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TEL: +82-31-645-6300 **FAX: +82-31-645-6401**

FCC DTS REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

Address:
129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

Date of Issue:
March 04, 2022

Test Site/Location:
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA

Report No.: HCT-RF-2203-FC004

FCC ID:	**A3LSMM536B**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**

Model:	SM-M536B/DSN
Additional Model:	-
EUT Type:	Mobile Phone
Average Output Power:	802.11b : 19.18 dBm, 802.11g : 16.83 dBm, 802.11n(HT20) : 16.95 dBm
Frequency Range:	2 412 MHz ~ 2 472 MHz
Modulation type:	CCK/DSSS/OFDM
FCC Classification:	Digital Transmission System(DTS)
FCC Rule Part(s):	Part 15.247

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

REVIEWED BY

Report prepared by : Jeong Ho Kim
Engineer of Telecommunication Testing Center

Report approved by : Jong Seok Lee
Manager of Telecommunication Testing Center

This test results were applied only to the test methods required by the standard.

This laboratory is not accredited for the test results marked *.
The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2203-FC004	March 04, 2022	- First Approval Report

Table of Contents

1. EUT DESCRIPTION

Model	SM-M536B/DSN	
Additional Model	-	
EUT Type	Mobile Phone	
Power Supply	DC 3.88 V	
Frequency Range	2 412 MHz ~ 2 472 MHz	
Max. RF Output Power	Peak Power (For information only)	802.11b : 24.88 dBm 802.11g : 24.72 dBm 802.11n(HT20) : 24.62 dBm
	Average Power	802.11b : 19.18 dBm 802.11g : 16.83 dBm 802.11n(HT20) : 16.95 dBm
Modulation Type	DSSS/CCK : 802.11b OFDM : 802.11g, 802.11n	
Number of Channels	13 Channels	
Date(s) of Tests	January 24, 2022~ March 04, 2022	
Serial number	Radiated: R3CRC0LNPCK Conducted: R3CRC0LNSAX	

2. TEST METHODOLOGY

FCC KDB 558074 D01 15.247 Meas Guidance v05r02 dated April 02, 2019 entitled “guidance for compliance measurements on digital transmission system, frequency hopping spread spectrum system, and hybrid system devices and the measurement procedure described in ANSI C63.10(Version : 2013) ‘the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices’.

EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10. (Version :2013) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1 GHz. Above 1 GHz with 1.5 m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 6.6.5 of ANSI C63.10. (Version: 2013)

DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

3. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment's, which is traceable to recognized national standards.

Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

4. FACILITIES AND ACCREDITATIONS

FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated d ata are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, R ep. of KOREA. The site is constructed in conformance with the requirements of ANSI C63.4. (Versio n :2014) and CISPR Publication 22.

Detailed description of test facility was submitted to the Commission and accepted dated April 02, 2 018 (Registration Number: KR0032).

EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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."

(1) The antennas of this E.U.T are permanently attached.

(2) The E.U.T Complies with the requirement of §15.203

6. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence.

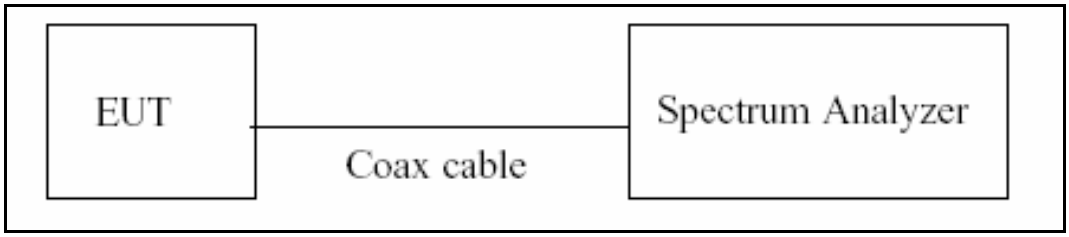
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	2.00 (Confidence level about 95 %, k=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.40 (Confidence level about 95 %, k=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.74 (Confidence level about 95 %, k=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.51 (Confidence level about 95 %, k=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.92 (Confidence level about 95 %, k=2)
Radiated Disturbance (Above 40 GHz)	5.48 (Confidence level about 95 %, k=2)

7. DESCRIPTION OF TESTS

7.1. Duty Cycle

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to the zero-span measurement method.

The largest available value of RBW is 8 MHz and VBW is 50 MHz.

The zero-span method of measuring duty cycle shall not be used if T ≤ 6.25 microseconds. (50/6.25 = 8)

The zero-span method was used because all measured T data are > 6.25 microseconds and both RBW and VBW are > 50/*T*.

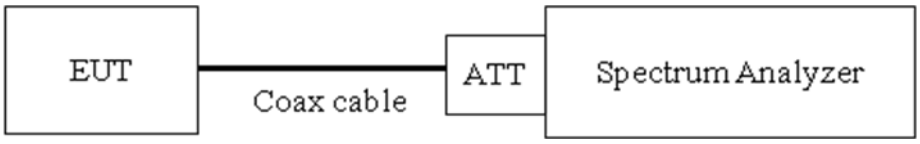
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz (≥ RBW)
3. SPAN = 0 Hz
4. Detector = Peak or Average
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on} / T_{total} and Duty Cycle Factor = 10log(1/Duty Cycle)

7.2. 6 dB Bandwidth

Limit

The minimum permissible 6 dB bandwidth is 500 kHz.

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to (Procedure 11.8.1 in ANSI 63.10-2013)

1) RBW = 100 kHz
2) VBW ≥ 3 x RBW
3) Detector = Peak
4) Trace mode = max hold
5) Sweep = auto couple
6) Allow the trace to stabilize
7) We tested 6 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set 6 dB.

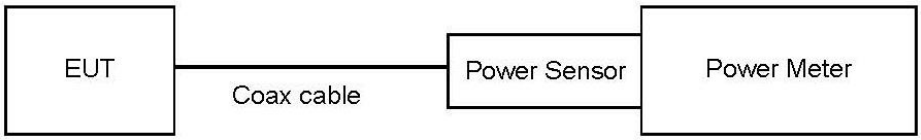
Note : We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

7.3. Output Power

Limit

The maximum permissible conducted output power is 1 Watt.

Test Configuration



Test Procedure

The transmitter output is connected to the Power Meter.

▪ Peak Power (Procedure 11.9.1.3 in ANSI 63.10-2013)

: Measure the peak power of the transmitter.

▪ Average Power (Procedure 11.9.2.3 in ANSI 63.10-2013)

1) Measure the duty cycle.
2) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

Sample Calculation

▪ Conducted Output Power(Peak) = Measured Level + ATT loss + Cable loss

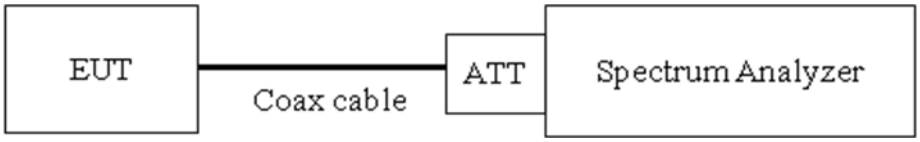
▪ Conducted Output Power(Average) = Measured Level + ATT loss + Cable loss + Duty Cycle Factor

7.4. Power Spectral Density

Limit

The transmitter power density average over 1-second interval shall not be greater than 8 dBm in any 3 kHz BW.

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure 8.4 in KDB 558074 v05r02, Procedure 11.10 in ANSI 63.10-2013.

The spectrum analyzer is set to :

1) Set analyzer center frequency to DTS channel center frequency.
2) Set span to at least 1.5 times the OBW.
3) RBW = 3 kHz ≤ RBW ≤ 100 kHz.
4) VBW ≥ 3 x RBW.
5) Sweep = auto couple
6) Detector = power averaging (rms) or sample detector (when rms not available).
7) Ensure that the number of measurement points in the sweep ≥ [2 × span / RBW].
8) Employ trace averaging (rms) mode over a minimum of 100 traces
9) Use the peak marker function to determine the maximum amplitude level.
10) 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.
11) if then duty factor shall be added to adjust the result if the duty cycle is less than 98 %

Sample Calculation

▪ Power Spectral Density = Measured Level + ATT loss + Cable loss + Duty Cycle Factor

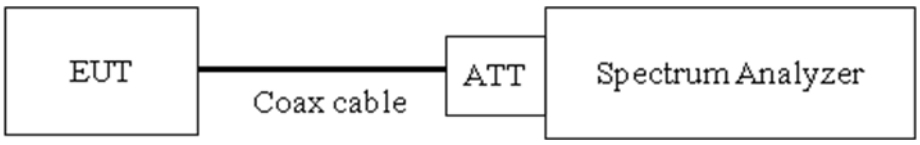
7.5. Conducted Band Edge(Out of Band Emissions) & Conducted Spurious Emissions

Limit

The maximum conducted (Average) output power was used to demonstrate compliance, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least relative to the maximum in-band peak PSD level in 100 kHz.

[Conducted > 30 dBc]

Test Configuration



Test Procedure

The transmitter output is connected to the spectrum analyzer.

(Procedure 11.11 in ANSI 63.10-2013)

1) RBW = 100 kHz
2) VBW ≥ 3 x RBW
3) Set span to encompass the spectrum to be examined
4) Detector = Peak
5) Trace Mode = max hold
6) Sweep time = auto couple
7) Ensure that the number of measurement points ≥ 2 x Span/RBW
8) Allow trace to fully stabilize.
9) Use peak marker function to determine the maximum amplitude level.

Measurements are made over the 30 MHz to 25 GHz range with the transmitter set to the lowest, middle, and highest channels.

Factors for frequency

Freq(MHz)	Factor(dB)
30	20.04
100	20.09
200	20.13
300	20.19
400	20.22
500	20.23
600	20.23
700	20.25
800	20.27
900	20.29
1000	20.31
2000	20.46
2400	20.52
2480	20.52
2500	20.52
3000	20.57
4000	20.67
5000	20.75
5150	20.77
5850	20.82
6000	20.82
7000	20.91
8000	20.98
9000	21.05
10 000	21.12
11 000	21.16
12 000	21.24
13 000	21.32
14 000	21.30
15 000	21.32
16 000	21.37
17 000	21.41
18 000	21.47
19 000	21.50
20 000	21.56
21 000	21.77
22 000	21.74
23 000	21.94
24 000	21.77

Note : 1. 2 400 ~ 2 500 MHz is fundamental frequency range.

2. Factor = Attenuator loss(20 dB) + Cable loss(1ea)

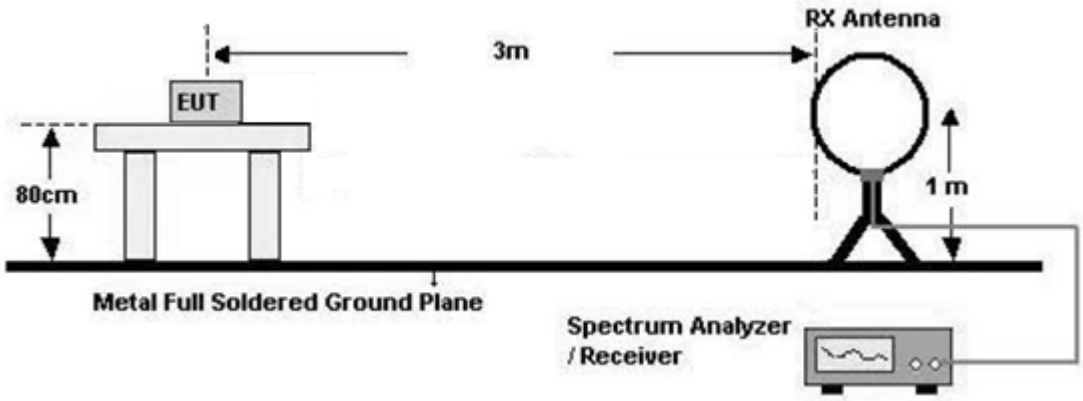
7.6. Radiated Test

Limit

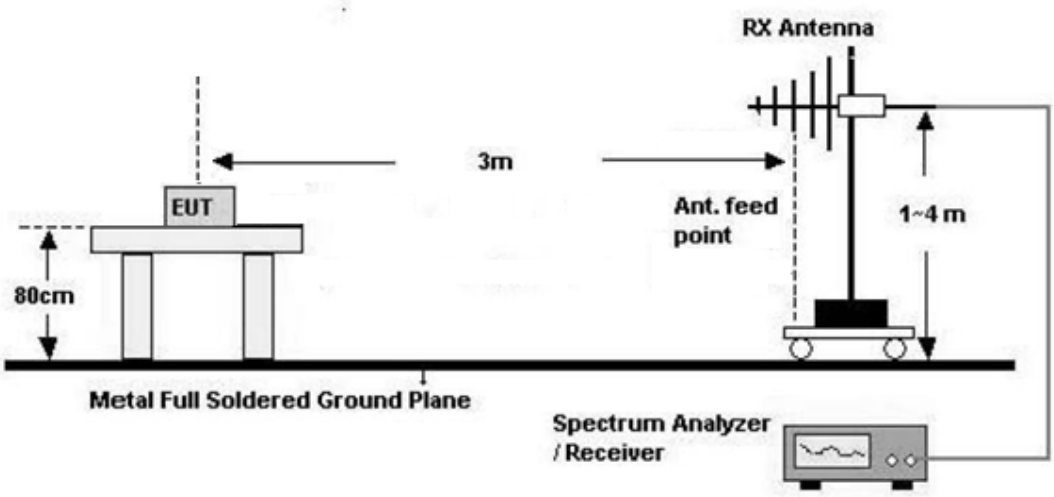
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

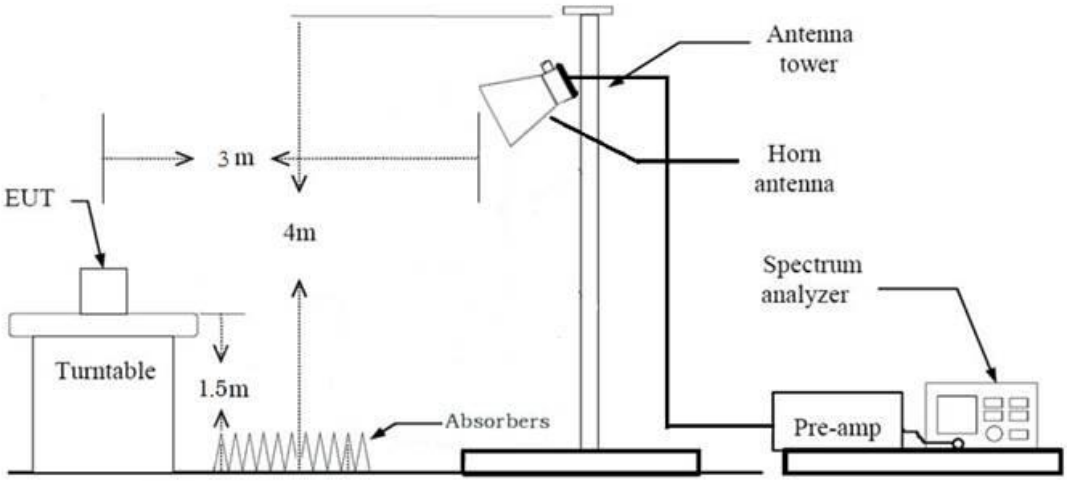
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



Test Procedure of Radiated spurious emissions(Below 30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3 m from the EUT
3. The EUT is placed on a turntable, which is 0.8 m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor(0.009 MHz – 0.490 MHz) = 40log(3 m/300 m) = - 80 dB
   Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) = 40log(3 m/30 m) = - 40 dB
   Measurement Distance : 3 m
8. Spectrum Setting
   - Frequency Range = 9 kHz ~ 30 MHz
   - Detector = Peak
   - Trace = Maxhold
   - RBW = 9 kHz
   - VBW ≥ 3 x RBW
9. Total = Measured Level + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
10. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

KDB 414788 OFS and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): 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.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Test Procedure of Radiated spurious emissions(Below 1 GHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The EUT is placed on a turntable, which is 0.8 m above ground plane.
3. The Hybrid antenna was placed at a location 3 m from the EUT, which is varied from 1 m to 4 m to find out the highest emissions.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Spectrum Setting
   (1) Measurement Type(Peak):
      - Measured Frequency Range : 30 MHz – 1 GHz
      - Detector = Peak
      - Trace = Maxhold
      - RBW = 100 kHz
      - VBW ≥ 3 x RBW
   (2) Measurement Type(Quasi-peak):
      - Measured Frequency Range : 30 MHz – 1 GHz
      - Detector = Quasi-Peak
      - RBW = 120 kHz

   ※In general, (1) is used mainly
7. Total = Measured Level + Antenna Factor(A.F) + Cable Loss(C.L)
8. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

Test Procedure of Radiated spurious emissions (Above 1 GHz)

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting (Method 8.6 in KDB 558074 v05r02, Procedure 11.12 in ANSI 63.10-2013)
   (1) Measurement Type(Peak):
      - Measured Frequency Range : 1 GHz – 25 GHz
      - Detector = Peak

- Trace = Maxhold
- RBW = 1 MHz
- VBW ≥ 3 x RBW

(2) Measurement Type(Average): Duty cycle ≥ 98 %

- Measured Frequency Range : 1 GHz – 25 GHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW ≥ 3 x RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).

(3) Measurement Type(Average): Duty cycle < 98 %, duty cycle variations are less than ±2 %

- Measured Frequency Range : 1 GHz – 25 GHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 1 MHz
- VBW ≥ 3 x RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).
- Correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 % duty cycle.
- Duty Cycle Factor (dB) : Please refer to the please refer to section 9.1.

9. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
10. Distance extrapolation factor = 20log (test distance / specific distance) (dB)
11. Total(Measurement Type : Peak)
    = Measured Level + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.G) + Distance Factor(D.F)

    Total(Measurement Type : Average, Duty cycle ≥ 98 %)
    = Measured Level + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.G) + Distance Factor(D.F)

    Total(Measurement Type : Average, Duty cycle < 98 %)
    = Measured Level + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.G) + Distance Factor(D.F)
    + Duty Cycle Factor

Test Procedure of Radiated Restricted Band Edge

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting
   (1) Measurement Type(Peak):
   - Measured Frequency Range : 2310 MHz ~ 2390 MHz/ 2483.5 MHz ~ 2500 MHz
   - Detector = Peak
   - Trace = Maxhold
   - RBW = 1 MHz
   - VBW ≥ 3 x RBW

   (2) Measurement Type(Average): Duty cycle ≥ 98 %,
   - Measured Frequency Range : 2310 MHz ~ 2390 MHz/ 2483.5 MHz ~ 2500 MHz
   - Detector = RMS
   - Averaging type = power (*i.e.*, RMS)
   - RBW = 1 MHz
   - VBW ≥ 3 x RBW
   - Sweep time = auto.
   - Trace mode = average (at least 100 traces).

   (3) Measurement Type(Average): Duty cycle < 98 %, duty cycle variations are less than ±2 %
   - Measured Frequency Range : 2310 MHz ~ 2390 MHz/ 2483.5 MHz ~ 2500 MHz
   - Detector = RMS
   - Averaging type = power (*i.e.*, RMS)
   - RBW = 1 MHz
   - VBW ≥ 3 x RBW
   - Sweep time = auto.
   - Trace mode = average (at least 100 traces).
   - Correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 % duty cycle.

- Duty Cycle Factor (dB) : Please refer to the please refer to section 9.1.

9. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
10. Distance extrapolation factor = 20log (test distance / specific distance) (dB)
11. Total(Measurement Type : Peak)
    = Measured Level + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
    Total(Measurement Type : Average, Duty cycle ≥ 98 %)
    = Measured Level + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
    Total(Measurement Type : Average, Duty cycle < 98 %)
    = Measured Level + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F) + Duty Cycle Factor

7.7. AC Power line Conducted Emissions

Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56[a]	56 to 46[a]
0.50 to 5	56	46
5 to 30	60	50

[a]Decreases with the logarithm of the frequency.

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Annex A for the actual connections between EUT and support equipment.

Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors : Quasi Peak and Average Detector.

Sample Calculation

Quasi-peak(Final Result) = Measured Level + Correction Factor

7.8. Worst case configuration and mode

Radiated test

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone, Stand alone + External accessories(Earphone, etc)
   - Worstcase : Stand alone
2. EUT Axis
   - Radiated Spurious Emissions : Y
   - Radiated Restricted Band Edge : X
3. Duty cycle factor applies only 802.11g/n (Duty cycle < 98 %).
4. All data rate of operation were investigated and the test results are worst case in lowest Data Rate of each mode.
   - 802.11b : 1 Mbps
   - 802.11g : 6 Mbps
   - 802.11n(HT20): MCS0
5. All position of loop antenna were investigated and the test result is a no critical peak found at all positions.
   - Position : Horizontal, Vertical, Parallel to the ground plane

AC Power line Conducted Emissions

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone + External accessories(Earphone, etc)+Travel Adapter,
     Stand alone + Travel Adapter
   - Worstcase : Stand alone + Travel Adapter

Conducted test

1. The EUT was configured with data rate of highest power.

8. SUMMARY TEST OF RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
6 dB Bandwidth	§15.247(a)(2)	> 500 kHz	Conducted	PASS
Conducted Maximum Output Power	§15.247(b)(3)	< 1 Watt		PASS
Power Spectral Density	§15.247(e)	< 8 dBm / 3 kHz Band		PASS
Band Edge (Out of Band Emissions)	§15.247(d)	Conducted > 30 dBc		PASS
AC Power line Conducted Emissions	§15.207	cf. Section 7.7		PASS
Radiated Spurious Emissions	§15.247(d), 15.205, 15.209	cf. Section 7.6	Radiated	PASS
Radiated Restricted Band Edge	§15.247(d), 15.205, 15.209	cf. Section 7.6		PASS

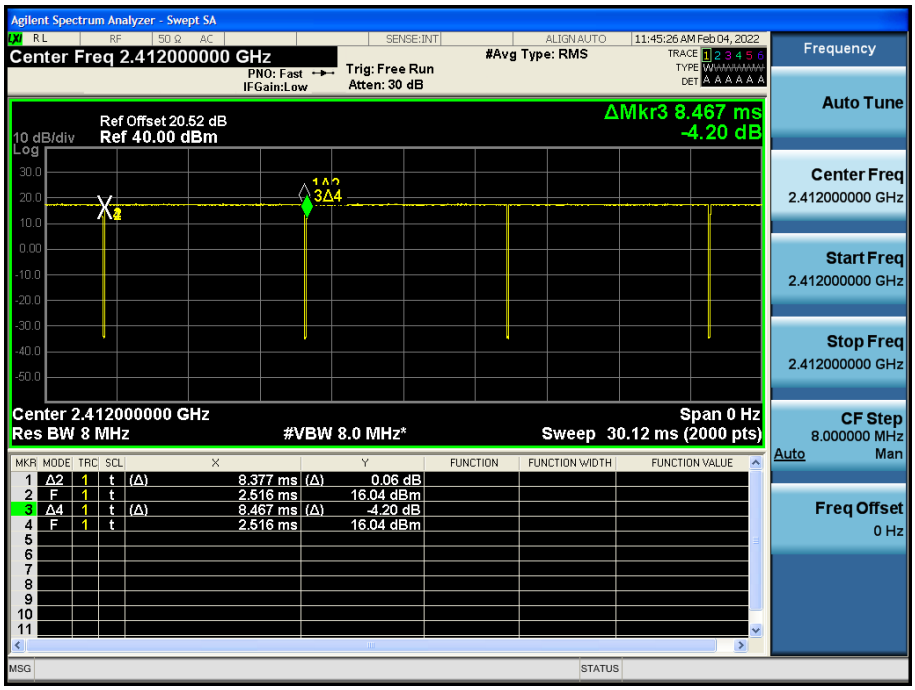
9. TEST RESULT

9.1 DUTY CYCLE

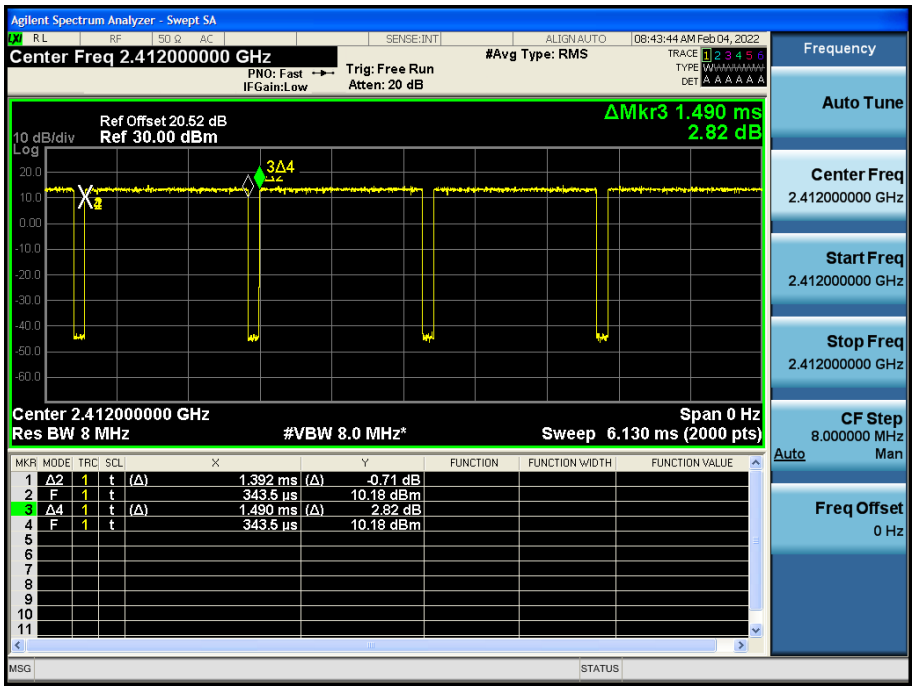
Mode	Data Rate (Mbps)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11b	1	8.377	8.467	0.989	0.047
	2	4.197	4.291	0.978	0.097
	5.5	1.585	1.686	0.941	0.266
	11	0.840	0.939	0.894	0.485
802.11g	6	1.392	1.490	0.934	0.296
	9	0.936	1.033	0.906	0.429
	12	0.709	0.806	0.879	0.558
	18	0.480	0.577	0.832	0.800
	24	0.364	0.461	0.789	1.027
	36	0.252	0.349	0.722	1.417
	48	0.192	0.289	0.665	1.770
	54	0.176	0.273	0.644	1.909
802.11n (HT20)	6.5 (MCS0)	1.301	1.397	0.932	0.308
	13 (MCS1)	0.668	0.765	0.873	0.592
	19.5 (MCS2)	0.460	0.557	0.825	0.835
	26 (MCS3)	0.352	0.449	0.784	1.058
	39 (MCS4)	0.248	0.345	0.719	1.435
	52 (MCS5)	0.196	0.293	0.669	1.745
	58.5 (MCS6)	0.180	0.277	0.650	1.872
	65 (MCS7)	0.164	0.261	0.629	2.014

▣ Test Plots

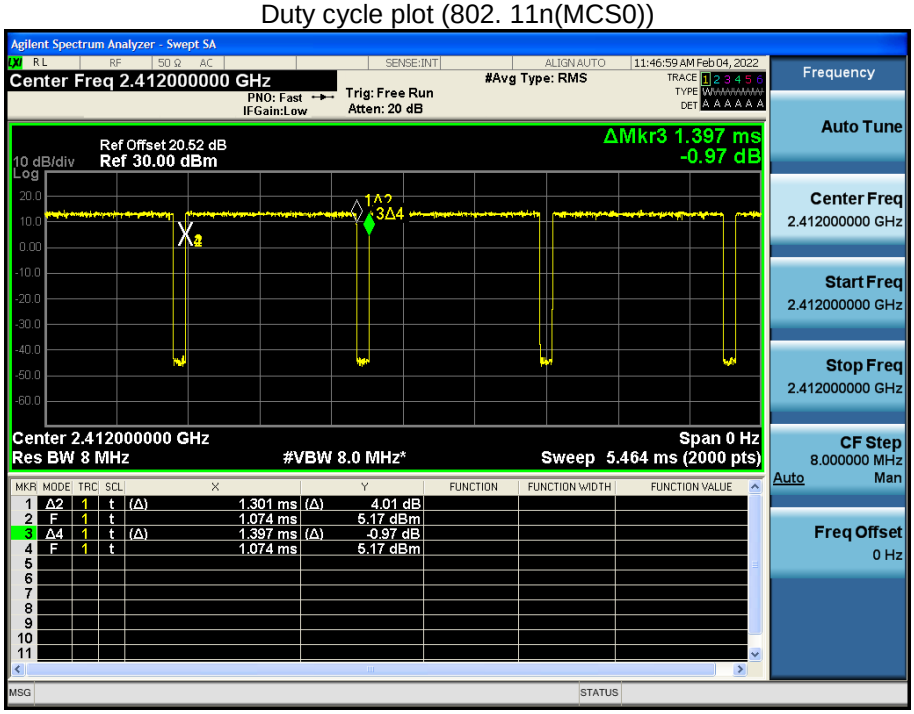
Duty cycle plot (802.11b(1 Mbps))



Duty cycle plot (802.11g(6 Mbps))



Duty cycle plot (802. 11n(MCS0))



Note:

In order to simplify the report, attached plots were only the most lowest data rate.

9.2 6 dB BANDWIDTH

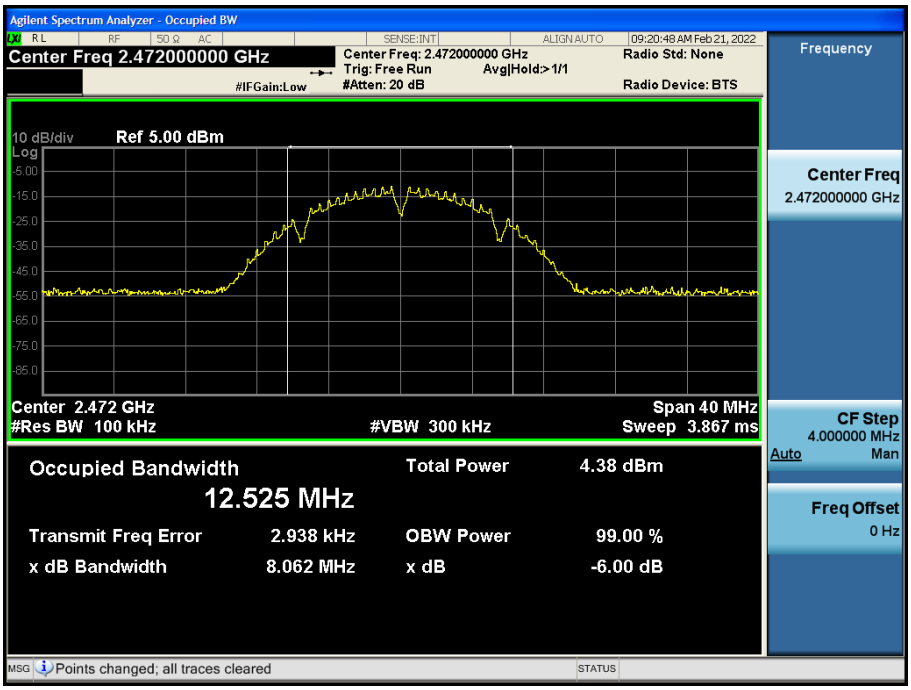
802.11b Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.		
2412	1	8.102	0.5
2437	6	8.081	0.5
2462	11	8.101	0.5
2467	12	8.083	0.5
2472	13	8.062	0.5

802.11g Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.		
2412	1	15.37	0.5
2437	6	15.49	0.5
2462	11	15.13	0.5
2467	12	15.09	0.5
2472	13	15.15	0.5

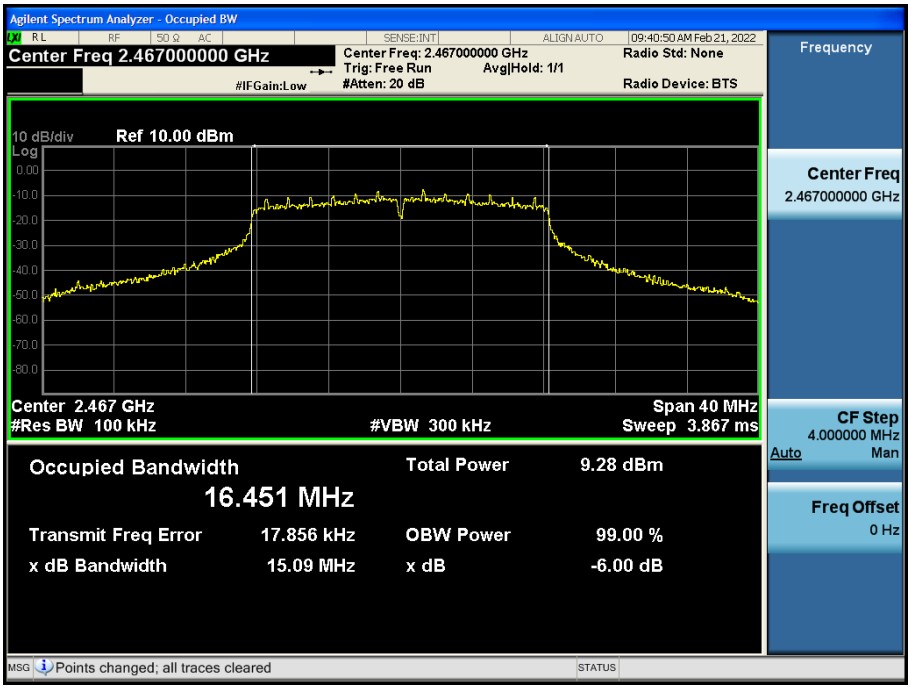
802.11n(HT20) Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]
Frequency [MHz]	Channel No.		
2412	1	15.17	0.5
2437	6	16.17	0.5
2462	11	15.17	0.5
2467	12	15.08	0.5
2472	13	15.16	0.5

▣ Test Plots

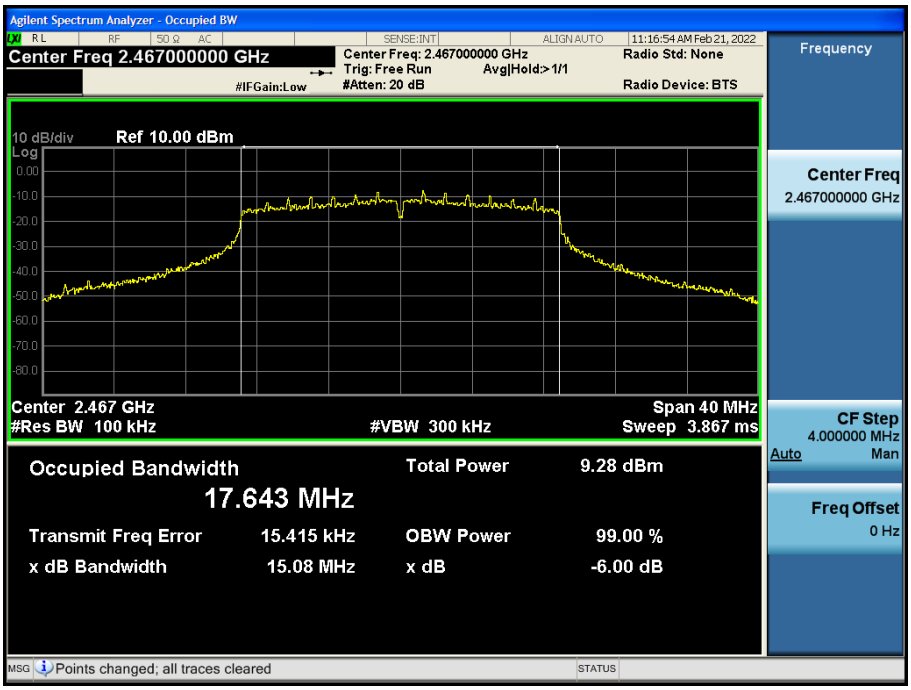
6 dB Bandwidth plot (802.11b-CH 13)



6 dB Bandwidth plot (802.11g-CH 12)



6 dB Bandwidth plot (802.11n_HT20-CH 12)



Note:

In order to simplify the report, attached plots were only the narrowest 6 dB BW channel.

