = Reading Level + Correct Factor.



802.11 n40 mode

RESTRICTED BANDEDGE (03 CHANNEL, HORIZONTAL)

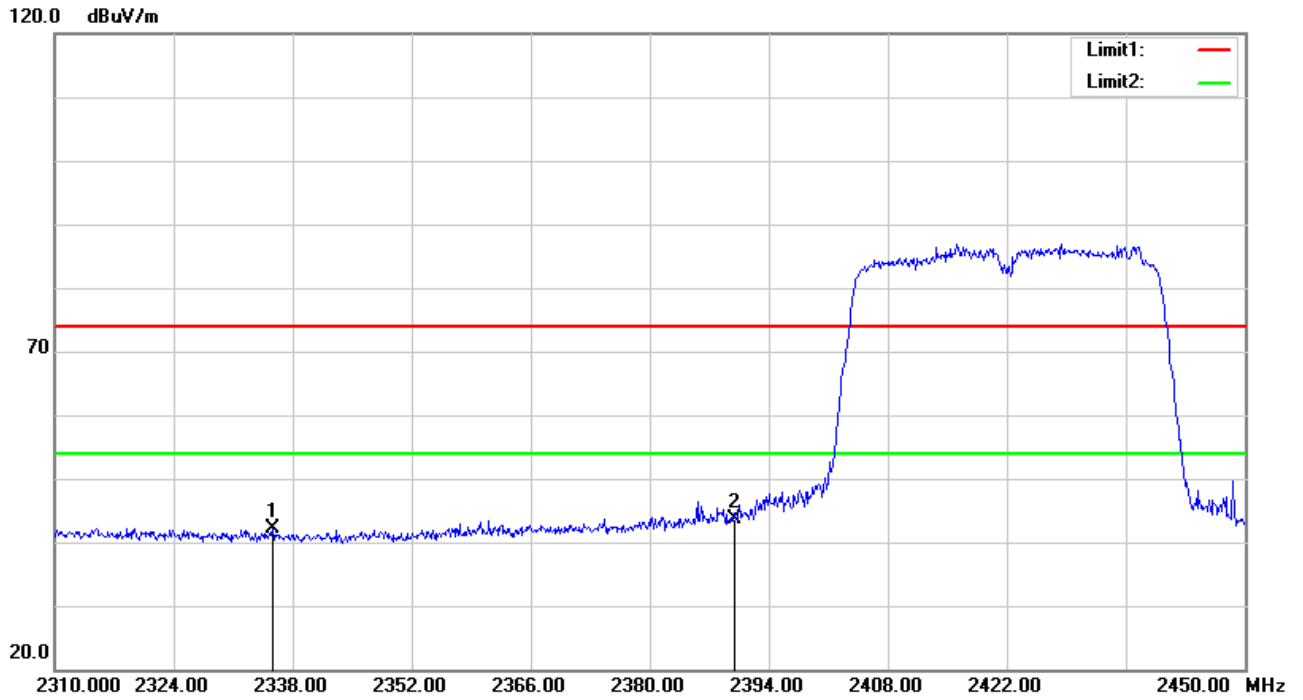


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2318.260	39.16	3.57	42.73	74.00	-31.27	peak
2	2390.000	42.08	4.34	46.42	74.00	-27.58	peak

Note: Measurement = Reading Level + Correct Factor.



RESTRICTED BANDEDGE (03 CHANNEL, VERTICAL)

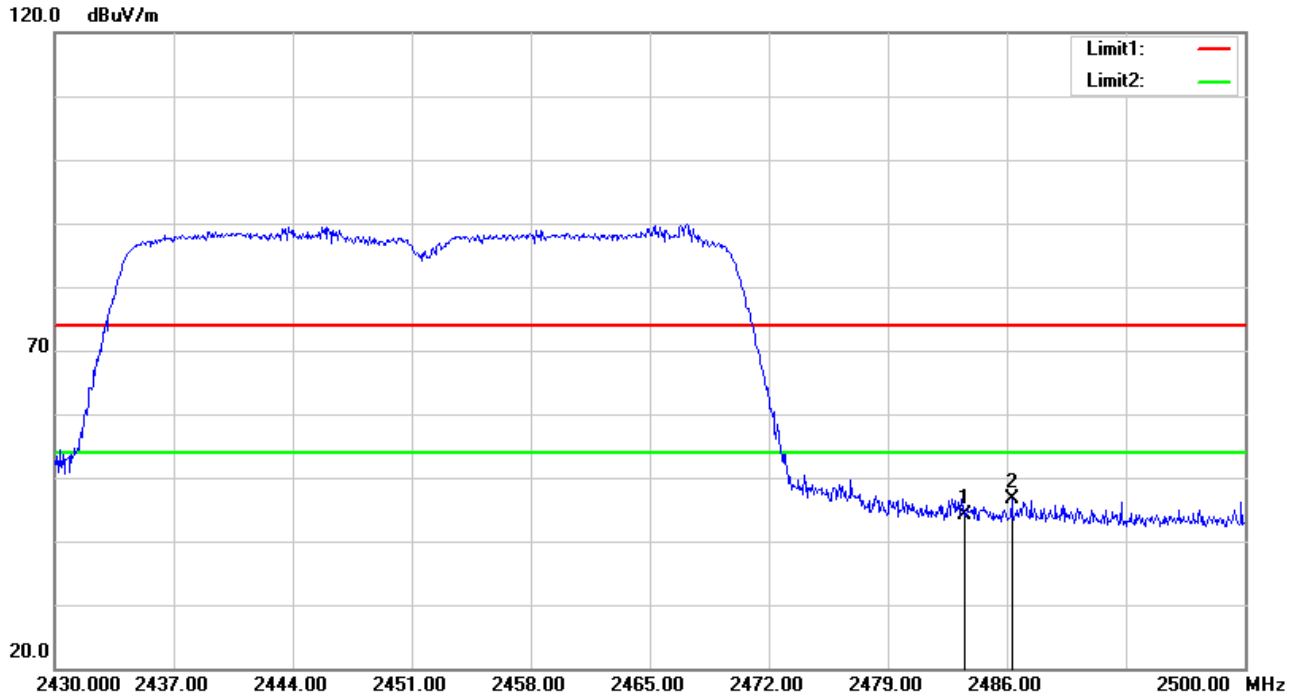


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2335.620	38.57	3.66	42.23	74.00	-31.77	peak
2	2390.000	39.36	4.34	43.70	74.00	-30.30	peak

Note: Measurement = Reading Level + Correct Factor.



RESTRICTED BANDEDGE (09 CHANNEL, HORIZONTAL)

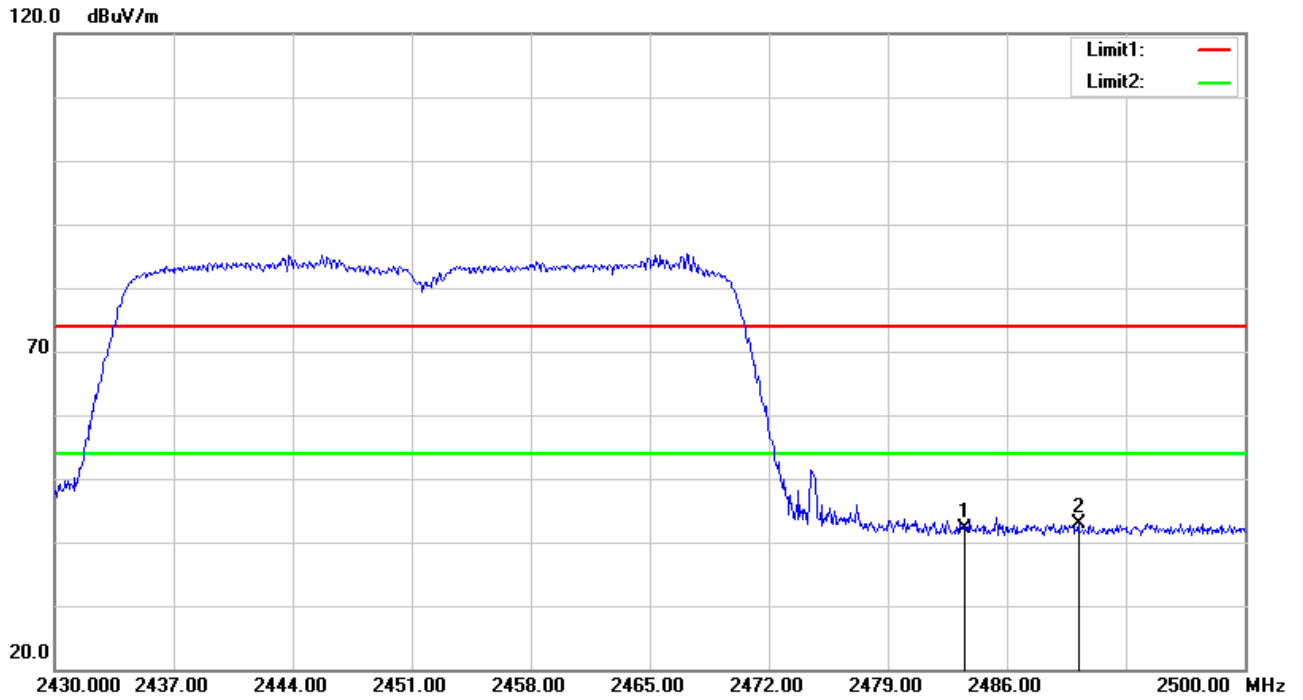


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	39.49	4.60	44.09	74.00	-29.91	peak
2	2486.280	42.02	4.61	46.63	74.00	-27.37	peak

Note: Measurement = Reading Level + Correct Factor.



RESTRICTED BANDEDGE (09 CHANNEL, VERTICAL)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	37.57	4.60	42.17	74.00	-31.83	peak
2	2490.200	38.28	4.63	42.91	74.00	-31.09	peak

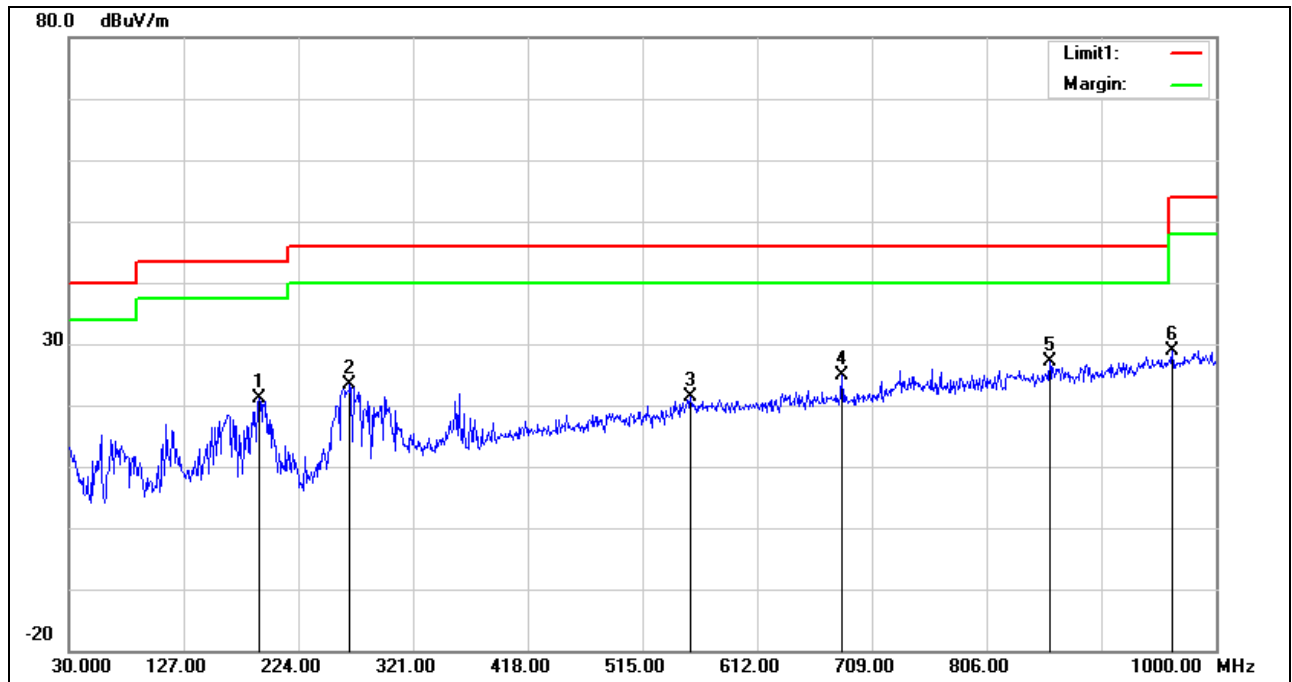
Note: Measurement = Reading Level + Correct Factor.

9.2. SPURIOUS EMISSIONS (30-1GHz)

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

802.11 b mode CH01

HARMONICS AND SPURIOUS EMISSIONS (HORIZONTAL)

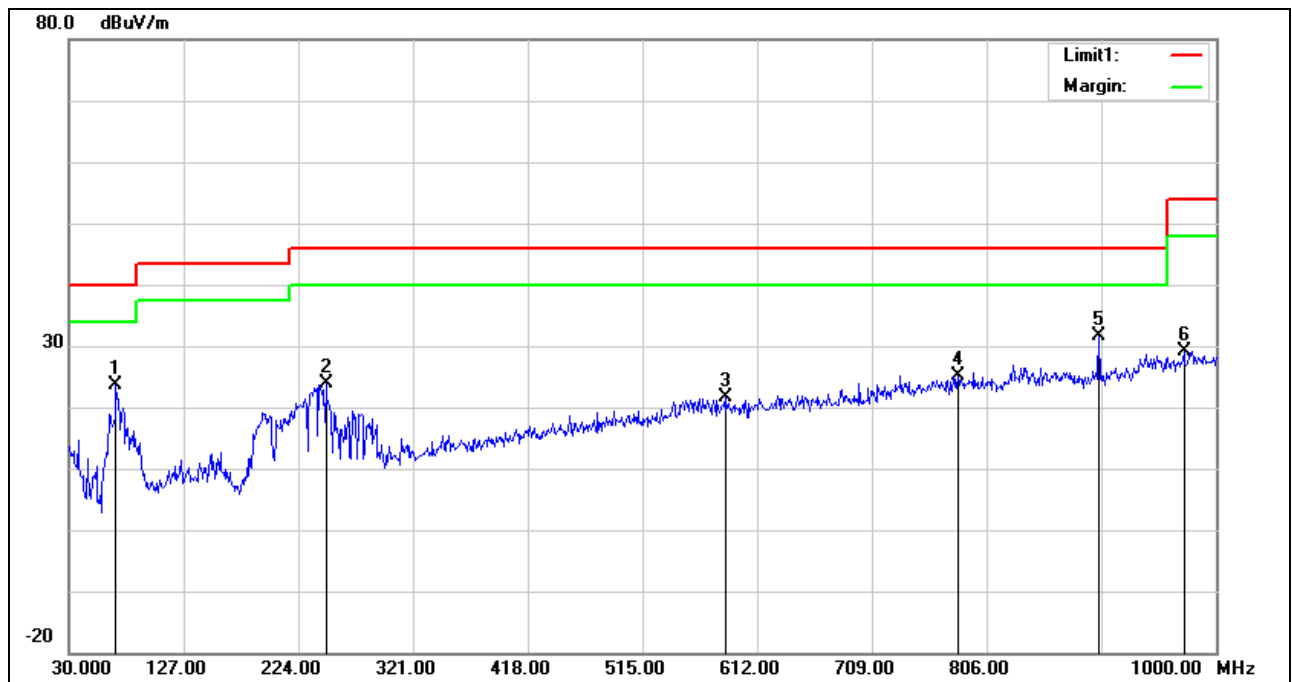


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	191.0200	42.24	-21.01	21.23	43.50	-22.27	QP
2	267.6500	38.39	-15.06	23.33	46.00	-22.67	QP
3	555.7400	26.99	-5.60	21.39	46.00	-24.61	QP
4	683.7800	29.09	-4.31	24.78	46.00	-21.22	QP
5	859.3500	27.49	-0.44	27.05	46.00	-18.95	QP
6	963.1400	26.92	1.84	28.76	54.00	-25.24	QP

Note: Measurement = Reading Level + Correct Factor.



