FCC Measurement/Technical Report on

SPB611 module

FCC ID: XO2-SPB611
IC: 8713A-SPB611

Test Report Reference: MDE_HDW_2303_FCC_04

Test Laboratory:
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D-PL-12140-01-01
D-PL-12140-01-02
D-PL-12140-01-03

Table of Contents

1 APPLIED STANDARDS AND TEST SUMMARY

1.1 APPLIED STANDARDS

Type of Authorization
Certification for an Intentional Radiator (Digital Device / Spread Spectrum).

Applicable FCC Rules

Prepared in accordance with the requirements of FCC Rules and Regulations as listed in 47 CFR Ch.1 Parts 2 (10-1-22 Edition) and 15 (10-1-22 Edition). The following subparts are applicable to the results in this test report.

Part 2, Subpart J - Equipment Authorization Procedures, Certification

Part 15, Subpart C – Intentional Radiators

§ 15.201 Equipment authorization requirement

§ 15.207 Conducted limits

§ 15.209 Radiated emission limits; general requirements

Part 15, Subpart E – Unlicensed National Information Infrastructure Devices

§ 15.403 Definitions

§ 15.407 General technical requirements

Note:
The tests were selected and performed with reference to the FCC Public Notice "Guidelines for Compliance Testing of Unlicensed National Information
Infrastructure (U-NII) Devices - Part 15, Subpart E, 789033 D02 General U-NII Test Procedures New Rules v02r01, 2017-12-14".

ANSI C63.10-2013 is applied.

1.2 FCC-IC CORRELATION TABLE

Correlation of measurement requirements for UNII / LE-LAN (e.g. WLAN 5 GHz) equipment from FCC and IC

UNII equipment

Measurement	FCC reference	IC reference
Conducted emissions on AC Mains	§ 15.207	RSS-Gen Issue 5: 8.8
Occupied bandwidth	§ 15.403 (26 dB) / § 15.407 (e) (6 dB)	RSS-247 Issue 3: 6.2.1.1, 6.2.2.1, 6.2.3.1 (99%) RSS-247 Issue 2: 6.2.4.1 (6 dB)
Maximum conducted output power	§ 15.407 (a) (1) to (8), (11)	RSS-247 Issue 3: 6.2.1.1, 6.2.2.1, 6.2.3.1, 6.2.4.1
Maximum power spectral density	§ 15.407 (a) (1) to (8), (12)	RSS-247 Issue 3: 6.2.1.1, 6.2.2.1, 6.2.3.1, 6.2.4.1
Transmitter undesirable emissions; General Field Strength Limits, Restricted Bands	§ 15.407 (b) § 15.209 (a)	RSS-Gen Issue 5: 6.13/8.9/8.10; RSS-247 Issue 3: 3.3/6.2 6.2.1.2, 6.2.2.2, 6.2.3.2, 6.2.4.2
Frequency stability	§ 15.407 (g)	RSS-Gen Issue 5: 6.11/8.11
Transmit Power Control (TPC) and Dynamic Frequency Selection (DFS)	§ 15.407 (h)	RSS-247 Issue 3: 6.2.2.1, 6.2.3.1, 6.3
Antenna requirement	§ 15.203 / 15.204 § 15.407 (a) (9)	RSS-Gen Issue 5: 8.3
Receiver spurious emissions	–	-

1.3 MEASUREMENT SUMMARY

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.207**

AC Conducted Emissions

The measurement was performed according to ANSI C63.10, chapter 6.2 **Final Result**

OP-Mode	Setup	Date	FCC	IC
Operating mode				
worst case	S01_AD01	2024-01-04	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.31, §15.403 (i)**

26 dB Bandwidth

The measurement was performed according to ANSI C63.10, chapter 12.4.1 **Final Result**

