

TEST REPORT

FCC DTS Test for SM-A376U
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2512-FC037

DATE OF ISSUE
December 16, 2025

Tested by
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TEST REPORT

REPORT NO.

HCT-RF-2512-FC037

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Additional Model

SM-A376U1, SM-S376V

Applicant

SAMSUNG Electronics Co., Ltd.

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

Product Name

Mobile Phone

Model Name

SM-A376U

FCC ID

A3LSMA376U

Date of Test

November 04, 2025 ~ December 16, 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	December 16, 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).

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1. EUT DESCRIPTION

Model	SM-A376U		
Additional Model	SM-A376U1, SM-S376V		
EUT Type	Mobile Phone		
Power Supply	DC 3.90 V		
Frequency Range	2 412 MHz ~ 2 462 MHz		
Max. RF Output Power	<u>Average Power</u>	SISO (Ant.1) :	17.59 dBm
		MIMO (Ant.1+ Ant.2) :	20.74 dBm
	<u>Peak Power</u>	SISO (Ant.1) :	24.02 dBm
		MIMO (Ant.1+ Ant.2) :	26.93 dBm
Modulation Type	DSSS/CCK : 802.11b OFDM : 802.11g, 802.11n		
Number of Channels	11 Channels		
Antenna Information	Please refer to the Antenna Specification document.		
Serial number	Conducted : R3CY90Z7ZCZ Radiated : R3CY90Z80FT		

Grant Notes :

1. Output Power listed is conducted(Average)

ANTENNA CONFIGURATIONS

1. Antenna configuration

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

Note:

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

2. 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	5 GHz WiFi Ant.2	BT Ant.1	BT Ant.2	Test Case
BT ANT.1 + 5 GHz WiFi MIMO	on	on	on	-	Scenario 1
BT ANT.1 + 5 GHz WiFi ANT.1	on	-	on	-	Scenario 2

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 ANSI C63.5-2017.

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 C63.4-2014 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 %, $k=2$)

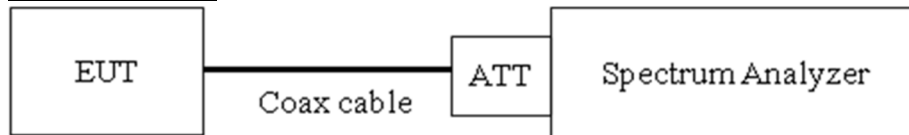
Parameter	Expanded Uncertainty ($\pm$ dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.54 (Confidence level about 95 %, $k=2$)
Conducted Output Power(Power Meter)	0.54 (Confidence level about 95 %, $k=2$)
Conducted Output Power(Signal Analyzer)	0.68 (Confidence level about 95 %, $k=2$)
Power Spectral Density	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 :

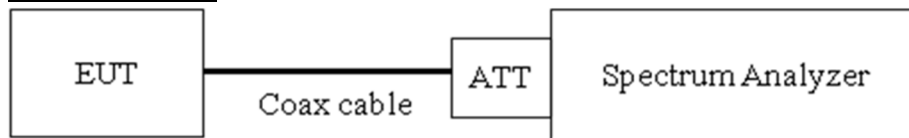
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz or 50 MHz ($\geq$ RBW)
3. SPAN = 0 Hz
4. Detector = Average
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on} / T_{total} and Duty Cycle Factor = $10\log(1/\text{Duty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

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.

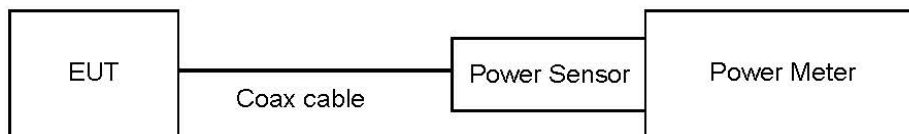
Note : We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

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

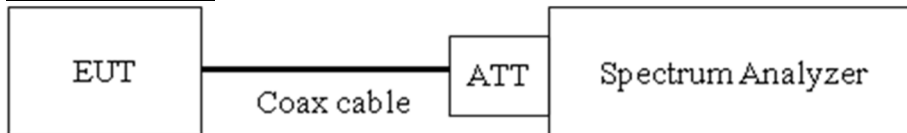
- Conducted Output Power(Peak) = Measured Value + ATT loss + Cable loss
- Conducted Output Power(Average) = Measured Value + ATT loss + Cable loss + Duty Cycle Factor

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 OBW.
- 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 = power averaging (rms) or sample detector (when rms not available).
- 7) Ensure that the number of measurement points in the sweep $\geq [2 \times \text{span} / RBW]$.
- 8) Employ trace averaging (rms) mode over a minimum of 100 traces
- 9) Use the peak marker function to determine the maximum amplitude level within the RBW.
- 10) 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 Value + ATT loss + Cable loss + Duty Cycle Factor

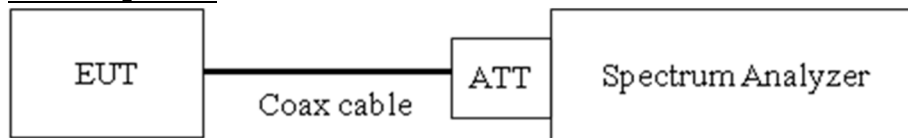
7.5. Conducted Band Edge(Out of Band Emissions) & Conducted Spurious Emissions

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 30 dB 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.

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
3. EUT cable loss = 0.20 dB
4. Total Port offset = 10.80 dB

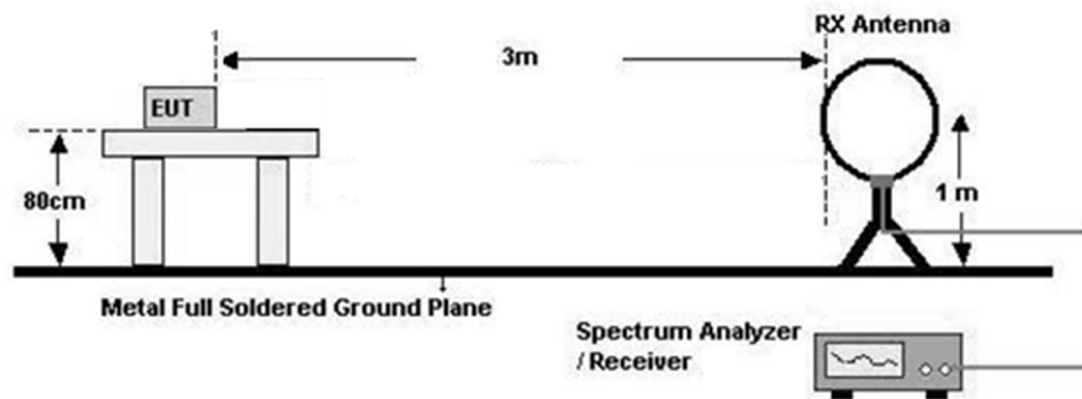
7.6. Radiated Test

Limit

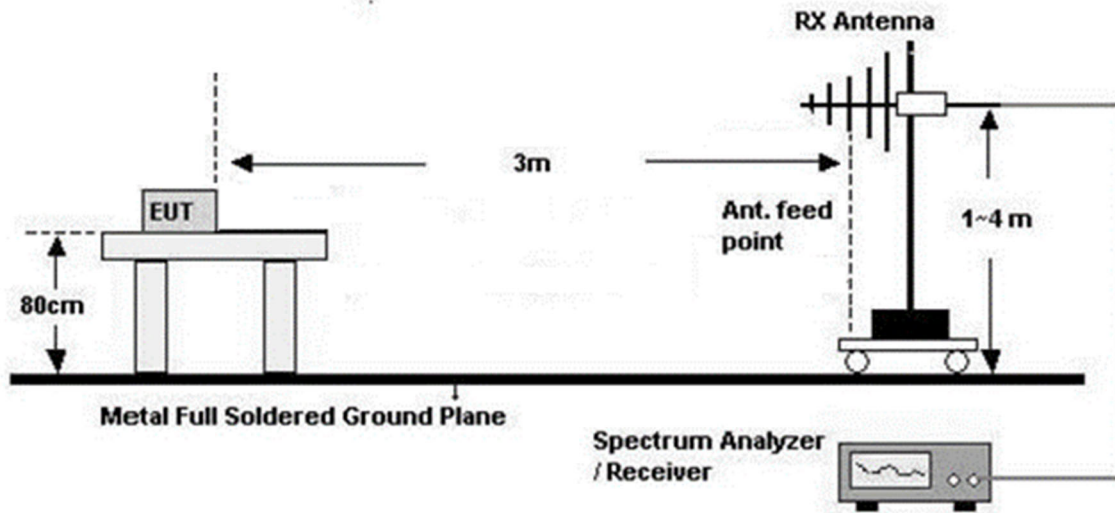
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 – 0.490	$2400/F(\text{kHz})$	300
0.490 – 1.705	$24000/F(\text{kHz})$	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