HARMONICS AND SPURIOUS EMISSIONS (VERTICAL)



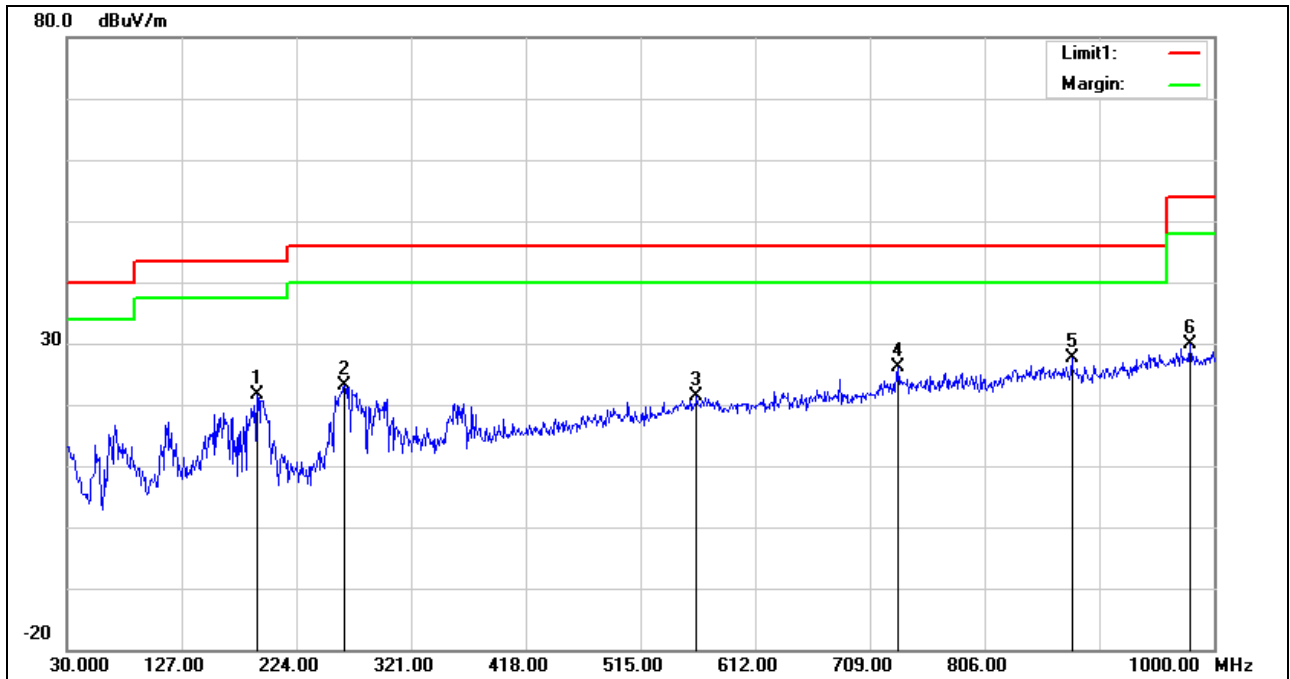
No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	69.7700	48.56	-24.91	23.65	40.00	-16.35	QP
2	247.2800	40.47	-16.59	23.88	46.00	-22.12	QP
3	584.8400	27.51	-5.79	21.72	46.00	-24.28	QP
4	781.7500	27.33	-2.18	25.15	46.00	-20.85	QP
5	901.0600	32.15	-0.43	31.72	46.00	-14.28	QP
6	972.8400	26.84	2.19	29.03	54.00	-24.97	QP

Note: Measurement = Reading Level + Correct Factor.



802.11 g mode CH01

HARMONICS AND SPURIOUS EMISSIONS (HORIZONTAL)

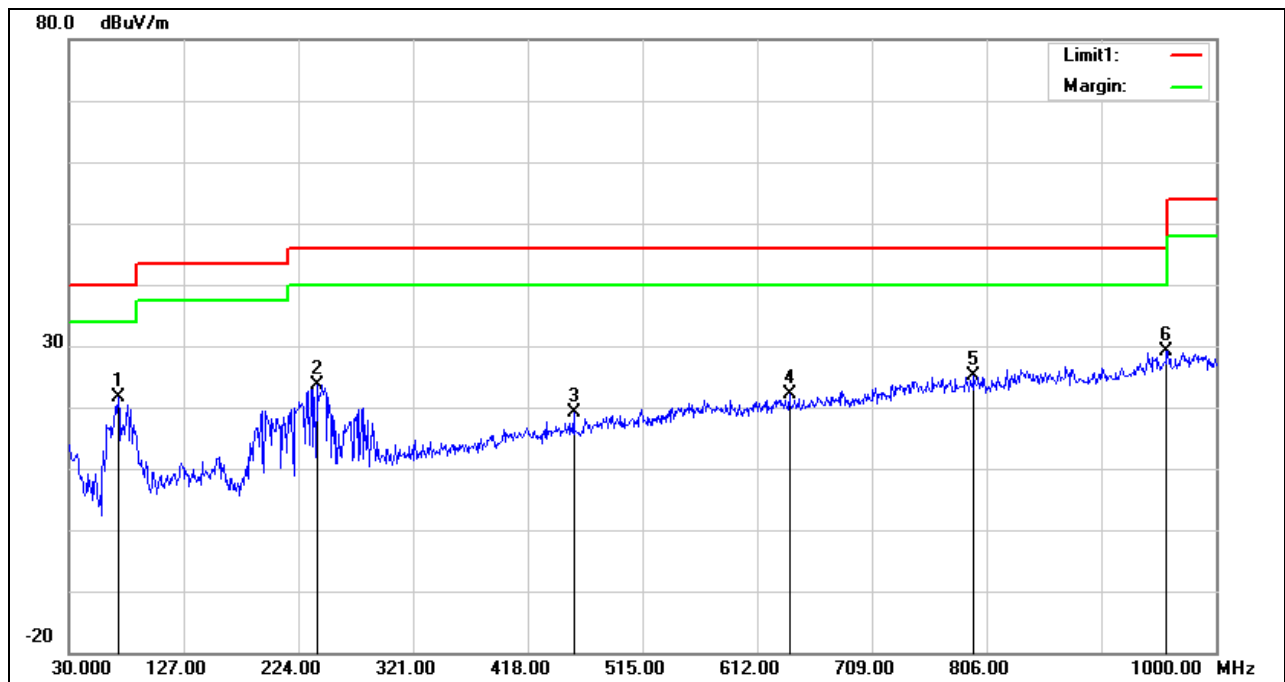


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	191.0200	42.61	-21.01	21.60	43.50	-21.90	QP
2	264.7400	37.91	-14.75	23.16	46.00	-22.84	QP
3	562.5300	26.85	-5.52	21.33	46.00	-24.67	QP
4	733.2500	28.36	-2.35	26.01	46.00	-19.99	QP
5	879.7200	28.40	-0.66	27.74	46.00	-18.26	QP
6	979.6300	27.16	2.65	29.81	54.00	-24.19	QP

Note: Measurement = Reading Level + Correct Factor.



HARMONICS AND SPURIOUS EMISSIONS (VERTICAL)

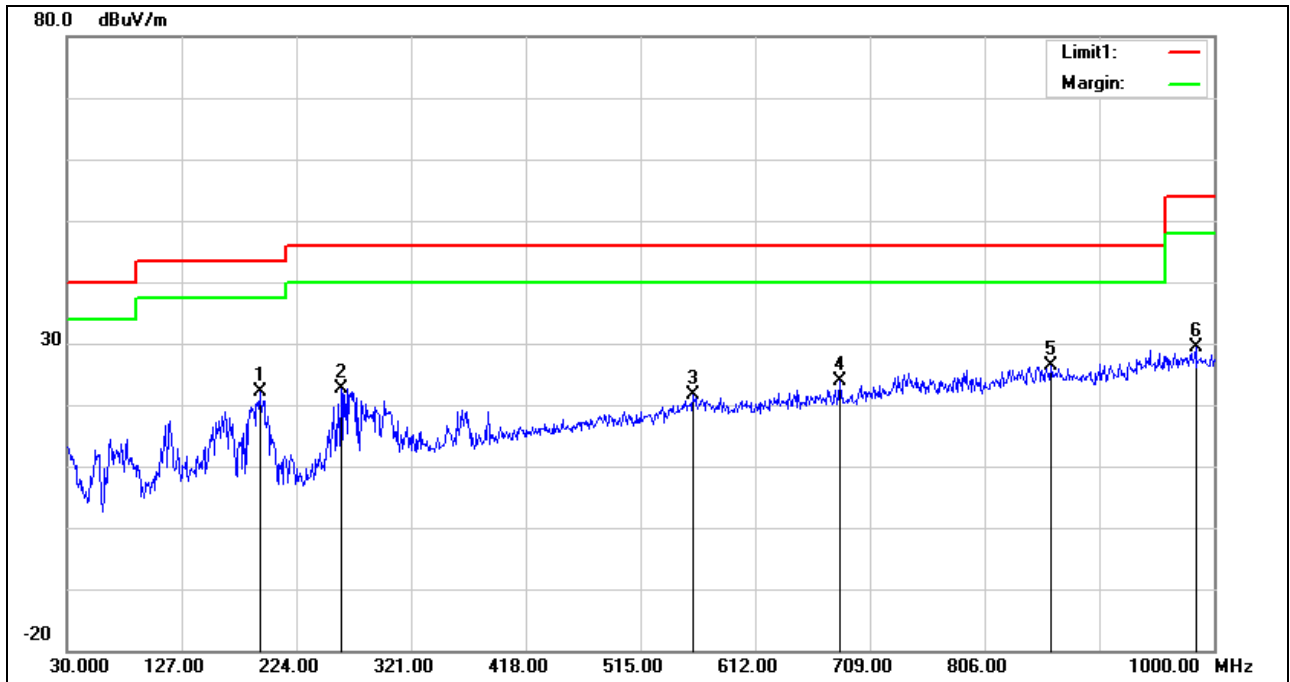


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	71.7100	46.26	-24.56	21.70	40.00	-18.30	QP
2	239.5200	41.75	-18.10	23.65	46.00	-22.35	QP
3	456.8000	28.59	-9.53	19.06	46.00	-26.94	QP
4	639.1600	27.06	-4.86	22.20	46.00	-23.80	QP
5	795.3300	27.09	-2.01	25.08	46.00	-20.92	QP
6	958.2900	27.37	1.73	29.10	46.00	-16.90	QP

Note: Measurement = Reading Level + Correct Factor.

802.11 n20 mode CH01

HARMONICS AND SPURIOUS EMISSIONS (HORIZONTAL)

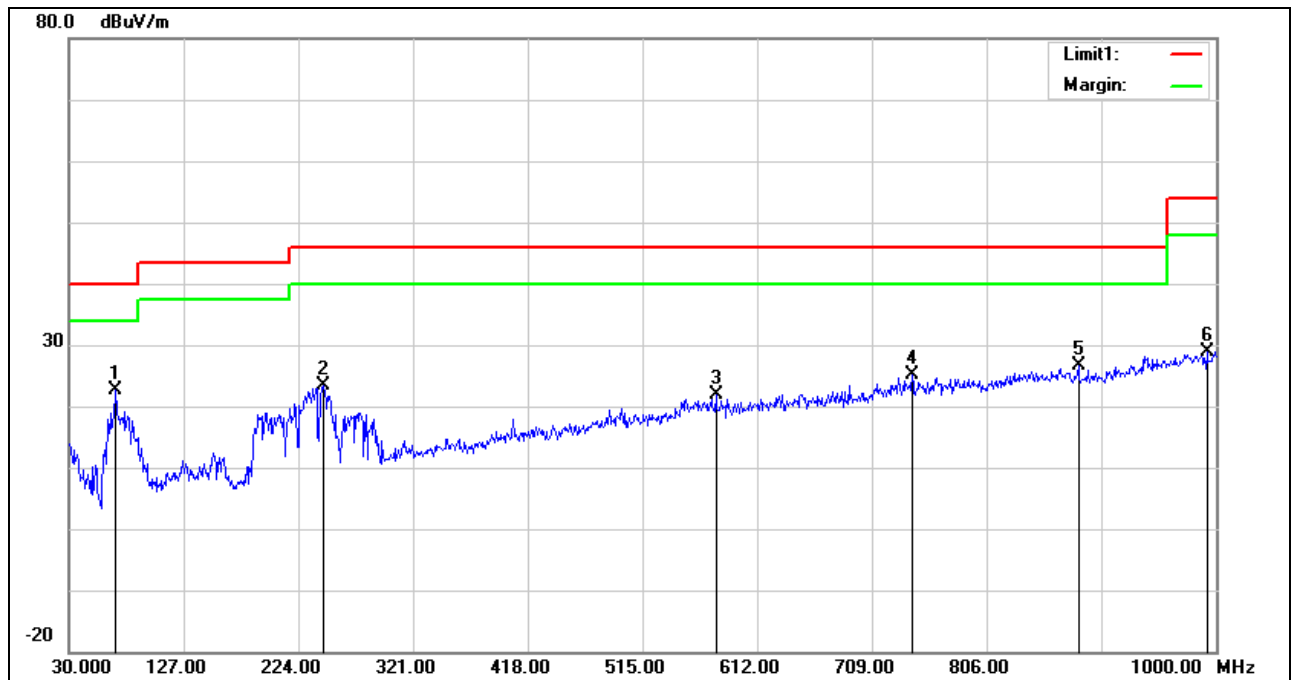


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	192.9600	43.09	-21.08	22.01	43.50	-21.49	QP
2	261.8300	37.48	-14.77	22.71	46.00	-23.29	QP
3	559.6200	27.16	-5.50	21.66	46.00	-24.34	QP
4	683.7800	28.31	-4.31	24.00	46.00	-22.00	QP
5	862.2600	26.74	-0.44	26.30	46.00	-19.70	QP
6	984.4800	27.09	2.40	29.49	54.00	-24.51	QP

Note: Measurement = Reading Level + Correct Factor.