OP-Mode	Setup	Date	FCC	IC
Radio Technology, Operating Frequency, Subband				
WLAN a, high, U-NII-1	S01_AD01	2023-10-30	Performed	N/A
WLAN a, high, U-NII-2A	S01_AD01	2023-10-30	Performed	N/A
WLAN a, high, U-NII-2C	S01_AD01	2023-10-30	Performed	N/A
WLAN a, high, U-NII-3	S01_AD01	2023-10-30	Performed	N/A
WLAN a, low, U-NII-1	S01_AD01	2023-10-30	Performed	N/A
WLAN a, low, U-NII-2A	S01_AD01	2023-10-30	Performed	N/A
WLAN a, low, U-NII-2C	S01_AD01	2023-10-30	Performed	N/A
WLAN a, low, U-NII-3	S01_AD01	2023-10-30	Performed	N/A
WLAN a, mid, U-NII-1	S01_AD01	2023-10-30	Performed	N/A
WLAN a, mid, U-NII-2A	S01_AD01	2023-10-30	Performed	N/A
WLAN a, mid, U-NII-2C	S01_AD01	2023-10-30	Performed	N/A
WLAN a, mid, U-NII-3	S01_AD01	2023-10-30	Performed	N/A
WLAN a, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-10-30	Performed	N/A
WLAN ac 20 MHz, high, U-NII-1	S01_AD01	2023-11-06	Performed	N/A
WLAN ac 20 MHz, high, U-NII-2A	S01_AD01	2023-11-06	Performed	N/A
WLAN ac 20 MHz, high, U-NII-2C	S01_AD01	2023-11-06	Performed	N/A
WLAN ac 20 MHz, high, U-NII-3	S01_AD01	2023-11-06	Performed	N/A
WLAN ac 20 MHz, low, U-NII-1	S01_AD01	2023-11-06	Performed	N/A
WLAN ac 20 MHz, low, U-NII-2A	S01_AD01	2023-11-06	Performed	N/A
WLAN ac 20 MHz, low, U-NII-2C	S01_AD01	2023-11-06	Performed	N/A
WLAN ac 20 MHz, low, U-NII-3	S01_AD01	2023-11-06	Performed	N/A
WLAN ac 20 MHz, mid, U-NII-1	S01_AD01	2023-11-06	Performed	N/A
WLAN ac 20 MHz, mid, U-NII-2A	S01_AD01	2023-11-06	Performed	N/A
WLAN ac 20 MHz, mid, U-NII-2C	S01_AD01	2023-11-06	Performed	N/A
WLAN ac 20 MHz, mid, U-NII-3	S01_AD01	2023-11-06	Performed	N/A
WLAN ac 20 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-06	Performed	N/A
WLAN ac 40 MHz, high, U-NII-1	S01_AD01	2023-11-09	Performed	N/A
WLAN ac 40 MHz, high, U-NII-2A	S01_AD01	2023-11-09	Performed	N/A

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.31, §15.403 (i)**

26 dB Bandwidth

The measurement was performed according to ANSI C63.10, chapter 12.4.1 **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN ac 40 MHz, high, U-NII-2C	S01_AD01	2023-11-09	Performed	N/A
WLAN ac 40 MHz, high, U-NII-3	S01_AD01	2023-11-09	Performed	N/A
WLAN ac 40 MHz, low, U-NII-1	S01_AD01	2023-11-09	Performed	N/A
WLAN ac 40 MHz, low, U-NII-2A	S01_AD01	2023-11-09	Performed	N/A
WLAN ac 40 MHz, low, U-NII-2C	S01_AD01	2023-11-09	Performed	N/A
WLAN ac 40 MHz, low, U-NII-3	S01_AD01	2023-11-09	Performed	N/A
WLAN ac 40 MHz, mid, U-NII-2C	S01_AD01	2023-11-09	Performed	N/A
WLAN ac 40 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-09	Performed	N/A
WLAN ac 80 MHz, high, U-NII-2C	S01_AD01	2023-11-13	Performed	N/A
WLAN ac 80 MHz, low, U-NII-2C	S01_AD01	2023-11-13	Performed	N/A
WLAN ac 80 MHz, low, U-NII-3	S01_AD01	2023-11-13	Performed	N/A
WLAN ac 80 MHz, mid, U-NII-1	S01_AD01	2023-11-13	Performed	N/A
WLAN ac 80 MHz, mid, U-NII-2A	S01_AD01	2023-11-13	Performed	N/A
WLAN ac 80 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-13	Performed	N/A
WLAN ax 20 MHz, high, U-NII-1	S01_AD01	2023-11-07	Performed	N/A
WLAN ax 20 MHz, high, U-NII-2A	S01_AD01	2023-11-07	Performed	N/A
WLAN ax 20 MHz, high, U-NII-2C	S01_AD01	2023-11-07	Performed	N/A
WLAN ax 20 MHz, high, U-NII-3	S01_AD01	2023-11-07	Performed	N/A
WLAN ax 20 MHz, low, U-NII-1	S01_AD01	2023-11-07	Performed	N/A
WLAN ax 20 MHz, low, U-NII-2A	S01_AD01	2023-11-07	Performed	N/A
WLAN ax 20 MHz, low, U-NII-2C	S01_AD01	2023-11-07	Performed	N/A
WLAN ax 20 MHz, low, U-NII-3	S01_AD01	2023-11-07	Performed	N/A
WLAN ax 20 MHz, mid, U-NII-1	S01_AD01	2023-11-07	Performed	N/A
WLAN ax 20 MHz, mid, U-NII-2A	S01_AD01	2023-11-07	Performed	N/A
WLAN ax 20 MHz, mid, U-NII-2C	S01_AD01	2023-11-07	Performed	N/A
WLAN ax 20 MHz, mid, U-NII-3	S01_AD01	2023-11-07	Performed	N/A
WLAN ax 20 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-07	Performed	N/A
WLAN ax 40 MHz, high, U-NII-1	S01_AD01	2023-11-13	Performed	N/A
WLAN ax 40 MHz, high, U-NII-2A	S01_AD01	2023-11-13	Performed	N/A
WLAN ax 40 MHz, high, U-NII-2C	S01_AD01	2023-11-13	Performed	N/A
WLAN ax 40 MHz, high, U-NII-3	S01_AD01	2023-11-13	Performed	N/A
WLAN ax 40 MHz, low, U-NII-1	S01_AD01	2023-11-13	Performed	N/A
WLAN ax 40 MHz, low, U-NII-2A	S01_AD01	2023-11-13	Performed	N/A
WLAN ax 40 MHz, low, U-NII-2C	S01_AD01	2023-11-13	Performed	N/A
WLAN ax 40 MHz, low, U-NII-3	S01_AD01	2023-11-13	Performed	N/A
WLAN ax 40 MHz, mid, U-NII-2C	S01_AD01	2023-11-13	Performed	N/A
WLAN ax 40 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-13	Performed	N/A
WLAN ax 80 MHz, high, U-NII-2C	S01_AD01	2023-11-14	Performed	N/A
WLAN ax 80 MHz, low, U-NII-2C	S01_AD01	2023-11-14	Performed	N/A
WLAN ax 80 MHz, low, U-NII-3	S01_AD01	2023-11-14	Performed	N/A
WLAN ax 80 MHz, mid, U-NII-1	S01_AD01	2023-11-14	Performed	N/A