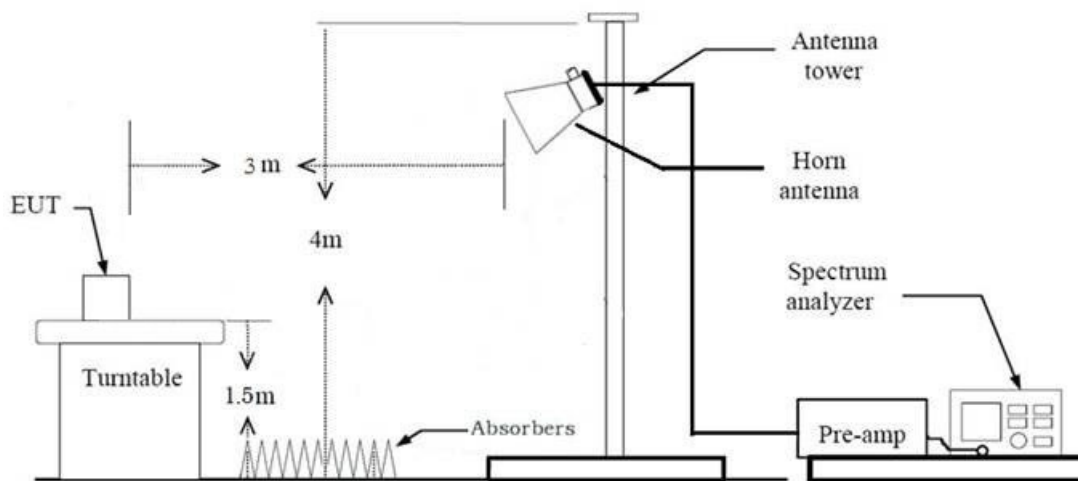
Below 30 MHz



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 = Maxhold
 - 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 = $20\log(\text{test distance} / \text{specific distance})$ (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 = Maxhold
 - 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. All Antennas of operation were investigated and the worst case results are reported
 - Antenna Operation Type : SISO(Ant.1), MIMO_CDD(Ant.1+Ant.2), MIMO_SDM(Ant.1+Ant.2)
 - Worstcase :
 - Band Edge : MIMO_CDD(Ant.1+Ant.2), MIMO_SDM(Ant.1+Ant.2)
 - R.S.E : SISO(Ant.1), MIMO_CDD(Ant.1+Ant.2),
3. EUT Axis
 - Radiated Spurious Emissions : Y
 - Radiated Restricted Band Edge : X
4. Duty cycle factor applies only 802.11g/n/ac (Duty cycle < 98 %).
5. 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): MCS8
6. 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
7. Radiated Spurious Emissions
 - 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
8. SM-A376U, Additional Models were tested and the worst case results are reported.
(Worst case: SM-A376U)

Radiated test(Simultaneous transmission Scenario)

1. Please refer to the [BT LE], [UNII ax] 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-A376U, Additional Models were tested and the worst case results are reported.

(Worst case: SM-A376U)

Conducted test

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

2. SM-A376U, Additional Models were tested and the worst case results are reported.

(Worst case: SM-A376U)

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 > 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

Note. The decision rule applies 'simple acceptance'

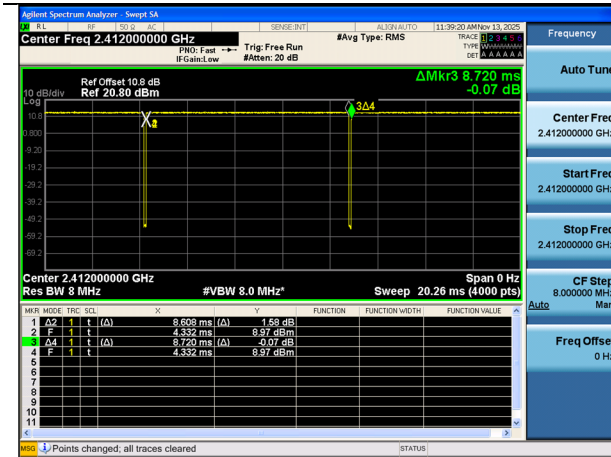
9. TEST RESULT

9.1 DUTY CYCLE

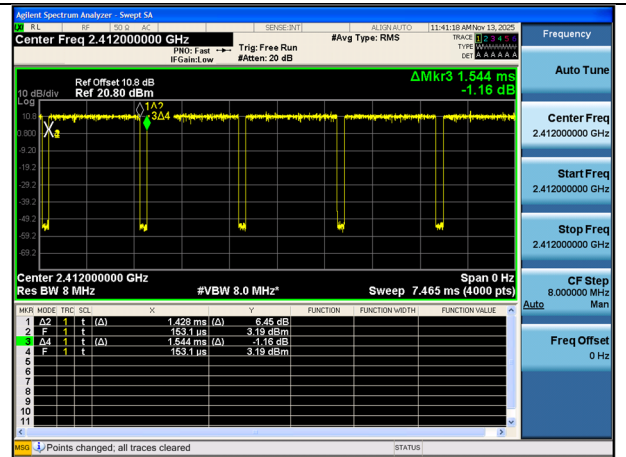
Mode	Data Rate	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
802.11b	1 Mbps	8.608	8.720	0.987	0.056
802.11g	6 Mbps	1.428	1.544	0.925	0.338
802.11n (HT20)	MCS0	1.336	1.451	0.921	0.359
	MCS8	0.692	0.811	0.854	0.686

Test Plots

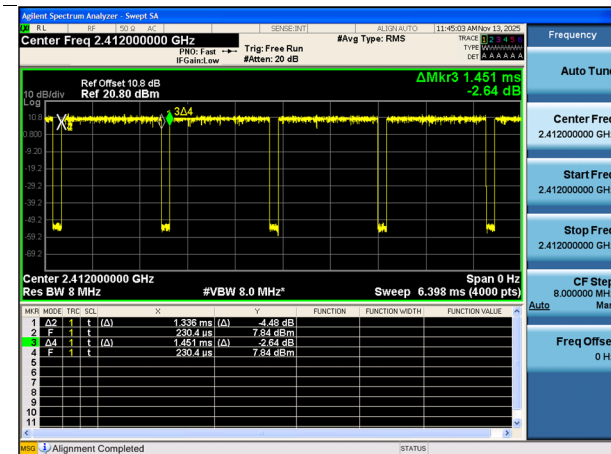
802.11b (1 Mbps)



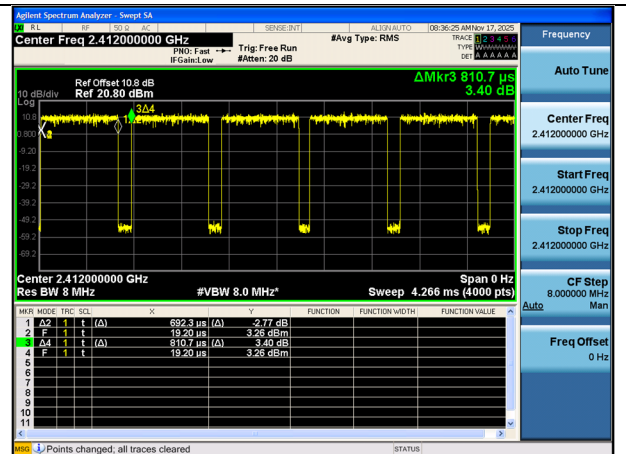
802.11g (6 Mbps)



802.11n (MCS0)



802.11n (MCS8)



9.2.6 dB BANDWIDTH

[ANT. 1]