HARMONICS AND SPURIOUS EMISSIONS (VERTICAL)

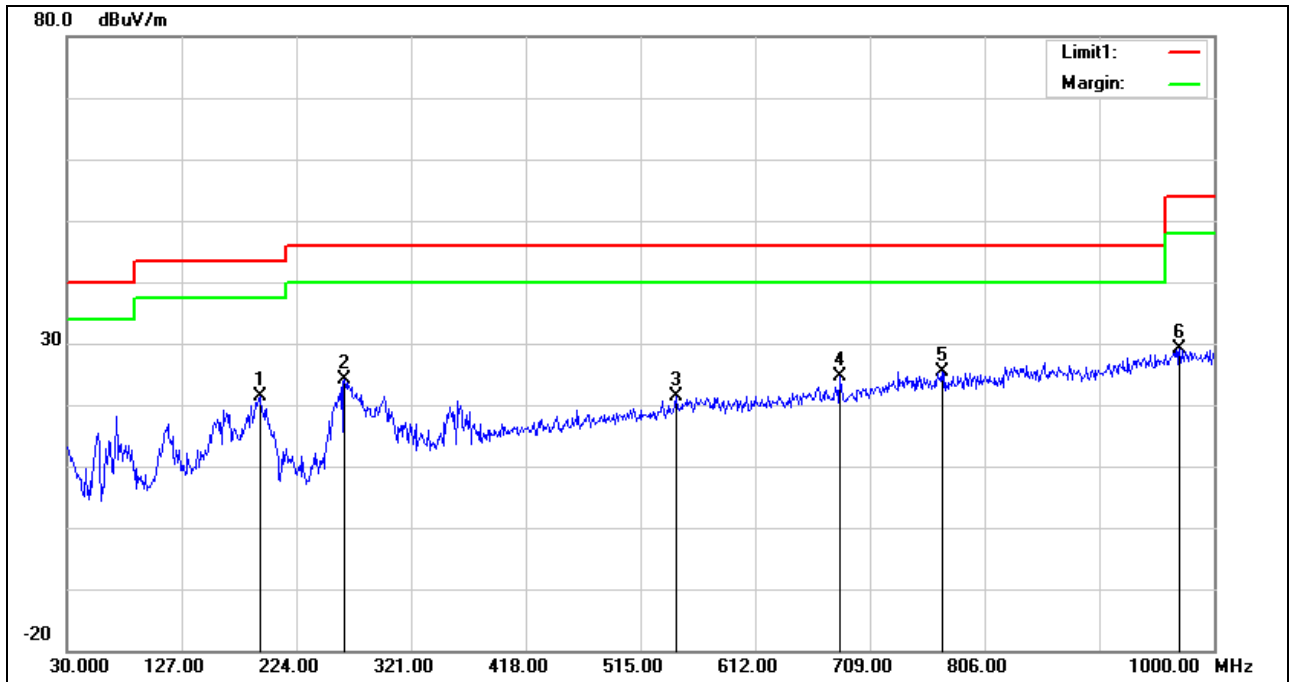


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	69.7700	47.61	-24.91	22.70	40.00	-17.30	QP
2	245.3400	40.18	-16.92	23.26	46.00	-22.74	QP
3	577.0800	27.53	-5.71	21.82	46.00	-24.18	QP
4	742.9500	27.17	-2.13	25.04	46.00	-20.96	QP
5	883.6000	27.26	-0.67	26.59	46.00	-19.41	QP
6	992.2400	26.85	2.05	28.90	54.00	-25.10	QP

Note: Measurement = Reading Level + Correct Factor.

802.11 n40 mode CH03

HARMONICS AND SPURIOUS EMISSIONS (HORIZONTAL)

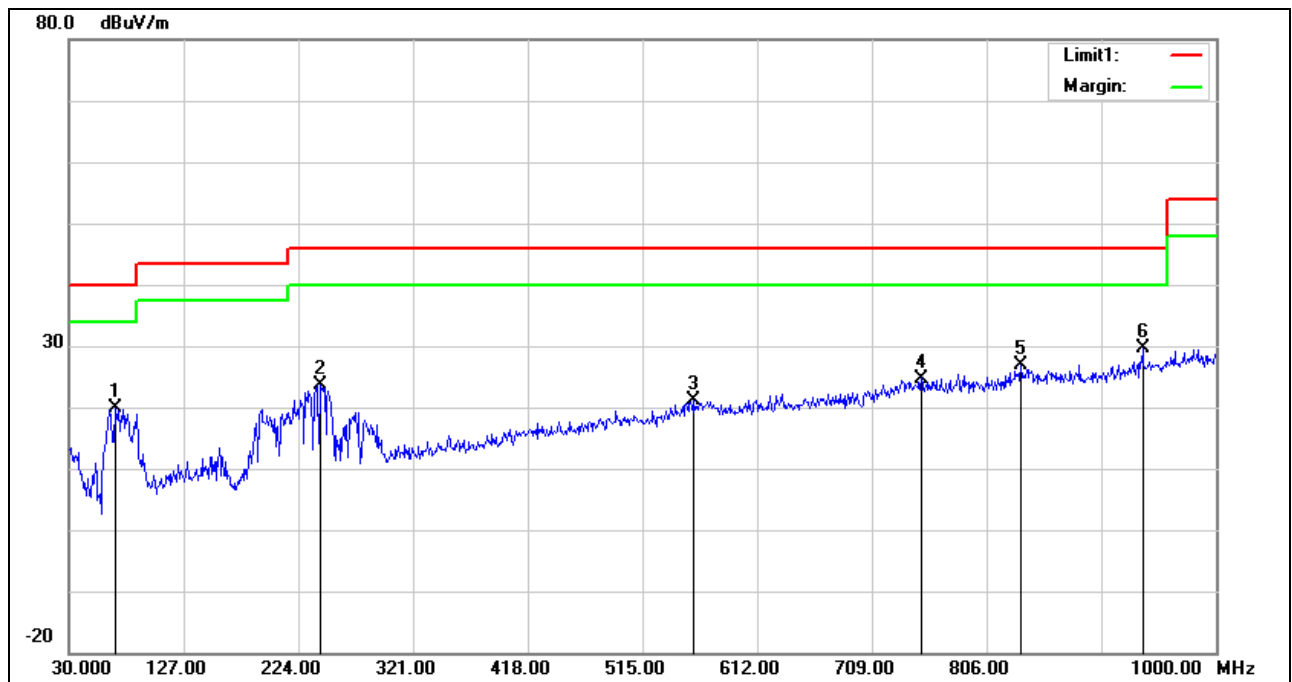


No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	192.9600	42.48	-21.08	21.40	43.50	-22.10	QP
2	264.7400	38.91	-14.75	24.16	46.00	-21.84	QP
3	545.0700	27.72	-6.31	21.41	46.00	-24.59	QP
4	683.7800	29.03	-4.31	24.72	46.00	-21.28	QP
5	770.1100	27.81	-2.33	25.48	46.00	-20.52	QP
6	970.9000	26.98	2.06	29.04	54.00	-24.96	QP

Note: Measurement = Reading Level + Correct Factor.



HARMONICS AND SPURIOUS EMISSIONS (VERTICAL)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	69.7700	44.73	-24.91	19.82	40.00	-20.18	QP
2	242.4300	41.17	-17.52	23.65	46.00	-22.35	QP
3	558.6500	26.57	-5.52	21.05	46.00	-24.95	QP
4	750.7100	26.91	-2.16	24.75	46.00	-21.25	QP
5	835.1000	27.42	-0.54	26.88	46.00	-19.12	QP
6	937.9200	28.50	1.20	29.70	46.00	-16.30	QP

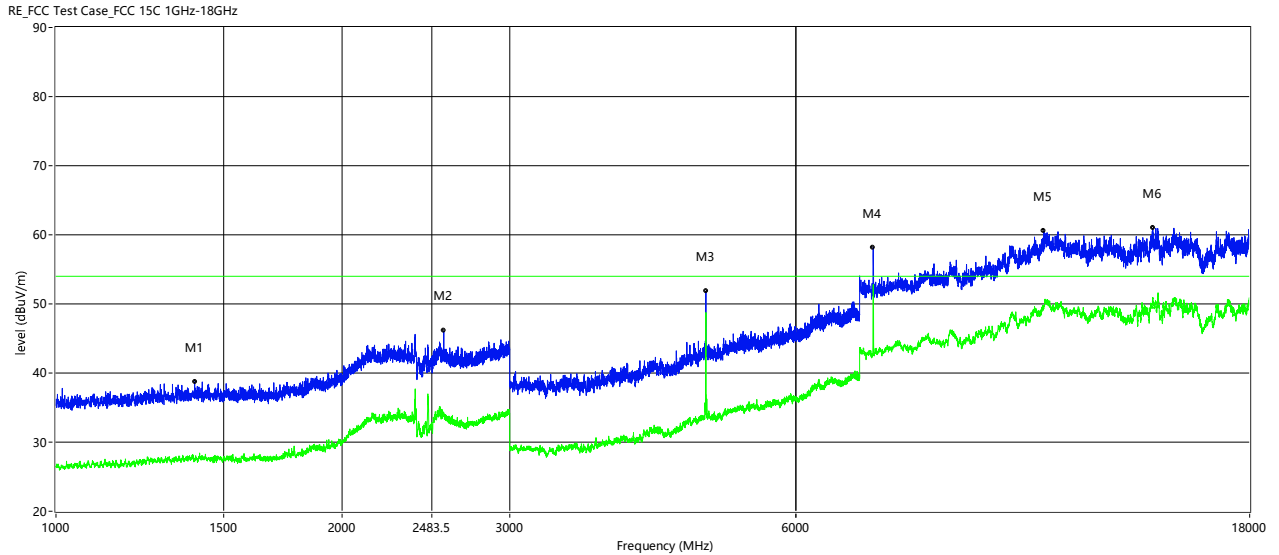
Note: Measurement = Reading Level + Correct Factor.



9.3. SPURIOUS EMISSIONS (1GHz-18GHz)

802.11 b mode

HARMONICS AND SPURIOUS EMISSIONS (01 CHANNEL, HORIZONTAL)



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1399.000	38.74	27.32	-0.66	74.0	54.0	-26.68	Horizontal	Pass
2557.500	46.07	34.24	4.19	74.0	54.0	-19.76	Horizontal	Pass
4824.000	51.85	48.76	-6.84	74.0	54.0	-5.24	Horizontal	Pass
7233.750	58.19	51.42	2.91	74.0	54.0	-2.58	Horizontal	Pass
10935.250	60.60	49.59	9.72	74.0	54.0	-4.41	Horizontal	Pass
14238.000	60.95	50.74	11.31	74.0	54.0	-3.26	Horizontal	Pass

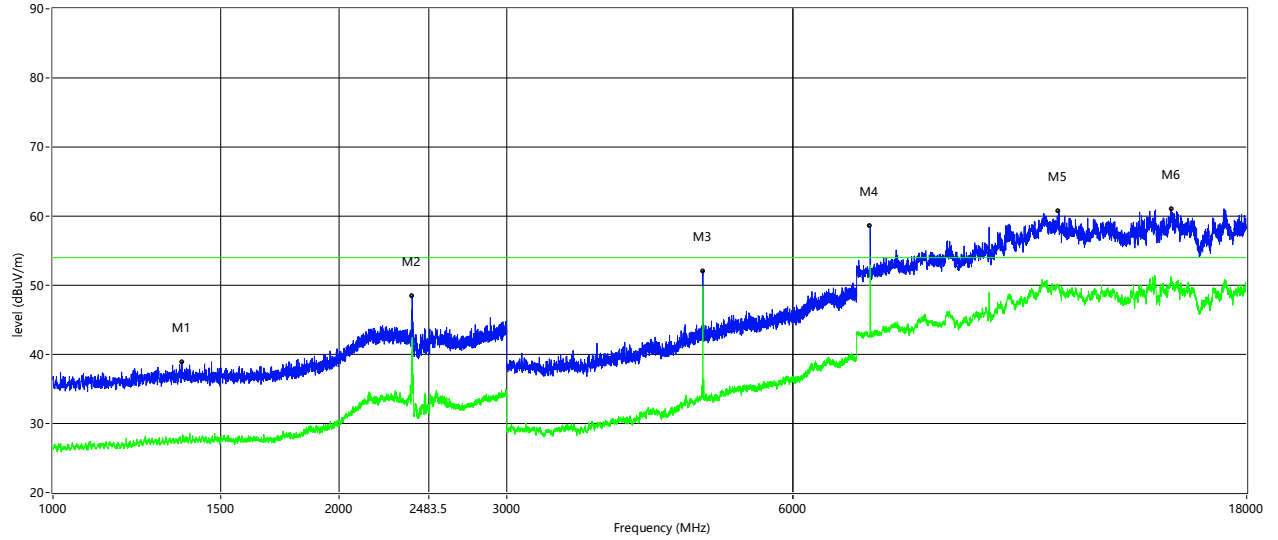
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (01 CHANNEL, VERTICAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1366.500	38.84	27.26	-0.75	74.0	54.0	-26.74	Vertical	Pass
2386.500	48.38	42.44	4.07	74.0	54.0	-11.56	Vertical	Pass
4824.000	52.06	49.85	-6.84	74.0	54.0	-4.15	Vertical	Pass
7233.750	60.53	51.06	2.91	74.0	54.0	-2.94	Vertical	Pass
11419.250	60.65	49.90	9.78	74.0	54.0	-4.10	Vertical	Pass
14994.250	60.97	50.49	10.37	74.0	54.0	-3.51	Vertical	Pass

