

TEST REPORT

FCC DTS Test for SM-A176U
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2510-FC039

DATE OF ISSUE
October 24, 2025

Tested by
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Applicant

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Product Name	Mobile Phone
Model Name	SM-A176U
FCC ID	A3LSMA176U
Date of Test	September 03, 2025 ~ October 24, 2025
FCC Classification	Digital Transmission System(DTS)
Test Standard Used	FCC Rule Part(s): Part 15.247
Test Results	PASS
Location of Test	☒ Permanent Testing Lab ☐ On Site Testing Lab (Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	October 24, 2025	Initial Release

Notice

Content

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.

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

The laboratory is not accredited for the test results marked *.

Information provided by the applicant is marked **.

Test results provided by external providers are marked ***.

When confirmation of authenticity of this test report is required, please contact www.hct.co.kr

The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).

CONTENTS

1. EUT DESCRIPTION	5
ANTENNA CONFIGURATIONS	6
2. TEST METHODOLOGY	7
EUT CONFIGURATION	7
EUT EXERCISE	7
GENERAL TEST PROCEDURES	7
DESCRIPTION OF TEST MODES	8
3. INSTRUMENT CALIBRATION	8
4. FACILITIES AND ACCREDITATIONS	8
FACILITIES	8
EQUIPMENT	8
5. ANTENNA REQUIREMENTS	9
6. MEASUREMENT UNCERTAINTY	9
7. DESCRIPTION OF TESTS	10
8. SUMMARY TEST OF RESULTS	28
9. TEST RESULT	29
9.1 DUTY CYCLE	29
9.2 6 dB BANDWIDTH	31
9.3 OUTPUT POWER	32
9.4 POWER SPECTRAL DENSITY	33
9.5 BAND EDGE / CONDUCTED SPURIOUS EMISSIONS	34
9.6 RADIATED SPURIOUS EMISSIONS	36
9.7 RADIATED RESTRICTED BAND EDGES	39
9.8 POWERLINE CONDUCTED EMISSIONS	44
9.9 CONFIRMATION OF GEO-LOCATION MECHANISM	45
10. LIST OF TEST EQUIPMENT	48
11. ANNEX A_ TEST SETUP PHOTO	50

1. EUT DESCRIPTION

Model	SM-A176U		
Additional Model	SM-A176U1, SM-S176V		
EUT Type	Mobile Phone		
Power Supply	DC 3.88 V		
Frequency Range	2 412 MHz ~ 2 462 MHz		
Max. RF Output Power	<u>Average Power</u>	802.11b:	19.91 dBm
		802.11g:	19.44 dBm
		802.11n(HT20):	19.39 dBm
	<u>Peak Power</u>	802.11b:	26.10 dBm
		802.11g:	27.40 dBm
		802.11n(HT20):	27.43 dBm
Modulation Type	DSSS/CCK : 802.11b OFDM : 802.11g, 802.11n		
Number of Channels	11 Channels		
Antenna Specification	Type: MFA Peak Gain : -4.5 dBi		
Serial number	Conducted : R3CY70RH0GF Radiated : R3CY80LZDYY		

ANTENNA CONFIGURATIONS

Configurations	SISO		MIMO	
	Ant1	Ant2	CDD	SDM
802.11b	O	X	X	X
802.11g	O	X	X	X
802.11n(HT20)	O	X	X	X

Note:

- (1) O = Support, X = Not Support
- (2) SISO = Single Input Single Output
- (3) SDM = Spatial Diversity Multiplexing
- (4) CDD = Cyclic Delay Diversity

This device supports simultaneous transmission operation, which allows for two channels to operate independent of one another in the 2.4 GHz and 5 GHz bands simultaneously on each antenna.

Simultaneous transmission Scenario	5 GHz WiFi Ant.1	BT Ant.1	Test Case
Bluetooth + 5 GHz WiFi	on	on	Scenario1

2. TEST METHODOLOGY

Unlicensed wireless device were tested using the following measurement procedure.

[1] KDB 558074 D01 15.247 Meas Guidance v05r02

[2] ANSI C63.10-2020

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 C63.10-2020. 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

According to the requirements in Section 6.3 ~ Section 6.6 of ANSI C63.10-2020,

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.

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 data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2014) and CISPR Publication 22.

Detailed description of test facility was submitted to the Commission and accepted dated March 11, 2024 (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 ANSI/USEMCSC C63.2-2023, "American National Standard for Specifications of Electromagnetic Interference and Field Strength Measuring Instrumentation in the Frequency Range 9 kHz to 40 GHz".

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 C63.10-2020.

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 ($\pm$ kHz)
X dB, 99% Bandwidth	95 (Confidence level about 95 %, $k=2$)
Frequency stability	28 (Confidence level about 95 %, $k=2$)

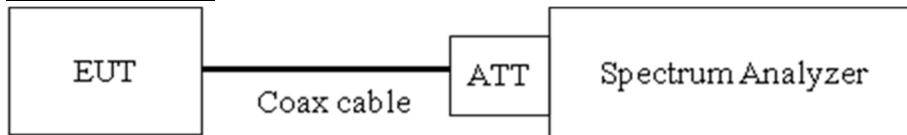
Parameter	Expanded Uncertainty ($\pm$ dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.54 (Confidence level about 95 %, $k=2$)
Conducted Output Power(Power Meter)	0.54 (Confidence level about 95 %, $k=2$)
Conducted Output Power(Signal Analyzer)	0.68 (Confidence level about 95 %, $k=2$)
Power Spectral Density	1.03 (Confidence level about 95 %, $k=2$)
Band Edge (Out of Band Emissions)	0.70 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.68 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.75 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.82 (Confidence level about 95 %, $k=2$)

7. DESCRIPTION OF TESTS

Test Item	Test Procedure
Duty Cycle	- ANSI C63.10-2020 – Section 11.6
6 dB Bandwidth	- ANSI C63.10-2020 – Section 11.8
Output Power	- ANSI C63.10-2020 – Section 11.9.1.2(Peak) & 11.9.2.3(Avg)
Power Spectral Density	- ANSI C63.10-2020 – Section 11.10
Conducted Band Edge(Out of Band Emissions) & Conducted Spurious Emissions	- ANSI C63.10-2020 – Section 11.11
Radiated Test	- ANSI C63.10-2020 – Section 6.4 (Below 30 MHz) - ANSI C63.10-2020 – Section 6.5 (30 MHz to 1000 MHz) - ANSI C63.10-2020 – Section 6.6 (1 GHz to 40 GHz) - ANSI C63.10-2020 – Section 6.10 & 11.12 (Restricted frequency bands)
AC Power line Conducted Emissions	- ANSI C63.10-2020 – Section 6.2

7.1. Duty Cycle

Test Configuration



Test Procedure

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 $T \leq 6.25$ 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 $> 50/T$.

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to :

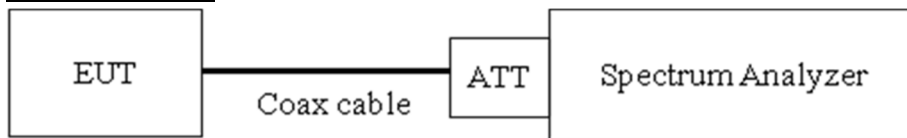
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz or 50 MHz ($\geq$ RBW)
3. SPAN = 0 Hz
4. Detector = Average
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on} / T_{total} and Duty Cycle Factor = $10\log(1/\text{Duty Cycle})$

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 :

- 1) RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
- 2) VBW $\geq 3 \times$ RBW
- 3) Detector = Peak
- 4) Trace mode = max hold
- 5) Sweep = No faster than coupled (auto) time.
- 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.

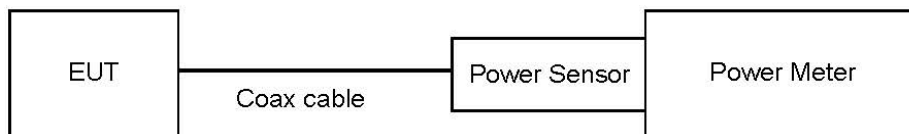
Note : We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

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

: Measure the peak power of the transmitter.

- Average Power

- 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

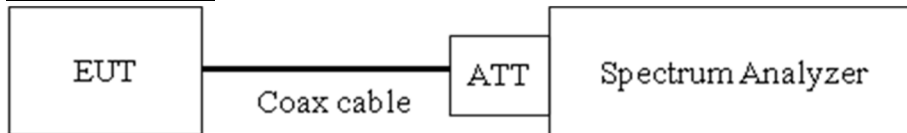
- Conducted Output Power(Peak) = Measured Value + ATT loss + Cable loss
- Conducted Output Power(Average) = Measured Value + ATT loss + Cable loss + Duty Cycle Factor

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.