Mode	Frequency [MHz]	Channel No.	6 dB Bandwidth [MHz]	Limit [MHz]
802.11b	2412	1	8.176	> 0.50
	2437	6	8.163	> 0.50
	2462	11	8.135	> 0.50
802.11g	2412	1	16.45	> 0.50
	2437	6	16.37	> 0.50
	2462	11	16.41	> 0.50
802.11n (HT20)	2412	1	17.68	> 0.50
	2437	6	17.66	> 0.50
	2462	11	17.67	> 0.50

[ANT. 2]

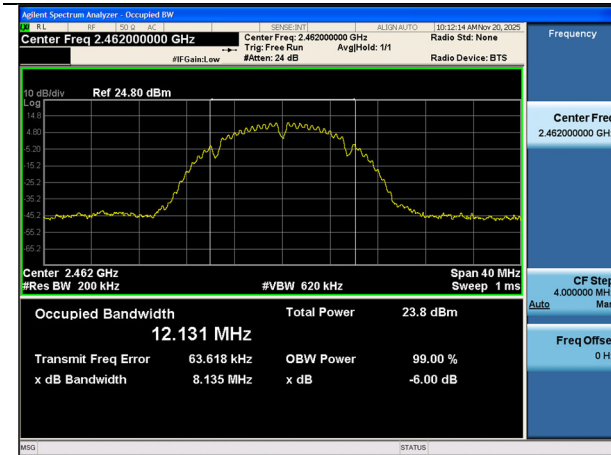
Mode	Frequency [MHz]	Channel No.	6 dB Bandwidth [MHz]	Limit [MHz]
802.11b	2412	1	8.161	> 0.50
	2437	6	8.174	> 0.50
	2462	11	8.154	> 0.50
802.11g	2412	1	16.45	> 0.50
	2437	6	16.47	> 0.50
	2462	11	16.44	> 0.50
802.11n (HT20)	2412	1	17.66	> 0.50
	2437	6	17.70	> 0.50
	2462	11	17.68	> 0.50

Test Plots

[ANT. 1]

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

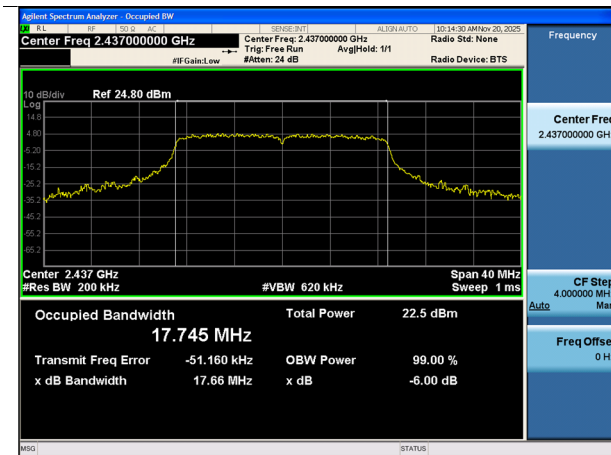
802.11b-CH 11



802.11g-CH 6



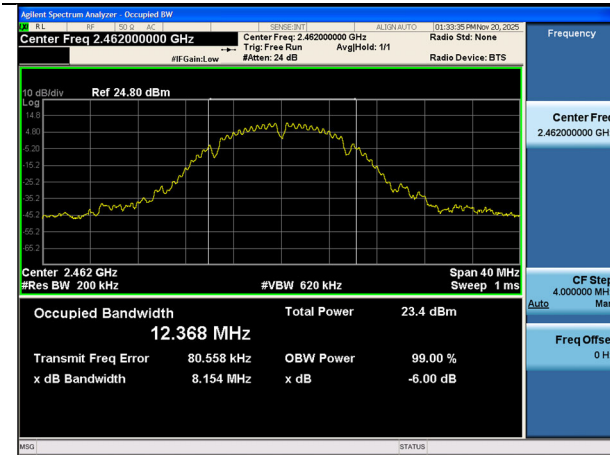
802.11n_HT20-CH 6



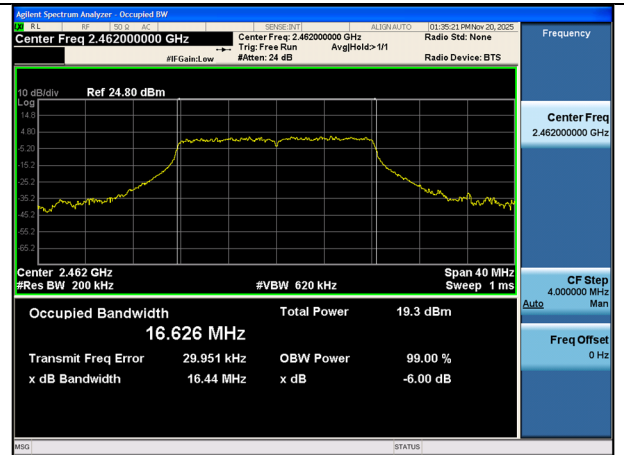
[ANT. 2]

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

802.11b-CH 11



802.11g-CH 11



802.11n_HT20-CH 1



9.3 OUTPUT POWER

Note :

1. MIMO(Ant1+Ant2) Power = $10 \cdot \log((10^{(\text{Ant. 1 power}/10)}) + (10^{(\text{Ant. 2 power}/10)}))$

Peak Power

[SISO(Ant1)]

Mode	Frequency [MHz]	Channel No.	Data Rate	Conducted Peak Power [dBm]	Limit [dBm]
802.11b	2412	1	11M	23.42	30
	2437	6	11M	23.66	30
	2462	11	11M	23.50	30
802.11g	2412	1	24M	21.58	30
	2437	6	24M	24.02	30
	2462	11	24M	21.55	30
802.11n (HT20)	2412	1	MCS4	21.46	30
	2437	6	MCS4	23.91	30
	2462	11	MCS4	21.46	30

[MIMO(Ant1+Ant2)]

Mode	Frequency [MHz]	Channel No.	Data Rate	Conducted Peak Power [dBm]			Limit [dBm]
				ANT1	ANT2	MIMO	
802.11b	2412	1	11M	23.42	23.19	26.32	30
	2437	6	11M	23.66	24.07	26.88	30
	2462	11	11M	23.50	23.04	26.29	30
802.11g	2412	1	24M	21.58	20.98	24.30	30
	2437	6	24M	24.02	23.81	26.93	30
	2462	11	24M	21.55	20.93	24.27	30
802.11n (HT20)	2412	1	MCS12	21.12	20.73	23.94	30
	2437	6	MCS12	23.49	23.78	26.65	30
	2462	11	MCS12	21.13	20.69	23.92	30

Average Power

Note :

1. Total Power [dBm] = Measured Power [dBm] + Duty Cycle Factor [dB]
2. MIMO(Ant1+Ant2) Power = $10 \cdot \log((10^{\text{Ant. 1 power}/10}) + (10^{\text{Ant. 2 power}/10}))$

[SISO(Ant1)]

Mode	Frequency [MHz]	Channel No.	Data Rate	Conducted Average Power [dBm]			Limit [dBm]
				Measured Value	D.C.F	Total	
802.11b	2412	1	1M	17.53	0.06	17.59	30
	2437	6	1M	17.49	0.06	17.55	30
	2462	11	1M	17.34	0.06	17.40	30
802.11g	2412	1	6M	12.94	0.34	13.27	30
	2437	6	6M	15.36	0.34	15.70	30
	2462	11	6M	12.97	0.34	13.31	30
802.11n (HT20)	2412	1	MCS0	12.79	0.36	13.14	30
	2437	6	MCS0	15.61	0.36	15.97	30
	2462	11	MCS0	12.95	0.36	13.31	30

[MIMO(Ant1+Ant2)]

Mode	Frequency [MHz]	Channel No.	Data Rate	Conducted Average Power [dBm]			Limit [dBm]
				ANT1	ANT2	MIMO	
802.11b	2412	1	1M	17.59	17.04	20.33	30
	2437	6	1M	17.55	17.90	20.74	30
	2462	11	1M	17.40	16.89	20.16	30
802.11g	2412	1	6M	13.27	12.71	16.01	30
	2437	6	6M	15.70	15.51	18.61	30
	2462	11	6M	13.31	12.71	16.03	30
802.11n (HT20)	2412	1	MCS8	12.94	12.41	15.69	30
	2437	6	MCS8	15.24	15.60	18.43	30
	2462	11	MCS8	13.26	12.33	15.83	30

9.4 POWER SPECTRAL DENSITY

Note :