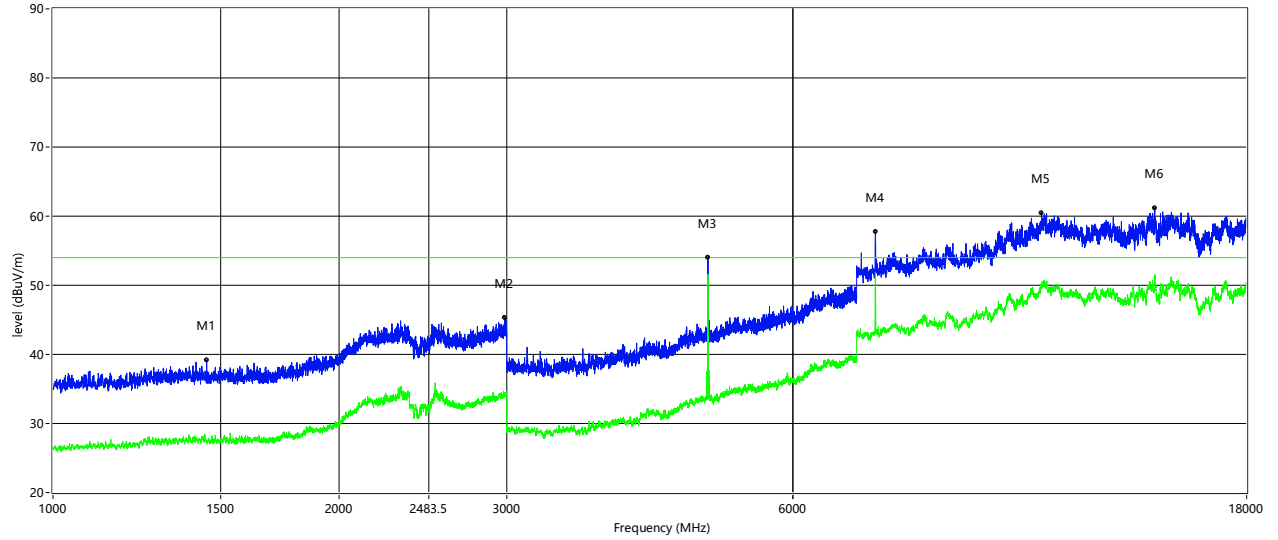
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (06 CHANNEL, HORIZONTAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1451.000	39.15	27.32	-0.58	74.0	54.0	-26.68	Horizontal	Pass
2984.000	45.31	34.25	6.04	74.0	54.0	-19.75	Horizontal	Pass
4884.000	54.02	51.55	-6.48	74.0	54.0	-2.45	Horizontal	Pass
7327.250	57.73	51.84	3.29	74.0	54.0	-2.16	Horizontal	Pass
10957.250	60.50	49.83	9.89	74.0	54.0	-4.17	Horizontal	Pass
14405.750	61.21	51.08	11.36	74.0	54.0	-2.92	Horizontal	Pass

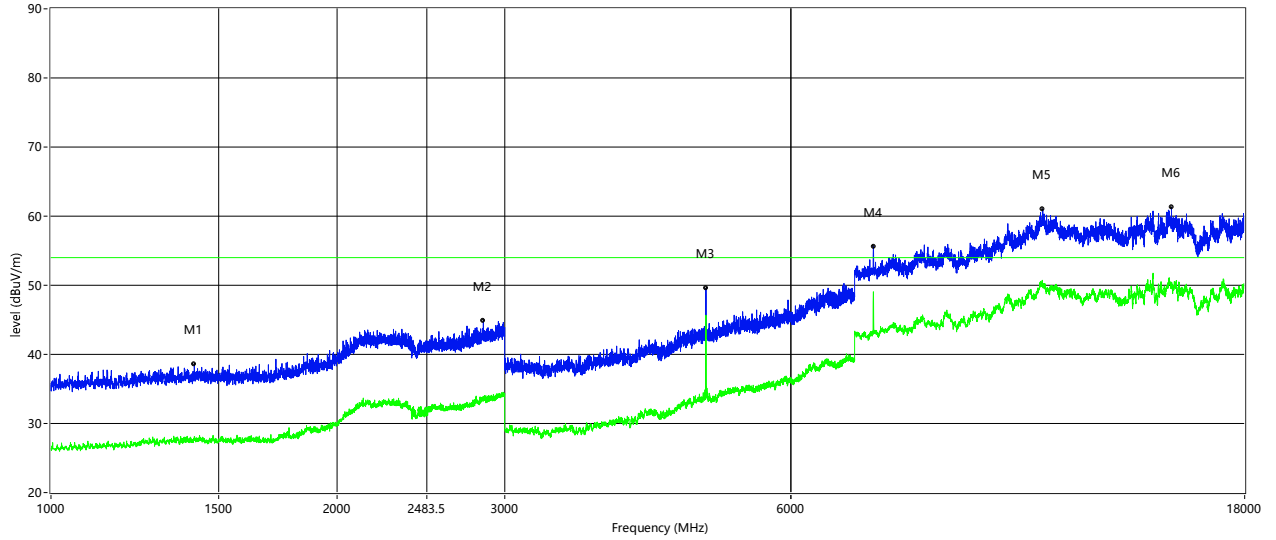
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (06 CHANNEL, VERTICAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1415.000	38.62	28.08	-0.64	74.0	54.0	-25.92	Vertical	Pass
2849.000	44.91	33.58	5.60	74.0	54.0	-20.42	Vertical	Pass
4884.000	49.53	45.65	-6.48	74.0	54.0	-8.35	Vertical	Pass
7327.250	55.62	48.97	3.29	74.0	54.0	-5.03	Vertical	Pass
11039.750	61.04	50.12	10.01	74.0	54.0	-3.88	Vertical	Pass
15076.750	61.26	50.19	10.33	74.0	54.0	-3.81	Vertical	Pass

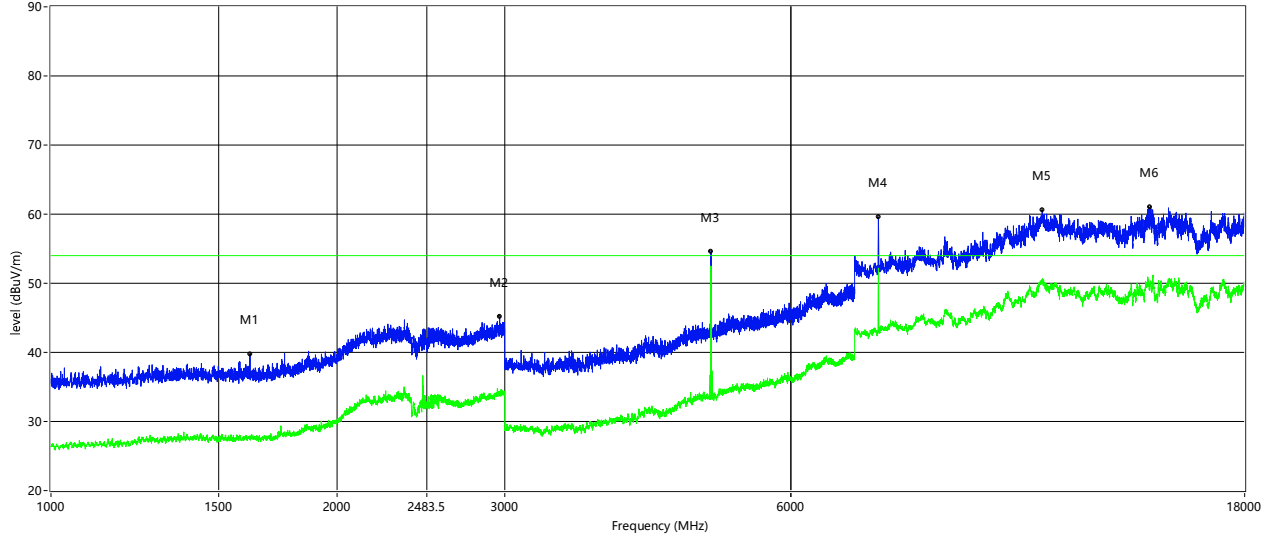
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (11 CHANNEL, HORIZONTAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1619.000	39.77	27.71	-0.49	74.0	54.0	-26.29	Horizontal	Pass
2963.500	45.16	34.33	5.95	74.0	54.0	-19.67	Horizontal	Pass
4944.000	56.59	51.50	-6.39	74.0	54.0	-2.50	Horizontal	Pass
7415.250	59.59	52.21	2.97	74.0	54.0	-1.79	Horizontal	Pass
11026.000	60.57	50.45	10.08	74.0	54.0	-3.55	Horizontal	Pass
14309.500	60.95	49.68	10.88	74.0	54.0	-4.32	Horizontal	Pass

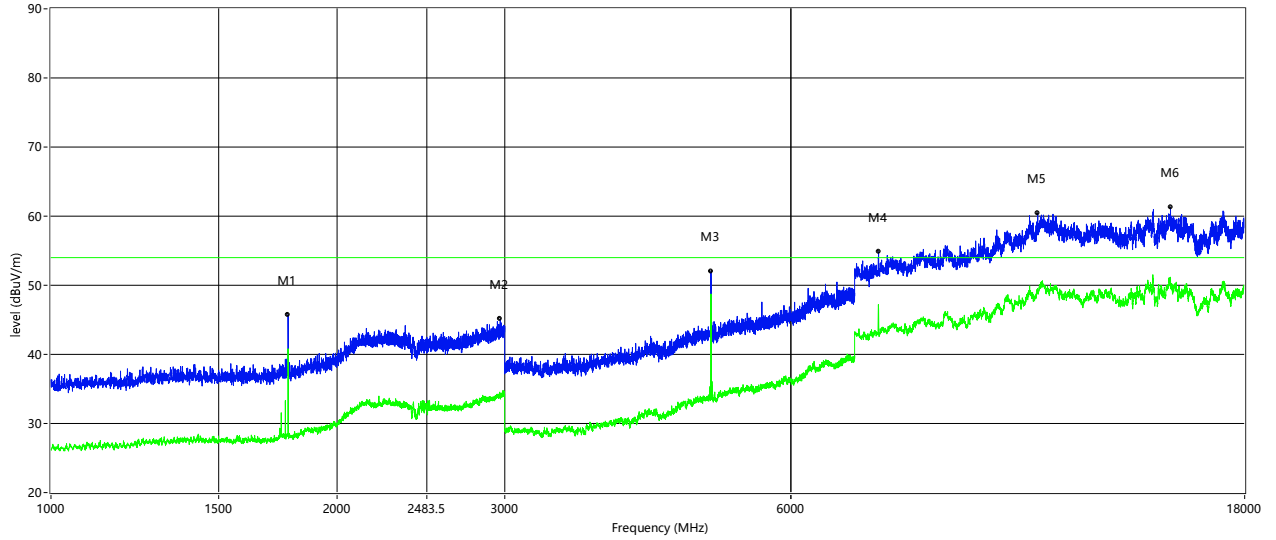
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (11 CHANNEL, VERTICAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1775.500	45.76	40.81	-0.02	74.0	54.0	-13.19	Vertical	Pass
2967.500	45.12	33.97	5.97	74.0	54.0	-20.03	Vertical	Pass
4944.000	51.97	48.74	-6.39	74.0	54.0	-5.26	Vertical	Pass
7418.000	54.84	46.52	2.97	74.0	54.0	-7.48	Vertical	Pass
10905.000	60.44	48.97	9.49	74.0	54.0	-5.03	Vertical	Pass
15041.000	61.22	51.17	10.36	74.0	54.0	-2.83	Vertical	Pass

Remark:

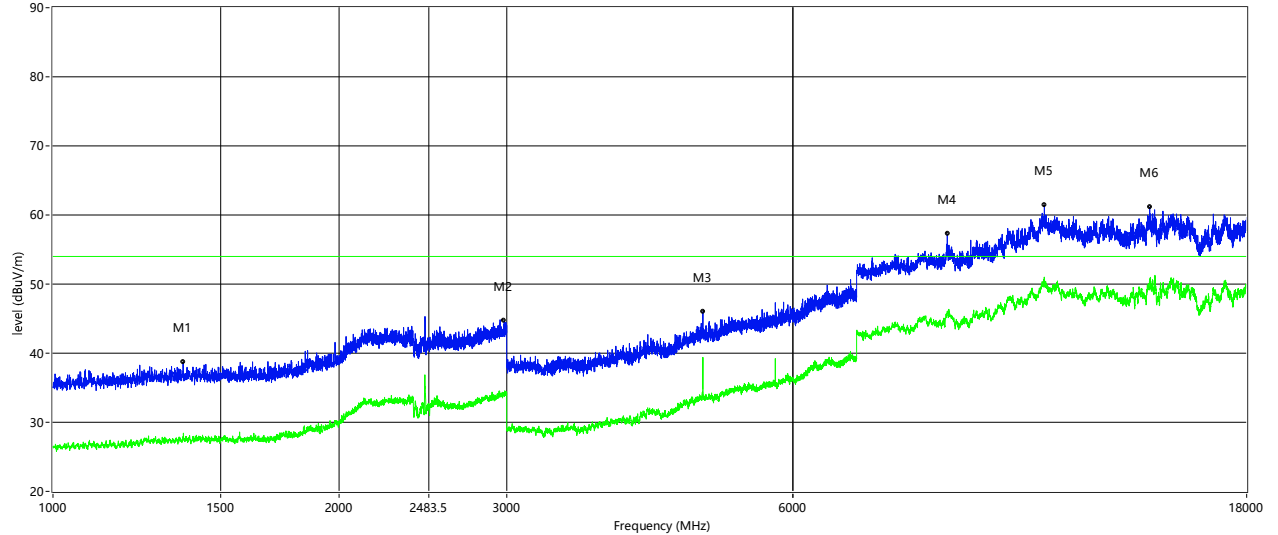
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



802.11 g mode

HARMONICS AND SPURIOUS EMISSIONS (01 CHANNEL, HORIZONTAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1370.500	38.71	27.85	-0.74	74.0	54.0	-26.15	Horizontal	Pass
2981.500	44.67	34.06	6.03	74.0	54.0	-19.94	Horizontal	Pass
4824.000	46.00	39.40	-6.84	74.0	54.0	-14.60	Horizontal	Pass
8718.750	57.22	46.07	5.10	74.0	54.0	-7.93	Horizontal	Pass
11028.750	61.43	50.05	10.06	74.0	54.0	-3.95	Horizontal	Pass
14232.500	61.16	50.57	11.35	74.0	54.0	-3.43	Horizontal	Pass