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 DTS bandwidth.
- 3) $RBW = 3 \text{ kHz} \leq RBW \leq 100 \text{ kHz}$.
- 4) $VBW \geq 3 \times RBW$.
- 5) Sweep = No faster than coupled (auto) time.
- 6) Detector = Peak.
- 7) Trace mode = max hold.
- 8) Allow trace to fully stabilize.
- 9) Use the peak marker function to determine the maximum amplitude level within the RBW.
- 10) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Sample Calculation

- Power Spectral Density = Measured Value + ATT loss + Cable loss

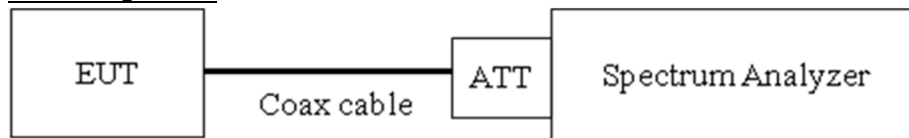
7.5. Conducted Band Edge(Out of Band Emissions) & Conducted Spurious Emissions

Limit

The maximum conducted (Peak) 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 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

[Conducted > 20 dBc]

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to :

- 1) RBW = 100 kHz
- 2) VBW $\geq 3 \times$ RBW
- 3) Set span to encompass the spectrum to be examined
- 4) Detector = Peak
- 5) Trace Mode = max hold
- 6) Sweep time = No faster than coupled (auto) time.
- 7) Ensure that the number of measurement points $\geq 2 \times$ 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	10.10
100	10.11
200	10.15
300	10.18
400	10.19
500	10.26
600	10.25
700	10.28
800	10.29
900	10.30
1000	10.30
2000	10.52
2400	10.60
2500	10.60
3000	10.62
4000	10.67
5000	10.80
6000	10.90
7000	10.90
8000	10.94
9000	11.04
10000	11.14
11000	11.18
12000	11.22
13000	11.28
14000	11.35
15000	11.44
16000	11.49
17000	11.53
18000	11.57
19000	11.63
20000	11.68
21000	11.71
22000	11.80
23000	11.82
24000	11.93
25000	11.95

Note : 1. 2400 ~ 2500 MHz is fundamental frequency range.

2. Factor = Attenuator loss + Cable loss

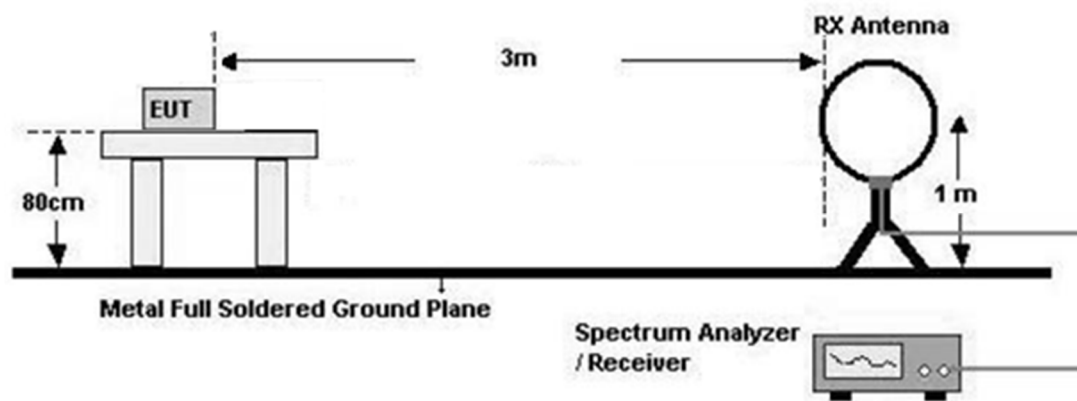
7.6. Radiated Test

Limit

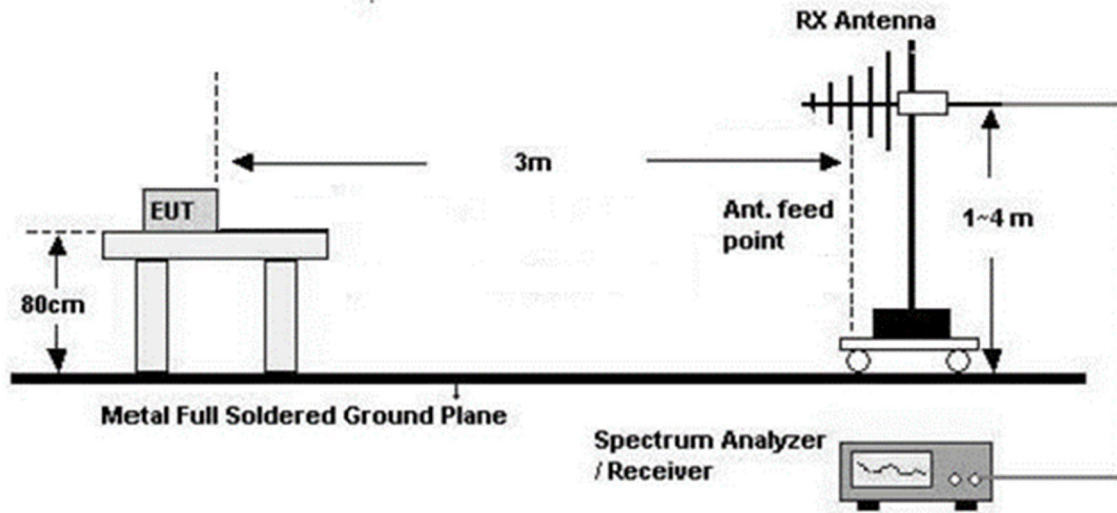
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 – 0.490	$2400/F(\text{kHz})$	300
0.490 – 1.705	$24000/F(\text{kHz})$	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

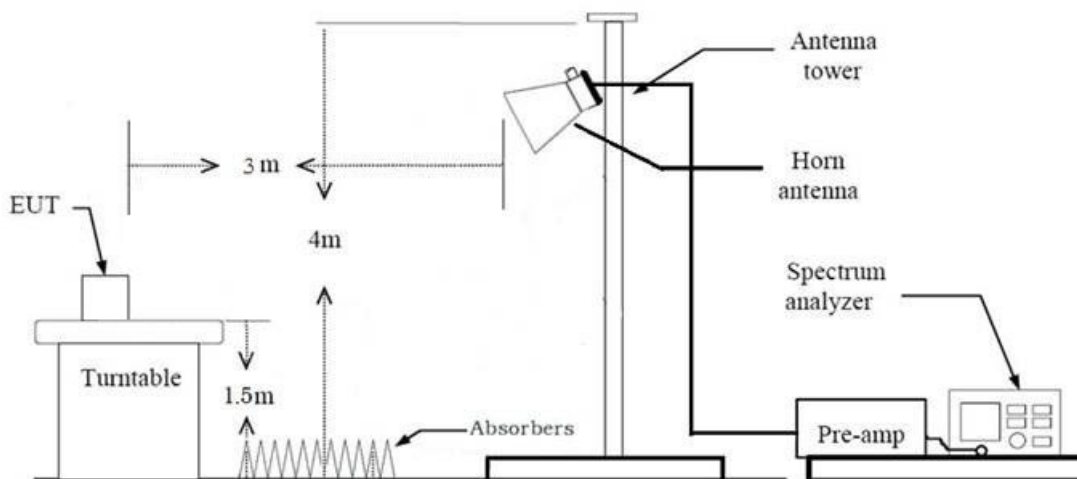
Below 30 MHz



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) = $40\log(3\text{ m}/300\text{ m}) = -80\text{ dB}$
Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) = $40\log(3\text{ m}/30\text{ m}) = -40\text{ dB}$
Measurement Distance : 3 m
8. Spectrum Analyzer Setting
Measurement Type(Peak):
 - Frequency Range = 9 kHz ~ 30 MHz
 - Detector = Peak
 - Trace = Max hold
 - RBW = 9 kHz
 - VBW $\geq 3 \times$ RBW
9. Total = Measured value + 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 Analyzer Setting
 - (1) Measurement Type(Peak):
 - Measured Frequency Range : 30 MHz – 1 GHz
 - Detector = Peak
 - Trace = Max hold
 - RBW = 100 kHz
 - VBW $\geq 3 \times$ 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 Value + 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. Spectrum Analyzer Setting
 - (1) Measurement Type(Peak):
 - Measured Frequency Range : 1 GHz – 25 GHz
 - Detector = Peak