1. MIMO(Ant1+Ant2) PSD = $10 \cdot \log((10^{(\text{Ant. 1 PSD} / 10)}) + (10^{(\text{Ant. 2 PSD} / 10)}))$

[SISO(Ant1)]

Mode	Freq. [MHz]	CH.	Data Rate	Total Power Spectral Density [dBm/3kHz]			Limit
				Measured Value	D.C.F	Total	
802.11b	2412	1	1M	-9.550	0.06	-9.494	8 dBm / 3 kHz
	2437	6	1M	-9.752	0.06	-9.696	
	2462	11	1M	-8.754	0.06	-8.698	
802.11g	2412	1	6M	-16.389	0.34	-16.051	
	2437	6	6M	-14.338	0.34	-14.000	
	2462	11	6M	-16.370	0.34	-16.032	
802.11n (HT20)	2412	1	MCS0	-16.681	0.36	-16.322	
	2437	6	MCS0	-14.248	0.36	-13.889	
	2462	11	MCS0	-16.614	0.36	-16.255	

[MIMO(Ant1+Ant2)]

Mode	Frequency [MHz]	Channel No.	Data Rate	Total Power Spectral Density [dBm/3kHz]			Limit
				ANT1	ANT2	MIMO	
802.11b	2412	1	1M	-9.494	-9.215	-6.342	8 dBm / 3 kHz
	2437	6	1M	-9.696	-8.692	-6.155	
	2462	11	1M	-8.698	-9.420	-6.034	
802.11g	2412	1	6M	-16.051	-16.212	-13.120	
	2437	6	6M	-14.000	-13.585	-10.777	
	2462	11	6M	-16.032	-16.624	-13.307	
802.11n (HT20)	2412	1	MCS8	-16.053	-15.683	-12.854	
	2437	6	MCS8	-13.679	-13.216	-10.431	
	2462	11	MCS8	-16.275	-16.286	-13.271	

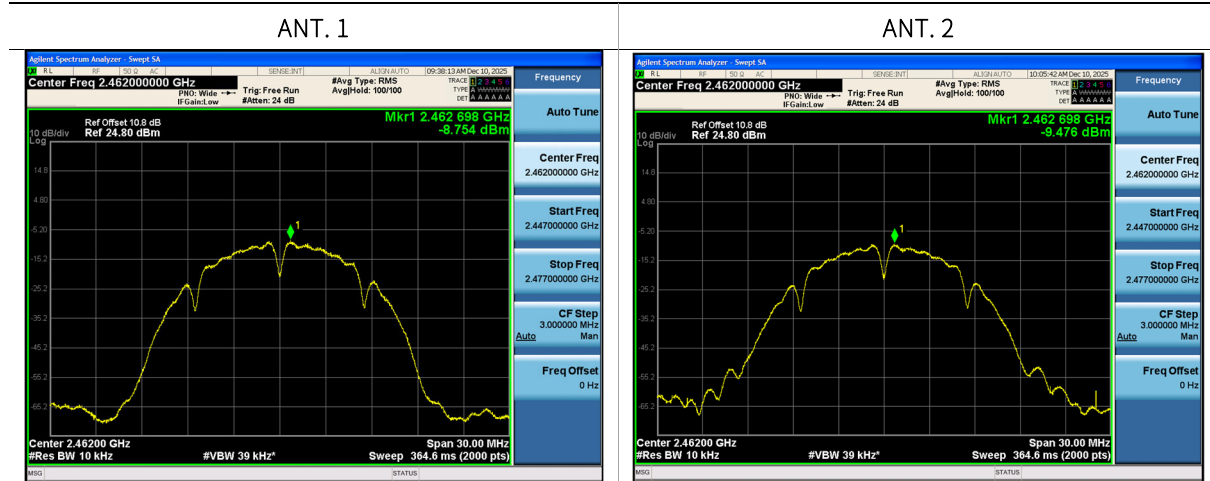
Test Plots

Note :

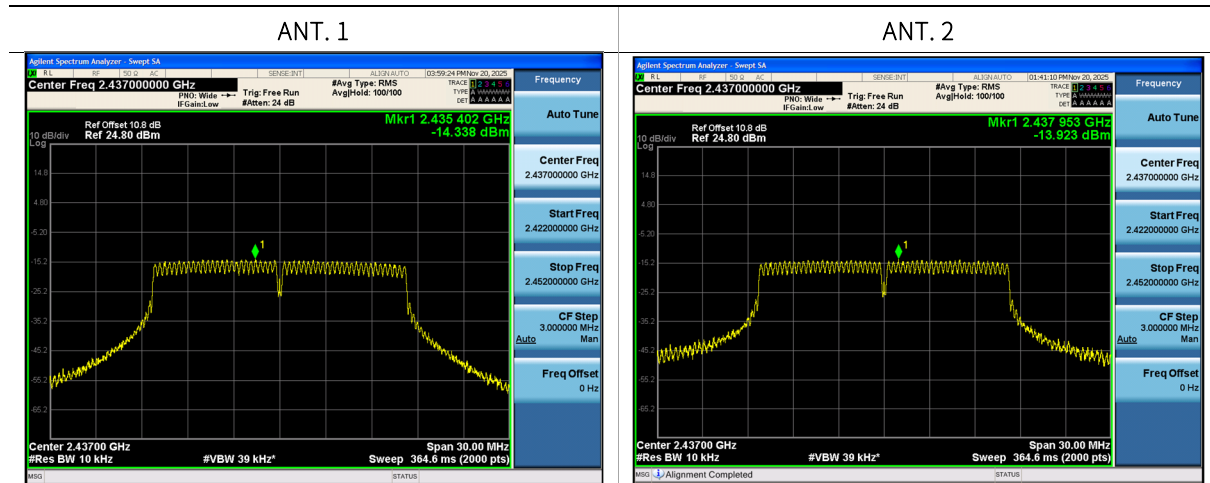
In order to simplify the report, attached plots were only the worst case PSD channel.

[MIMO(Ant1+Ant2)]

Power Spectral Density (802.11b-CH 11)

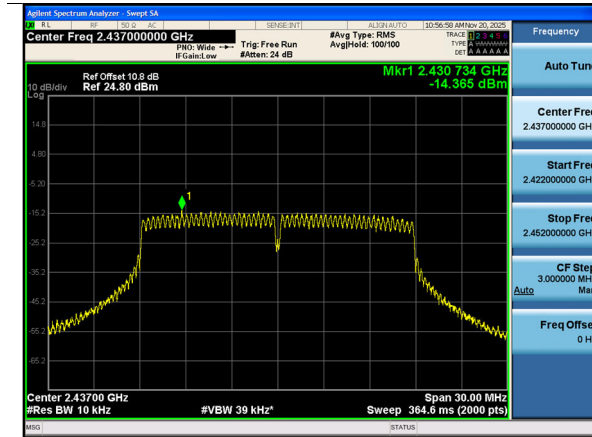


Power Spectral Density (802.11g-CH 6)

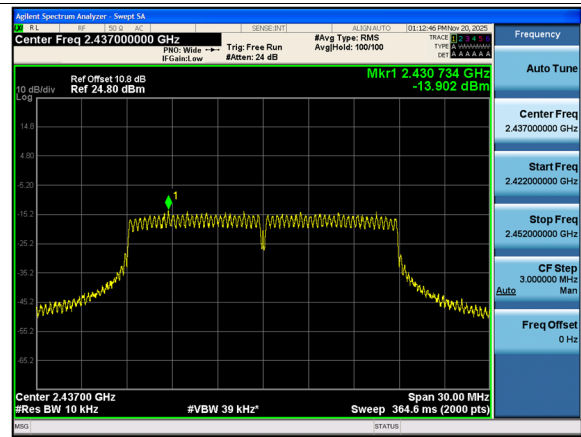


Power Spectral Density (802.11n-CH 6)

ANT. 1



ANT. 2



9.5 BAND EDGE / CONDUCTED SPURIOUS EMISSIONS

Band Edge

Limit : 30 dBc

[ANT. 1]

Mode	Freq. [MHz]	CH.	Worst Data Rate	Measured Position	Band edge[dB]
802.11b	2412	1	1M	Lowest Bandedge	53.016
	2462	11	1M	Highest Bandedge	58.924
802.11g	2412	1	6M	Lowest Bandedge	36.435
	2462	11	6M	Highest Bandedge	51.857
802.11n (HT20)	2412	1	MCS8	Lowest Bandedge	33.695
	2462	11	MCS8	Highest Bandedge	52.416