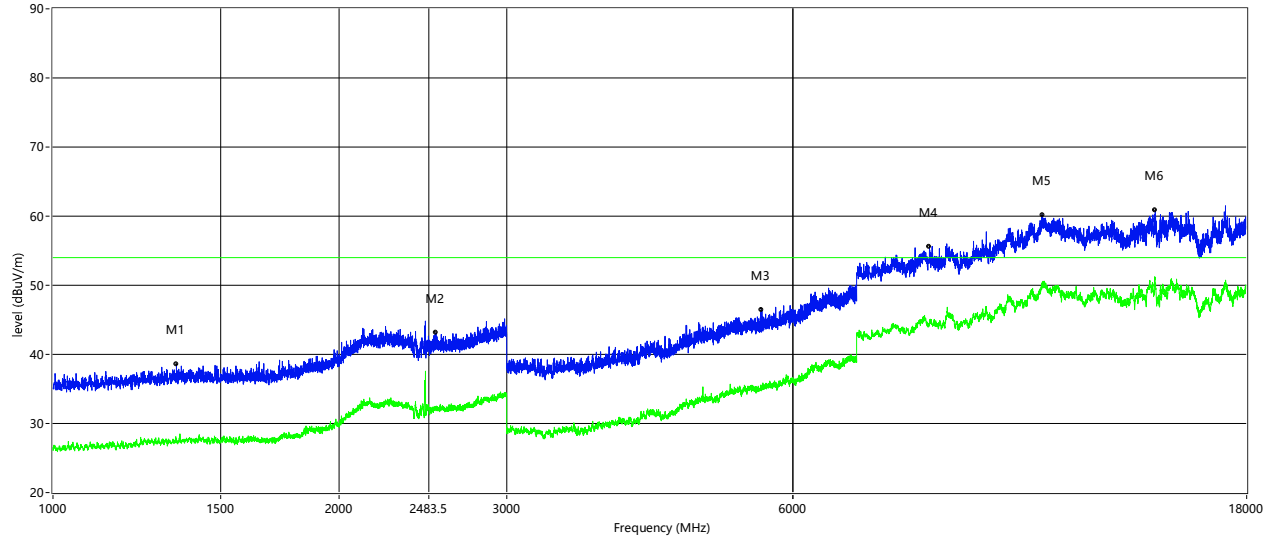
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (01 CHANNEL, VERTICAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1348.500	38.60	27.76	-0.80	74.0	54.0	-26.24	Vertical	Pass
2527.500	43.11	32.48	4.08	74.0	54.0	-21.52	Vertical	Pass
5557.000	46.45	34.75	-4.49	74.0	54.0	-19.25	Vertical	Pass
8350.250	55.53	44.26	4.26	74.0	54.0	-9.74	Vertical	Pass
10971.000	60.21	49.87	10.00	74.0	54.0	-4.13	Vertical	Pass
14425.000	60.82	50.32	11.13	74.0	54.0	-3.68	Vertical	Pass

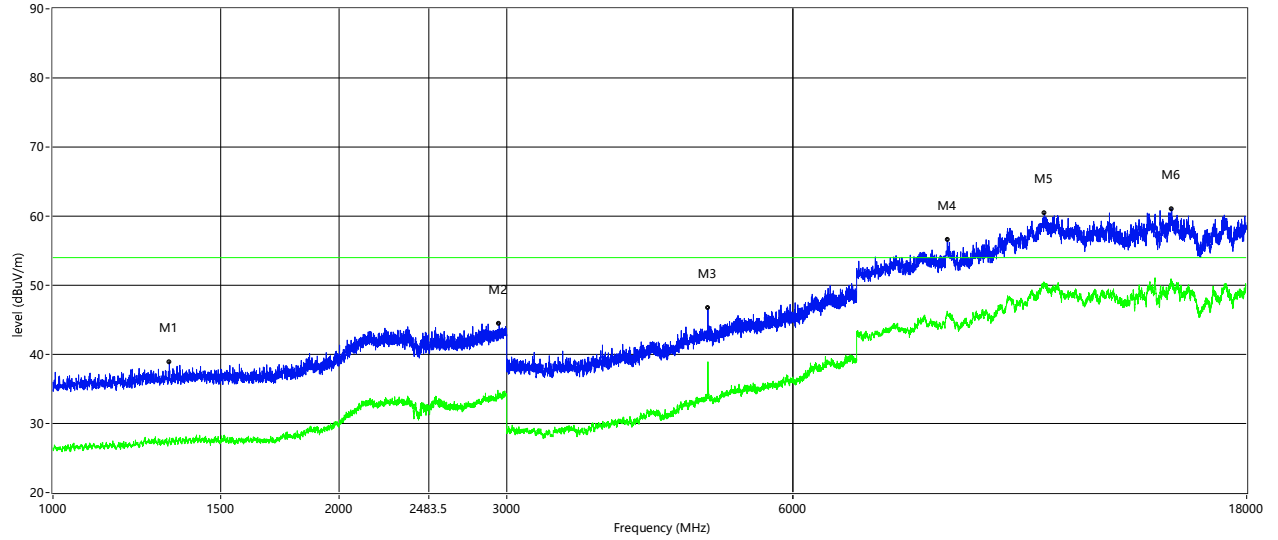
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (06 CHANNEL, HORIZONTAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1325.500	38.90	27.56	-0.86	74.0	54.0	-26.44	Horizontal	Pass
2946.000	44.50	33.80	5.87	74.0	54.0	-20.20	Horizontal	Pass
4884.000	46.66	38.93	-6.48	74.0	54.0	-15.07	Horizontal	Pass
8718.750	56.54	45.80	5.10	74.0	54.0	-8.20	Horizontal	Pass
11028.750	60.42	50.34	10.06	74.0	54.0	-3.66	Horizontal	Pass
15010.750	61.07	50.10	10.39	74.0	54.0	-3.90	Horizontal	Pass

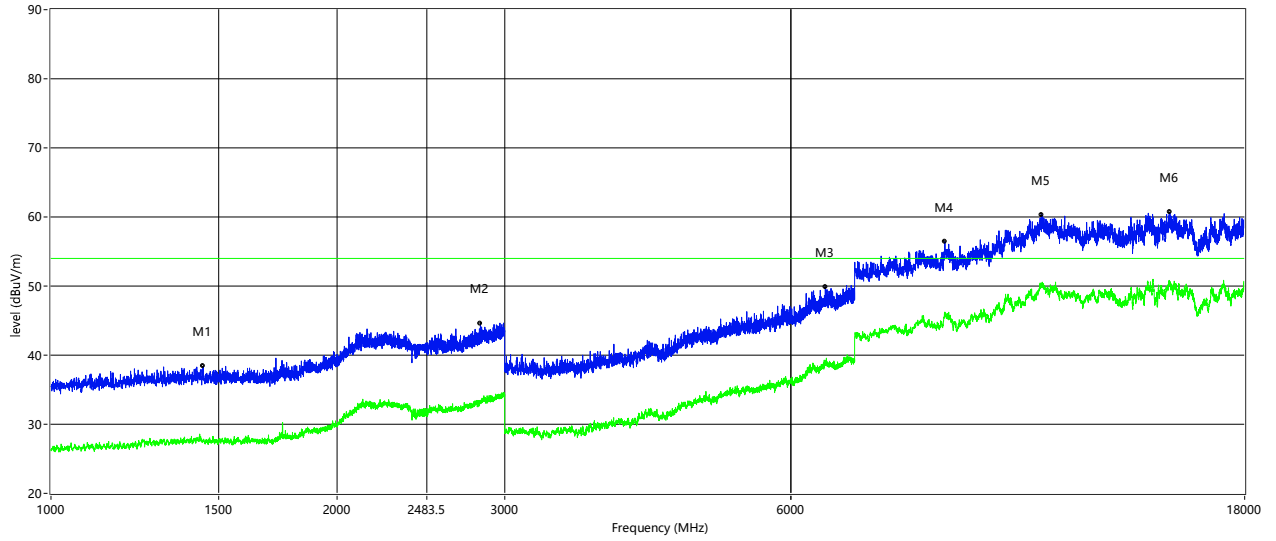
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (06 CHANNEL, VERTICAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1446.000	38.37	27.82	-0.59	74.0	54.0	-26.18	Vertical	Pass
2829.000	44.51	33.31	5.45	74.0	54.0	-20.69	Vertical	Pass
6521.000	49.89	38.56	-0.41	74.0	54.0	-15.44	Vertical	Pass
8710.500	56.45	46.24	5.13	74.0	54.0	-7.76	Vertical	Pass
10998.500	60.34	49.90	10.21	74.0	54.0	-4.10	Vertical	Pass
15019.000	60.68	50.07	10.38	74.0	54.0	-3.93	Vertical	Pass

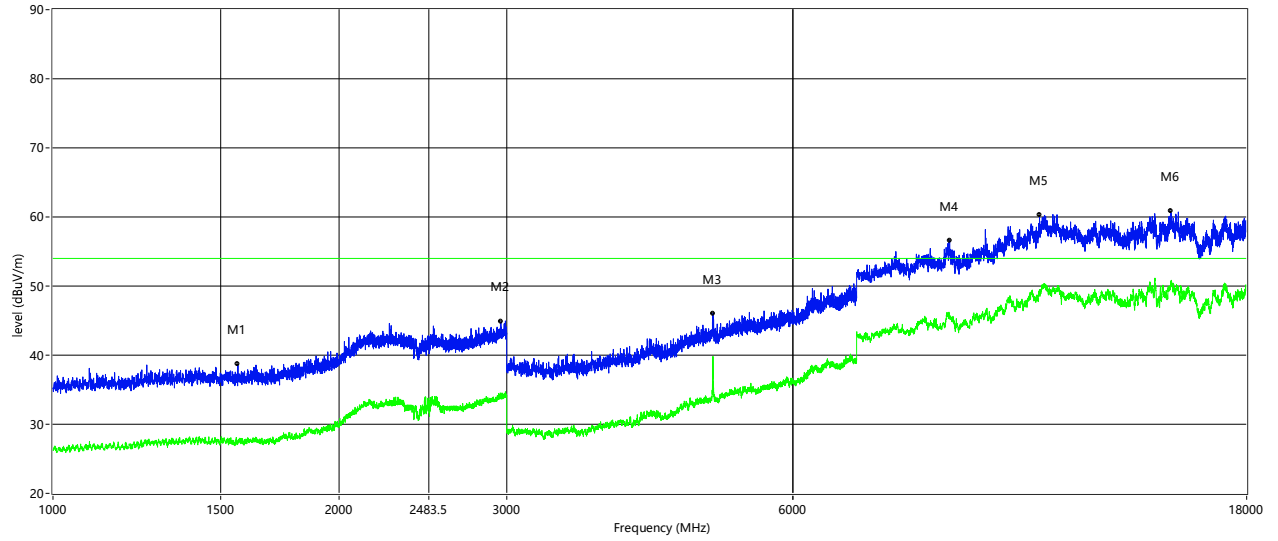
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (11 CHANNEL, HORIZONTAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1565.000	38.71	27.25	-0.58	74.0	54.0	-26.75	Horizontal	Pass
2958.000	44.83	34.13	5.93	74.0	54.0	-19.87	Horizontal	Pass
4944.000	46.06	39.82	-6.39	74.0	54.0	-14.18	Horizontal	Pass
8768.250	56.64	45.57	4.95	74.0	54.0	-8.43	Horizontal	Pass
10899.500	60.29	49.48	9.44	74.0	54.0	-4.52	Horizontal	Pass
14980.500	60.87	50.38	10.30	74.0	54.0	-3.62	Horizontal	Pass

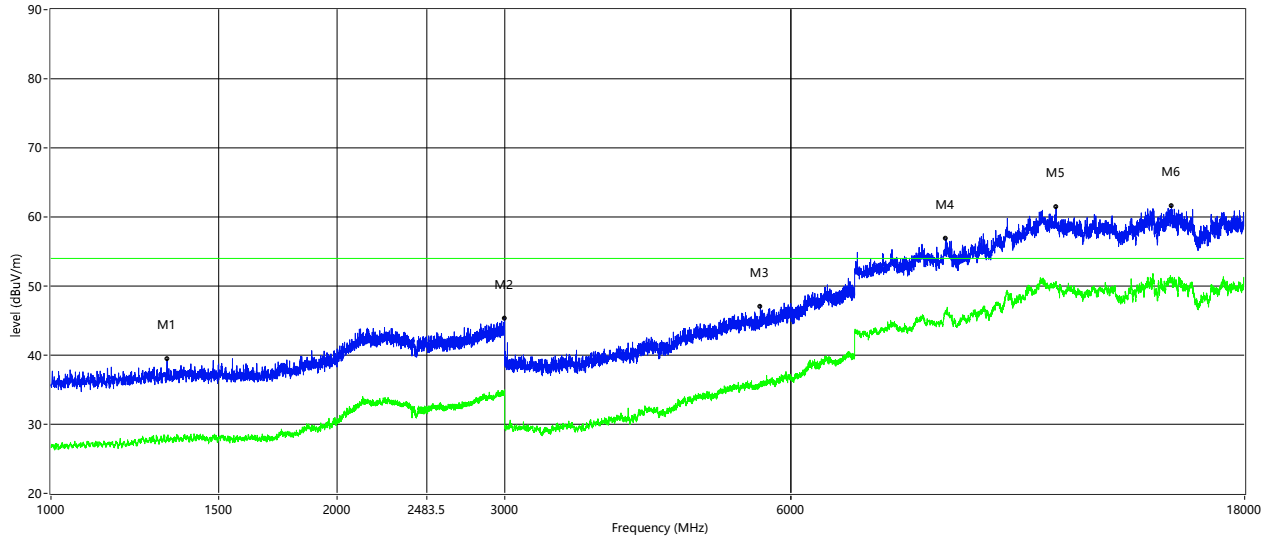
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (11 CHANNEL, VERTICAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1324.500	39.37	27.90	-0.87	74.0	54.0	-26.10	Vertical	Pass
2999.000	45.28	34.99	6.11	74.0	54.0	-19.01	Vertical	Pass
5572.000	47.07	35.82	-4.34	74.0	54.0	-18.18	Vertical	Pass
8735.250	56.88	46.14	5.05	74.0	54.0	-7.86	Vertical	Pass
11399.999	61.43	50.44	9.74	74.0	54.0	-3.56	Vertical	Pass
15076.750	61.62	50.93	10.33	74.0	54.0	-3.07	Vertical	Pass

Remark:

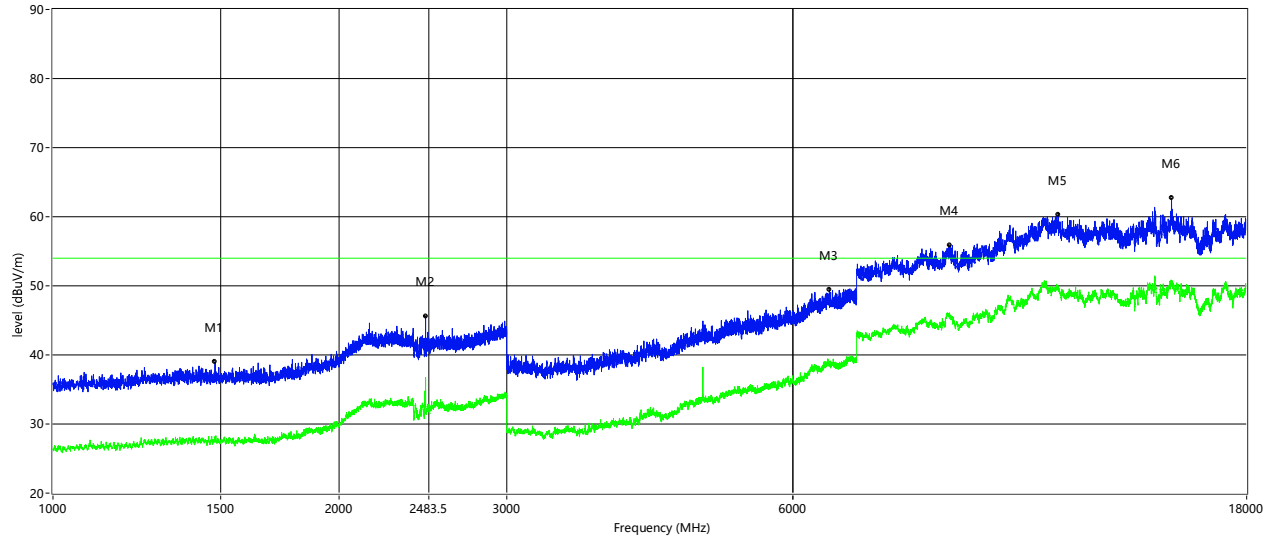
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



802.11 n20 mode

HARMONICS AND SPURIOUS EMISSIONS (01 CHANNEL, HORIZONTAL)

RE_FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1480.500	39.00	28.21	-0.57	74.0	54.0	-25.79	Horizontal	Pass
2465.000	45.63	36.72	4.02	74.0	54.0	-17.28	Horizontal	Pass
6553.000	49.41	38.51	-0.43	74.0	54.0	-15.49	Horizontal	Pass
8776.500	55.85	45.74	4.92	74.0	54.0	-8.26	Horizontal	Pass
11405.500	60.31	49.68	9.75	74.0	54.0	-4.32	Horizontal	Pass
15005.250	62.64	50.35	10.40	74.0	54.0	-3.65	Horizontal	Pass

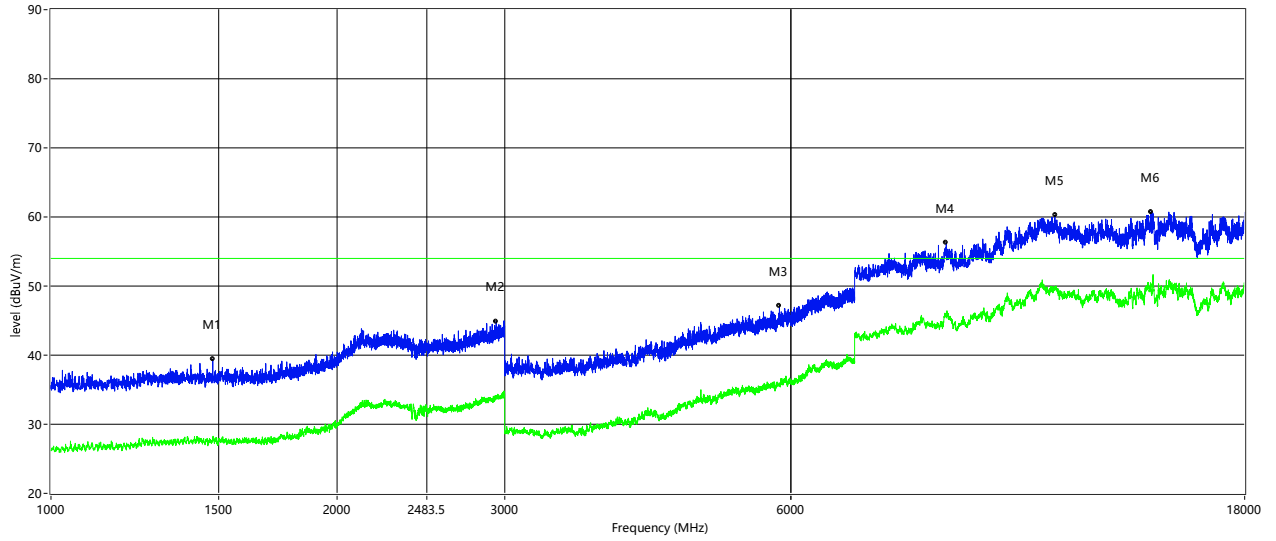
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (01 CHANNEL, VERTICAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1479.500	39.39	27.98	-0.57	74.0	54.0	-26.02	Vertical	Pass
2939.000	44.93	33.74	5.83	74.0	54.0	-20.26	Vertical	Pass
5835.000	47.11	35.65	-3.65	74.0	54.0	-18.35	Vertical	Pass
8738.000	56.29	45.61	5.04	74.0	54.0	-8.39	Vertical	Pass
11367.000	60.24	49.63	9.67	74.0	54.0	-4.37	Vertical	Pass
14348.000	60.76	50.19	11.11	74.0	54.0	-3.81	Vertical	Pass

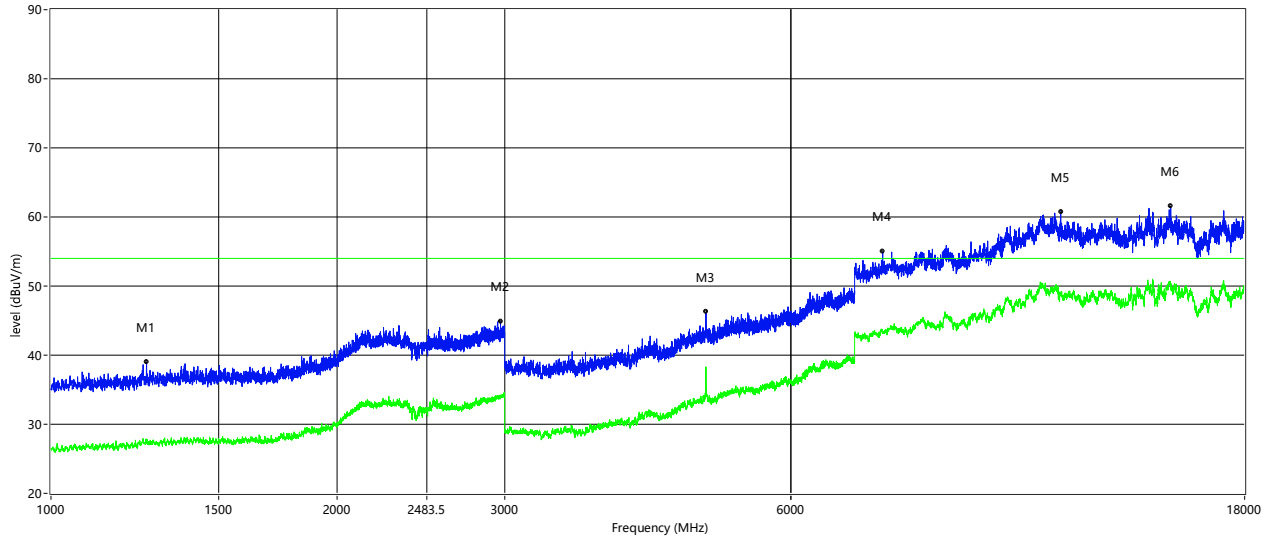
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (06 CHANNEL, HORIZONTAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1260.500	39.03	27.35	-0.92	74.0	54.0	-26.65	Horizontal	Pass
2970.000	44.84	34.03	5.98	74.0	54.0	-19.97	Horizontal	Pass
4885.000	46.23	36.02	-6.48	74.0	54.0	-17.98	Horizontal	Pass
7492.250	54.94	43.50	2.97	74.0	54.0	-10.50	Horizontal	Pass
11529.250	60.76	48.99	9.98	74.0	54.0	-5.01	Horizontal	Pass
15049.250	61.51	50.26	10.35	74.0	54.0	-3.74	Horizontal	Pass

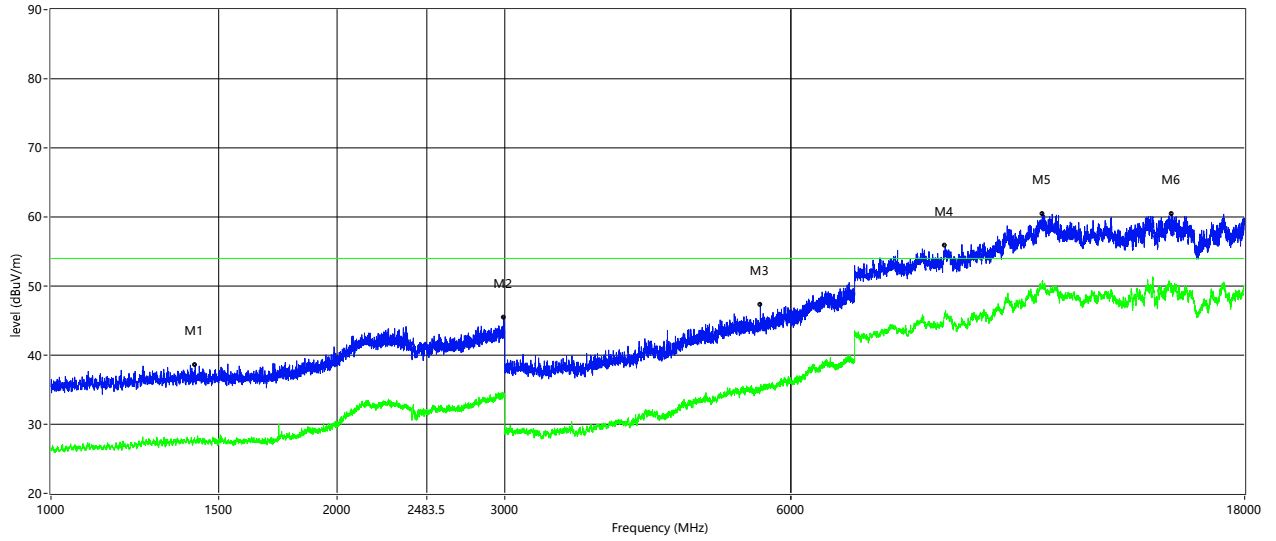
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (06 CHANNEL, VERTICAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1418.000	38.64	27.54	-0.63	74.0	54.0	-26.46	Vertical	Pass
2993.500	45.50	34.13	6.08	74.0	54.0	-19.87	Vertical	Pass
5572.000	47.32	35.37	-4.34	74.0	54.0	-18.63	Vertical	Pass
8716.000	55.80	45.73	5.11	74.0	54.0	-8.27	Vertical	Pass
11034.250	60.45	49.83	10.04	74.0	54.0	-4.17	Vertical	Pass
15096.001	60.42	49.27	10.31	74.0	54.0	-4.73	Vertical	Pass

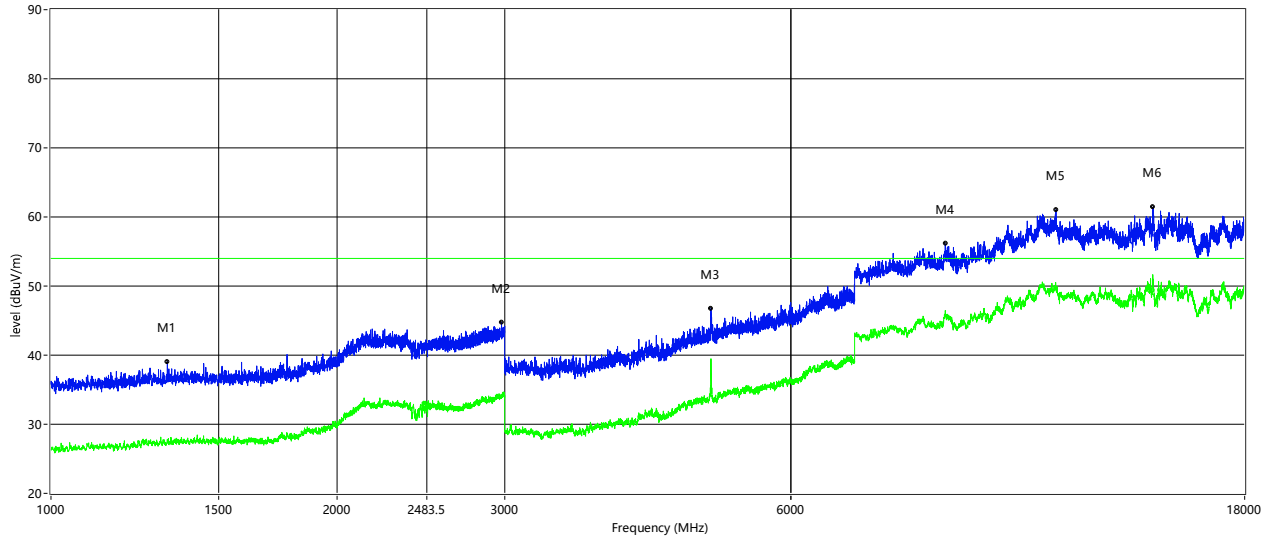
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (11 CHANNEL, HORIZONTAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1325.500	39.05	27.82	-0.86	74.0	54.0	-26.18	Horizontal	Pass
2977.000	44.71	34.29	6.01	74.0	54.0	-19.71	Horizontal	Pass
4944.000	46.75	39.48	-6.39	74.0	54.0	-14.52	Horizontal	Pass
8718.750	56.11	46.46	5.10	74.0	54.0	-7.54	Horizontal	Pass
11397.250	61.05	49.77	9.74	74.0	54.0	-4.23	Horizontal	Pass
14416.750	61.44	51.01	11.23	74.0	54.0	-2.99	Horizontal	Pass