- Trace = Max hold
 - RBW = 1 MHz
 - VBW $\geq 3 \times$ RBW
- (2) Measurement Type(Average): Duty cycle $\geq 98 \%$
- Measured Frequency Range : 1 GHz – 25 GHz
 - Detector = RMS
 - Averaging type = power (*i.e.*, RMS)
 - RBW = 1 MHz
 - VBW $\geq 3 \times$ RBW
 - Sweep time = auto.
 - Trace mode = average (at least 100 traces).
- (3) Measurement Type(Average): Duty cycle $< 98 \%$, duty cycle variations are less than $\pm 2 \%$
- Measured Frequency Range : 1 GHz – 25 GHz
 - Detector = RMS
 - Averaging type = power (*i.e.*, RMS)
 - RBW = 1 MHz
 - VBW $\geq 3 \times$ 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 Duty cycle test result.
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.
9. Distance extrapolation factor = $20\log$ (test distance / specific distance) (dB)
10. Total(Measurement Type : Peak)
- = Measured value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.G) + Distance Factor(D.F)
- Total(Measurement Type : Average, Duty cycle $\geq 98 \%$)
- = Measured value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.G) + Distance Factor(D.F)
- Total(Measurement Type : Average, Duty cycle $< 98 \%$)
- = Measured value + 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. Spectrum Analyzer Setting
 - (1) Measurement Type(Peak):
 - Measured Frequency Range : 2310 MHz ~ 2390 MHz / 2483.5 MHz ~ 2500 MHz
 - Detector = Peak
 - Trace = Max hold
 - RBW = 1 MHz
 - VBW $\geq 3 \times$ RBW
 - (2) Measurement Type(Average): Duty cycle $\geq 98 \%$,
 - Measured Frequency Range : 2310 MHz ~ 2390 MHz / 2483.5 MHz ~ 2500 MHz
 - Detector = RMS
 - Averaging type = power (*i.e.*, RMS)
 - RBW = 1 MHz
 - VBW $\geq 3 \times$ RBW
 - Sweep time = auto.
 - Trace mode = average (at least 100 traces).
 - (3) Measurement Type(Average): Duty cycle $< 98 \%$, duty cycle variations are less than $\pm 2 \%$
 - Measured Frequency Range : 2310 MHz ~ 2390 MHz / 2483.5 MHz ~ 2500 MHz
 - Detector = RMS
 - Averaging type = power (*i.e.*, RMS)
 - RBW = 1 MHz
 - VBW $\geq 3 \times$ 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 Duty cycle test result.
 - (4) Measurement Type(Average , Integration Method) : Duty cycle $\geq 98 \%$

- Measured Frequency Range : 2310 MHz ~ 2390 MHz/ 2483.5 MHz ~ 2500 MHz
- Detector = RMS
- Averaging type = power (*i.e.*, RMS)
- RBW = 100 kHz
- VBW $\geq 3 \times$ RBW
- Sweep time = auto.
- Trace mode = average (at least 100 traces).
- Compute the power by integrating the spectrum over 1 MHz using the analyzer's band-power measurement function with band limits set equal to the emission frequency ($f_{\text{emission}} \pm 0.5$ MHz). If the instrument does not have a band-power function, then sum the amplitude levels (in power units) at 100 kHz intervals extending across the 1 MHz spectrum defined by $f_{\text{emission}} \pm 0.5$ MHz

(5) Measurement Type(Average , Integration Method) : 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 = 100 kHz
 - VBW $\geq 3 \times$ RBW
 - Sweep time = auto.
 - Trace mode = average (at least 100 traces).
 - Compute the power by integrating the spectrum over 1 MHz using the analyzer's band-power measurement function with band limits set equal to the emission frequency ($f_{\text{emission}} \pm 0.5$ MHz). If the instrument does not have a band-power function, then sum the amplitude levels (in power units) at 100 kHz intervals extending across the 1 MHz spectrum defined by $f_{\text{emission}} \pm 0.5$ MHz.
 - 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 Duty cycle test result.
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.
9. Distance extrapolation factor = $20 \log$ (test distance / specific distance) (dB)
10. Total (Measurement Type : Peak)
- = Peak Measured Value
- Total(Measurement Type : Average, Duty cycle ≥ 98 %)
- = Average Measured Value

Total(Measurement Type : Average, Duty cycle < 98 %)

= Average Measured Value + Duty Cycle Factor

- We apply to the offset in the range 1 GHz - 18 GHz.
- The offset = Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

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 μ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dB μ V)	
	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 Value + 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
 - Worstcase : Stand alone
2. EUT Axis
 - Radiated Spurious Emissions : Y
 - Radiated Restricted Band Edge : Z
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
6. Radiated Spurious Emission
 - All modes of operation were investigated and the worst case results are reported.
 - Mode: 802.11b, 802.11g, 802.11n(HT20)
 - Worst case: 802.11b
7. SM-A176U, Additional Models were tested and the worst case results are reported.
(Worst case: SM-A176U)

Radiated test(Simultaneous transmission Scenario)

1. Please refer to the [BT LE], [UNII] Test Report.

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 + Travel Adapter
Stand alone + Travel Adapter
 - Worstcase : Stand alone + Travel Adapter
2. SM-A176U, Additional Models were tested and the worst case results are reported.
(Worst case: SM-A176U)

Conducted test

1. The EUT was configured with data rate of highest power.
2. SM-A176U, Additional Models were tested and the worst case results are reported.
(Worst case: SM-A176U)

8. SUMMARY TEST OF RESULTS

Test Item	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 > 20 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

Note. The decision rule applies 'simple acceptance'

9. TEST RESULT

9.1 DUTY CYCLE

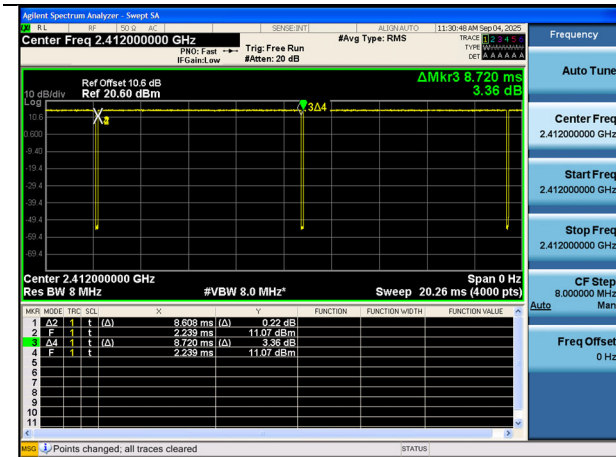
Mode	Data Rate	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11b	1 Mbps	8.608	8.720	0.987	0.056
802.11g	6 Mbps	1.428	1.525	0.936	0.286
802.11n HT20	MCS0	1.336	1.430	0.934	0.297

Test Plots

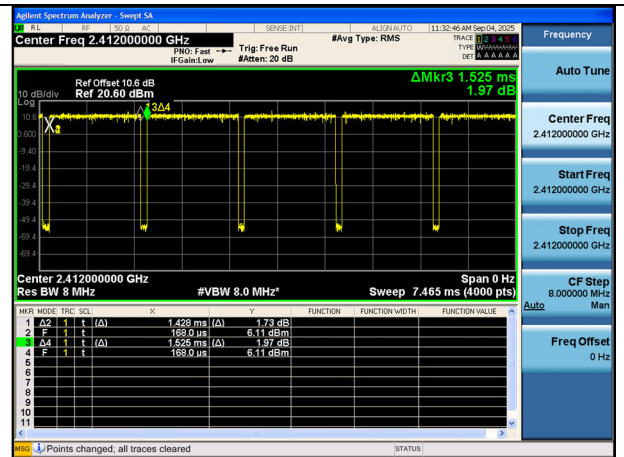
Note:

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

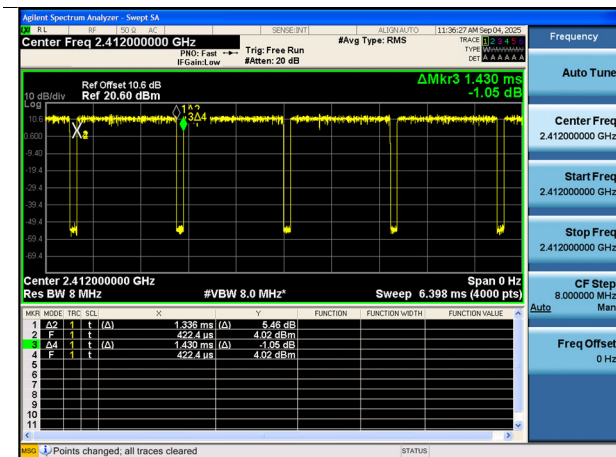
802.11b (1 Mbps)



802.11g (6 Mbps)



802.11n(HT20) (MCS0)



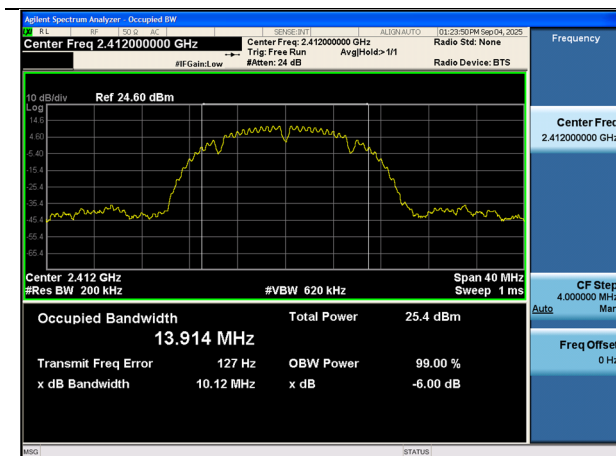
9.2 6 dB BANDWIDTH

Mode	Frequency [MHz]	Channel No.	6 dB Bandwidth [MHz]	Minimum Bandwidth [MHz]
802.11b	2412	1	10.12	0.50
	2437	6	10.13	0.50
	2462	11	10.14	0.50
802.11g	2412	1	16.86	0.50
	2437	6	16.81	0.50
	2462	11	16.79	0.50
802.11n HT20	2412	1	18.84	0.50
	2437	6	18.90	0.50
	2462	11	18.94	0.50

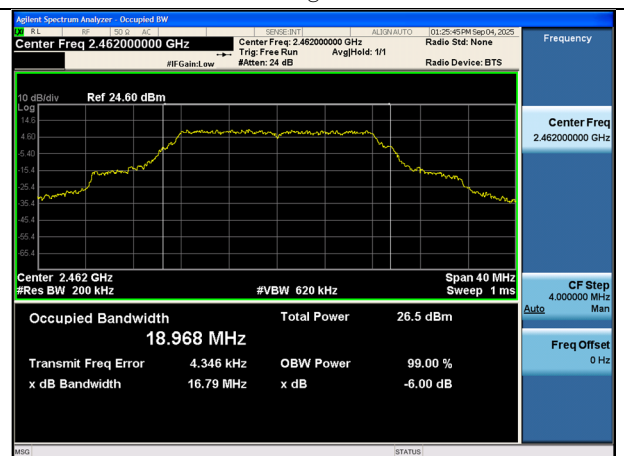
Test Plots

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

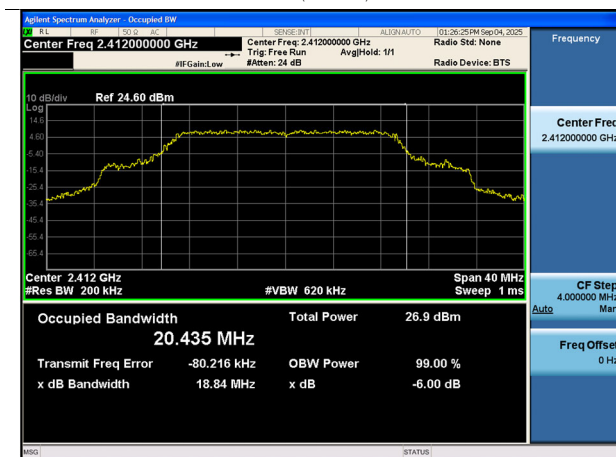
802.11b-CH 1



802.11g-CH 11



802.11n(HT20)-CH 1



9.3 OUTPUT POWER

Peak Power

Mode	Frequency [MHz]	Channel No.	Data Rate	Conducted Peak Power [dBm]	Limit [dBm]
802.11b	2412	1	11M	25.86	30
	2437	6	11M	26.10	30
	2462	11	11M	26.05	30
802.11g	2412	1	54M	26.28	30
	2437	6	6M	27.40	30
	2462	11	54M	26.11	30
802.11n HT20	2412	1	MCS6	26.38	30
	2437	6	MCS0	27.42	30
	2462	11	MCS6	26.37	30

Average Power

Note : Total Power [dBm] = Measured Power [dBm] + Duty Cycle Factor [dB]

Mode	Frequency [MHz]	Channel No.	Data Rate	Total Average Power [dBm]			Limit [dBm]
				Measured Value	D.C.F	Summed	
802.11b	2412	1	1M	19.77	0.06	19.82	30
	2437	6	1M	19.86	0.06	19.91	30
	2462	11	1M	19.79	0.06	19.85	30
802.11g	2412	1	6M	17.38	0.29	17.67	30
	2437	6	6M	19.16	0.29	19.44	30
	2462	11	6M	17.74	0.29	18.02	30
802.11n HT20	2412	1	MCS0	17.25	0.30	17.54	30
	2437	6	MCS0	19.10	0.30	19.39	30
	2462	11	MCS0	17.82	0.30	18.11	30

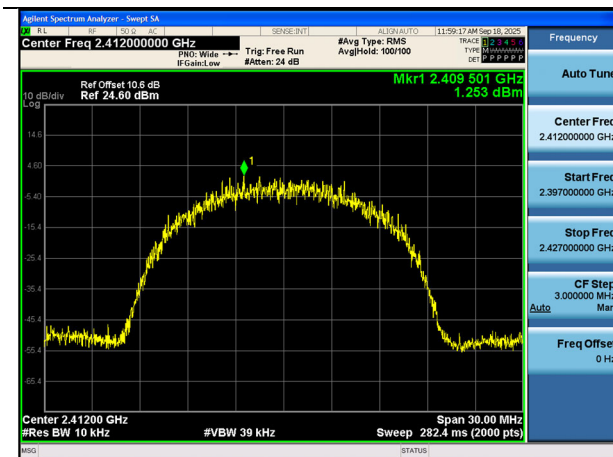
9.4 POWER SPECTRAL DENSITY

Mode	Frequency [MHz]	Channel No.	Data Rate	Power Spectral Density [dBm/kHz]	Limit [dBm/3kHz]
802.11b	2412	1	11M	1.253	8
	2437	6	11M	1.127	
	2462	11	11M	1.175	
802.11g	2412	1	54M	-2.199	
	2437	6	6M	-1.740	
	2462	11	54M	-2.076	
802.11n HT20	2412	1	MCS6	-1.354	
	2437	6	MCS0	0.638	
	2462	11	MCS6	-0.994	

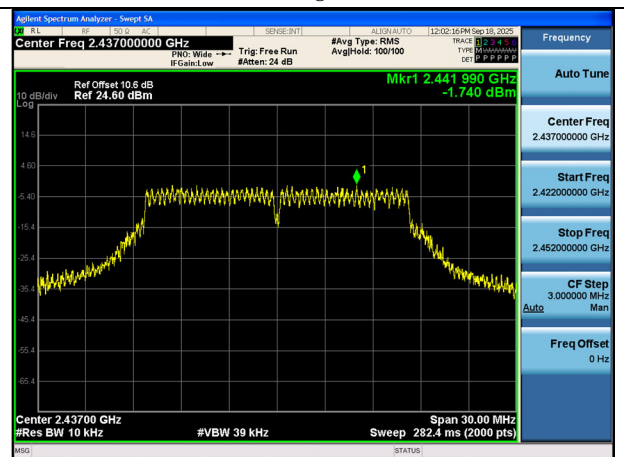
Test Plots

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

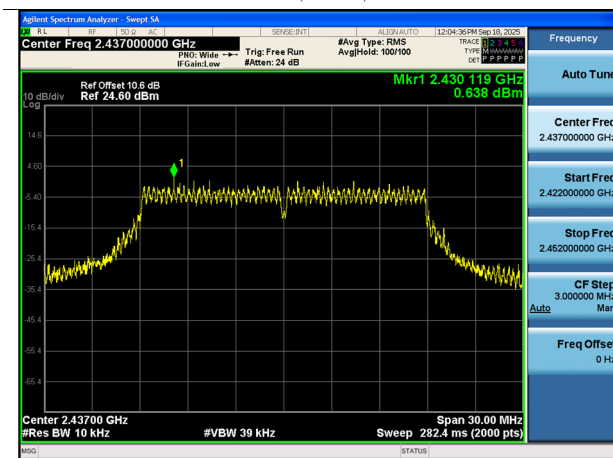
802.11b-CH 1



802.11g-CH 6



802.11n(HT20)-CH 6



9.5 BAND EDGE / CONDUCTED SPURIOUS EMISSIONS

Band Edge

Limit : 20 dBc

Mode	Freq. [MHz]	CH.	Measured Position	Band edge[dB]
802.11b	2 412	1	Lowest Bandedge	48.071
	2 462	11	Highest Bandedge	56.478
802.11g	2 412	1	Lowest Bandedge	25.099
	2 462	11	Highest Bandedge	49.780
802.11n HT20	2 412	1	Lowest Bandedge	20.575
	2 462	11	Highest Bandedge	47.325