[ANT. 2]

Mode	Freq. [MHz]	CH.	Worst Data Rate	Measured Position	Band edge[dB]
802.11b	2412	1	1M	Lowest Bandedge	51.800
	2462	11	1M	Highest Bandedge	55.296
802.11g	2412	1	6M	Lowest Bandedge	35.567
	2462	11	6M	Highest Bandedge	43.935
802.11n (HT20)	2412	1	MCS8	Lowest Bandedge	35.417
	2462	11	MCS8	Highest Bandedge	44.868

Conducted Spurious Emissions

Limit : 30 dBc

[ANT. 1]

Mode	Frequency [MHz]	CH.	Worst Data Rate	Conducted Spurious Emissions [dBc]
802.11b	2412	1	1M	63.751
	2437	6	1M	63.594
	2462	11	1M	65.304
802.11g	2412	1	6M	56.378
	2437	6	6M	57.944
	2462	11	6M	55.591
802.11n (HT20)	2412	1	MCS8	57.899
	2437	6	MCS8	56.918
	2462	11	MCS8	57.263

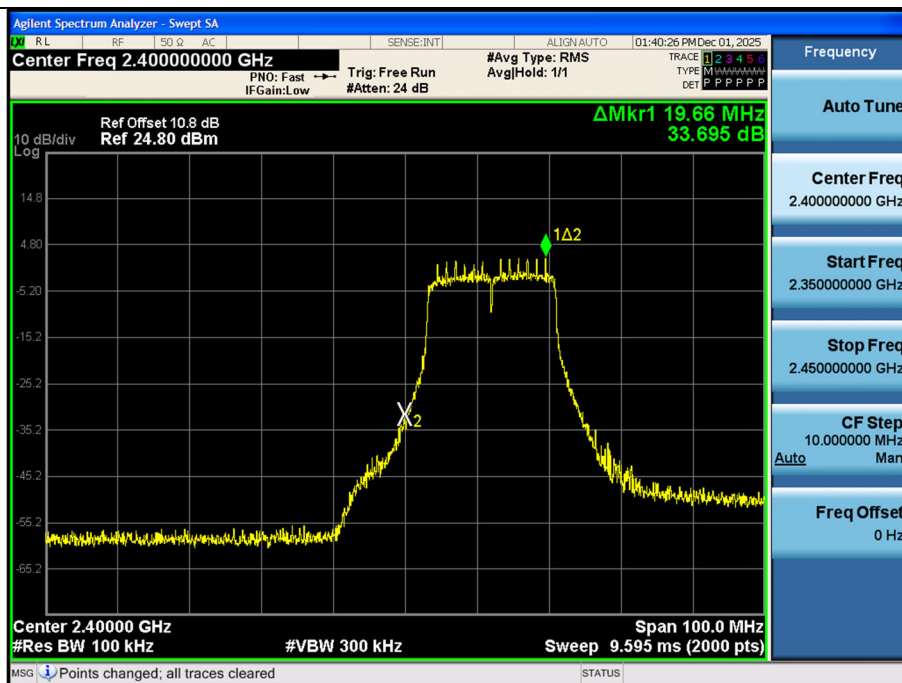
[ANT. 2]

Mode	Frequency [MHz]	CH.	Worst Data Rate	Conducted Spurious Emissions [dBc]
802.11b	2412	1	1M	64.329
	2437	6	1M	65.656
	2462	11	1M	63.880
802.11g	2412	1	6M	57.185
	2437	6	6M	60.310
	2462	11	6M	57.350
802.11n (HT20)	2412	1	MCS8	55.615
	2437	6	MCS8	60.861
	2462	11	MCS8	57.635