9.3 OUTPUT POWER

Peak Power

Power Meter offset

Attenuator loss(20 dB) + Cable loss

802.11b Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	1	21.14	30
		2	21.51	30
		5.5	23.33	30
		11	24.78	30
2437	6	1	21.42	30
		2	21.82	30
		5.5	23.23	30
		11	24.88	30
2462	11	1	20.97	30
		2	21.38	30
		5.5	22.89	30
		11	24.46	30
2467	12	1	7.98	30
		2	8.55	30
		5.5	9.95	30
		11	11.57	30
2472	13	1	4.05	30
		2	4.39	30
		5.5	5.90	30
		11	7.46	30

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6	22.30	30
		9	22.34	30
		12	22.21	30
		18	22.24	30
		24	22.66	30
		36	22.59	30
		48	22.70	30
		54	22.70	30
2437	6	6	24.42	30
		9	24.43	30
		12	24.30	30
		18	24.29	30
		24	24.72	30
		36	24.65	30
		48	24.48	30
		54	24.68	30
2462	11	6	22.12	30
		9	22.13	30
		12	21.98	30
		18	21.90	30
		24	22.46	30
		36	22.39	30
		48	22.50	30
		54	22.50	30
2467	12	6	11.90	30
		9	11.91	30
		12	11.72	30
		18	11.70	30
		24	12.18	30
		36	12.18	30
		48	12.22	30
		54	12.18	30
2472	13	6	7.38	30
		9	7.37	30
		12	7.16	30
		18	7.13	30
		24	7.70	30
		36	7.56	30
		48	7.59	30
		54	7.66	30

802.11n(HT20) Mode		MCS Index	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	0	22.18	30
		1	22.08	30
		2	22.04	30
		3	22.43	30
		4	22.32	30
		5	22.39	30
		6	22.36	30
		7	22.35	30
2437	6	0	24.39	30
		1	24.15	30
		2	24.16	30
		3	24.60	30
		4	24.59	30
		5	24.62	30
		6	24.61	30
		7	24.59	30
2462	11	0	21.96	30
		1	21.77	30
		2	21.73	30
		3	22.20	30
		4	22.16	30
		5	22.28	30
		6	22.24	30
		7	22.21	30
2467	12	0	11.58	30
		1	11.48	30
		2	11.40	30
		3	11.93	30
		4	11.82	30
		5	11.77	30
		6	11.81	30
		7	11.83	30
2472	13	0	7.07	30
		1	6.99	30
		2	6.98	30
		3	7.48	30
		4	7.28	30
		5	7.41	30
		6	7.37	30
		7	7.33	30

Average Power

Power Meter offset Loss = Attenuator loss(20 dB) + Cable loss

802.11b Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	1	18.74	0.047	18.78	30
		2	18.86	0.097	18.96	30
		5.5	18.91	0.266	19.18	30
		11	18.60	0.485	19.08	30
2437	6	1	18.96	0.047	19.01	30
		2	19.07	0.097	19.17	30
		5.5	18.82	0.266	19.09	30
		11	18.63	0.485	19.11	30
2462	11	1	18.51	0.047	18.56	30
		2	18.64	0.097	18.73	30
		5.5	18.50	0.266	18.77	30
		11	18.18	0.485	18.66	30
2467	12	1	5.49	0.047	5.53	30
		2	5.77	0.097	5.87	30
		5.5	5.48	0.266	5.75	30
		11	5.33	0.485	5.82	30
2472	13	1	1.45	0.047	1.49	30
		2	1.54	0.097	1.64	30
		5.5	1.46	0.266	1.72	30
		11	1.28	0.485	1.76	30

802.11g Mode		Rate (Mbps)	Measured Power (dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	6	14.47	0.296	14.76	30
		9	14.35	0.429	14.78	30
		12	14.26	0.558	14.82	30
		18	14.00	0.800	14.80	30
		24	13.73	1.027	14.76	30
		36	13.29	1.417	14.71	30
		48	12.95	1.770	14.72	30
		54	12.81	1.909	14.72	30
2437	6	6	16.51	0.296	16.80	30
		9	16.37	0.429	16.80	30
		12	16.24	0.558	16.80	30
		18	16.03	0.800	16.83	30
		24	15.72	1.027	16.75	30
		36	15.33	1.417	16.75	30
		48	14.97	1.770	16.73	30
		54	14.81	1.909	16.72	30
2462	11	6	14.28	0.296	14.58	30
		9	14.17	0.429	14.59	30
		12	13.96	0.558	14.52	30
		18	13.78	0.800	14.58	30
		24	13.49	1.027	14.52	30
		36	13.10	1.417	14.51	30
		48	12.75	1.770	14.52	30
		54	12.60	1.909	14.51	30
2467	12	6	3.95	0.296	4.25	30
		9	3.85	0.429	4.28	30
		12	3.69	0.558	4.25	30
		18	3.41	0.800	4.21	30
		24	3.17	1.027	4.19	30
		36	2.78	1.417	4.20	30
		48	2.42	1.770	4.19	30
		54	2.22	1.909	4.13	30
2472	13	6	-0.54	0.296	-0.25	30
		9	-0.69	0.429	-0.26	30
		12	-0.85	0.558	-0.30	30
		18	-1.04	0.800	-0.24	30
		24	-1.31	1.027	-0.28	30
		36	-1.74	1.417	-0.32	30
		48	-2.10	1.770	-0.33	30
		54	-2.25	1.909	-0.34	30

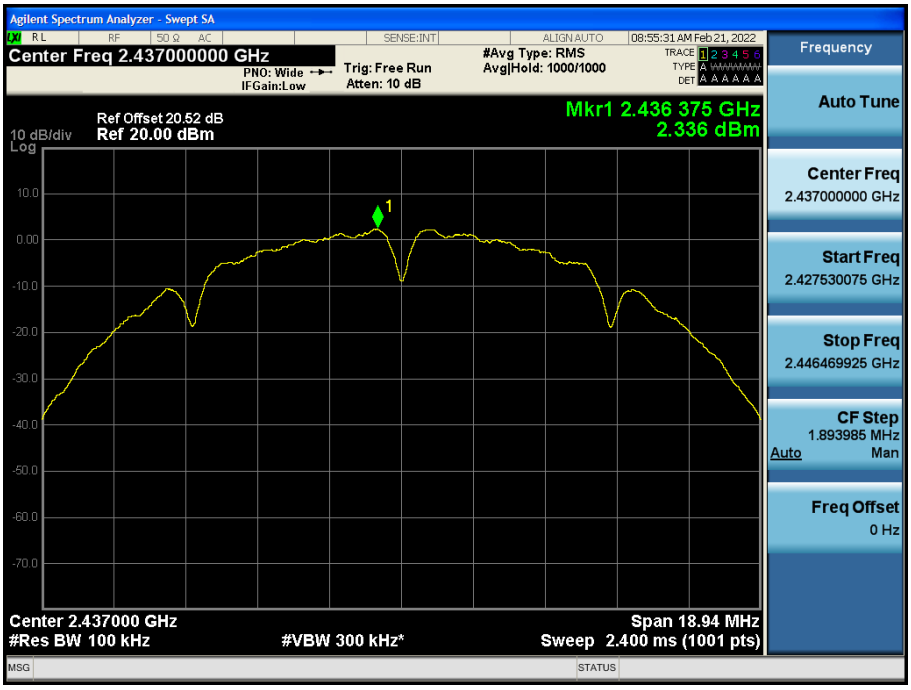
802.11n(HT20) Mode		MCS Index	Measured Power (dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	0	14.45	0.308	14.76	30
		1	14.07	0.592	14.66	30
		2	13.92	0.835	14.75	30
		3	13.69	1.058	14.75	30
		4	13.28	1.435	14.71	30
		5	12.89	1.745	14.64	30
		6	12.79	1.872	14.66	30
		7	12.65	2.014	14.67	30
2437	6	0	16.64	0.308	16.95	30
		1	16.26	0.592	16.86	30
		2	15.99	0.835	16.82	30
		3	15.71	1.058	16.77	30
		4	15.36	1.435	16.79	30
		5	14.94	1.745	16.69	30
		6	14.81	1.872	16.68	30
		7	14.55	2.014	16.56	30
2462	11	0	14.25	0.308	14.56	30
		1	13.95	0.592	14.54	30
		2	13.72	0.835	14.55	30
		3	13.49	1.058	14.55	30
		4	13.05	1.435	14.48	30
		5	12.73	1.745	14.47	30
		6	12.66	1.872	14.53	30
		7	12.55	2.014	14.56	30
2467	12	0	3.83	0.308	4.13	30
		1	3.48	0.592	4.08	30
		2	3.23	0.835	4.06	30
		3	3.02	1.058	4.08	30
		4	2.66	1.435	4.09	30
		5	2.26	1.745	4.01	30
		6	2.13	1.872	4.01	30
		7	1.96	2.014	3.97	30
2472	13	0	-0.74	0.308	-0.43	30
		1	-0.94	0.592	-0.35	30
		2	-1.21	0.835	-0.37	30
		3	-1.48	1.058	-0.43	30
		4	-1.86	1.435	-0.42	30
		5	-2.15	1.745	-0.40	30
		6	-2.31	1.872	-0.44	30
		7	-2.51	2.014	-0.49	30

9.4 POWER SPECTRAL DENSITY

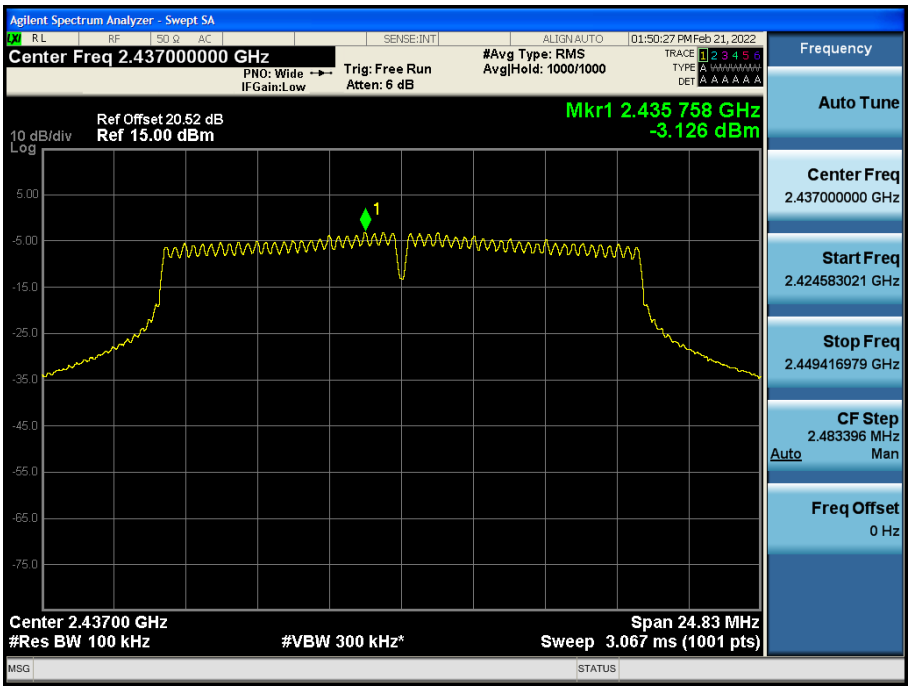
Mode	Frequency (MHz)	Channel No.	Test Result			
			Measured PSD (dBm)	Duty Cycle Factor	Measured PSD(dBm) + Duty Cycle Factor	Limit (dBm)
802.11b	2412	1	1.562	0.266	1.828	8 dBm / 3 kHz
	2437	**6**	**2.336**	**0.097**	**2.433**	
	2462	11	1.043	0.266	1.309	
	2467	12	-11.032	0.097	-10.935	
	2472	13	-15.865	0.485	-15.380	
802.11g	2412	1	-4.998	0.558	-4.440	
	2437	**6**	**-3.126**	**0.800**	**-2.326**	
	2462	11	-5.135	0.429	-4.706	
	2467	12	-15.211	0.429	-14.782	
	2472	13	-20.185	0.800	-19.385	
802.11n(HT20)	2412	1	-4.956	0.308	-4.648	
	2437	**6**	**-3.138**	**0.308**	**-2.830**	
	2462	11	-5.237	0.308	-4.929	
	2467	12	-15.657	0.308	-15.349	
	2472	13	-19.919	0.592	-19.327	

▣ Test Plots

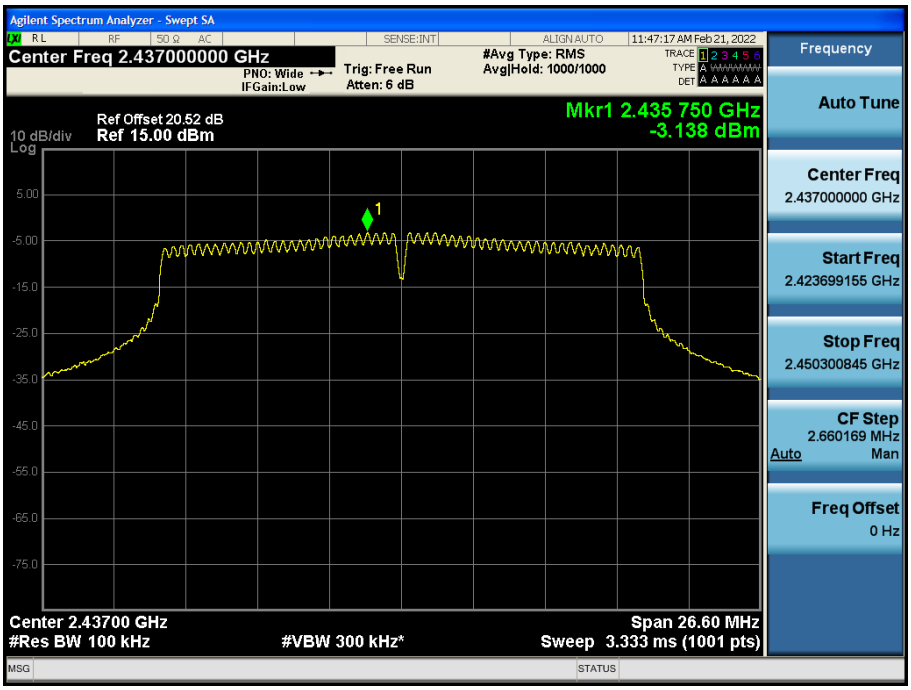
Power Spectral Density (802.11b-CH 6)



Power Spectral Density (802.11g-CH 6)



Power Spectral Density (802.11n_HT20-CH 6)



Note :

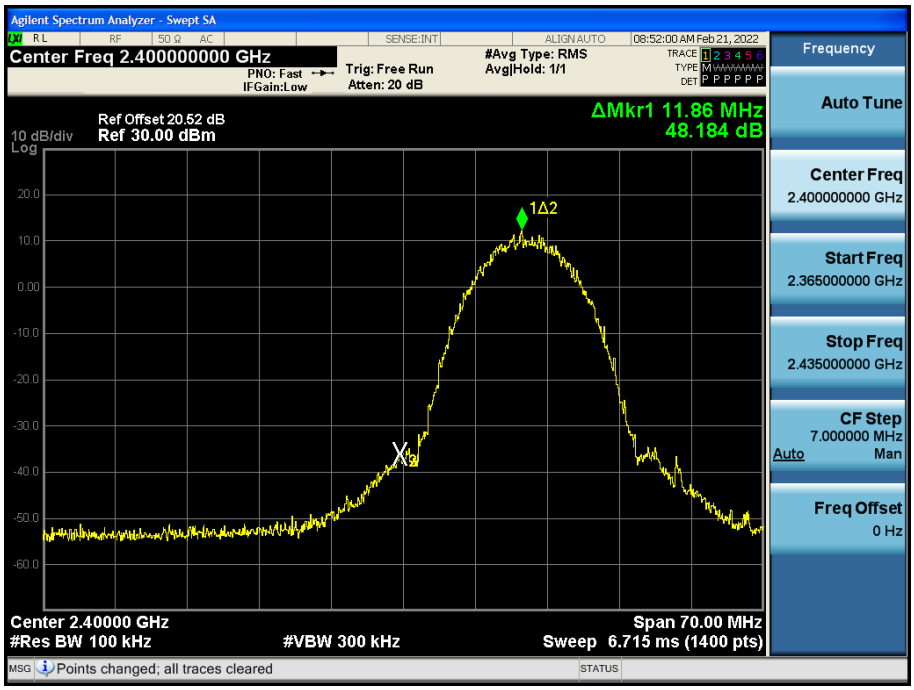
In order to simplify the report, attached plots were only the worst case PSD channel.