Conducted Spurious Emissions

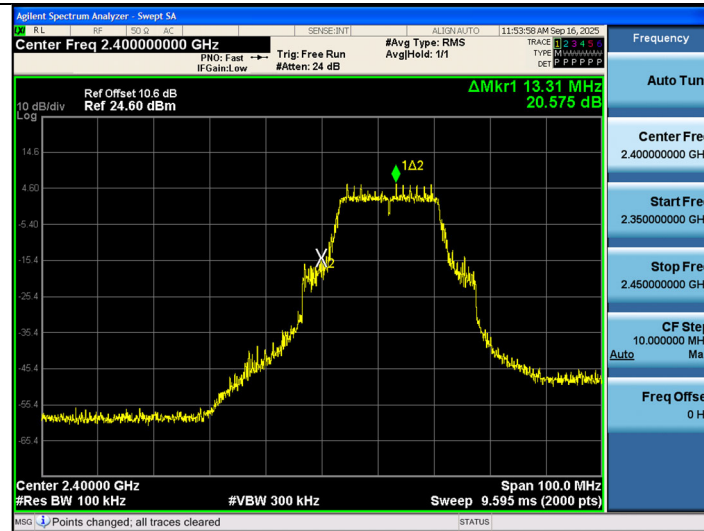
Limit : 20 dBc

Mode	Frequency [MHz]	Channel No.	Conducted Spurious Emissions [dBc]
802.11b	2412	1	66.034
	2437	6	65.135
	2462	11	66.374
802.11g	2412	1	64.131
	2437	6	62.189
	2462	11	63.420
802.11n HT20	2412	1	62.893
	2437	6	64.865
	2462	11	63.833

Test Plots(Band Edge)

Note: In order to simplify the report, attached plots were only the worst case.

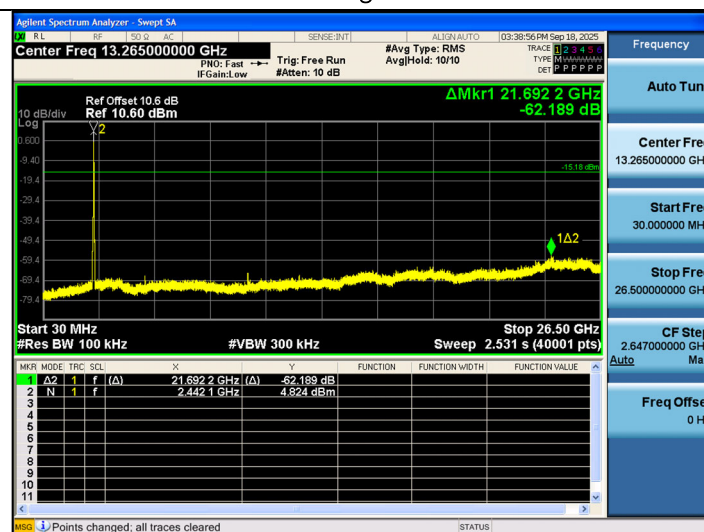
802.11n(HT20) - CH 1



Test Plots(Conducted Spurious Emissions)

Note: In order to simplify the report, attached plots were only the worst case.

802.11g - CH 6



Limit: -15.176 dBm

9.6 RADIATED SPURIOUS EMISSIONS

Frequency Range : 9 kHz – 30 MHz

Frequency	Measured Value	A.F+C.L+D.F	Ant. POL	Total	Limit	Margin
[MHz]	[dB μ V/m]	[dB/m]	[H/V]	[dB μ V/m]	[dB μ V/m]	[dB]

No Critical peaks found

Note:

1. The Measured value 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 = $40\log(\text{specific distance} / \text{test distance})$ (dB)
3. Limit line = specific Limits (dB μ V) + Distance extrapolation factor

Frequency Range : Below 1 GHz

Frequency	Measured Value	A.F+C.L	Ant. POL	Total	Limit	Margin
[MHz]	[dB μ V/m]	[dB/m]	[H/V]	[dB μ V/m]	[dB μ V/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

Band : DTS			Operation Mode :		802.11b			
CH.1 2412 MHz			Transfer Rate :		1Mbps			
Frequency [MHz]	Measured value [dBμV]	D.C.F [dB]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4824	45.66	0.00	1.95	V	47.61	73.98	26.37	PK
4824	33.72	0.00	1.95	V	35.67	53.98	18.31	AV
7236	41.92	0.00	10.48	V	52.40	73.98	21.58	PK
7236	28.90	0.00	10.48	V	39.38	53.98	14.60	AV
4824	45.28	0.00	1.95	H	47.23	73.98	26.75	PK
4824	33.81	0.00	1.95	H	35.76	53.98	18.22	AV
7236	41.48	0.00	10.48	H	51.96	73.98	22.02	PK
7236	29.30	0.00	10.48	H	39.78	53.98	14.20	AV

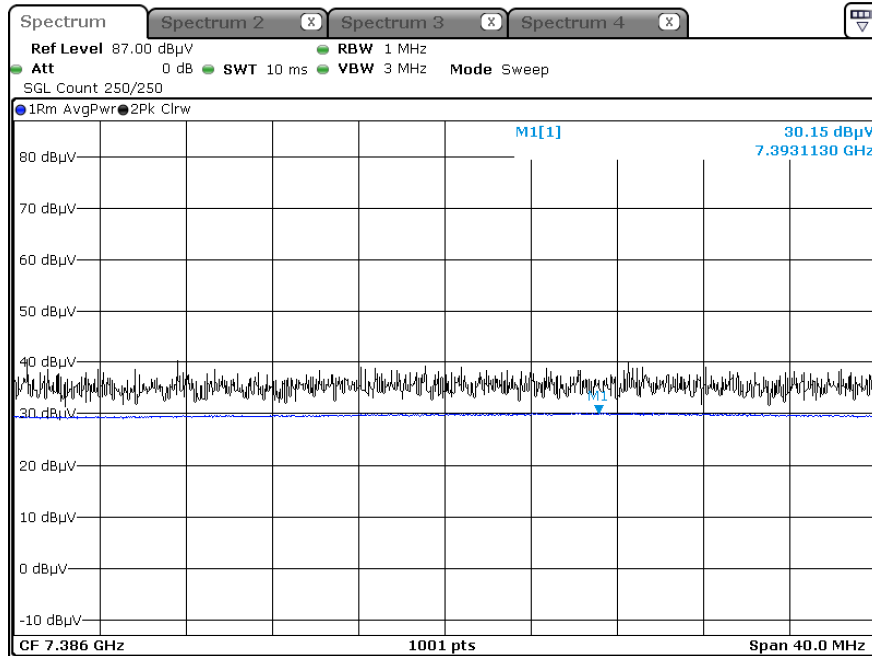
Band : DTS			Operation Mode :		802.11b			
CH.6 2437 MHz			Transfer Rate :		1Mbps			
Frequency [MHz]	Measured value [dBμV]	D.C.F [dB]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4874	46.28	0.00	2.26	V	48.54	73.98	25.44	PK
4874	34.39	0.00	2.26	V	36.65	53.98	17.33	AV
7311	41.88	0.00	9.95	V	51.83	73.98	22.15	PK
7311	29.67	0.00	9.95	V	39.62	53.98	14.36	AV
4874	46.47	0.00	2.26	H	48.73	73.98	25.25	PK
4874	34.28	0.00	2.26	H	36.54	53.98	17.44	AV
7311	41.77	0.00	9.95	H	51.72	73.98	22.26	PK
7311	29.78	0.00	9.95	H	39.73	53.98	14.25	AV