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.31, §15.403 (i)**

26 dB Bandwidth

The measurement was performed according to ANSI C63.10, chapter 12.4.1 **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN ax 80 MHz, mid, U-NII-2A	S01_AD01	2023-11-14	Performed	N/A
WLAN ax 80 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-14	Performed	N/A
WLAN n 20 MHz, high, U-NII-1	S01_AD01	2023-11-06	Performed	N/A
WLAN n 20 MHz, high, U-NII-2A	S01_AD01	2023-11-06	Performed	N/A
WLAN n 20 MHz, high, U-NII-2C	S01_AD01	2023-11-06	Performed	N/A
WLAN n 20 MHz, high, U-NII-3	S01_AD01	2023-11-06	Performed	N/A
WLAN n 20 MHz, low, U-NII-1	S01_AD01	2023-11-06	Performed	N/A
WLAN n 20 MHz, low, U-NII-2A	S01_AD01	2023-11-06	Performed	N/A
WLAN n 20 MHz, low, U-NII-2C	S01_AD01	2023-11-06	Performed	N/A
WLAN n 20 MHz, low, U-NII-3	S01_AD01	2023-11-06	Performed	N/A
WLAN n 20 MHz, mid, U-NII-1	S01_AD01	2023-11-06	Performed	N/A
WLAN n 20 MHz, mid, U-NII-2A	S01_AD01	2023-11-06	Performed	N/A
WLAN n 20 MHz, mid, U-NII-2C	S01_AD01	2023-11-06	Performed	N/A
WLAN n 20 MHz, mid, U-NII-3	S01_AD01	2023-11-06	Performed	N/A
WLAN n 20 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-06	Performed	N/A
WLAN n 40 MHz, high, U-NII-1	S01_AD01	2023-11-08	Performed	N/A
WLAN n 40 MHz, high, U-NII-2A	S01_AD01	2023-11-08	Performed	N/A
WLAN n 40 MHz, high, U-NII-2C	S01_AD01	2023-11-08	Performed	N/A
WLAN n 40 MHz, high, U-NII-3	S01_AD01	2023-11-08	Performed	N/A
WLAN n 40 MHz, low, U-NII-1	S01_AD01	2023-11-08	Performed	N/A
WLAN n 40 MHz, low, U-NII-2A	S01_AD01	2023-11-08	Performed	N/A
WLAN n 40 MHz, low, U-NII-2C	S01_AD01	2023-11-08	Performed	N/A
WLAN n 40 MHz, low, U-NII-3	S01_AD01	2023-11-08	Performed	N/A
WLAN n 40 MHz, mid, U-NII-2C	S01_AD01	2023-11-08	Performed	N/A
WLAN n 40 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-08	Performed	N/A