9.5 BAND EDGE / CONDUCTED SPURIOUS EMISSIONS

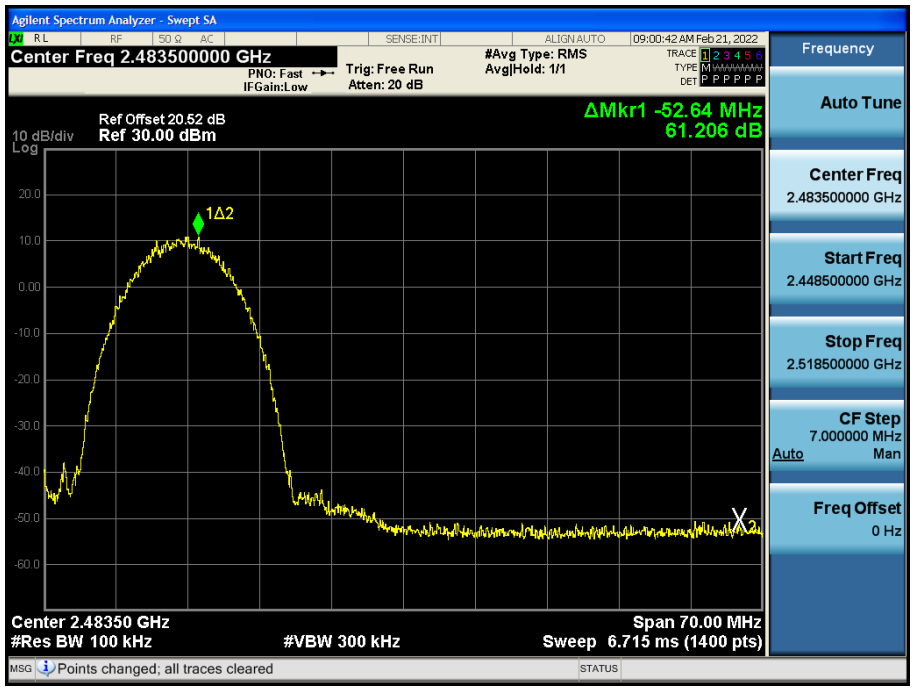
Test Result : please refer to the plot below.
In order to simplify the report, attached plots were only the worst case channel and data rate.

▣ Test Plots(Band Edge)

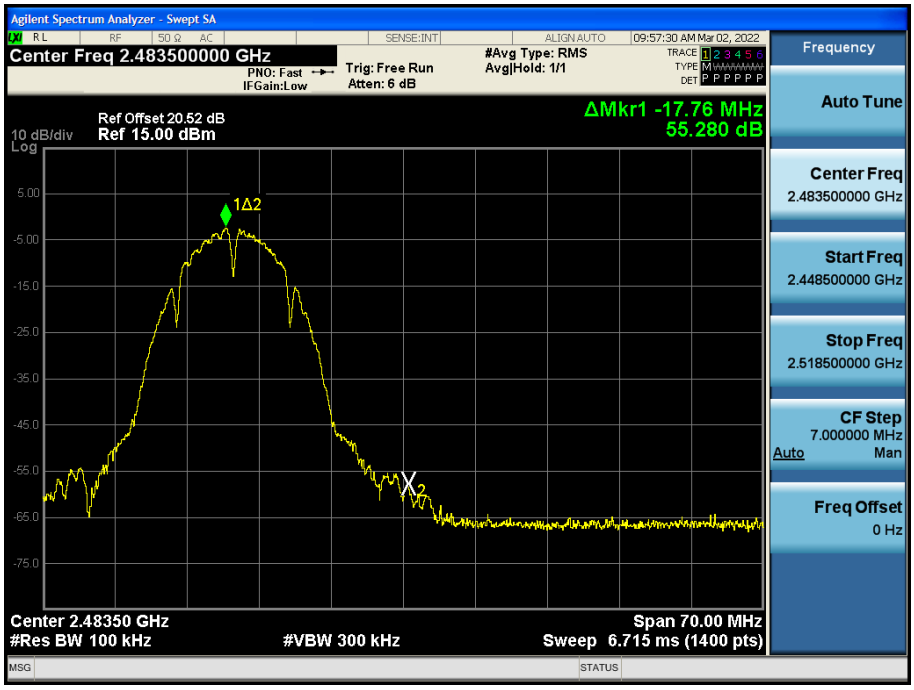
Band Edge (802.11b -CH1)



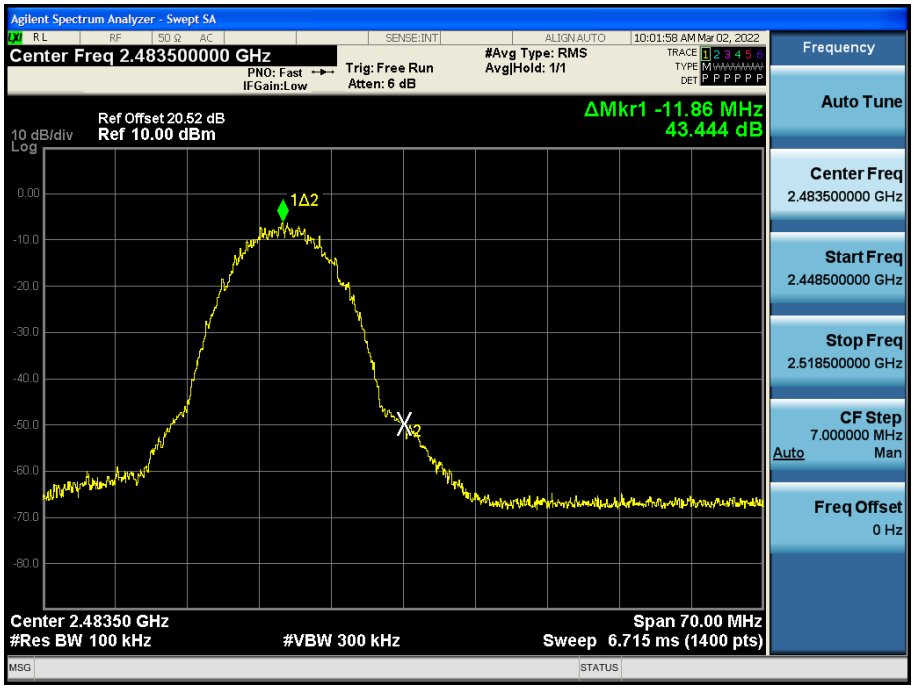
Band Edge (802.11b -CH11)



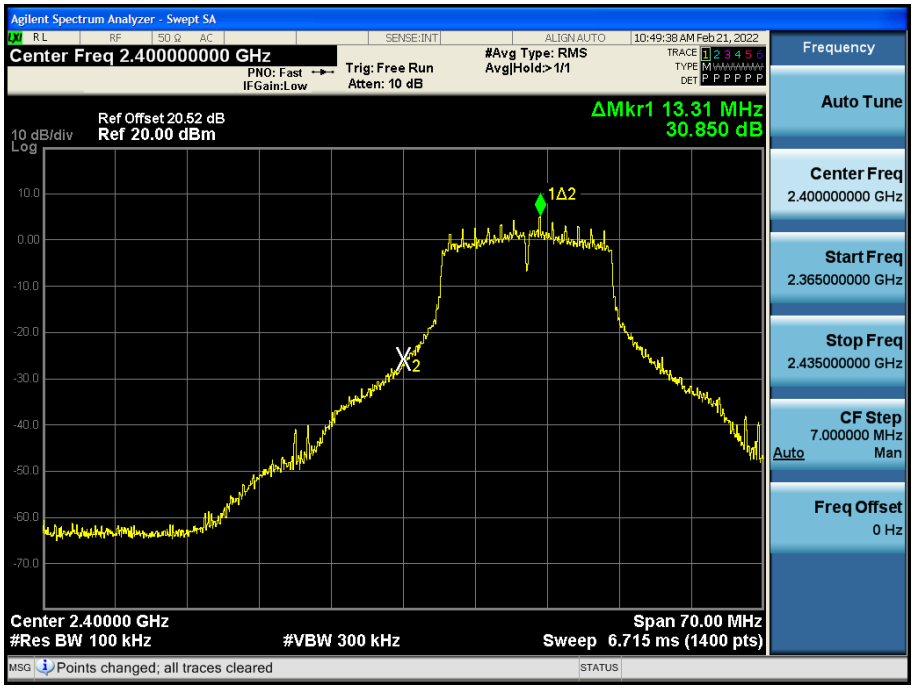
Band Edge (802.11b -CH12)



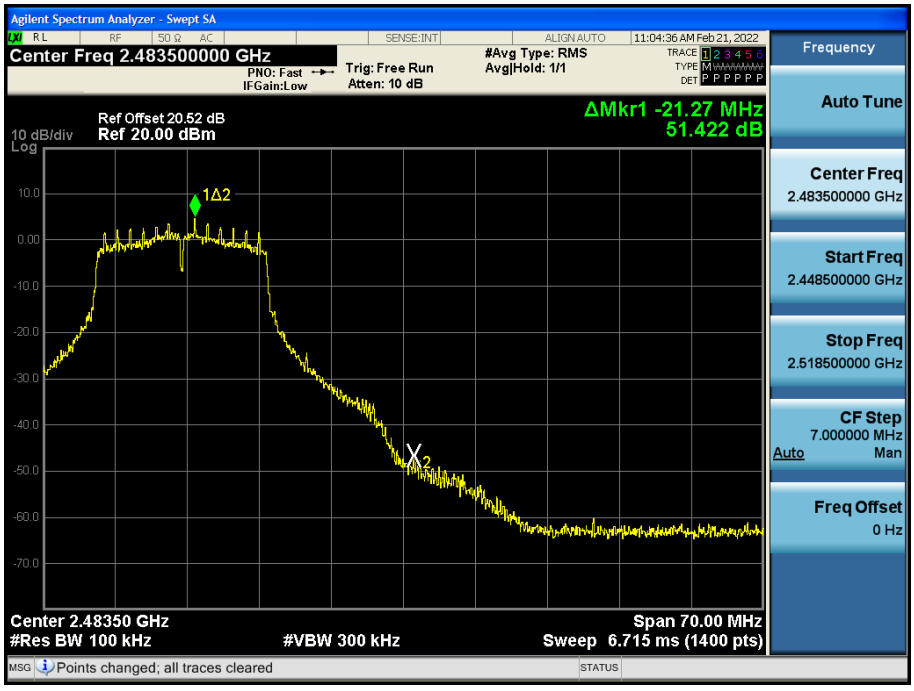
Band Edge (802.11b -CH13)



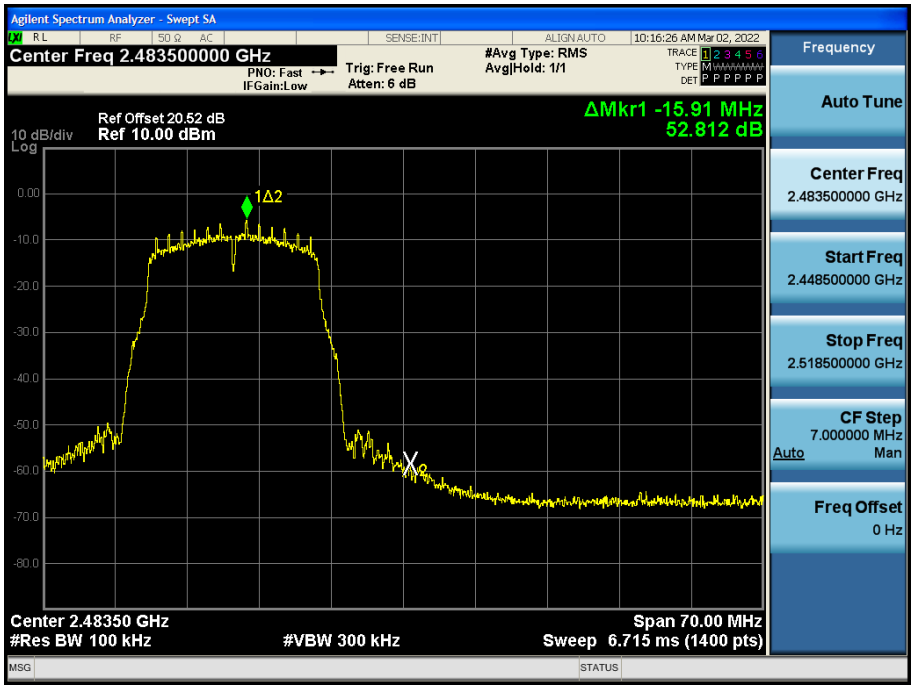
Band Edge (802.11g -CH1)



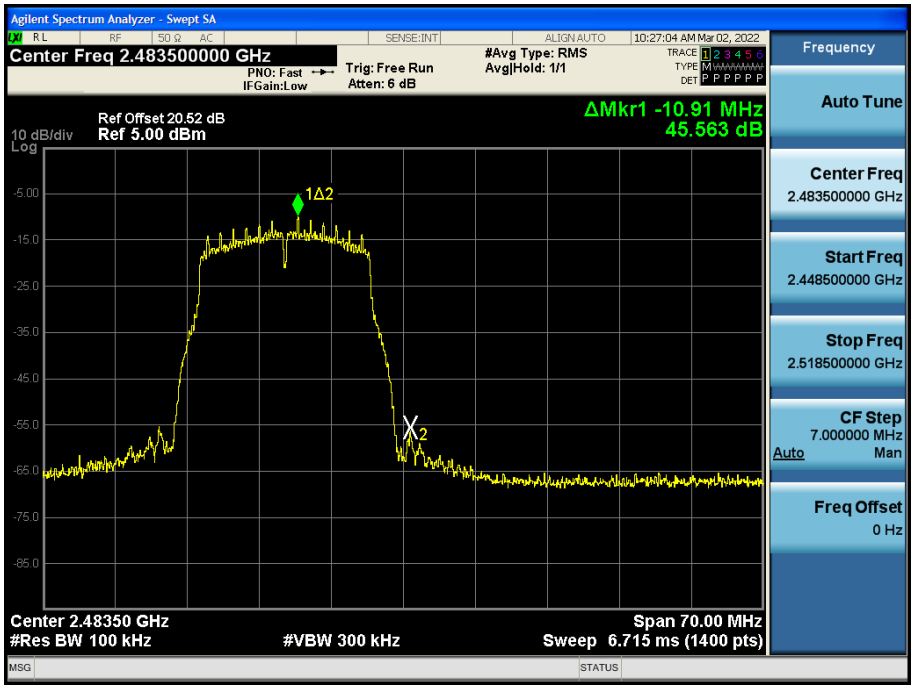
Band Edge (802.11g -CH11)



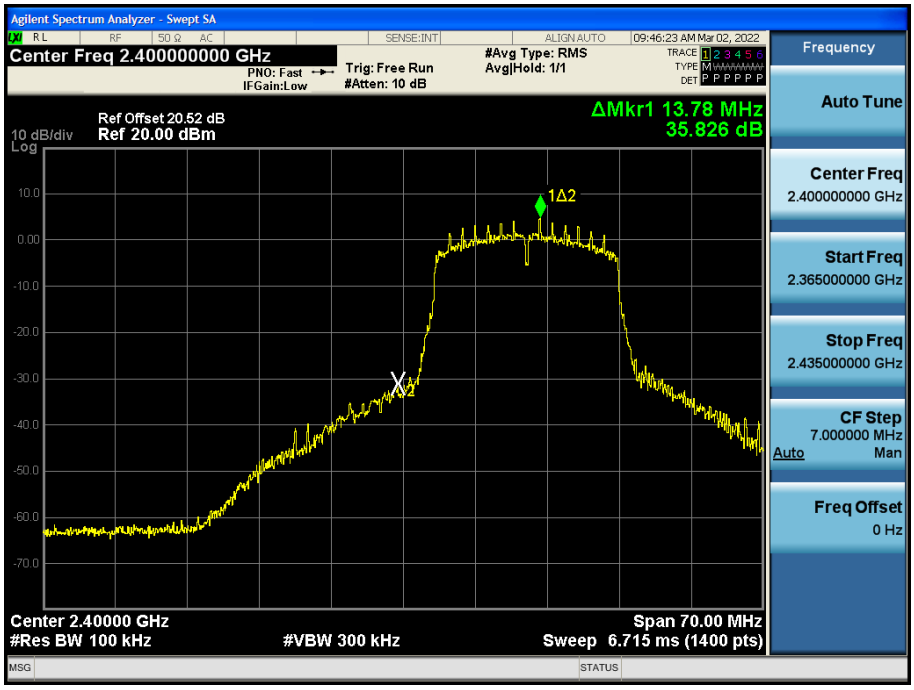
Band Edge (802.11g -CH12)



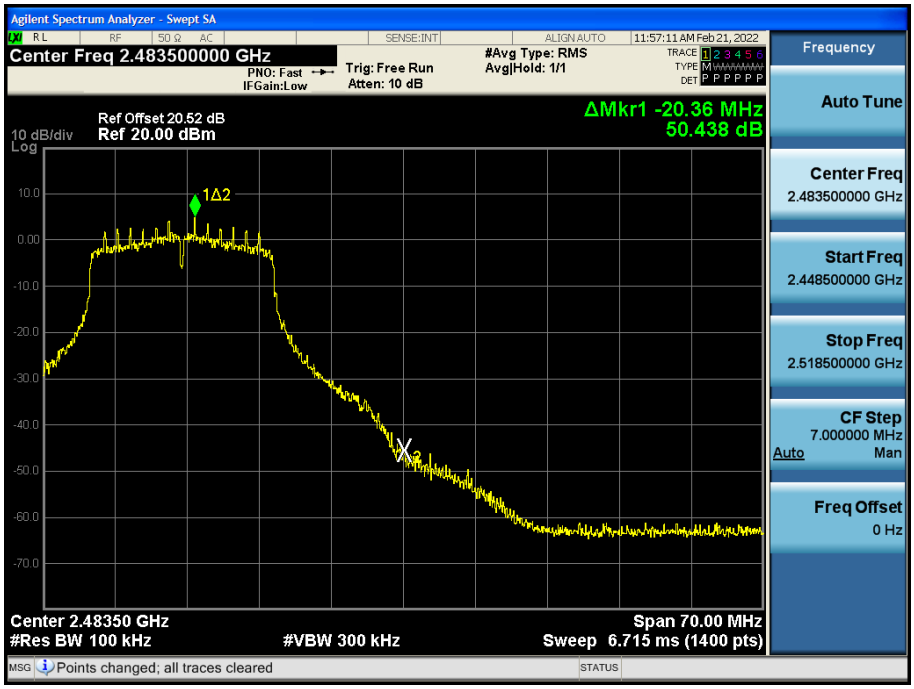
Band Edge (802.11g -CH13)