Band : DTS			Operation Mode :		802.11b			
CH.11 2462 MHz			Transfer Rate :		1Mbps			
Frequency [MHz]	Measured value [dBμV]	D.C.F [dB]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4924	45.57	0.00	3.14	V	48.71	73.98	25.27	PK
4924	34.28	0.00	3.14	V	37.42	53.98	16.56	AV
7386	42.08	0.00	10.39	V	52.47	73.98	21.51	PK
7386	29.76	0.00	10.39	V	40.15	53.98	13.83	AV
4924	46.08	0.00	3.14	H	49.22	73.98	24.76	PK
4924	34.42	0.00	3.14	H	37.56	53.98	16.42	AV
7386	43.09	0.00	10.39	H	53.48	73.98	20.50	PK
7386	30.15	0.00	10.39	H	40.54	53.98	13.44	AV

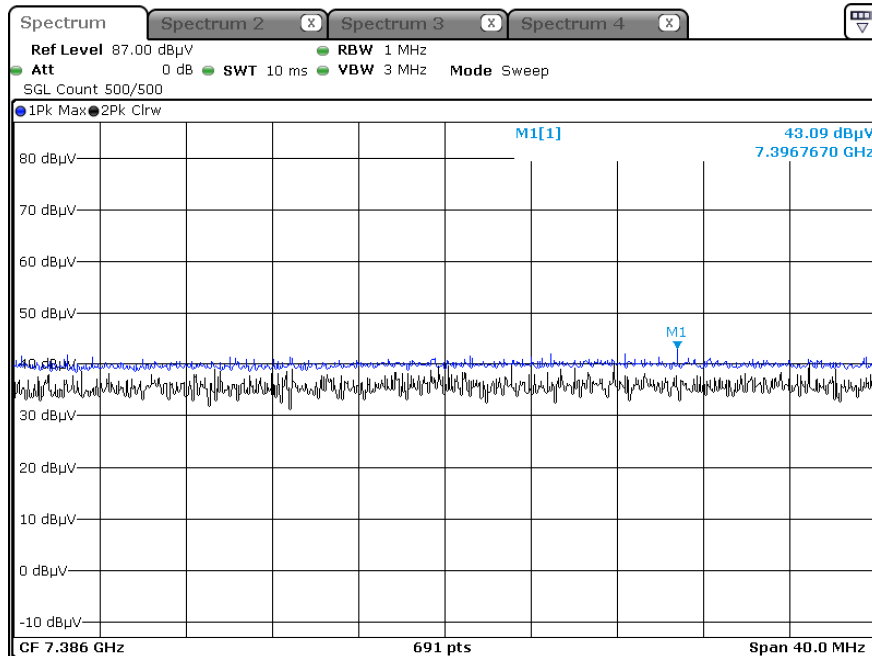
Test Plots

Note: In order to simplify the report, Plots of worst case are only reported.

Radiated Spurious Emissions plot – Average Result (802.11b_1 Mbps, Ch.11 3rd Harmonic, Y-H)



Radiated Spurious Emissions plot – Peak Result (802.11b_1 Mbps, Ch.11 3rd Harmonic, Y-H)



9.7 RADIATED RESTRICTED BAND EDGES

#Note : Integration method Used (ANSI C63.10-2020 Section 11.12.3.2)

802.11b	Channel	01 Ch	Freq	2412 MHz		Transfer Rate	1 Mbps
Frequency	Measured Value	A.F.+C.L+D.F	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
2390.0	59.45	-	V	59.45	73.98	14.53	PK
2390.0	48.72	-	V	48.72	53.98	5.26	AV

802.11b	Channel	11 Ch	Freq	2462 MHz		Transfer Rate	1 Mbps
Frequency	Measured Value	A.F.+C.L+D.F	ANT. POL	Total	Limit	Margin	Measurement
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	Type
2483.5	58.99	-	H	58.99	73.98	14.99	PK
2483.5	47.42	-	H	47.42	53.98	6.56	AV

802.11g		Channel	01 Ch	Freq	2412 MHz		Transfer Rate	6 Mbps
Frequency	Measured Value	Duty Cycle Factor	A.F.+C.L+D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	65.15	0.00	-	V	65.15	73.98	8.83	PK
2390.0	49.67	0.29	-	V	49.96	53.98	4.02	AV

802.11g		Channel	02 Ch	Freq	2417 MHz		Transfer Rate	6 Mbps
Frequency	Measured Value	Duty Cycle Factor	A.F.+C.L+D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	65.88	0.00	-	V	65.88	73.98	8.10	PK
2390.0	49.91	0.29	-	V	50.20	53.98	3.78	AV

802.11g		Channel	10 Ch	Freq	2457 MHz		Transfer Rate	6 Mbps
Frequency	Measured Value	Duty Cycle Factor	A.F.+C.L+D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2483.5	65.91	0.00	-	H	65.91	73.98	8.07	PK
2483.5	48.16	0.29	-	H	48.45	53.98	5.53	AV

802.11g		Channel	11 Ch	Freq	2462 MHz		Transfer Rate	6 Mbps
Frequency	Measured Value	Duty Cycle Factor	A.F.+C.L+D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2483.5~2500	65.89	0.00	-	H	65.89	73.98	8.09	PK
2485.5~2500	50.64	0.29	-	H	50.93	53.98	3.05	AV

802.11n (HT20)		Channel	01 Ch	Freq	2412 MHz		Transfer MCS Index	MCS0
Frequency	Measured Value	Duty Cycle Factor	A.F.+C.L+D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	69.09	0.00	-	V	69.09	73.98	4.89	PK
#2388~2390	51.24	0.30	-	V	51.54	53.98	2.44	AV
2310~2388	50.05	0.30	-	V	50.35	53.98	3.63	AV

802.11n (HT20)		Channel	02 Ch	Freq	2417 MHz		Transfer MCS Index	MCS0
Frequency	Measured Value	Duty Cycle Factor	A.F.+C.L+D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	71.56	0.00	-	V	71.56	73.98	2.42	PK
#2388~2390	50.17	0.30	-	V	50.47	53.98	3.51	AV
2310~2388	49.85	0.30	-	V	50.15	53.98	3.83	AV

802.11n (HT20)		Channel	10 Ch	Freq	2457 MHz		Transfer MCS Index	MCS0
Frequency	Measured Value	Duty Cycle Factor	A.F.+C.L+D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2483.5~2500	65.00	0.00	-	H	65.00	73.98	8.98	PK
2483.5~2500	48.44	0.30	-	H	48.74	53.98	5.24	AV

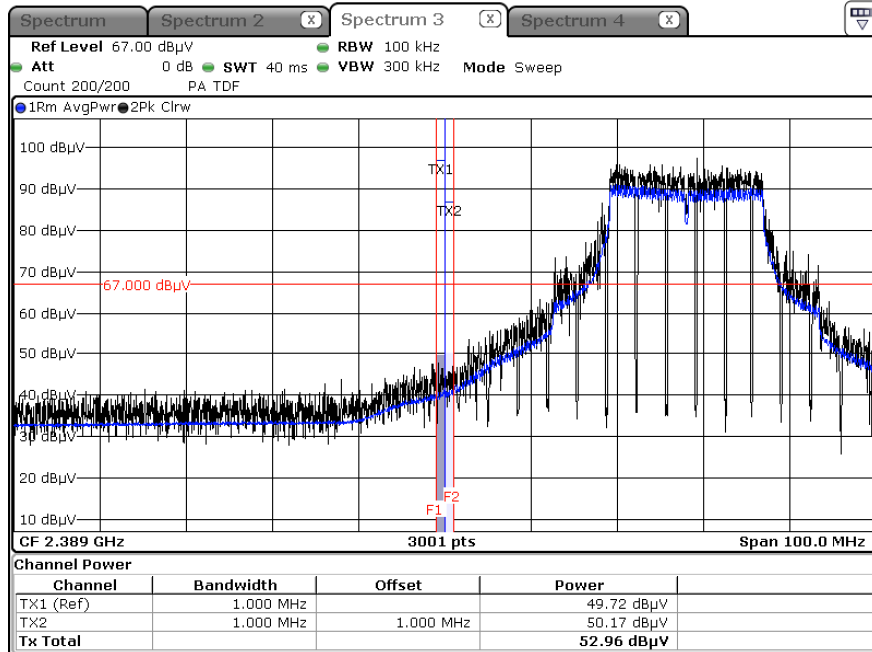
802.11n (HT20)		Channel	11 Ch	Freq	2462 MHz		Transfer MCS Index	MCS0
Frequency	Measured Value	Duty Cycle Factor	A.F.+C.L+D.F	ANT. POL	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]	
2483.5~2500	69.06	0.00	-	H	69.06	73.98	4.92	PK
#2483.5~2485.5	50.88	0.30	-	H	51.18	53.98	2.80	AV
2485.5~2500	49.09	0.30	-	H	49.39	53.98	4.59	AV