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.31, §15.407 (e)**

6 dB Bandwidth

The measurement was performed according to ANSI C63.10, chapter 6.9.2 **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN a, high, U-NII-3	S01_AD01	2023-10-30	Passed	Passed
WLAN a, low, U-NII-3	S01_AD01	2023-10-30	Passed	Passed
WLAN a, mid, U-NII-3	S01_AD01	2023-10-30	Passed	Passed
WLAN a, straddle, U-NII-3	S01_AD01	2023-10-30	Passed	Passed
WLAN ac 20 MHz, high, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, low, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, mid, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, straddle, U-NII-3	S01_AD01	2023-11-08	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.31, §15.407 (e)**

6 dB Bandwidth

The measurement was performed according to ANSI C63.10, chapter 6.9.2 **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN ac 40 MHz, high, U-NII-3	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, low, U-NII-3	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, straddle, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 80 MHz, low, U-NII-3	S01_AD01	2023-11-13	Passed	Passed
WLAN ac 80 MHz, straddle, U-NII-3	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, high, U-NII-3	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, low, U-NII-3	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, mid, U-NII-3	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, straddle, U-NII-3	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 40 MHz, high, U-NII-3	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, low, U-NII-3	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, straddle, U-NII-3	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 80 MHz, low, U-NII-3	S01_AD01	2023-11-14	Passed	Passed
WLAN n 20 MHz, high, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, low, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, mid, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, straddle, U-NII-3	S01_AD01	2023-10-30	Passed	Passed
WLAN n 40 MHz, high, U-NII-3	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, low, U-NII-3	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, straddle, U-NII-3	S01_AD01	2023-11-06	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.31, IC RSS 247 Ch. 6.2.x**

99 % Bandwidth

The measurement was performed according to ANSI C63.10, chapter 12.4.2 (6.9.3) **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN a, high, U-NII-1	S01_AD01	2023-10-30	N/A	Performed
WLAN a, high, U-NII-2A	S01_AD01	2023-10-30	N/A	Performed
WLAN a, high, U-NII-2C	S01_AD01	2023-10-30	N/A	Performed
WLAN a, high, U-NII-3	S01_AD01	2023-10-30	N/A	Performed
WLAN a, low, U-NII-1	S01_AD01	2023-10-30	N/A	Performed
WLAN a, low, U-NII-2A	S01_AD01	2023-10-30	N/A	Performed
WLAN a, low, U-NII-2C	S01_AD01	2023-10-30	N/A	Performed
WLAN a, low, U-NII-3	S01_AD01	2023-10-30	N/A	Performed
WLAN a, mid, U-NII-1	S01_AD01	2023-10-30	N/A	Performed
WLAN a, mid, U-NII-2A	S01_AD01	2023-10-30	N/A	Performed
WLAN a, mid, U-NII-2C	S01_AD01	2023-10-30	N/A	Performed
WLAN a, mid, U-NII-3	S01_AD01	2023-10-30	N/A	Performed
WLAN a, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-10-30	N/A	Performed