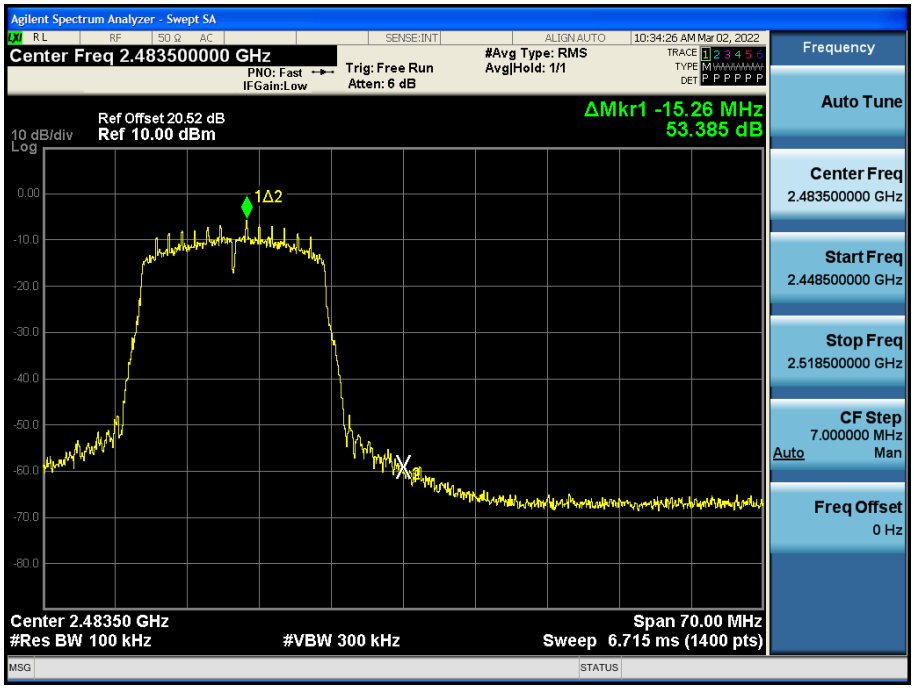
Band Edge (802.11n_HT20-CH1)



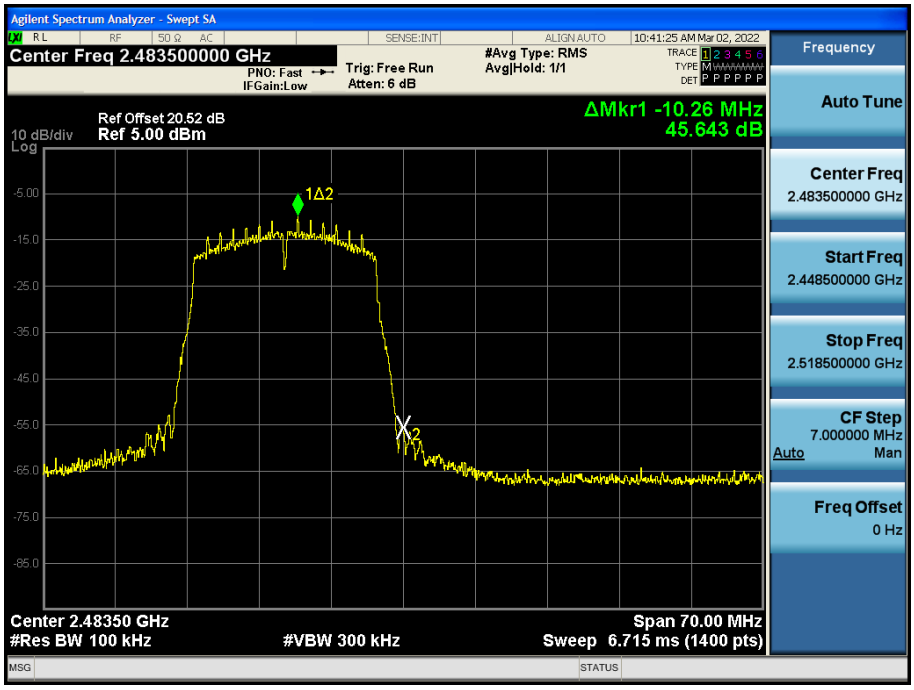
Band Edge (802.11n_HT20-CH11)



Band Edge (802.11n_HT20-CH12)



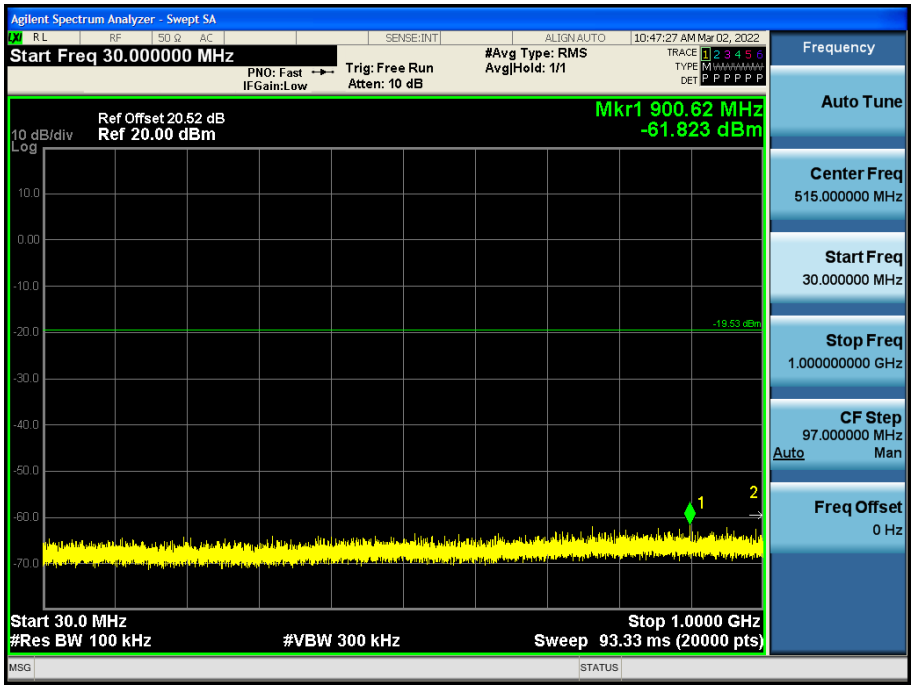
Band Edge (802.11n_HT20-CH13)



▣ Test Plots(Conducted Spurious Emission)

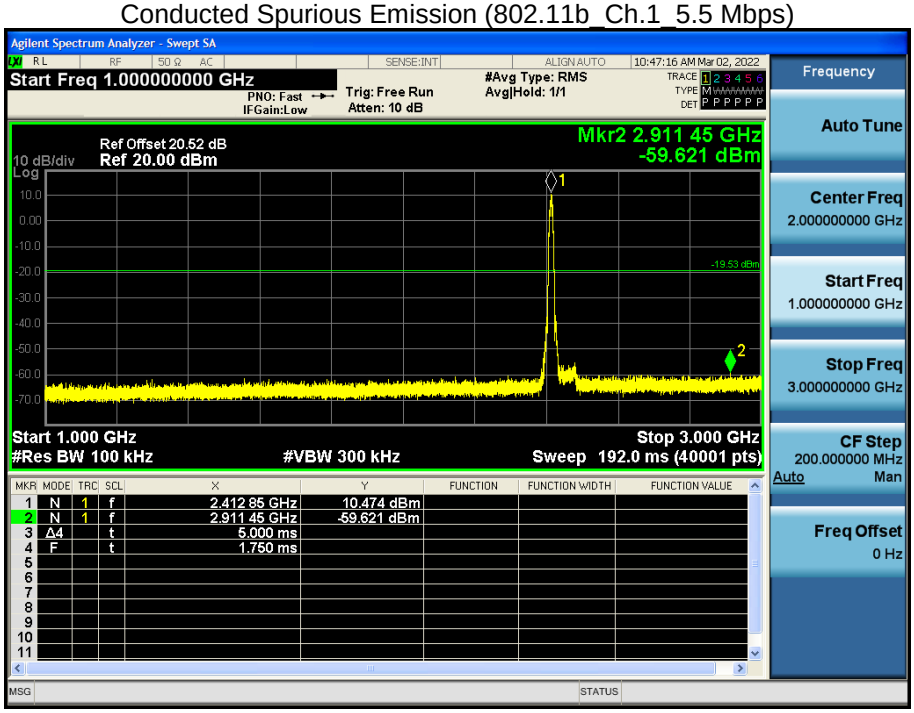
30 MHz ~ 1 GHz

Conducted Spurious Emission (802.11b_Ch.1_5.5 Mbps)



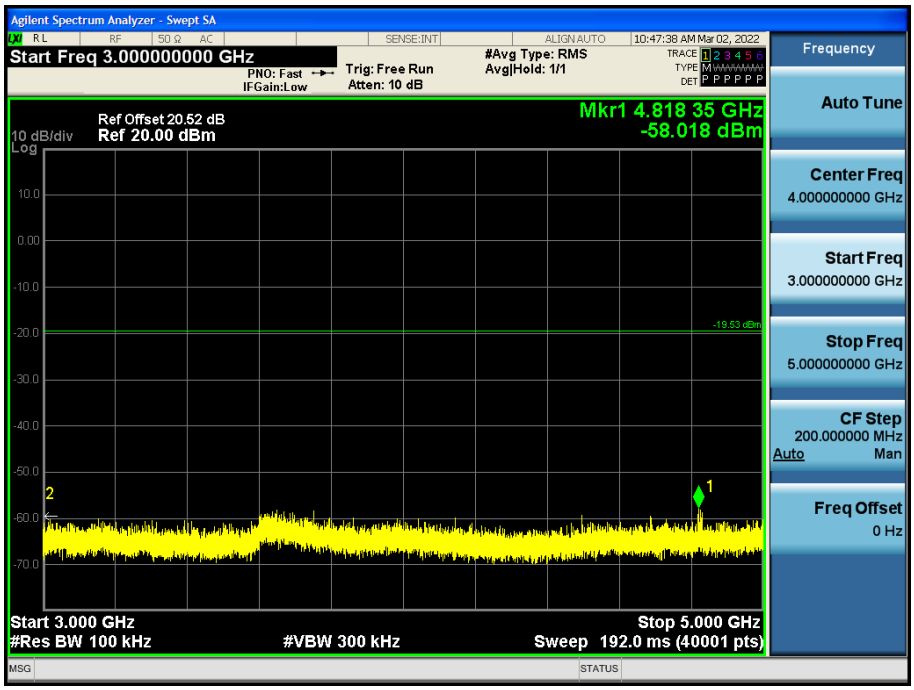
1 GHz ~ 3 GHz

Conducted Spurious Emission (802.11b_Ch.1_5.5 Mbps)



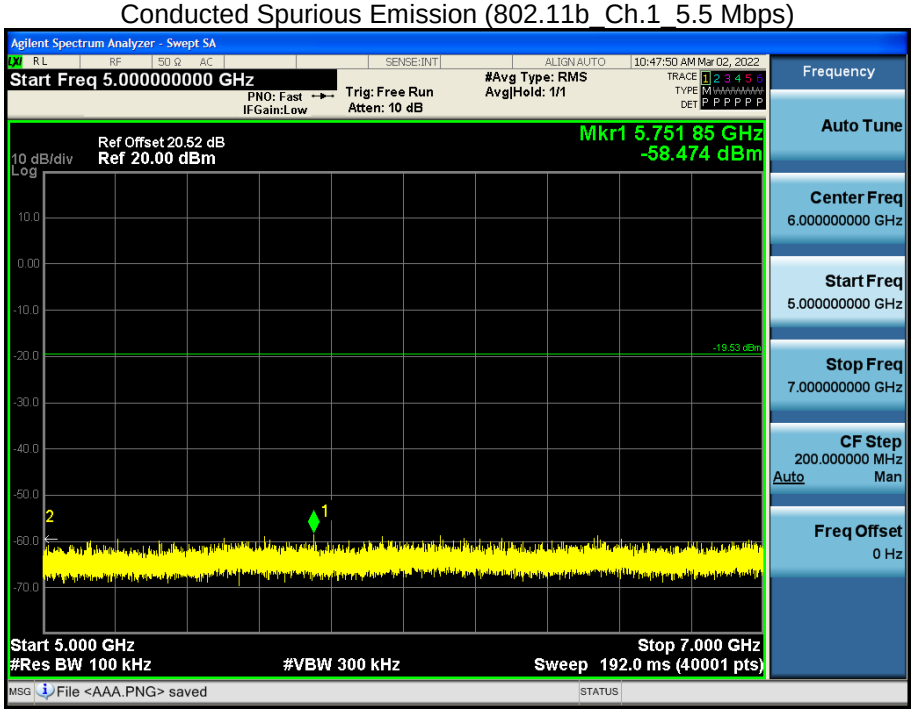
3 GHz ~ 5 GHz

Conducted Spurious Emission (802.11b_Ch.1_5.5 Mbps)



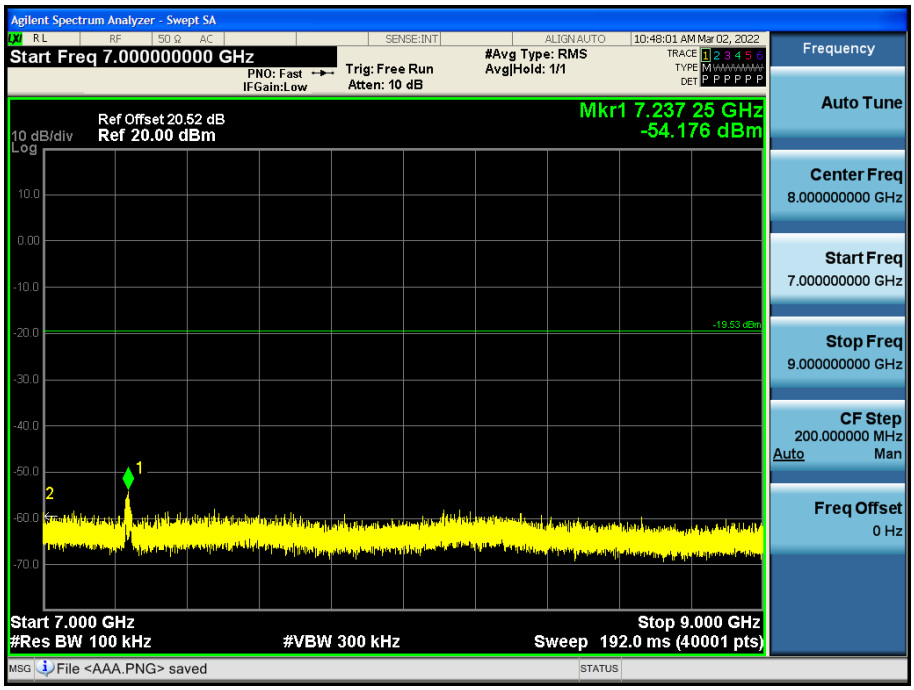
5 GHz ~ 7 GHz

Conducted Spurious Emission (802.11b_Ch.1_ 5.5 Mbps)



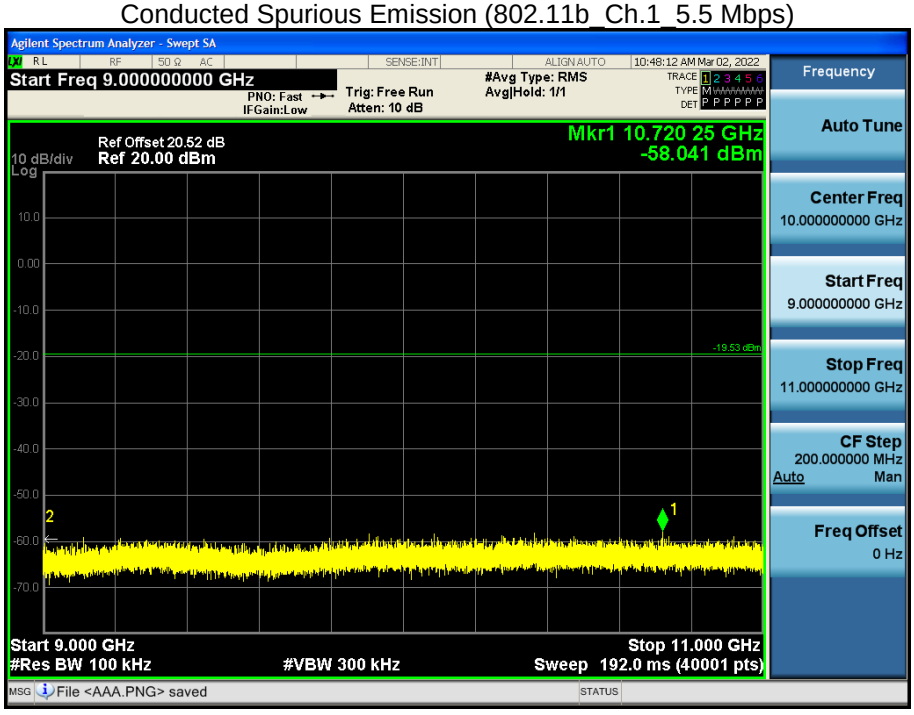
7 GHz ~ 9 GHz

Conducted Spurious Emission (802.11b_Ch.1_5.5 Mbps)