Test Plots

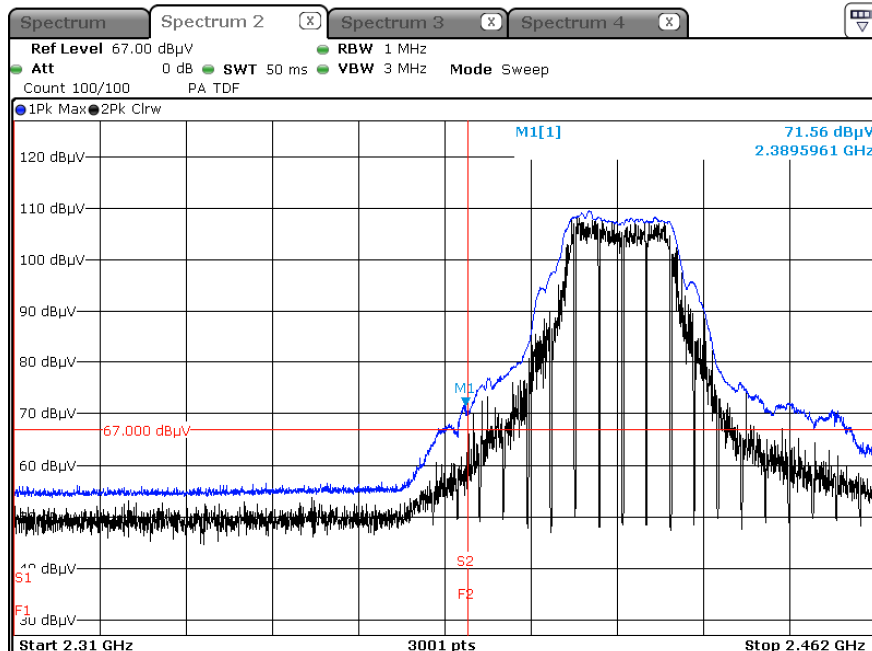
Note: In order to simplify the report, Plots of worst case are only reported.

Radiated Restricted Band Edges plot – Average Result (802.11n (HT20)_MCS0, Ch.2, Z-V)

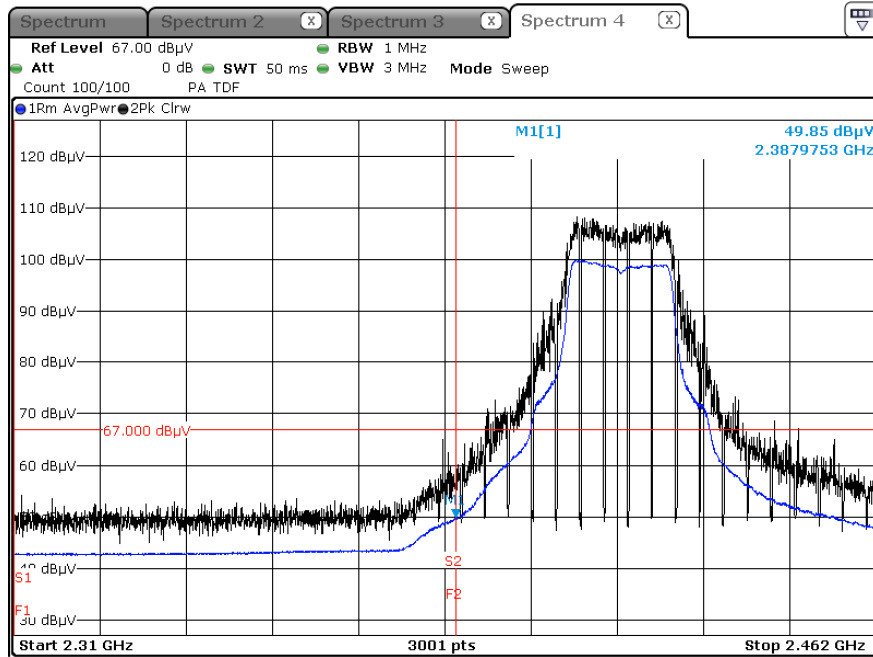
(Avg Integration method Used)



Radiated Restricted Band Edges plot – Peak Result (802.11n (HT20)_MCS0, Ch.2, Z-V)



Radiated Restricted Band Edges plot – Average Result (802.11n (HT20)_MCS0, Ch.2, Z-V)



9.8 POWERLINE CONDUCTED EMISSIONS

Conducted Emissions

Test

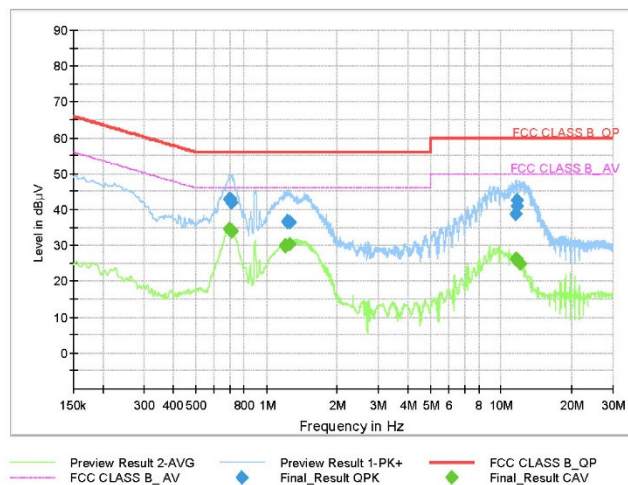
1 / 1

Test Report

Common Information

EUT : SM-A176U
Operating Conditions : 2.4G WLAN Mode
Comment :

Full Spectrum



Final Result QPK

Frequency (MHz)	QuasiPeak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.6935	42.83	56.00	13.17	9.000	L1	9.8
0.7025	42.87	56.00	13.13	9.000	L1	9.8
0.7115	42.02	56.00	13.98	9.000	L1	9.8
1.2245	36.83	56.00	19.17	9.000	L1	9.8
1.2335	36.38	56.00	19.62	9.000	N	9.8
1.2560	36.63	56.00	19.37	9.000	N	9.8
11.5948	38.78	60.00	21.22	9.000	L1	10.2
11.6443	41.11	60.00	18.89	9.000	L1	10.2
11.6488	42.60	60.00	17.40	9.000	L1	10.2

Final Result CAV

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.6958	34.47	46.00	11.53	9.000	L1	9.8
0.7048	34.23	46.00	11.77	9.000	L1	9.8
0.7115	33.87	46.00	12.13	9.000	L1	9.8
1.1953	29.73	46.00	16.27	9.000	L1	9.8
1.2065	30.09	46.00	15.91	9.000	L1	9.8
1.2538	30.40	46.00	15.60	9.000	L1	9.8
11.5520	26.35	50.00	23.65	9.000	L1	10.2
11.6465	26.37	50.00	23.63	9.000	L1	10.2
12.0200	24.89	50.00	25.11	9.000	L1	10.2

2025-09-23

오전 9:12:49

9.9 CONFIRMATION OF GEO-LOCATION MECHANISM

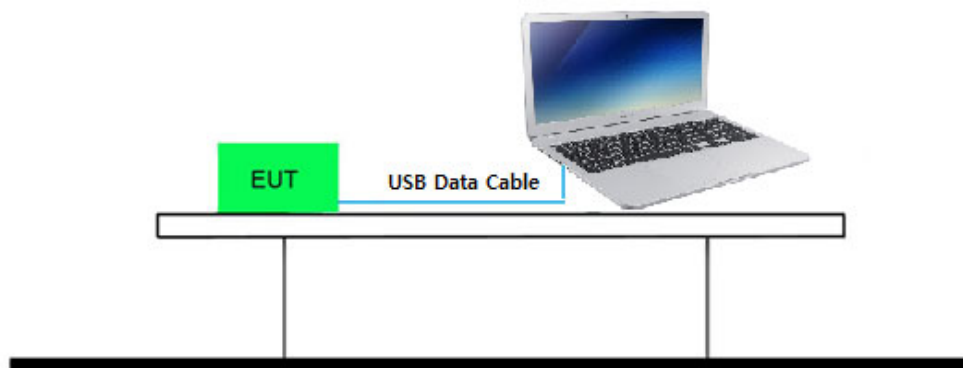
The device uses MCC information obtained from the public cellular carrier to determine that it is operating outside the U.S. and then enable channels 12 and 13 only if a non-US MCC that supports channel 12 and 13 is confirmed.