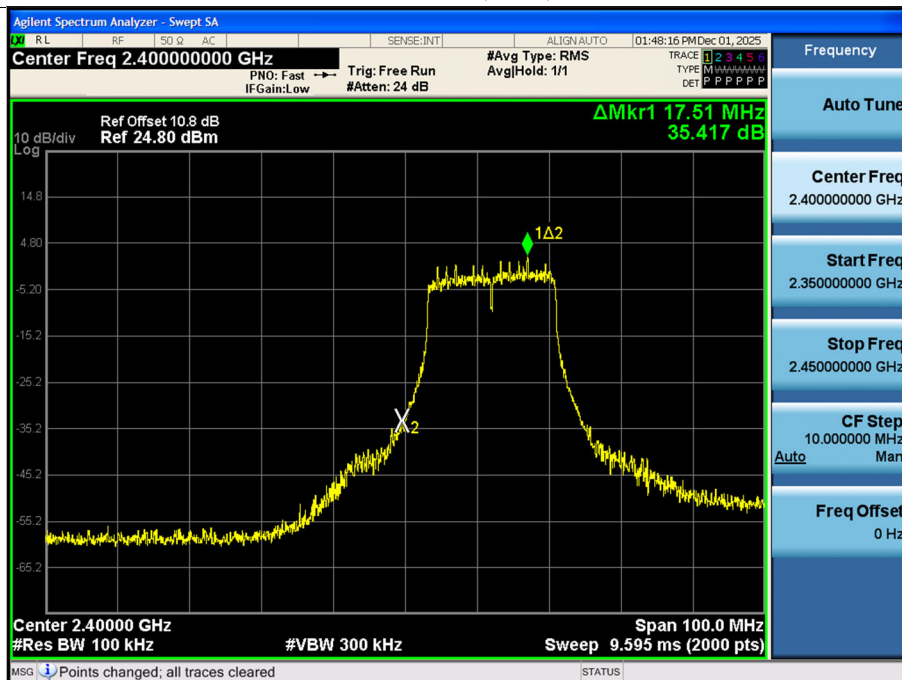
■ Test Plots

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

[ANT. 1] 802.11n(HT20)- CH 1



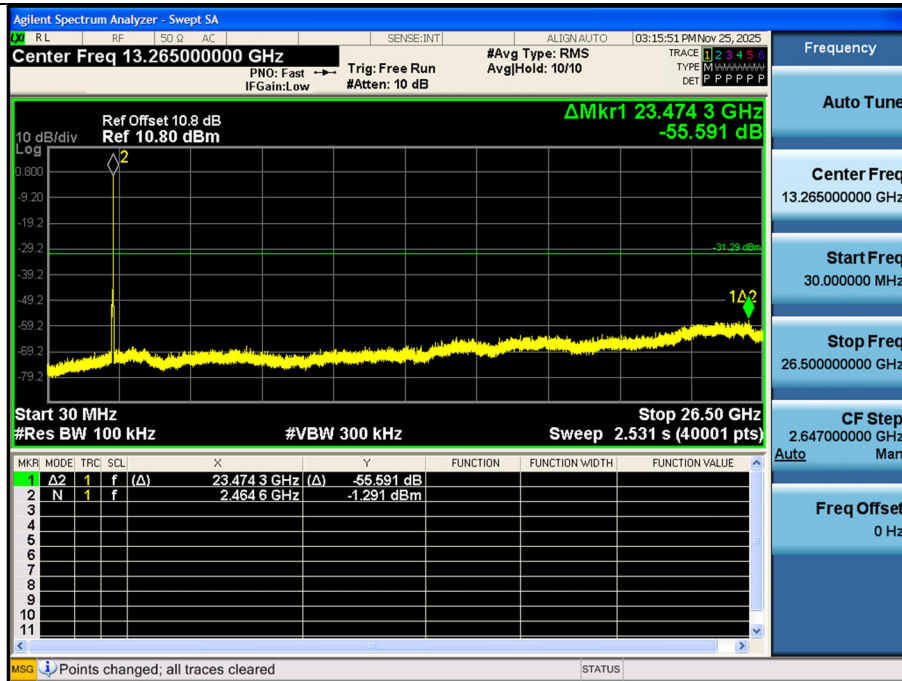
[ANT. 2] 802.11n(HT20)- CH 1



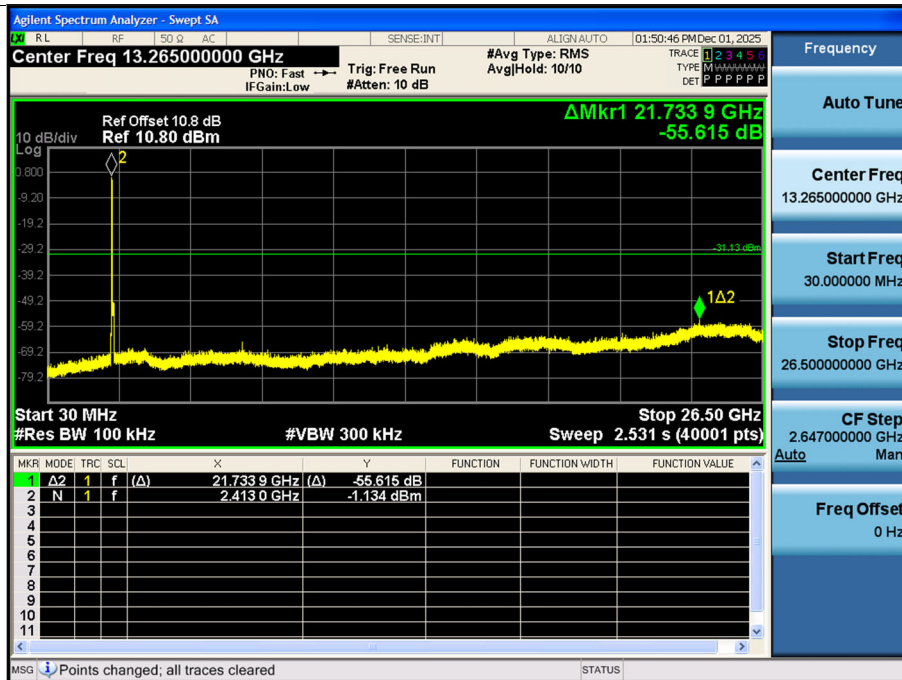
Test Plots(Conducted Spurious Emissions)

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

[ANT. 1] 802.11g - CH 11



[ANT. 2] 802.11n(HT20) - CH 1



Limit

ANT.1 : -31.291 dBm, ANT.2 : -31.134 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

[SISO(Ant1)]

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	44.53	0.00	1.95	V	46.48	73.98	27.50	PK
4824	34.28	0.00	1.95	V	36.23	53.98	17.75	AV
7236	42.88	0.00	10.48	V	53.36	73.98	20.62	PK
7236	32.80	0.00	10.48	V	43.28	53.98	10.70	AV
4824	45.04	0.00	1.95	H	46.99	73.98	26.99	PK
4824	34.35	0.00	1.95	H	36.30	53.98	17.68	AV
7236	42.74	0.00	10.48	H	53.22	73.98	20.76	PK
7236	33.88	0.00	10.48	H	44.36	53.98	9.62	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	45.73	0.00	2.26	V	47.99	73.98	25.99	PK
4874	35.44	0.00	2.26	V	37.70	53.98	16.28	AV
7311	43.66	0.00	9.95	V	53.61	73.98	20.37	PK
7311	35.11	0.00	9.95	V	45.06	53.98	8.92	AV
4874	45.87	0.00	2.26	H	48.13	73.98	25.85	PK
4874	35.64	0.00	2.26	H	37.90	53.98	16.08	AV
7311	44.60	0.00	9.95	H	54.55	73.98	19.43	PK
7311	37.47	0.00	9.95	H	47.42	53.98	6.56	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	45.55	0.00	3.14	V	48.69	73.98	25.29	PK
4924	36.09	0.00	3.14	V	39.23	53.98	14.75	AV
7386	45.04	0.00	10.39	V	55.43	73.98	18.55	PK
7386	37.10	0.00	10.39	V	47.49	53.98	6.49	AV
4924	45.31	0.00	3.14	H	48.45	73.98	25.53	PK
4924	36.47	0.00	3.14	H	39.61	53.98	14.37	AV
7386	45.19	0.00	10.39	H	55.58	73.98	18.40	PK
7386	37.46	0.00	10.39	H	47.85	53.98	6.13	AV

[MIMO (Ant1+Ant2)]

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	45.38	0.00	1.95	V	47.33	73.98	26.65	PK
4824	37.82	0.00	1.95	V	39.77	53.98	14.21	AV
7236	42.32	0.00	10.48	V	52.80	73.98	21.18	PK
7236	32.83	0.00	10.48	V	43.31	53.98	10.67	AV
4824	45.41	0.00	1.95	H	47.36	73.98	26.62	PK
4824	37.22	0.00	1.95	H	39.17	53.98	14.81	AV
7236	43.26	0.00	10.48	H	53.74	73.98	20.24	PK
7236	34.62	0.00	10.48	H	45.10	53.98	8.88	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	46.47	0.00	2.26	V	48.73	73.98	25.25	PK
4874	38.38	0.00	2.26	V	40.64	53.98	13.34	AV
7311	43.02	0.00	9.95	V	52.97	73.98	21.01	PK
7311	33.83	0.00	9.95	V	43.78	53.98	10.20	AV
4874	46.74	0.00	2.26	H	49.00	73.98	24.98	PK
4874	38.62	0.00	2.26	H	40.88	53.98	13.10	AV
7311	43.93	0.00	9.95	H	53.88	73.98	20.10	PK
7311	36.25	0.00	9.95	H	46.20	53.98	7.78	AV

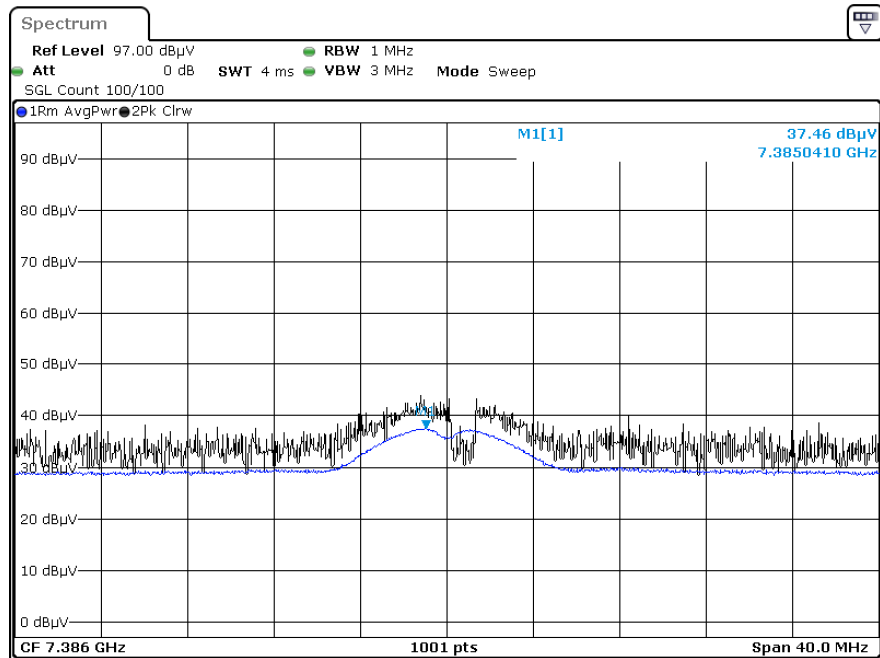
Band : DTS			Operation Mode :		802.11b			
CH.11 2462 MHz			Transfer Rate :		1Mbps			
Frequency [MHz]	Measured value [dBμV]	D.C.F [dB]	CL+AF+DF-AG [dB/m]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
4924	44.99	0.00	3.14	V	48.13	73.98	25.85	PK
4924	35.74	0.00	3.14	V	38.88	53.98	15.10	AV
7386	44.73	0.00	10.39	V	55.12	73.98	18.86	PK
7386	36.59	0.00	10.39	V	46.98	53.98	7.00	AV
4924	45.47	0.00	3.14	H	48.61	73.98	25.37	PK
4924	35.64	0.00	3.14	H	38.78	53.98	15.20	AV
7386	45.22	0.00	10.39	H	55.61	73.98	18.37	PK
7386	37.07	0.00	10.39	H	47.46	53.98	6.52	AV