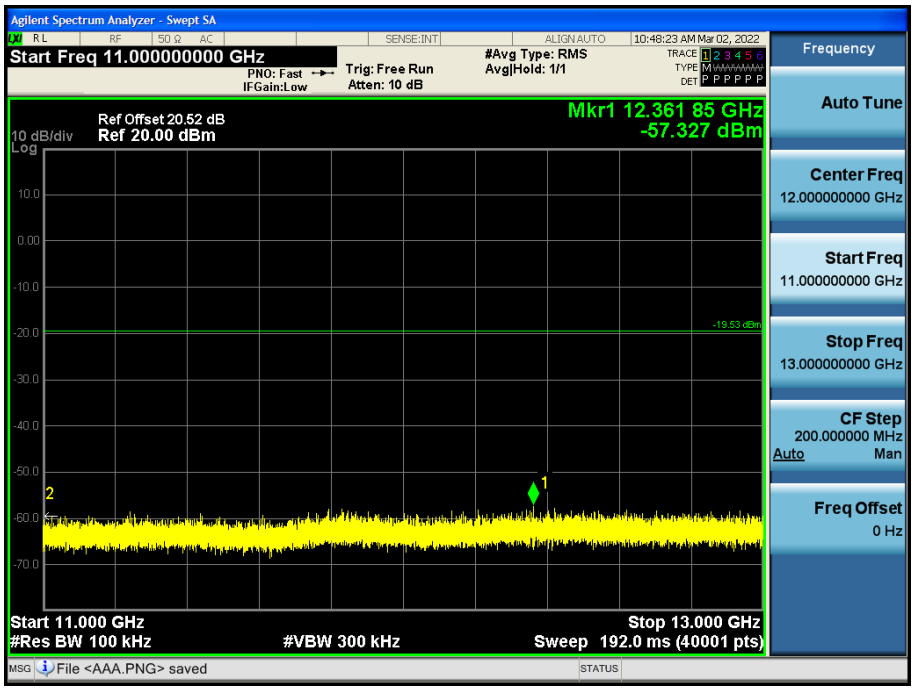
9 GHz ~ 11 GHz

Conducted Spurious Emission (802.11b_Ch.1_ 5.5 Mbps)



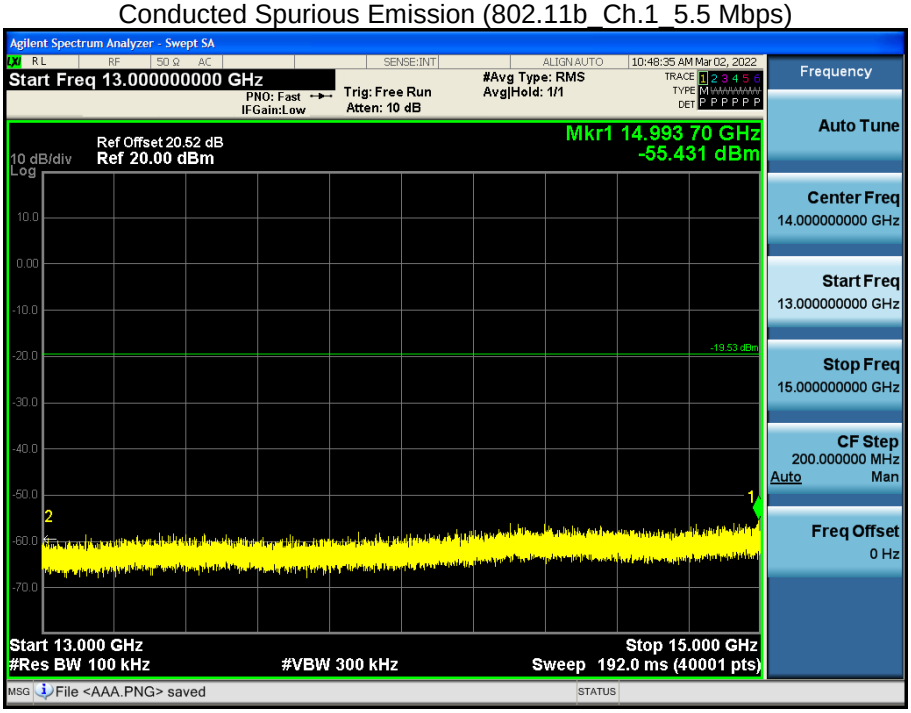
11 GHz ~ 13 GHz

Conducted Spurious Emission (802.11b_Ch.1_5.5 Mbps)



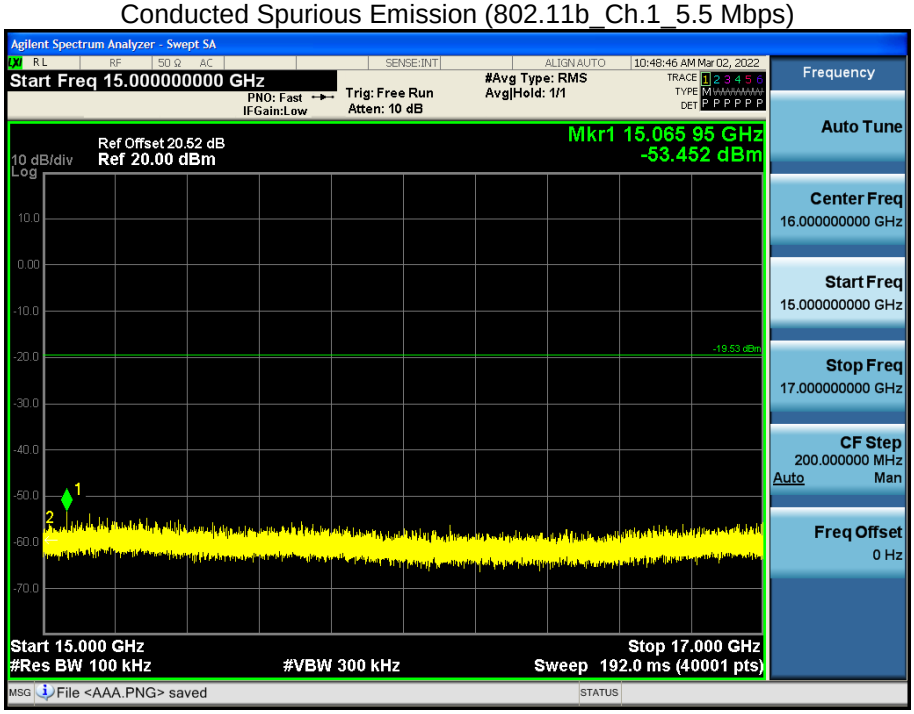
13 GHz ~ 15 GHz

Conducted Spurious Emission (802.11b_Ch.1_5.5 Mbps)



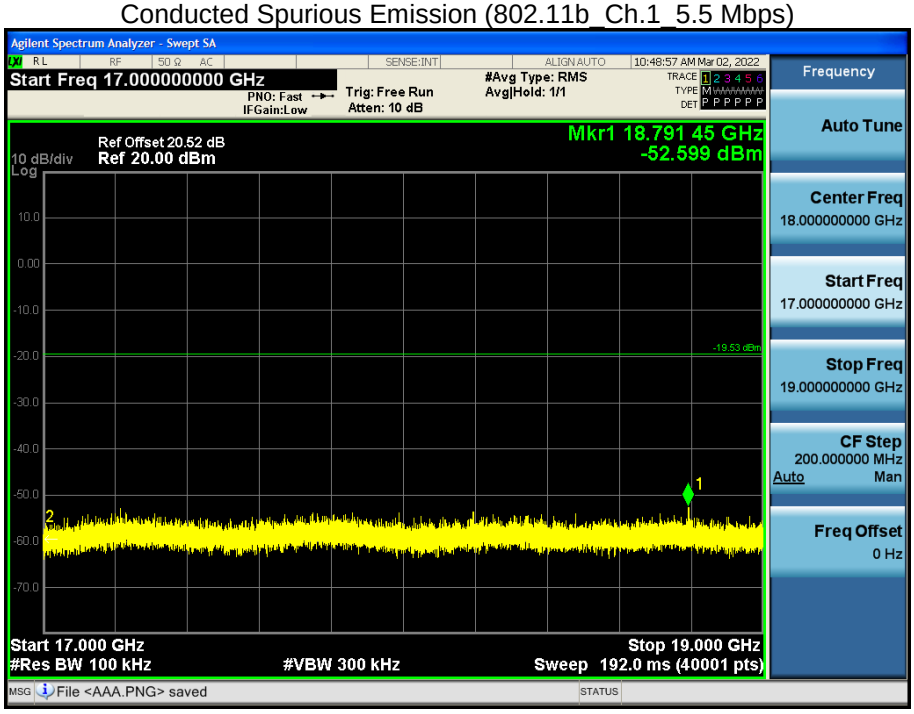
15 GHz ~ 17 GHz

Conducted Spurious Emission (802.11b_Ch.1_5.5 Mbps)



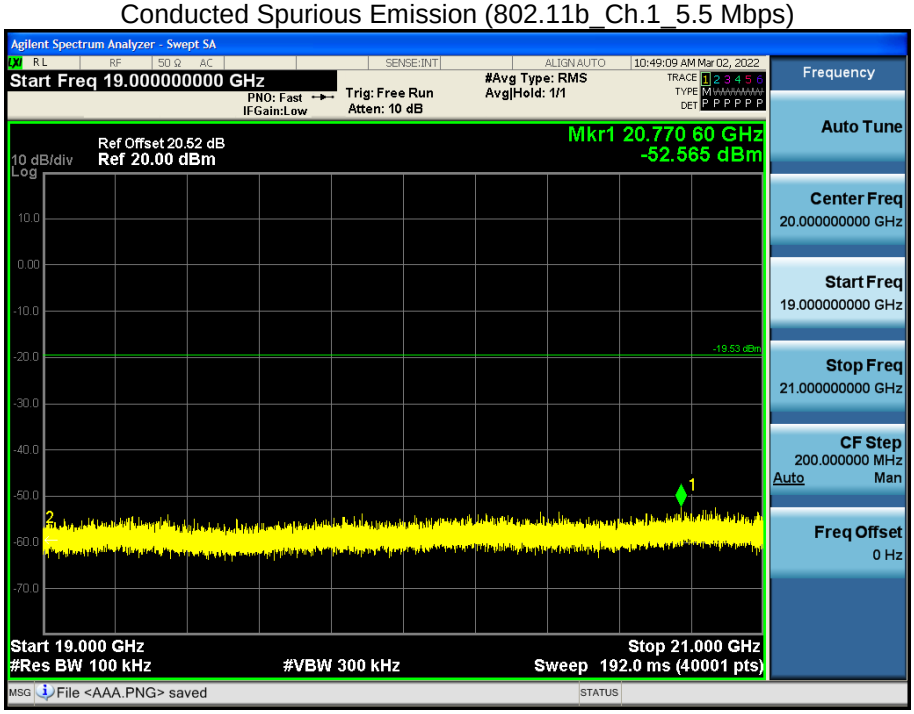
17 GHz ~ 19 GHz

Conducted Spurious Emission (802.11b_Ch.1_5.5 Mbps)



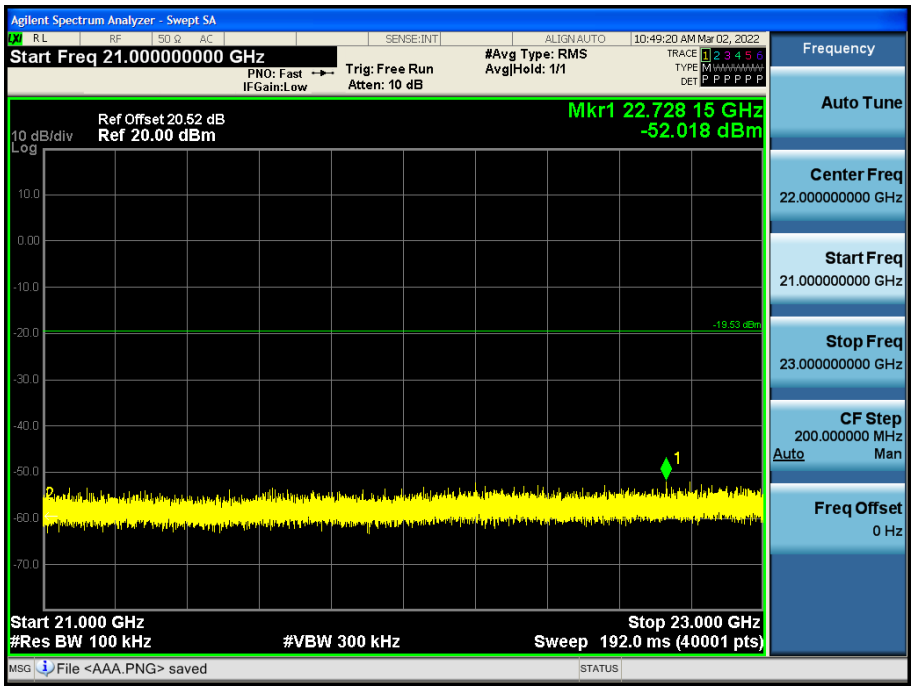
19 GHz ~ 21 GHz

Conducted Spurious Emission (802.11b_Ch.1_5.5 Mbps)



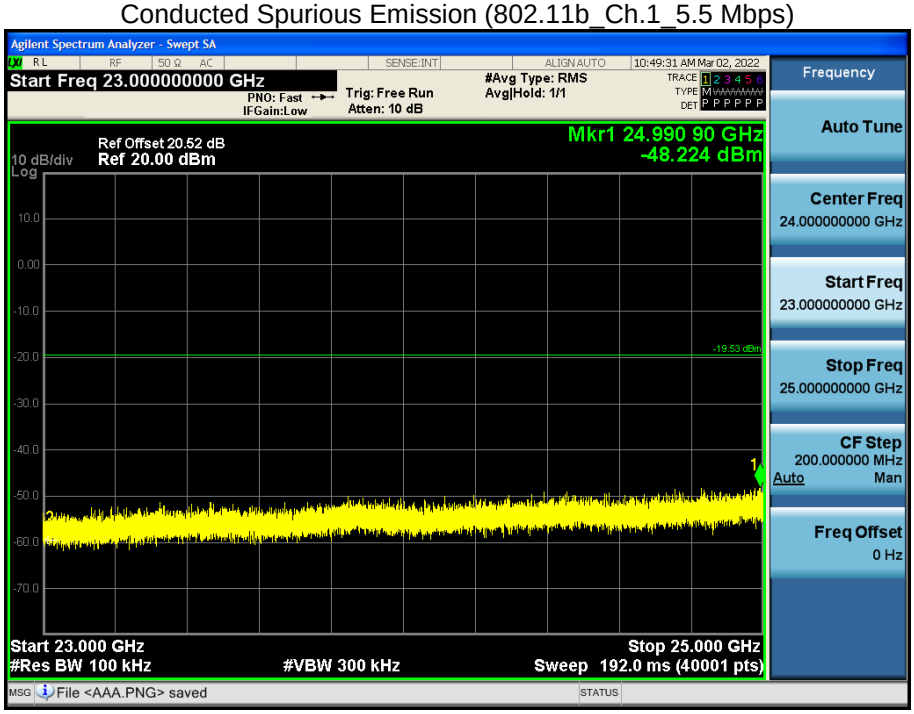
21 GHz ~ 23 GHz

Conducted Spurious Emission (802.11b_Ch.1_5.5 Mbps)



23 GHz ~ 25 GHz

Conducted Spurious Emission (802.11b_Ch.1_5.5 Mbps)



9.6 RADIATED SPURIOUS EMISSIONS

Frequency Range : 9 kHz – 30 MHz

Frequency	Measured Value	A.F+C.L+D.F	POL	Total	Limit	Margin
[MHz]	[dBμV/m]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]
No Critical peaks found						

Note:

1. The Measured of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
2. Distance extrapolation factor = 40log (specific distance / test distance) (dB)
3. Limit line = specific Limits (dBμV) + Distance extrapolation factor

Frequency Range : Below 1 GHz

Frequency	Measured Value	A.F+C.L	POL	Total	Limit	Margin
[MHz]	[dBμV/m]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]
No Critical peaks found						

Note:

1. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.

Frequency Range : Above 1 GHz

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2412 MHz
Channel No.	01 Ch

Frequency [MHz]	Measured Level [dBµV]	A.F+C.L-A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
4824	45.87	4.02	V	49.89	73.98	24.09	PK
4824	41.21	4.02	V	45.23	53.98	8.75	AV
7236	41.56	11.57	V	53.13	73.98	20.85	PK
7236	33.35	11.57	V	44.92	53.98	9.06	AV
4824	47.24	4.02	H	51.26	73.98	22.72	PK
4824	42.86	4.02	H	46.88	53.98	7.10	AV
7236	42.71	11.57	H	54.28	73.98	19.70	PK
7236	34.64	11.57	H	46.21	53.98	7.77	AV

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2437 MHz
Channel No.	06 Ch

Frequency [MHz]	Measured Level [dBµV]	A.F+C.L-A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
4874	47.82	4.25	V	52.07	73.98	21.91	PK
4874	43.36	4.25	V	47.61	53.98	6.37	AV
7311	40.33	12.01	V	52.34	73.98	21.64	PK
7311	31.70	12.01	V	43.71	53.98	10.27	AV
4874	**49.12**	**4.25**	**H**	**53.37**	**73.98**	**20.61**	**PK**
4874	**45.11**	**4.25**	**H**	**49.36**	**53.98**	**4.62**	**AV**
7311	41.94	12.01	H	53.95	73.98	20.03	PK
7311	33.46	12.01	H	45.47	53.98	8.51	AV

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2462 MHz
Channel No.	11 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F+C.L-A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4924	47.53	4.41	V	51.94	73.98	22.04	PK
4924	43.25	4.41	V	47.66	53.98	6.32	AV
7386	40.02	11.96	V	51.98	73.98	22.00	PK
7386	30.78	11.96	V	42.74	53.98	11.24	AV
4924	48.87	4.41	H	53.28	73.98	20.70	PK
4924	44.90	4.41	H	49.31	53.98	4.67	AV
7386	41.46	11.96	H	53.42	73.98	20.56	PK
7386	32.22	11.96	H	44.18	53.98	9.80	AV

Note: Channel 12 and 13 are less powerful than channel 11 so the test for high channel was performed at channel 11.