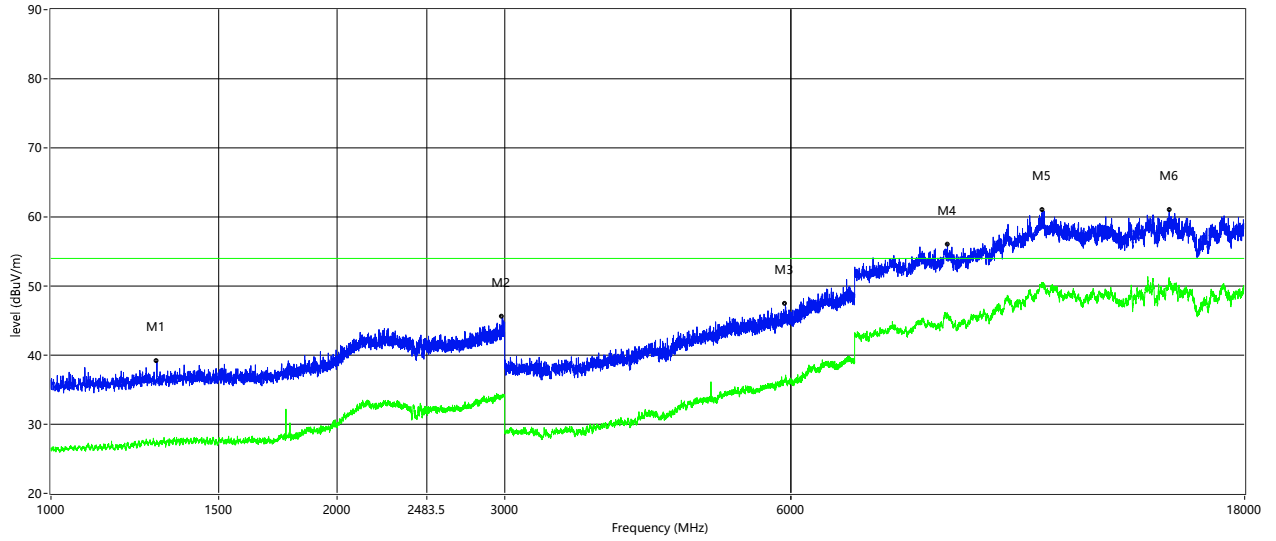
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (11 CHANNEL, VERTICAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1292.500	39.15	27.57	-0.93	74.0	54.0	-26.43	Vertical	Pass
2982.000	45.50	34.03	6.03	74.0	54.0	-19.97	Vertical	Pass
5920.000	47.38	36.44	-3.19	74.0	54.0	-17.56	Vertical	Pass
8765.500	56.03	45.69	4.96	74.0	54.0	-8.31	Vertical	Pass
11026.000	60.93	50.53	10.08	74.0	54.0	-3.47	Vertical	Pass
14994.250	61.01	50.58	10.37	74.0	54.0	-3.42	Vertical	Pass

Remark:

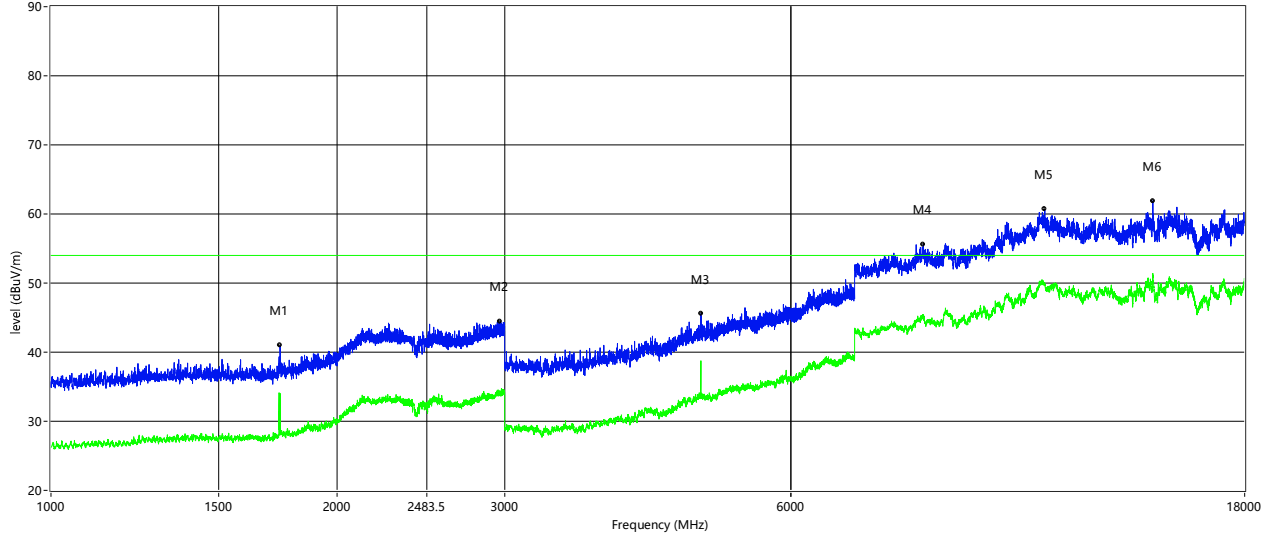
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



802.11 n40 mode

HARMONICS AND SPURIOUS EMISSIONS (03 CHANNEL, HORIZONTAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1741.500	40.95	34.04	-0.04	74.0	54.0	-19.96	Horizontal	Pass
2966.500	44.44	34.39	5.97	74.0	54.0	-19.61	Horizontal	Pass
4824.000	45.57	38.76	-6.84	74.0	54.0	-15.24	Horizontal	Pass
8265.000	55.62	45.02	4.23	74.0	54.0	-8.98	Horizontal	Pass
11094.750	60.66	49.59	9.71	74.0	54.0	-4.41	Horizontal	Pass
14411.250	61.91	51.40	11.29	74.0	54.0	-2.60	Horizontal	Pass

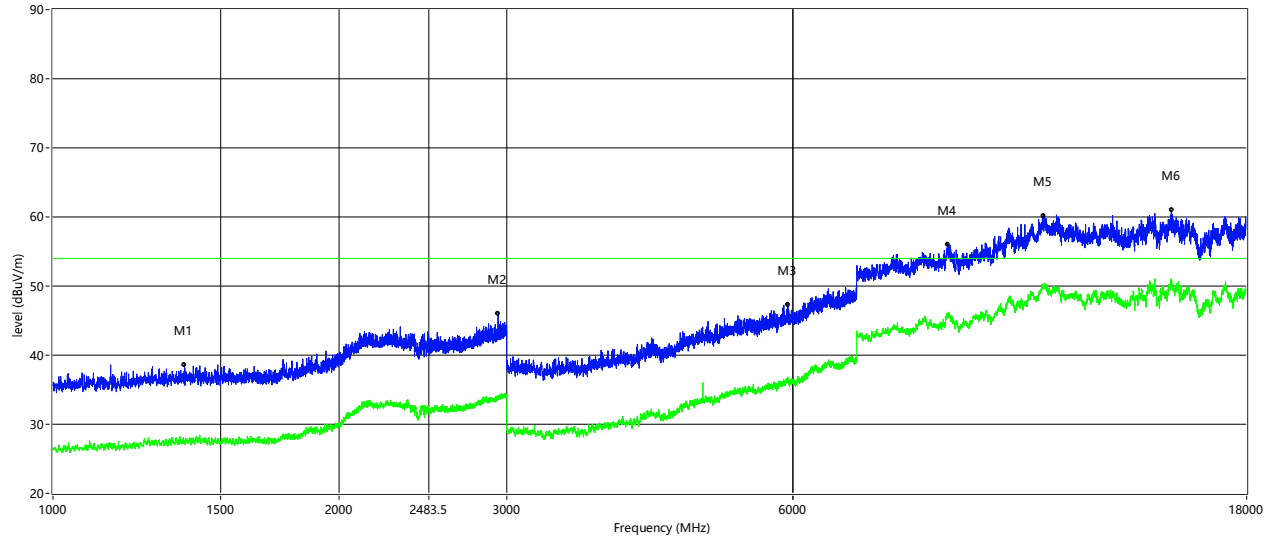
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (03 CHANNEL, VERTICAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1375.000	38.51	27.69	-0.73	74.0	54.0	-26.31	Vertical	Pass
2938.000	45.98	33.61	5.83	74.0	54.0	-20.39	Vertical	Pass
5927.000	47.35	36.60	-3.18	74.0	54.0	-17.40	Vertical	Pass
8721.500	56.02	45.91	5.09	74.0	54.0	-8.09	Vertical	Pass
11009.500	60.20	49.89	10.17	74.0	54.0	-4.11	Vertical	Pass
14997.000	60.93	50.43	10.38	74.0	54.0	-3.57	Vertical	Pass

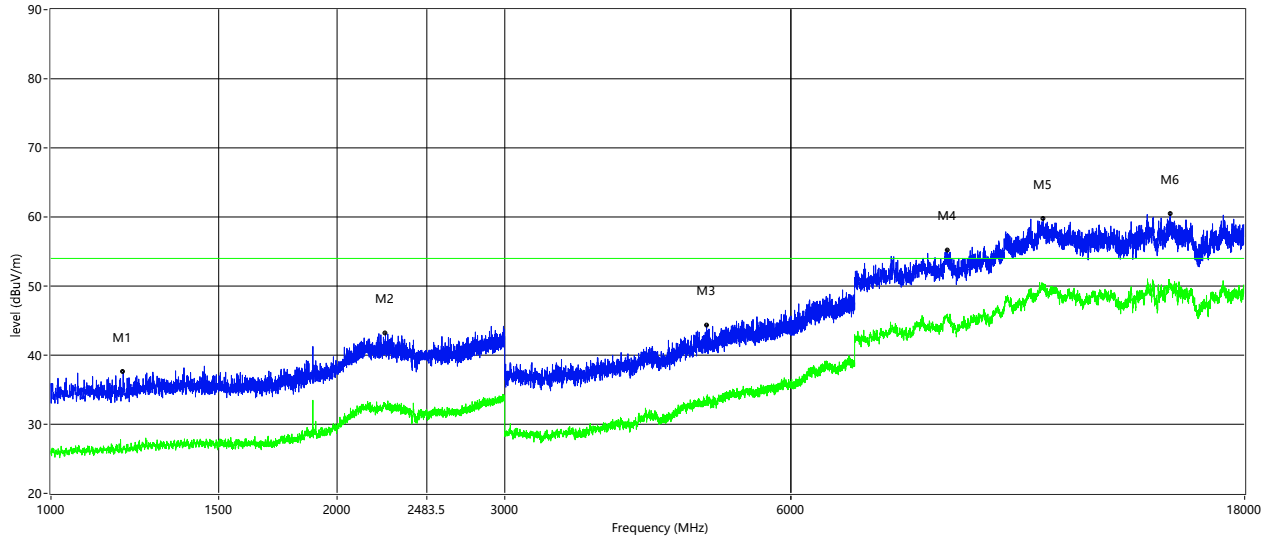
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (06 CHANNEL, HORIZONTAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1191.000	37.63	26.69	-1.24	74.0	54.0	-27.31	Horizontal	Pass
2248.000	43.14	32.74	4.62	74.0	54.0	-21.26	Horizontal	Pass
4892.000	44.30	33.13	-6.44	74.0	54.0	-20.87	Horizontal	Pass
8765.500	55.18	45.96	4.96	74.0	54.0	-8.04	Horizontal	Pass
11056.250	59.76	50.34	9.92	74.0	54.0	-3.66	Horizontal	Pass
15030.000	60.47	50.23	10.37	74.0	54.0	-3.77	Horizontal	Pass

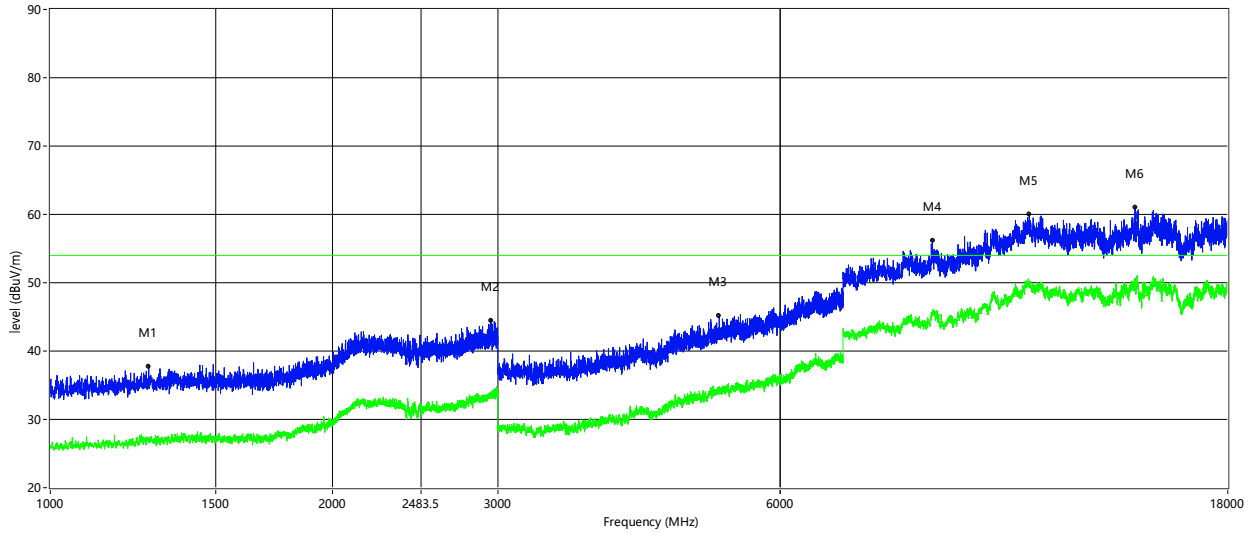
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (06 CHANNEL, VERTICAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1273.500	37.74	26.78	-0.92	74.0	54.0	-27.22	Vertical	Pass
2949.000	44.49	33.59	5.89	74.0	54.0	-20.41	Vertical	Pass
5166.000	45.20	34.82	-5.10	74.0	54.0	-19.18	Vertical	Pass
8718.750	56.13	46.02	5.10	74.0	54.0	-7.98	Vertical	Pass
11056.250	60.02	49.74	9.92	74.0	54.0	-4.26	Vertical	Pass
14334.250	61.01	50.68	11.03	74.0	54.0	-3.32	Vertical	Pass