Test Plots

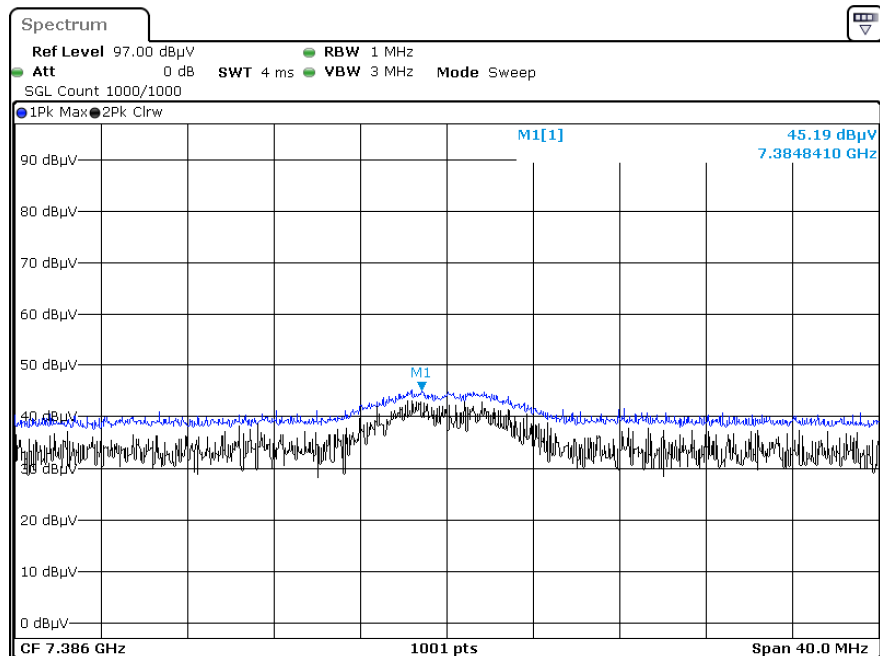
Note: In order to simplify the report, Plots of worst case are only reported.

[SISO(Ant1)]

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

[MIMO (Ant1+Ant2)]

[DTS Lower Edge]

[802.11b]

Operation Mode :	802.11b	Tone & RU Index :	N/A	Transfer Rate :	1M		
Channel No. :	1	Frequency :	2412 MHz	Band :	DTS		
Frequency [MHz]	Measured Value [dBμV]	Duty Cycly Factor [dB]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2310 - 2390	58.72	0.00	H	58.72	73.98	15.26	PK
2310 - 2390	46.32	0.00	H	46.32	53.98	7.66	AV

[802.11g]

Operation Mode :	802.11g	Tone & RU Index :	N/A	Transfer Rate :	6M		
Channel No. :	1	Frequency :	2412 MHz	Band :	DTS		
Frequency [MHz]	Measured Value [dBμV]	Duty Cycly Factor [dB]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2310 - 2390	60.68	0.00	H	60.68	73.98	13.30	PK
2310 - 2390	46.35	0.34	H	46.69	53.98	7.29	AV

Operation Mode :	802.11g	Tone & RU Index :	N/A	Transfer Rate :	6M		
Channel No. :	2	Frequency :	2417 MHz	Band :	DTS		
Frequency [MHz]	Measured Value [dBμV]	Duty Cycly Factor [dB]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2310 - 2390	59.05	0.00	H	59.05	73.98	14.93	PK
2310 - 2390	46.68	0.34	H	47.02	53.98	6.96	AV

[802.11n20]

Operation Mode:	802.11n_20	Tone & RU Index:	N/A			MCS index:	MCS8
Channel No.:	1	Frequency:	2412 MHz			Band:	DTS
Frequency [MHz]	Measured Value [dBμV]	Duty Cycly Factor [dB]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2310 - 2390	64.09	0.00	H	64.09	73.98	9.89	PK
2310 - 2390	47.19	0.69	H	47.88	53.98	6.10	AV

Operation Mode :	802.11n_20	Tone & RU Index :	N/A			MCS index :	MCS8
Channel No. :	2	Frequency :	2417 MHz			Band :	DTS
Frequency [MHz]	Measured Value [dBμV]	Duty Cycly Factor [dB]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2310 - 2390	62.11	0.00	H	62.11	73.98	11.87	PK
2310 - 2390	47.10	0.69	H	47.79	53.98	6.19	AV

[DTS Upper Edge]

[802.11b]

Operation Mode :	802.11b	Tone & RU Index :	N/A		Transfer Rate :		1M
Channel No. :	11	Frequency :	2462 MHz		Band :		DTS
Frequency [MHz]	Measured Value [dBμV]	Duty Cycly Factor [dB]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5 - 2500	60.60	0.00	H	60.60	73.98	13.38	PK
2483.5 - 2500	48.84	0.00	H	48.84	53.98	5.14	AV

[802.11g]

Operation Mode:	802.11g	Tone & RU Index:	N/A		Transfer Rate:	6M	
Channel No.:	10	Frequency:	2457 MHz		Band:	DTS	
Frequency [MHz]	Measured Value [dBμV]	Duty Cycly Factor [dB]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5 - 2500	66.46	0.00	H	66.46	73.98	7.52	PK
2483.5 - 2500	49.22	0.34	H	49.56	53.98	4.42	AV

Operation Mode:	802.11g	Tone & RU Index:	N/A		Transfer Rate:	6M	
Channel No.:	11	Frequency:	2462 MHz		Band:	DTS	
Frequency [MHz]	Measured Value [dBμV]	Duty Cycly Factor [dB]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5 - 2500	66.09	0.00	H	66.09	73.98	7.89	PK
2485.5 - 2500	49.60	0.34	H	49.93	53.98	4.05	AV

[802.11n20]

Operation Mode :	802.11n_20	Tone & RU Index :	N/A			MCS index :	MCS8
Channel No. :	10	Frequency :	2457 MHz			Band :	DTS
Frequency [MHz]	Measured Value [dBμV]	Duty Cycly Factor [dB]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5 - 2500	67.29	0.00	H	67.29	73.98	6.69	PK
2483.5 - 2500	49.11	0.69	H	49.80	53.98	4.18	AV

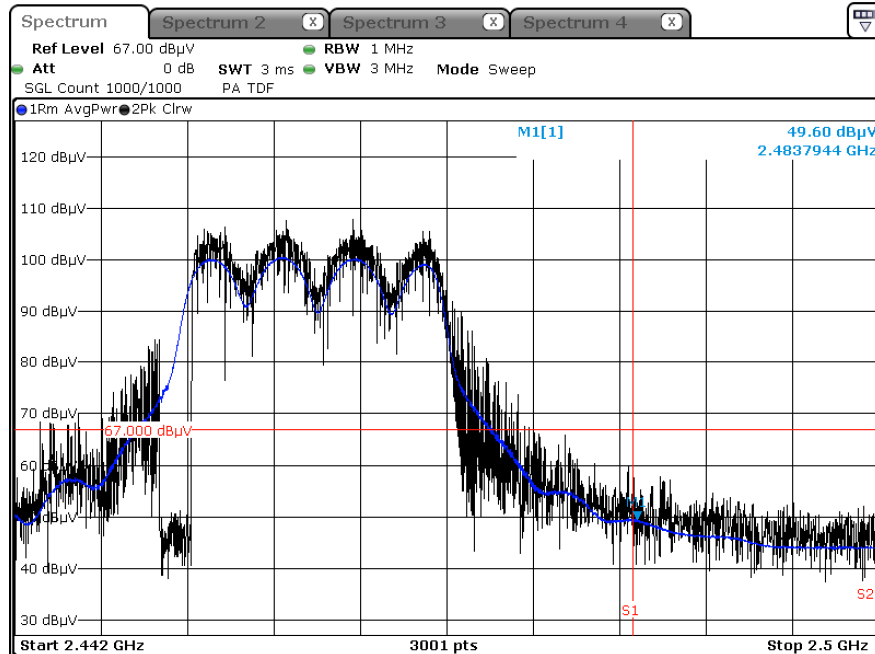
Operation Mode :	802.11n_20	Tone & RU Index :	N/A		MCS index :	MCS8	
Channel No. :	11	Frequency :	2462 MHz		Band :	DTS	
Frequency [MHz]	Measured Value [dBμV]	Duty Cycly Factor [dB]	ANT. POL [H/V]	Total [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Measurement Type
2483.5 - 2500	66.44	0.00	H	66.44	73.98	7.54	PK
2483.5 - 2500	49.13	0.69	H	49.82	53.98	4.16	AV