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2412 MHz
Channel No.	01 Ch

Frequency [MHz]	Measured Level [dBµV]	Duty Cycle Factor [dB]	A.F+C.L-A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
4824	43.90	0.00	4.02	V	47.92	73.98	26.06	PK
4824	31.65	0.30	4.02	V	35.97	53.98	18.01	AV
7236	41.40	0.00	11.57	V	52.97	73.98	21.01	PK
7236	27.49	0.30	11.57	V	39.36	53.98	14.62	AV
4824	44.21	0.00	4.02	H	48.23	73.98	25.75	PK
4824	31.86	0.30	4.02	H	36.18	53.98	17.80	AV
7236	41.82	0.00	11.57	H	53.39	73.98	20.59	PK
7236	27.51	0.30	11.57	H	39.38	53.98	14.60	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2437 MHz
Channel No.	06 Ch

Frequency [MHz]	Measured Level [dBµV]	Duty Cycle Factor [dB]	A.F+C.L-A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
4874	44.49	0.00	4.25	V	48.74	73.98	25.24	PK
4874	31.46	0.30	4.25	V	36.01	53.98	17.97	AV
7311	40.04	0.00	12.01	V	52.05	73.98	21.93	PK
7311	26.51	0.30	12.01	V	38.82	53.98	15.16	AV
4874	45.80	0.00	4.25	H	50.05	73.98	23.93	PK
4874	32.84	0.30	4.25	H	37.39	53.98	16.59	AV
7311	41.59	0.00	12.01	H	53.60	73.98	20.38	PK
7311	27.52	0.30	12.01	H	39.83	53.98	14.15	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2462 MHz
Channel No.	11 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F+C.L-A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4924	44.57	0.00	4.41	V	48.98	73.98	25.00	PK
4924	31.76	0.30	4.41	V	36.47	53.98	17.51	AV
7386	40.03	0.00	11.96	V	51.99	73.98	21.99	PK
7386	27.19	0.30	11.96	V	39.45	53.98	14.53	AV
4924	45.85	0.00	4.41	H	50.26	73.98	23.72	PK
4924	32.83	0.30	4.41	H	37.54	53.98	16.44	AV
7386	40.43	0.00	11.96	H	52.39	73.98	21.59	PK
7386	27.66	0.30	11.96	H	39.92	53.98	14.06	AV

Note: Channel 12 and 13 are less powerful than channel 11 so the test for high channel was performed at channel 11.

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz
Channel No.	01 Ch

Frequency [MHz]	Measured Level [dBµV]	Duty Cycle Factor [dB]	A.F+C.L-A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
4824	43.32	0.00	4.02	V	47.34	73.98	26.64	PK
4824	30.59	0.31	4.02	V	34.92	53.98	19.06	AV
7236	40.54	0.00	11.57	V	52.11	73.98	21.87	PK
7236	27.12	0.31	11.57	V	39.00	53.98	14.98	AV
4824	44.24	0.00	4.02	H	48.26	73.98	25.72	PK
4824	31.64	0.31	4.02	H	35.97	53.98	18.01	AV
7236	40.85	0.00	11.57	H	52.42	73.98	21.56	PK
7236	27.36	0.31	11.57	H	39.24	53.98	14.74	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2437 MHz
Channel No.	06 Ch

Frequency [MHz]	Measured Level [dBµV]	Duty Cycle Factor [dB]	A.F+C.L-A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
4874	44.64	0.00	4.25	V	48.89	73.98	25.09	PK
4874	31.82	0.31	4.25	V	36.38	53.98	17.60	AV
7311	40.41	0.00	12.01	V	52.42	73.98	21.56	PK
7311	26.67	0.31	12.01	V	38.99	53.98	14.99	AV
4874	46.02	0.00	4.25	H	50.27	73.98	23.71	PK
4874	32.63	0.31	4.25	H	37.19	53.98	16.79	AV
7311	41.93	0.00	12.01	H	53.94	73.98	20.04	PK
7311	27.53	0.31	12.01	H	39.85	53.98	14.13	AV

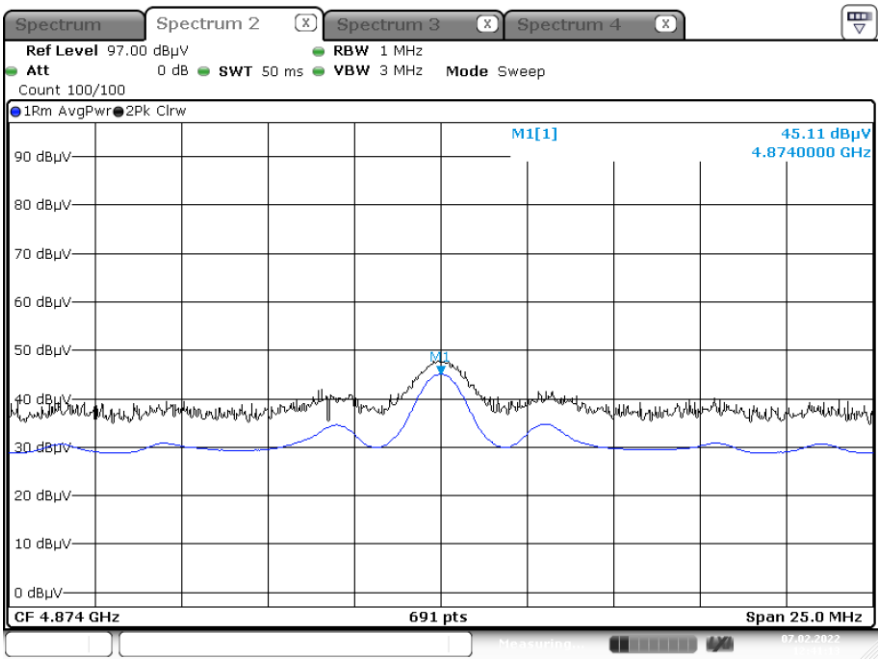
Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2462 MHz
Channel No.	11 Ch

Frequency [MHz]	Measured Level [dBµV]	Duty Cycle Factor [dB]	A.F+C.L-A.G+D.F [dB/m]	ANT. POL [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
4924	43.86	0.00	4.41	V	48.27	73.98	25.71	PK
4924	31.89	0.31	4.41	V	36.61	53.98	17.37	AV
7386	40.82	0.00	11.96	V	52.78	73.98	21.20	PK
7386	27.03	0.31	11.96	V	39.30	53.98	14.68	AV
4924	45.14	0.00	4.41	H	49.55	73.98	24.43	PK
4924	32.56	0.31	4.41	H	37.28	53.98	16.70	AV
7386	41.33	0.00	11.96	H	53.29	73.98	20.69	PK
7386	27.55	0.31	11.96	H	39.82	53.98	14.16	AV

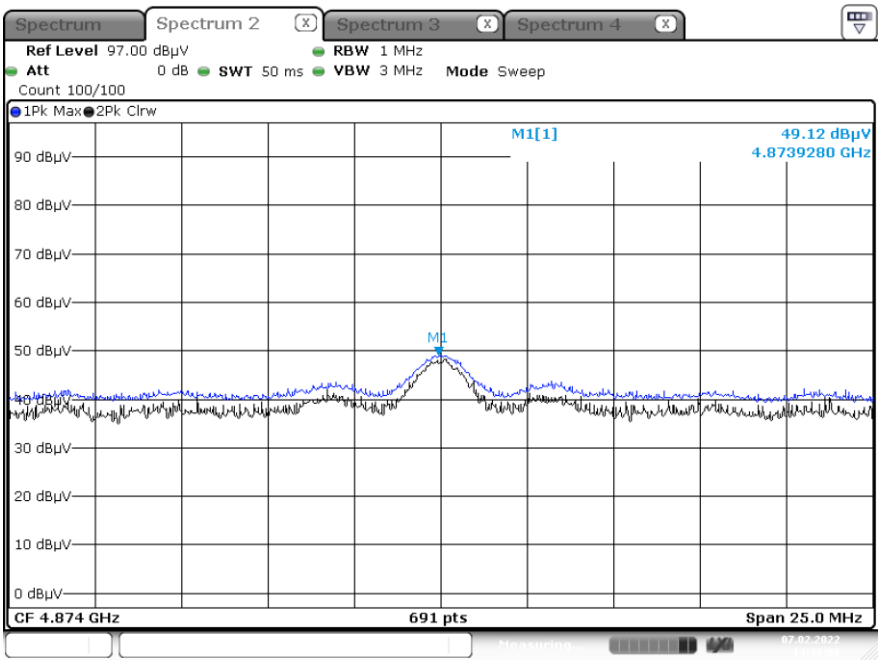
Note: Channel 12 and 13 are less powerful than channel 11 so the test for high channel was performed at channel 11.

▣ Test Plots (Worst case : Y-H)

Radiated Spurious Emissions plot – Average Result (802.11b_1 Mbps, Ch.6 2nd Harmonic)



Radiated Spurious Emissions plot – Peak Result (802.11b_1 Mbps, Ch.6 2nd Harmonic)



Note: Plot of worst case are only reported.

9.7 RADIATED RESTRICTED BAND EDGES

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F.+ C.L-A.G +ATT+ D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	54.71	5.45	H	60.16	73.98	13.82	PK
2390.0	37.93	5.45	H	43.38	53.98	10.60	AV
2390.0	53.56	5.45	V	59.01	73.98	14.97	PK
2390.0	37.82	5.45	V	43.27	53.98	10.71	AV
2483.5	56.17	5.65	H	61.82	73.98	12.16	PK
2483.5	38.34	5.65	H	43.99	53.98	9.99	AV
2483.5	55.92	5.65	V	61.57	73.98	12.41	PK
2483.5	37.66	5.65	V	43.31	53.98	10.67	AV

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2467 MHz
Channel No.	12 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F.+ C.L-A.G +ATT+ D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	51.74	5.65	H	57.39	73.98	16.59	PK
2483.5	37.86	5.65	H	43.51	53.98	10.47	AV
2483.5	50.71	5.65	V	56.36	73.98	17.62	PK
2483.5	36.92	5.65	V	42.57	53.98	11.41	AV

Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2472 MHz
Channel No.	13 Ch

Frequency [MHz]	Measured Level [dBμV]	A.F.+ C.L-A.G +ATT+ D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	60.32	5.65	H	65.97	73.98	8.01	PK
2483.5	38.08	5.65	H	43.73	53.98	10.25	AV
2483.5	59.63	5.65	V	65.28	73.98	8.70	PK
2483.5	37.42	5.65	V	43.07	53.98	10.91	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Measured Level [dBµV]	Duty Cycle Factor [dB]	A.F.+ C.L-A.G +ATT+ D.F [dB/m]	ANT. POL [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
2390.0	63.76	0.00	5.45	H	69.21	73.98	4.77	PK
2390.0	44.11	0.30	5.45	H	49.86	53.98	4.12	AV
2390.0	62.58	0.00	5.45	V	68.03	73.98	5.95	PK
2390.0	42.69	0.30	5.45	V	48.44	53.98	5.54	AV
2483.5	65.71	0.00	5.65	H	71.36	73.98	2.62	PK
2483.5	45.04	0.30	5.65	H	50.99	53.98	2.99	AV
2483.5	64.35	0.00	5.65	V	70.00	73.98	3.98	PK
2483.5	44.63	0.30	5.65	V	50.58	53.98	3.40	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2417 MHz
Channel No.	2 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F.+ C.L-A.G +ATT+ D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	62.57	0.00	5.45	H	68.02	73.98	5.96	PK
2390.0	41.86	0.30	5.45	H	47.61	53.98	6.37	AV
2390.0	61.84	0.00	5.45	V	67.29	73.98	6.69	PK
2390.0	40.73	0.30	5.45	V	46.48	53.98	7.50	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2457 MHz
Channel No.	10 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F.+ C.L-A.G +ATT+ D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	65.12	0.00	5.65	H	70.77	73.98	3.21	PK
2483.5	43.19	0.30	5.65	H	49.14	53.98	4.84	AV
2483.5	64.86	0.00	5.65	V	70.51	73.98	3.47	PK
2483.5	42.58	0.30	5.65	V	48.53	53.98	5.45	AV

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2467 MHz
Channel No.	12 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F.+ C.L-A.G +ATT+ D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
#2484.0	56.49	0.00	5.65	H	62.14	73.98	11.84	PK
#2484.0	45.64	0.30	5.65	H	51.59	53.98	2.39	AV
#2485.0	55.16	0.00	5.65	H	60.81	73.98	13.17	PK
#2485.0	44.12	0.30	5.65	H	50.07	53.98	3.91	AV
2485.5~2500	64.63	0.00	5.65	H	70.28	73.98	3.70	PK
2485.5~2500	43.49	0.30	5.65	H	49.44	53.98	4.54	AV

Note : integration method Used (ANSI C63.10 Section11.13.3)

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2472 MHz
Channel No.	13 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F.+ C.L-A.G +ATT+ D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	64.38	0.00	5.65	H	70.03	73.98	3.95	PK
2483.5	44.13	0.30	5.65	H	50.08	53.98	3.90	AV
#2485.0	63.26	0.00	5.65	V	68.91	73.98	5.07	PK
#2485.0	43.08	0.30	5.65	V	49.03	53.98	4.95	AV

Note : integration method Used (ANSI C63.10 Section11.13.3)

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Measured Level [dBµV]	Duty Cycle Factor [dB]	A.F.+ C.L-A.G +ATT+ D.F [dB/m]	ANT. POL [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
2390.0	65.01	0.00	5.45	H	70.46	73.98	3.52	PK
2390.0	45.83	0.31	5.45	H	51.59	53.98	2.39	AV
2390.0	64.58	0.00	5.45	V	70.03	73.98	3.95	PK
2390.0	44.62	0.31	5.45	V	50.38	53.98	3.60	AV
2483.5	**65.14**	**0.00**	**5.65**	**H**	**70.79**	**73.98**	**3.19**	**PK**
#2484.0	**45.67**	**0.31**	**5.65**	**H**	**51.63**	**53.98**	**2.35**	**AV**
#2485.0	**43.86**	**0.31**	**5.65**	**H**	**49.82**	**53.98**	**4.16**	**AV**
2485.5~2500	**43.63**	**0.31**	**5.65**	**H**	**49.59**	**53.98**	**4.39**	**AV**

Note : integration method Used (ANSI C63.10 Section11.13.3)

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2417 MHz
Channel No.	2 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F.+ C.L-A.G +ATT+ D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2390.0	64.69	0.00	5.45	H	70.14	73.98	3.84	PK
2390.0	42.33	0.31	5.45	H	48.09	53.98	5.89	AV
2390.0	63.18	0.00	5.45	V	68.63	73.98	5.35	PK
2390.0	42.19	0.31	5.45	V	47.95	53.98	6.03	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2457 MHz
Channel No.	10 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F.+ C.L-A.G +ATT+ D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	65.14	0.00	5.65	H	70.79	73.98	3.19	PK
2483.5	42.82	0.31	5.65	H	48.78	53.98	5.20	AV
2483.5	64.13	0.00	5.65	V	69.78	73.98	4.20	PK
2483.5	41.76	0.31	5.65	V	47.72	53.98	6.26	AV

Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2467 MHz
Channel No.	12 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F.+ C.L-A.G +ATT+ D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
#2484.0	58.33	0.00	5.65	H	63.98	73.98	10.00	PK
#2484.0	45.62	0.31	5.65	H	51.58	53.98	2.40	AV
#2485.0	56.27	0.00	5.65	H	61.92	73.98	12.06	PK
#2485.0	44.07	0.31	5.65	H	50.03	53.98	3.95	AV
2485.5~2500	64.26	0.00	5.65	H	69.91	73.98	4.07	PK
2485.5~2500	43.21	0.31	5.65	H	49.17	53.98	4.81	AV

Note : integration method Used (ANSI C63.10 Section11.13.3)

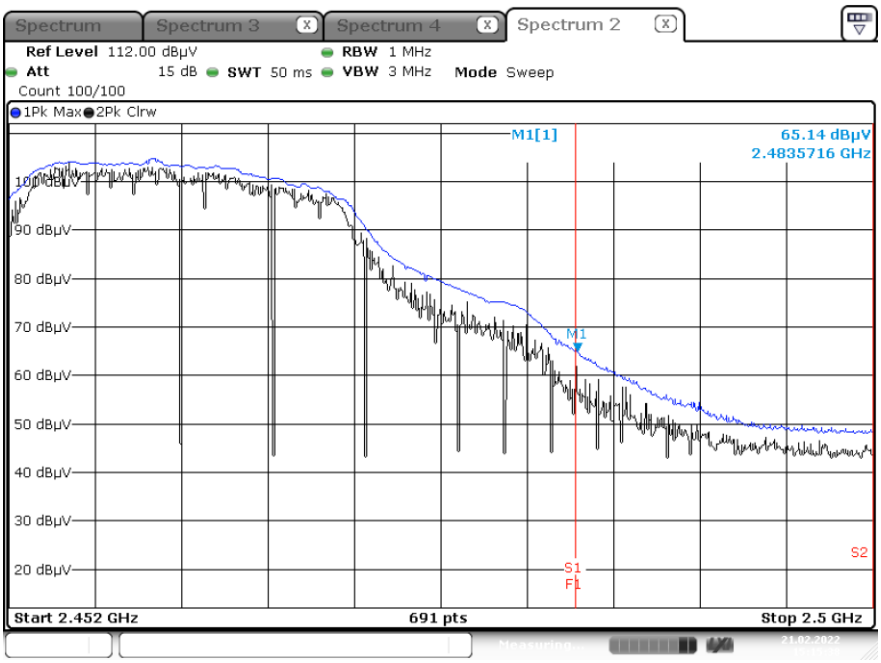
Operation Mode:	802.11n (HT20)
Transfer MCS Index:	0
Operating Frequency	2472 MHz
Channel No.	13 Ch

Frequency [MHz]	Measured Level [dBμV]	Duty Cycle Factor [dB]	A.F.+ C.L-A.G +ATT+ D.F [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5	65.09	0.00	5.65	H	70.74	73.98	3.24	PK
2483.5	44.82	0.31	5.65	H	50.78	53.98	3.20	AV
2483.5	64.69	0.00	5.65	H	70.34	73.98	3.64	PK
2483.5	44.19	0.31	5.65	H	50.15	53.98	3.83	AV