The device uses a geo-location mechanism based on the Country in order to only enable certain WLAN DTS bands when the device is not in the USA.

WLAN	Country code = US	Country code = KR(Korea)
CH 12	Did not connect	Connected
CH 13	Did not connect	Connected

The verification tests confirmed the operational of the geo-location mechanism.

Test Setup



Test Procedure

In case of Country code

1. Open Command Prompt.
2. Setting the country for product
3. At the Command Prompt, enter the command.


```
>adb root
>adb remount
>adb shell cmd wifi get-country-code
>adb shell iw phy phy0 channels
```

Setting the country for product

Country code = US

CHANGE THE MAC

Samsung MLO Control



Samsung lwh Control



Current CountryCode : US

SET COUNTRY

REFRESH COUNTRY

Country code = KR(Korea)

CHANGE THE MAC

Samsung MLO Control



Samsung lwh Control



Current CountryCode : KR

SET COUNTRY

REFRESH COUNTRY

Country code = US

```
C:\platform-tools>adb shell cmd wifi get-country-code
Wifi Country Code = US

C:\platform-tools>adb shell iw phy phy0 channels
Band 1:
* 2412 MHz [1]
  Maximum TX power: 30.0 dBm
  Channel widths: 20MHz HT40+
* 2417 MHz [2]
  Maximum TX power: 30.0 dBm
  Channel widths: 20MHz HT40+
* 2422 MHz [3]
  Maximum TX power: 30.0 dBm
  Channel widths: 20MHz HT40+
* 2427 MHz [4]
  Maximum TX power: 30.0 dBm
  Channel widths: 20MHz HT40+
* 2432 MHz [5]
  Maximum TX power: 30.0 dBm
  Channel widths: 20MHz HT40- HT40+
* 2437 MHz [6]
  Maximum TX power: 30.0 dBm
  Channel widths: 20MHz HT40- HT40+
* 2442 MHz [7]
  Maximum TX power: 30.0 dBm
  Channel widths: 20MHz HT40- HT40+
* 2447 MHz [8]
  Maximum TX power: 30.0 dBm
  Channel widths: 20MHz HT40-
* 2452 MHz [9]
  Maximum TX power: 30.0 dBm
  Channel widths: 20MHz HT40-
* 2457 MHz [10]
  Maximum TX power: 30.0 dBm
  Channel widths: 20MHz HT40-
* 2462 MHz [11]
  Maximum TX power: 30.0 dBm
  Channel widths: 20MHz HT40-
* 2467 MHz [12] (disabled)
* 2472 MHz [13] (disabled)
```

Country code = KR (Korea)

```
C:\platform-tools>adb shell cmd wifi get-country-code
Wifi Country Code = KR

C:\platform-tools>adb shell iw phy phy0 channels
Band 1:
* 2412 MHz [1]
  Maximum TX power: 20.0 dBm
  Channel widths: 20MHz HT40+
* 2417 MHz [2]
  Maximum TX power: 20.0 dBm
  Channel widths: 20MHz HT40+
* 2422 MHz [3]
  Maximum TX power: 20.0 dBm
  Channel widths: 20MHz HT40+
* 2427 MHz [4]
  Maximum TX power: 20.0 dBm
  Channel widths: 20MHz HT40+
* 2432 MHz [5]
  Maximum TX power: 20.0 dBm
  Channel widths: 20MHz HT40- HT40+
* 2437 MHz [6]
  Maximum TX power: 20.0 dBm
  Channel widths: 20MHz HT40- HT40+
* 2442 MHz [7]
  Maximum TX power: 20.0 dBm
  Channel widths: 20MHz HT40- HT40+
* 2447 MHz [8]
  Maximum TX power: 20.0 dBm
  Channel widths: 20MHz HT40- HT40+
* 2452 MHz [9]
  Maximum TX power: 20.0 dBm
  Channel widths: 20MHz HT40- HT40+
* 2457 MHz [10]
  Maximum TX power: 20.0 dBm
  Channel widths: 20MHz HT40-
* 2462 MHz [11]
  Maximum TX power: 20.0 dBm
  Channel widths: 20MHz HT40-
* 2467 MHz [12]
  Maximum TX power: 20.0 dBm
  Channel widths: 20MHz HT40-
* 2472 MHz [13]
  Maximum TX power: 20.0 dBm
  Channel widths: 20MHz HT40-
```

10. LIST OF TEST EQUIPMENT

Conducted Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
LISN	ENV216	Rohde & Schwarz	102245	07/15/2026	Annual
EMI Test Receiver	ESR	Rohde & Schwarz	101910	08/20/2026	Annual
Temperature Chamber	SU-642	ESPEC	0093008124	02/11/2026	Annual
Signal Analyzer	N9030A	Agilent	MY49431210	12/12/2025	Annual
Power Meter	N1911A	Agilent	MY45100523	02/21/2026	Annual
Power Sensor	N1921A	Agilent	MY57820067	02/04/2026	Annual
Directional Coupler	87300B	Agilent	3116A03621	10/14/2026	Annual
Power Splitter	11667B	Hewlett Packard	5001	04/10/2026	Annual
DC Power Supply	E3632A	H.P	KR75303243	04/16/2026	Annual
Attenuator(10 dB)	8493C	Hewlett Packard	07560	05/27/2026	Annual
Software	EMC32	Rohde & Schwarz	N/A	N/A	N/A
Automation Software	FCC WLAN Conducted	HCT CO., LTD	-	-	-
Automation Software	FCC Bluetooth Conducted	HCT CO., LTD	-	-	-

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 & Turn Table)	CO3000	Innco system	CO3000/1031/ 41190717/P	N/A	N/A
Antenna Mast	MA4640	Innco system	S2AM	07/25/2026	Annual
Turn Table	DS2000-S	Innco system	N/A	N/A	N/A
Loop Antenna	FMZB 1513	Rohde & Schwarz	1513-333	03/07/2026	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck	760	02/17/2027	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	02299	01/29/2026	Biennial
Horn Antenna (15GHz ~ 40 GHz)	BBHA9170	Schwarzbeck	BBHA9170342	09/20/2026	Biennial
Spectrum Analyzer	FSV40	Rohde & Schwarz	100901	02/21/2026	Annual
Signal Analyzer	N9030A	Agilent	MY52350879	03/25/2026	Annual
Attenuator(3 dB)	18B-03	Api tech.	1	04/21/2026	Annual
Band Reject Filter	WRCJV12-4900-5100-5900- 6100-50SS	Wainwright Instruments	5	05/27/2026	Annual
Band Reject Filter	WRCJV12-4900-5100-5900- 6100-50SS	Wainwright Instruments	6	05/27/2026	Annual
Band Reject Filter	WRCJV2400/2483.5- 2370/2520-60/12SS	Wainwright Instruments	2	12/26/2025	Annual
Band Reject Filter	WRCJV5100/5850-40/50- 8EEK	Wainwright Instruments	1	01/09/2026	Annual
RF Switching System	FMSR-04B (3G HPF+LNA)	T&M SYSTEM	S2L1	12/23/2025	Annual
RF Switching System	FMSR-04B (10dB ATT+LNA)	T&M SYSTEM	S2L2	12/23/2025	Annual
RF Switching System	FMSR-04B (3dB ATT+LNA)	T&M SYSTEM	S2L3	12/23/2025	Annual
RF Switching System	FMSR-04B (LNA)	T&M SYSTEM	S2L4	12/23/2025	Annual
RF Switching System	FMSR-04B (7G HPF+LNA)	T&M SYSTEM	S2L5	12/23/2025	Annual
Power Amplifier	CBL18265035	CERNEX	22966	10/21/2026	Annual
Power Amplifier	CBL26405040	CERNEX	25956	02/19/2026	Annual
Automation Software	FCC WLAN Radiated	HCT CO., LTD	-	-	-

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-2510-FC039-P