Test Plots

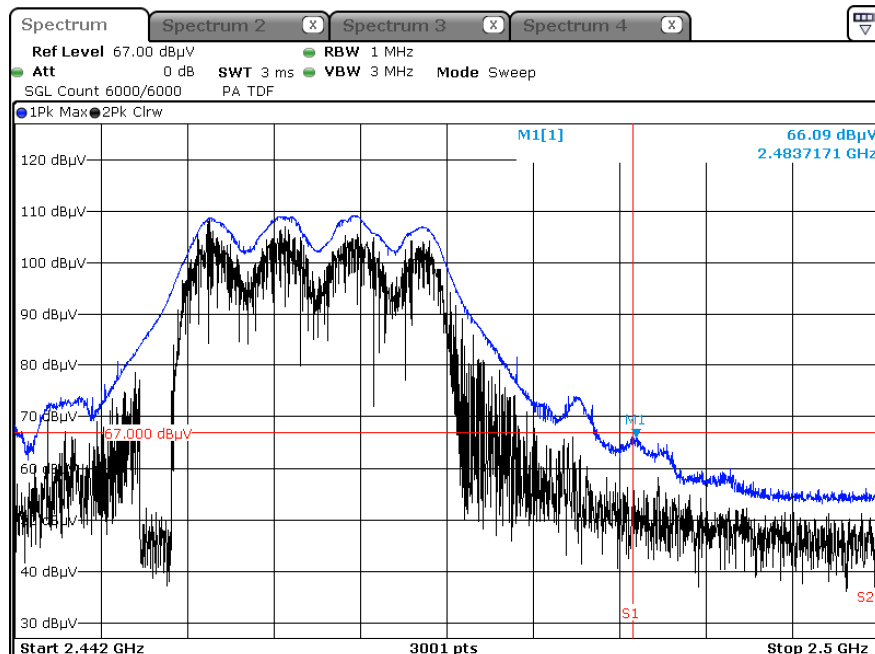
Note: In order to simplify the report, Plots of worst case are only reported.

[MIMO (Ant1+Ant2)]

Radiated Restricted Band Edges plot – Average Result (802.11g_6 Mbps, Ch.11, X-H)



Radiated Restricted Band Edges plot – Peak Result (802.11g_6 Mbps, Ch.11, X-H)



9.8 POWERLINE CONDUCTED EMISSIONS

Conducted Emissions

Test

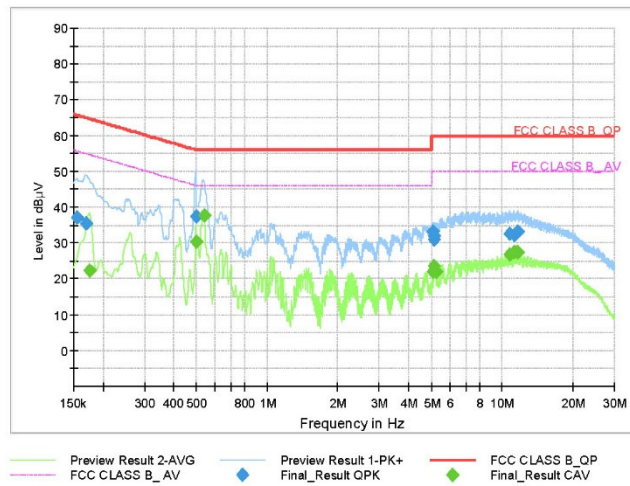
1 / 1

Test Report

Common Information

EUT : SM-A376U
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)
0.1545	37.22	65.75	28.54	9.000	L1	9.8
0.1703	35.63	64.95	29.32	9.000	N	9.7
0.5000	37.28	56.00	18.72	9.000	N	9.7
5.0743	33.14	60.00	26.86	9.000	N	9.9
5.1125	32.12	60.00	27.88	9.000	L1	10.0
5.1418	30.88	60.00	29.12	9.000	N	9.9
10.8208	32.54	60.00	27.46	9.000	N	10.2
11.2190	32.20	60.00	27.80	9.000	L1	10.2
11.6533	33.15	60.00	26.85	9.000	L1	10.2

Final Result CAV

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1748	22.48	54.73	32.26	9.000	N	9.7
0.5000	30.45	46.00	15.55	9.000	N	9.7
0.5383	37.82	46.00	8.18	9.000	L1	9.8
5.0788	22.14	50.00	27.86	9.000	L1	10.0
5.1485	23.51	50.00	26.49	9.000	L1	10.0
5.2565	22.11	50.00	27.89	9.000	N	9.9
10.8185	26.71	50.00	23.29	9.000	L1	10.2
11.2190	27.39	50.00	22.61	9.000	L1	10.2
11.6533	27.49	50.00	22.51	9.000	L1	10.2

2025-11-16

오전 8:30:14

9.9 CONFIRMATION OF GEO-LOCATION MECHANISM

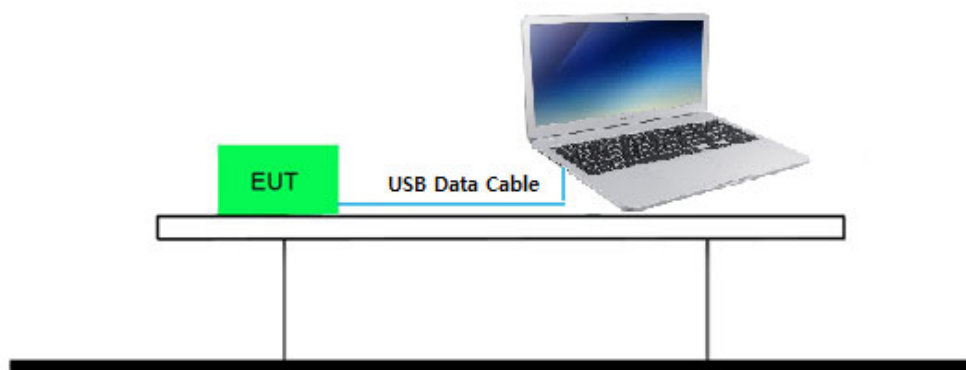
The device uses MCC information obtained from the public cellular carrier to determine that it is operating outside the U.S. and then enable channels 12 and 13 only if a non-US MCC that supports channel 12 and 13 is confirmed.

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

The screenshot shows a web interface titled "CHANGE THE MAC". It contains two toggle switches: "Samsung MLO Control" and "Samsung lwh Control", both of which are turned on. Below these, there is a text input field labeled "Current CountryCode : US" with the value "US" entered. This field is highlighted with an orange rectangular box. At the bottom of the interface, there are two buttons: "SET COUNTRY" and "REFRESH COUNTRY".

Country code = KR(Korea)

The screenshot shows the same "CHANGE THE MAC" web interface. The "Samsung MLO Control" and "Samsung lwh Control" toggle switches remain turned on. The text input field now displays "Current CountryCode : KR" with the value "KR" entered. This field is highlighted with an orange rectangular box. The "SET COUNTRY" and "REFRESH COUNTRY" buttons are still visible at the bottom.

Country code = US	Country code = KR (Korea)
<pre> Wifi Country Code = US C:\Users\user>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- * 2452 MHz [9] Maximum TX power: 20.0 dBm Channel widths: 20MHz 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 No IR Channel widths: 20MHz * 2472 MHz [13] Maximum TX power: 20.0 dBm No IR </pre>	<pre> Wifi Country Code = KR C:\Users\user>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- </pre>

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	11/28/2026	Annual
Power Measurement Set	OSP 120	Rohde & Schwarz	100935	07/24/2026	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	05001	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
Bluetooth Tester	CBT	Rohde & Schwarz	100752	12/27/2025	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:

- Equipment whose calibration due date was updated during the test period was not used between the previous due date and the update.
All reported measurements were performed using equipment within valid calibration.
- Especially, all antenna for measurement is calibrated in accordance with the requirements of ANSI C63.5-2017.

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
Bluetooth Tester	TC-3000C	TESCOM	3000C000175	03/12/2026	Annual
Automation Software	FCC WLAN Radiated	HCT CO., LTD	-	-	-

Note:

- Equipment whose calibration due date was updated during the test period was not used between the previous due date and the update.
All reported measurements were performed using equipment within valid calibration.
- Especially, all antenna for measurement is calibrated in accordance with the requirements of ANSI C63.5-2017.

11. ANNEX A_ TEST SETUP PHOTO

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

No.	Description
1	HCT-RF-2512-FC037-P