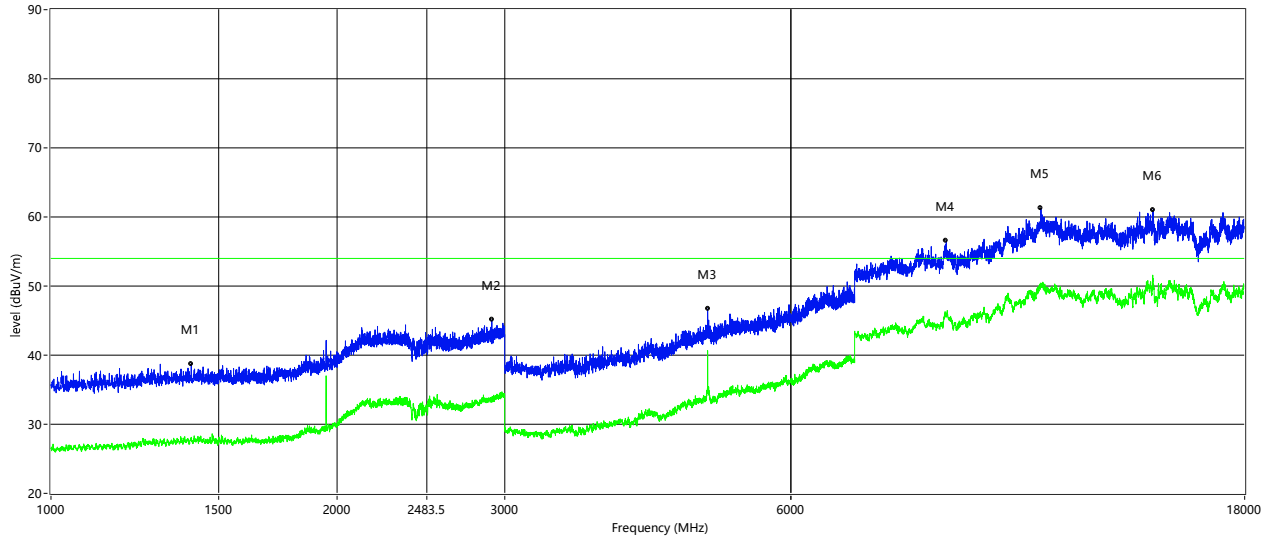
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (09 CHANNEL, HORIZONTAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1404.500	38.77	28.12	-0.65	74.0	54.0	-25.88	Horizontal	Pass
2907.500	45.09	33.52	5.65	74.0	54.0	-20.48	Horizontal	Pass
4904.000	46.68	40.66	-6.39	74.0	54.0	-13.34	Horizontal	Pass
8738.000	56.60	45.59	5.04	74.0	54.0	-8.41	Horizontal	Pass
10990.250	61.29	50.21	10.14	74.0	54.0	-3.79	Horizontal	Pass
14422.250	61.05	50.64	11.16	74.0	54.0	-3.36	Horizontal	Pass

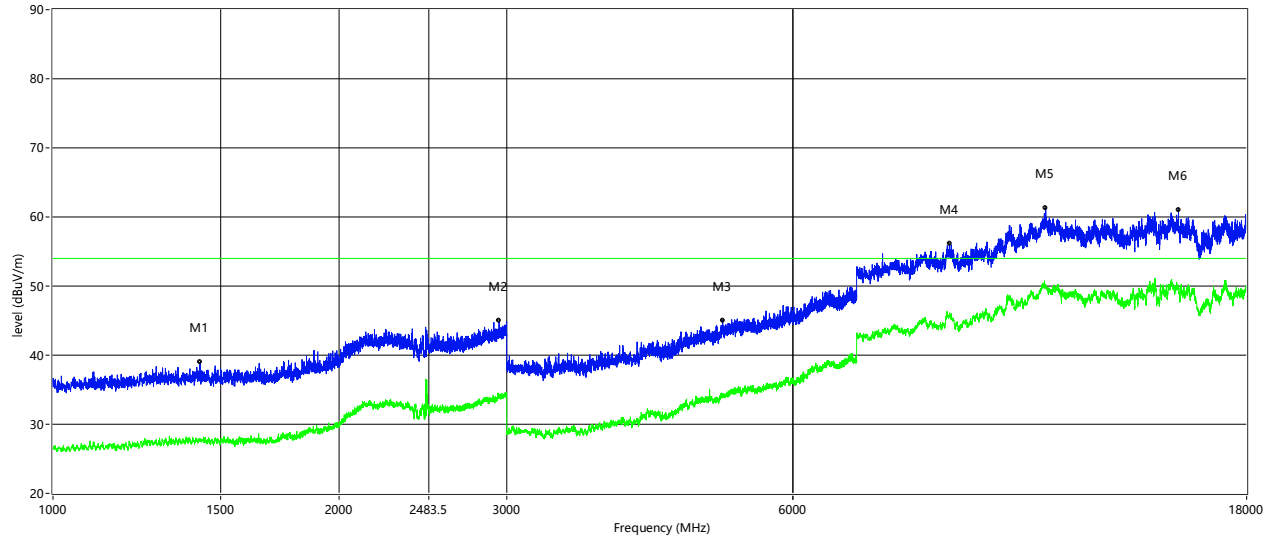
Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



HARMONICS AND SPURIOUS EMISSIONS (09 CHANNEL, VERTICAL)

RE FCC Test Case_FCC 15C 1GHz-18GHz



Frequency (MHz)	Peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	ANT	Verdict
1427.500	38.95	27.96	-0.62	74.0	54.0	-26.04	Vertical	Pass
2945.500	44.93	33.84	5.87	74.0	54.0	-20.16	Vertical	Pass
5061.000	45.05	34.40	-5.87	74.0	54.0	-19.60	Vertical	Pass
8762.750	56.09	45.52	4.97	74.0	54.0	-8.48	Vertical	Pass
11064.500	61.35	50.24	9.87	74.0	54.0	-3.76	Vertical	Pass
15261.000	61.07	49.95	10.39	74.0	54.0	-4.05	Vertical	Pass

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier + BRF Factor.
2. Margin = Limit - Emission Level
3. Tests were performed in three frequency range 1GHz~3GHz, 3GHz~13GHz, 13GHz~18GHz.
4. Above 18GHz emissions are mainly from the environment noise, not show in report.



9.4. SPURIOUS EMISSIONS BELOW 30M

Freq. (MHz)	Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	State P/F	Test Result
--	--	--	--	--	PASS
--	--	--	--	--	PASS

Note:

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

Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

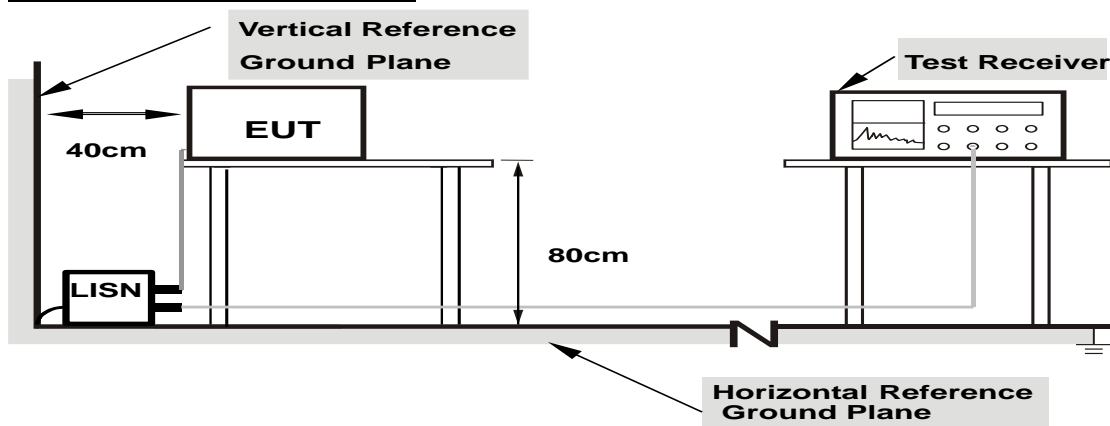
10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

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

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

TEST SETUP AND PROCEDURE



- Note: 1.Support units were connected to second LISN.
 2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 7 and 13 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.

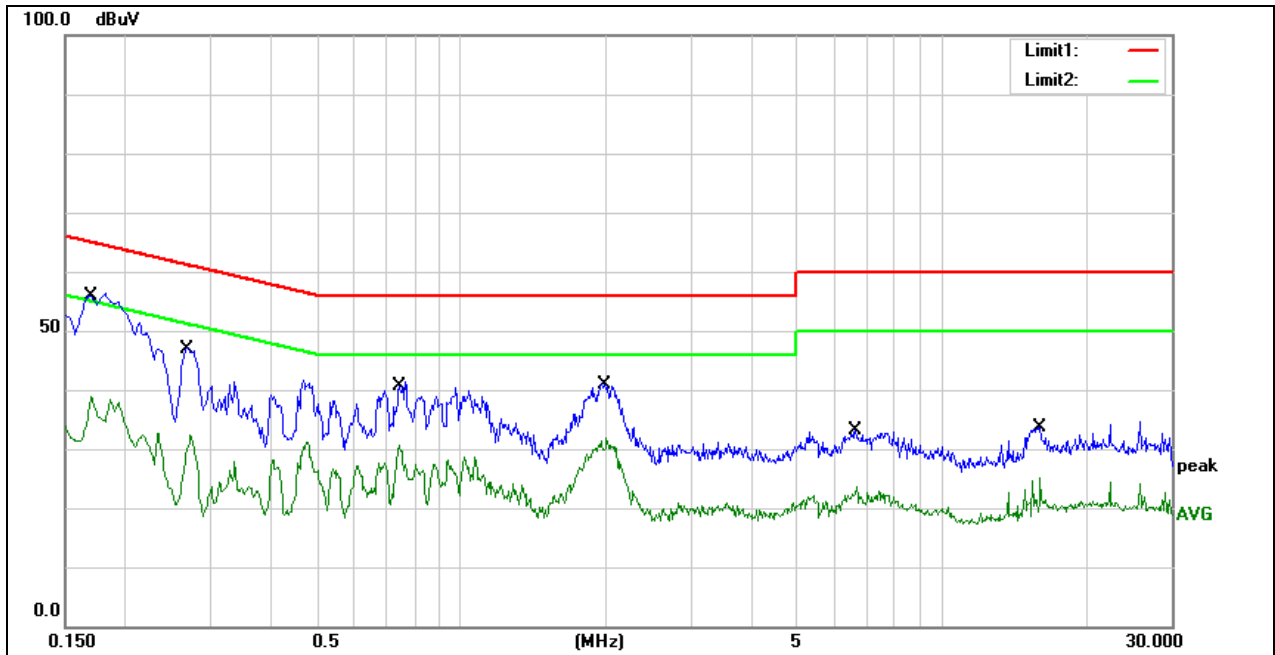
The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

TEST ENVIRONMENT

Temperature	25°C	Relative Humidity	60%
Atmosphere Pressure	101kPa	Test Voltage	DC 5V

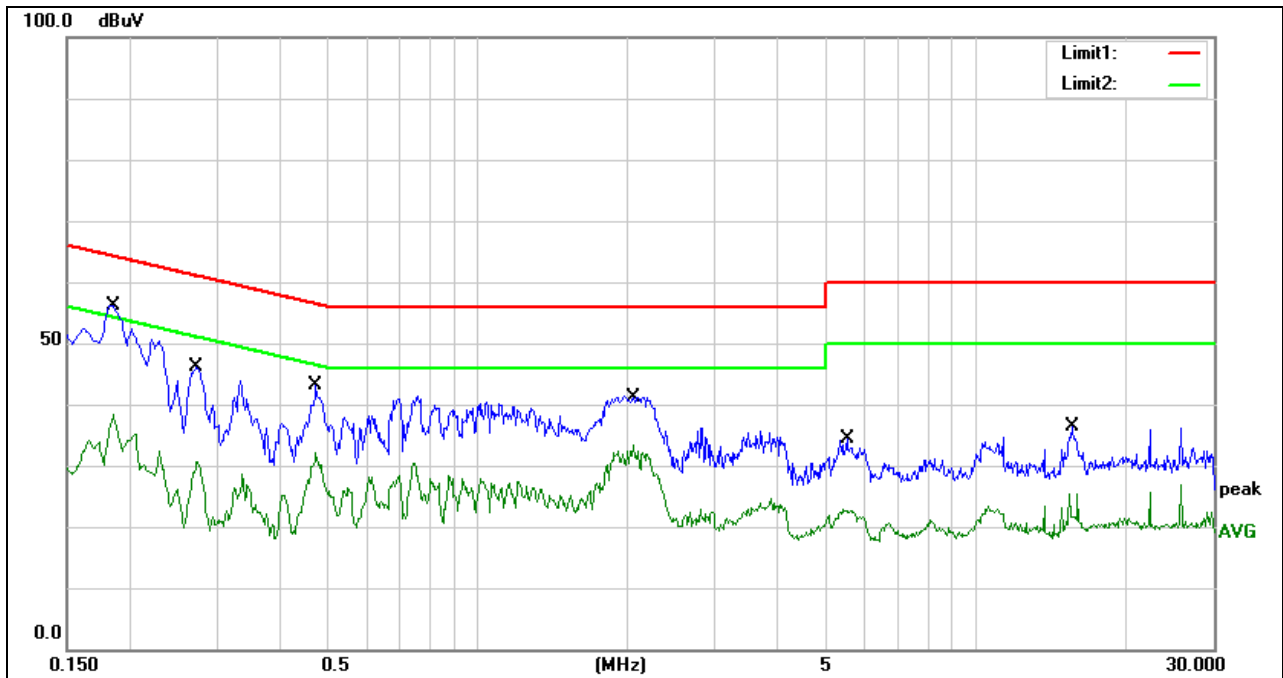
TEST RESULTS

NEUTRAL N RESULTS



No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1700	36.10	20.24	56.34	64.96	-8.62	QP
2	0.1700	18.54	20.24	38.78	54.96	-16.18	AVG
3	0.2740	26.55	20.65	47.20	61.00	-13.80	QP
4	0.2740	11.62	20.65	32.27	51.00	-18.73	AVG
5	0.7460	21.10	20.26	41.36	56.00	-14.64	QP
6	0.7460	10.35	20.26	30.61	46.00	-15.39	AVG
7	2.0060	20.91	20.15	41.06	56.00	-14.94	QP
8	2.0060	11.67	20.15	31.82	46.00	-14.18	AVG
9	6.6380	13.29	19.92	33.21	60.00	-26.79	QP
10	6.6380	3.62	19.92	23.54	50.00	-26.46	AVG
11	16.0260	13.53	20.17	33.70	60.00	-26.30	QP
12	16.0260	4.96	20.17	25.13	50.00	-24.87	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 L RESULTS**

No.	Frequency (MHz)	Reading (dBuV)	Correct dB	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1860	35.85	20.29	56.14	64.21	-8.07	QP
2	0.1860	18.10	20.29	38.39	54.21	-15.82	AVG
3	0.2740	25.44	20.65	46.09	61.00	-14.91	QP
4	0.2740	10.03	20.65	30.68	51.00	-20.32	AVG
5	0.4740	22.70	20.45	43.15	56.44	-13.29	QP
6	0.4740	11.66	20.45	32.11	46.44	-14.33	AVG
7	2.0620	21.23	20.14	41.37	56.00	-14.63	QP
8	2.0620	13.12	20.14	33.26	46.00	-12.74	AVG
9	5.5180	14.36	19.97	34.33	60.00	-25.67	QP
10	5.5180	2.79	19.97	22.76	50.00	-27.24	AVG
11	15.4580	16.16	20.11	36.27	60.00	-23.73	QP
12	15.4580	5.33	20.11	25.44	50.00	-24.56	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.



11. 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.

ANTENNA CONNECTOR

EUT has a PCB Antenna without antenna connector.

ANTENNA GAIN

The antenna gain of EUT is less than 6 dBi.



Test photos

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

END OF REPORT