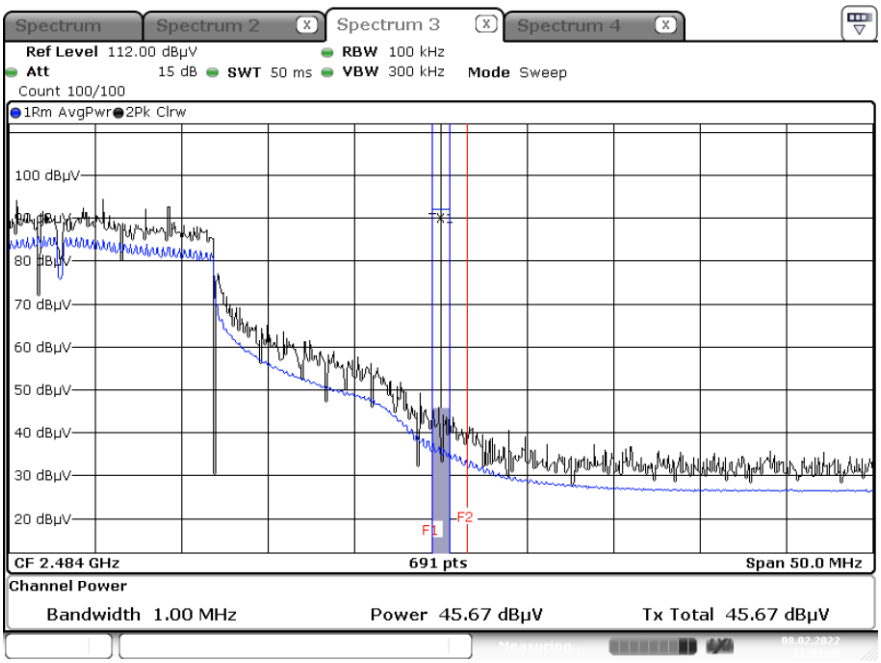
▣ Test Plots

(Worst case : X-H)

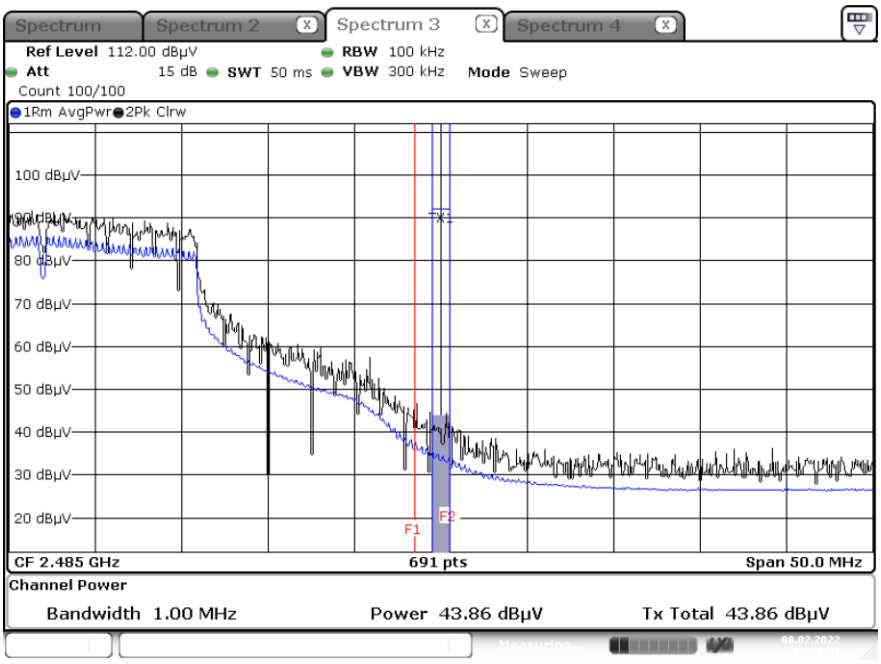
Radiated Restricted Band Edges plot – Peak Result (802.11n (HT20)_ MCS0 Ch.11)



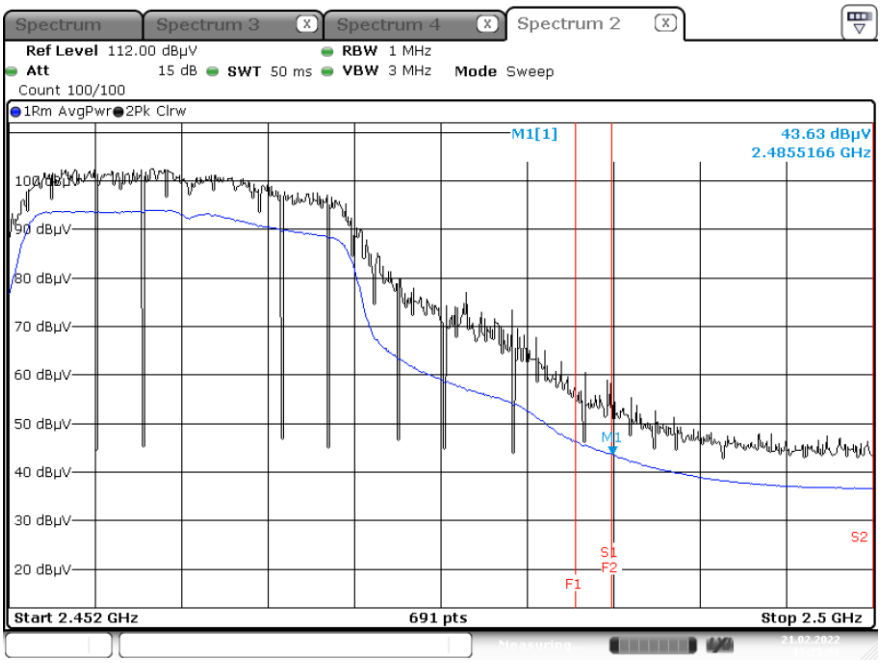
Radiated Restricted Band Edges plot – Average Result (802.11n (HT20)_ MCS0 Ch.11)



Radiated Restricted Band Edges plot – Average Result (802.11n (HT20)_ MCS0 Ch.11)



Radiated Restricted Band Edges plot – Average Result (802.11n (HT20)_ MCS0 Ch.11)



Note:

Plot of worst case are only reported.

9.8 POWERLINE CONDUCTED EMISSIONS

Conducted Emissions (Line 1)

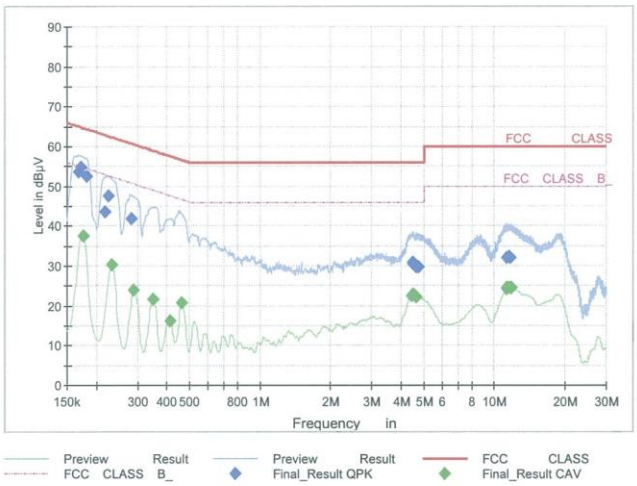
2.4G WLAN_L1 1 / 2

Test Report

Common Information

EUT :	SM-M536B/DSN
Manufacturer :	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions :	2.4G WLAN_L1

Full Spectrum



Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1680	53.73	65.06	11.33	9.000	L1	OFF	9.6
0.1725	54.67	64.84	10.17	9.000	L1	OFF	9.6
0.1815	52.61	64.42	11.80	9.000	L1	OFF	9.6
0.2175	43.46	62.91	19.46	9.000	L1	OFF	9.6
0.2243	47.57	62.66	15.09	9.000	L1	OFF	9.6
0.2805	41.85	60.80	18.95	9.000	L1	OFF	9.6
4.4645	30.46	56.00	25.54	9.000	L1	OFF	9.8
4.4690	30.62	56.00	25.38	9.000	L1	OFF	9.8
4.4735	30.85	56.00	25.15	9.000	L1	OFF	9.8
4.5073	30.69	56.00	25.31	9.000	L1	OFF	9.8
4.6153	29.85	56.00	26.15	9.000	L1	OFF	9.8
4.7368	29.70	56.00	26.30	9.000	L1	OFF	9.8
11.2798	32.05	60.00	27.95	9.000	L1	OFF	10.1
11.2865	32.08	60.00	27.92	9.000	L1	OFF	10.1
11.5273	32.40	60.00	27.60	9.000	L1	OFF	10.1
11.5385	32.34	60.00	27.66	9.000	L1	OFF	10.1
11.5835	32.32	60.00	27.68	9.000	L1	OFF	10.1
11.6330	32.14	60.00	27.86	9.000	L1	OFF	10.1

2022-02-09 오후 3:27:27

2.4G WLAN_L1 2 / 2

Final_Result_CAV

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1748	37.48	54.73	17.25	9.000	L1	OFF	9.6
0.2333	30.26	52.33	22.07	9.000	L1	OFF	9.6
0.2895	24.02	50.54	26.52	9.000	L1	OFF	9.6
0.3503	21.63	48.96	27.33	9.000	L1	OFF	9.6
0.4110	16.19	47.63	31.44	9.000	L1	OFF	9.7
0.4628	20.66	46.64	25.99	9.000	L1	OFF	9.7
4.4533	22.58	46.00	23.42	9.000	L1	OFF	9.8
4.4645	22.68	46.00	23.32	9.000	L1	OFF	9.8
4.4870	22.73	46.00	23.27	9.000	L1	OFF	9.8
4.5095	22.66	46.00	23.34	9.000	L1	OFF	9.8
4.5230	22.65	46.00	23.35	9.000	L1	OFF	9.8
4.6603	22.07	46.00	23.93	9.000	L1	OFF	9.8
11.2280	24.37	50.00	25.63	9.000	L1	OFF	10.1
11.2483	24.41	50.00	25.59	9.000	L1	OFF	10.1
11.4238	24.55	50.00	25.45	9.000	L1	OFF	10.1
11.6083	24.63	50.00	25.37	9.000	L1	OFF	10.1
11.6330	24.46	50.00	25.54	9.000	L1	OFF	10.1
11.7680	24.66	50.00	25.34	9.000	L1	OFF	10.1

2022-02-09 오후 3:27:27

Conducted Emissions (Line 2)

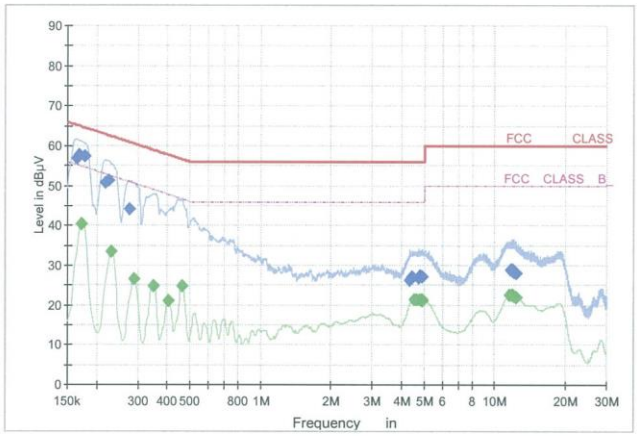
2.4G WLAN_N 1 / 2

Test Report

Common Information

EUT :	SM-M536B/DSN
Manufacturer :	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions :	2.4G WLAN_N

Full Spectrum



Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1635	56.83	65.28	8.45	9.000	N	OFF	9.6
0.1680	57.58	65.06	7.48	9.000	N	OFF	9.6
0.1770	57.48	64.63	7.15	9.000	N	OFF	9.6
0.2175	50.66	62.91	12.25	9.000	N	OFF	9.6
0.2243	51.35	62.66	11.31	9.000	N	OFF	9.6
0.2760	44.22	60.94	16.72	9.000	N	OFF	9.6
4.3543	26.37	56.00	29.63	9.000	N	OFF	9.8
4.4533	27.04	56.00	28.96	9.000	N	OFF	9.8
4.7233	26.94	56.00	29.06	9.000	N	OFF	9.8
4.8110	27.33	56.00	28.67	9.000	N	OFF	9.8
4.8875	27.01	56.00	28.99	9.000	N	OFF	9.8
4.9213	26.98	56.00	29.02	9.000	N	OFF	9.8
11.6443	28.89	60.00	31.11	9.000	N	OFF	10.1
11.8310	28.88	60.00	31.12	9.000	N	OFF	10.1
11.9210	28.76	60.00	31.24	9.000	N	OFF	10.1
11.9323	28.53	60.00	31.47	9.000	N	OFF	10.1
12.1123	28.36	60.00	31.64	9.000	N	OFF	10.1
12.3935	27.97	60.00	32.03	9.000	N	OFF	10.2

2022-02-09 오후 3:20:26

2.4G WLAN_N 2 / 2

Final_Result_CAV

Frequency (MHz)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1725	40.35	54.84	14.49	9.000	N	OFF	9.6
0.2310	33.46	52.41	18.96	9.000	N	OFF	9.6
0.2895	26.59	50.54	23.95	9.000	N	OFF	9.6
0.3480	24.76	49.01	24.25	9.000	N	OFF	9.6
0.4020	21.19	47.81	26.63	9.000	N	OFF	9.7
0.4605	24.68	46.68	22.00	9.000	N	OFF	9.7
4.5208	21.31	46.00	24.69	9.000	N	OFF	9.8
4.6220	21.31	46.00	24.69	9.000	N	OFF	9.8
4.8200	21.38	46.00	24.62	9.000	N	OFF	9.8
4.9055	21.24	46.00	24.76	9.000	N	OFF	9.8
4.9123	21.17	46.00	24.83	9.000	N	OFF	9.8
4.9280	21.15	46.00	24.85	9.000	N	OFF	9.8
11.5498	22.63	50.00	27.37	9.000	N	OFF	10.1
11.8310	22.64	50.00	27.36	9.000	N	OFF	10.1
11.9188	22.52	50.00	27.48	9.000	N	OFF	10.1
11.9323	22.51	50.00	27.49	9.000	N	OFF	10.1
12.1123	22.23	50.00	27.77	9.000	N	OFF	10.1
12.3935	21.92	50.00	28.08	9.000	N	OFF	10.2

2022-02-09 오후 3:20:26

10. LIST OF TEST EQUIPMENT

Conducted Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
LISN	ENV216	Rohde & Schwarz	102245	08/23/2022	Annual
EMI Test Receiver	ESR	Rohde & Schwarz	101910	06/17/2022	Annual
Temperature Chamber	SU-642	ESPEC	0093008124	03/15/2022	Annual
Signal Analyzer	N9030A	Agilent	MY49432108	03/09/2022	Annual
Power Meter	N1911A	Agilent	MY45100523	04/08/2022	Annual
Power Sensor	N1921A	Agilent	MY57820067	04/08/2022	Annual
Directional Coupler	87300B	Agilent	3116A03621	11/02/2022	Annual
Power Splitter	11667B	Hewlett Packard	10545	02/03/2023	Annual
DC Power Supply	E3632A	HP	KR75303243	04/27/2022	Annual
Attenuator(10 dB)(DC-26.5 GHz)	8493C	HP	07560	06/18/2022	Annual
Attenuator(10 dB)(DC-26.5 GHz)	8493C	HP	08285	06/28/2022	Annual
Attenuator(20 dB)	18N-20dB	Rohde & Schwarz	8	03/08/2022	Annual
Software	EMC32	Rohde & Schwarz	N/A	N/A	N/A
FCC WLAN&BT&BLE Conducted Test Software v3.0	N/A	HCT CO., LTD.	N/A	N/A	N/A

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

Radiated Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Controller(Antenna mast)	CO3000	Innco system	CO3000-4p	N/A	N/A
Antenna Position Tower	MA4640/800-XP-EP	Innco system	N/A	N/A	N/A
EM1000 / Controller	EM1000	Audix	060520	N/A	N/A
Turn Table	N/A	Audix	N/A	N/A	N/A
Amp & Filter Bank Switch Controller	FBSM-01B	TNM system	TM19050002	N/A	N/A
Loop Antenna	1513	Schwarzbeck	1513-333	03/19/2022	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck	9168-0895	09/04/2022	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	9120D-1300	01/18/2024	Biennial
Horn Antenna(15 GHz ~ 40 GHz)	BBHA9170	Schwarzbeck	BBHA9170124	04/12/2023	Biennial
Spectrum Analyzer	FSV(10 Hz ~ 40 GHz)	Rohde & Schwarz	101055	05/14/2022	Annual
Band Reject Filter	WRCJV2400/2483.5-2370/2520-60/12SS	Wainwright Instruments	2	01/06/2023	Annual
Band Reject Filter	WRCJV12-4900-5100-5900-6100-50SS	Wainwright Instruments	5	06/24/2022	Annual
Band Reject Filter	WRCJV12-4900-5100-5900-6100-50SS	Wainwright Instruments	6	06/24/2022	Annual
High Pass Filter(7 GHz ~ 18 GHz)	WHKX10-7150-8000-18000-50SS	Wainwright Instruments	1	04/02/2022	Annual
Power Amplifier	CBL18265035	CERNEX	22966	12/02/2022	Annual
Power Amplifier	CBL26405040	CERNEX	25956	03/23/2022	Annual
HPF(3~18GHz) + LNA1(1~18GHz)	FMSR-05B	TNM system	F6	01/19/2023	Annual
ATT(10dB) + LNA1(1~18GHz)	FMSR -05B	TNM system	None	01/19/2023	Annual
ATT(3dB) + LNA1(1~18GHz)	FMSR -05B	TNM system	None	01/19/2023	Annual
LNA1(1~18GHz)	FMSR -05B	TNM system	25540	01/19/2023	Annual
HPF(7~18GHz) + LNA2(6~18GHz)	FMSR -05B	TNM system	28550	01/19/2023	Annual
Thru(30MHz ~ 18GHz)	FMSR -05B	TNM system	None	01/19/2023	Annual

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
3. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5(Version : 2017).

11. ANNEX A_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-2203-FC004-P