99 % Bandwidth

The measurement was performed according to ANSI C63.10, chapter 12.4.2 (6.9.3) **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN ac 20 MHz, high, U-NII-1	S01_AD01	2023-11-06	N/A	Performed
WLAN ac 20 MHz, high, U-NII-2A	S01_AD01	2023-11-06	N/A	Performed
WLAN ac 20 MHz, high, U-NII-2C	S01_AD01	2023-11-06	N/A	Performed
WLAN ac 20 MHz, high, U-NII-3	S01_AD01	2023-11-06	N/A	Performed
WLAN ac 20 MHz, low, U-NII-1	S01_AD01	2023-11-06	N/A	Performed
WLAN ac 20 MHz, low, U-NII-2A	S01_AD01	2023-11-06	N/A	Performed
WLAN ac 20 MHz, low, U-NII-2C	S01_AD01	2023-11-06	N/A	Performed
WLAN ac 20 MHz, low, U-NII-3	S01_AD01	2023-11-06	N/A	Performed
WLAN ac 20 MHz, mid, U-NII-1	S01_AD01	2023-11-06	N/A	Performed
WLAN ac 20 MHz, mid, U-NII-2A	S01_AD01	2023-11-06	N/A	Performed
WLAN ac 20 MHz, mid, U-NII-2C	S01_AD01	2023-11-06	N/A	Performed
WLAN ac 20 MHz, mid, U-NII-3	S01_AD01	2023-11-06	N/A	Performed
WLAN ac 20 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-06	N/A	Performed
WLAN ac 40 MHz, high, U-NII-1	S01_AD01	2023-11-09	N/A	Performed
WLAN ac 40 MHz, high, U-NII-2A	S01_AD01	2023-11-09	N/A	Performed
WLAN ac 40 MHz, high, U-NII-2C	S01_AD01	2023-11-09	N/A	Performed
WLAN ac 40 MHz, high, U-NII-3	S01_AD01	2023-11-09	N/A	Performed
WLAN ac 40 MHz, low, U-NII-1	S01_AD01	2023-11-09	N/A	Performed
WLAN ac 40 MHz, low, U-NII-2A	S01_AD01	2023-11-09	N/A	Performed
WLAN ac 40 MHz, low, U-NII-2C	S01_AD01	2023-11-09	N/A	Performed
WLAN ac 40 MHz, low, U-NII-3	S01_AD01	2023-11-09	N/A	Performed
WLAN ac 40 MHz, mid, U-NII-2C	S01_AD01	2023-11-09	N/A	Performed
WLAN ac 40 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-09	N/A	Performed
WLAN ac 80 MHz, high, U-NII-2C	S01_AD01	2023-11-14	N/A	Performed
WLAN ac 80 MHz, low, U-NII-2C	S01_AD01	2023-11-14	N/A	Performed
WLAN ac 80 MHz, low, U-NII-3	S01_AD01	2023-11-14	N/A	Performed
WLAN ac 80 MHz, mid, U-NII-1	S01_AD01	2023-11-14	N/A	Performed
WLAN ac 80 MHz, mid, U-NII-2A	S01_AD01	2023-11-14	N/A	Performed
WLAN ac 80 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-14	N/A	Performed
WLAN ax 20 MHz, high, U-NII-1	S01_AD01	2023-11-07	N/A	Performed
WLAN ax 20 MHz, high, U-NII-2A	S01_AD01	2023-11-07	N/A	Performed
WLAN ax 20 MHz, high, U-NII-2C	S01_AD01	2023-11-07	N/A	Performed
WLAN ax 20 MHz, high, U-NII-3	S01_AD01	2023-11-07	N/A	Performed
WLAN ax 20 MHz, low, U-NII-1	S01_AD01	2023-11-07	N/A	Performed
WLAN ax 20 MHz, low, U-NII-2A	S01_AD01	2023-11-07	N/A	Performed
WLAN ax 20 MHz, low, U-NII-2C	S01_AD01	2023-11-07	N/A	Performed
WLAN ax 20 MHz, low, U-NII-3	S01_AD01	2023-11-07	N/A	Performed
WLAN ax 20 MHz, mid, U-NII-1	S01_AD01	2023-11-07	N/A	Performed
WLAN ax 20 MHz, mid, U-NII-2A	S01_AD01	2023-11-07	N/A	Performed
WLAN ax 20 MHz, mid, U-NII-2C	S01_AD01	2023-11-07	N/A	Performed
WLAN ax 20 MHz, mid, U-NII-3	S01_AD01	2023-11-07	N/A	Performed

99 % Bandwidth

The measurement was performed according to ANSI C63.10, chapter 12.4.2 (6.9.3)

Final Result

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN ax 20 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-07	N/A	Performed
WLAN ax 40 MHz, high, U-NII-1	S01_AD01	2023-11-13	N/A	Performed
WLAN ax 40 MHz, high, U-NII-2A	S01_AD01	2023-11-13	N/A	Performed
WLAN ax 40 MHz, high, U-NII-2C	S01_AD01	2023-11-13	N/A	Performed
WLAN ax 40 MHz, high, U-NII-3	S01_AD01	2023-11-13	N/A	Performed
WLAN ax 40 MHz, low, U-NII-1	S01_AD01	2023-11-13	N/A	Performed
WLAN ax 40 MHz, low, U-NII-2A	S01_AD01	2023-11-13	N/A	Performed
WLAN ax 40 MHz, low, U-NII-2C	S01_AD01	2023-11-13	N/A	Performed
WLAN ax 40 MHz, low, U-NII-3	S01_AD01	2023-11-13	N/A	Performed
WLAN ax 40 MHz, mid, U-NII-2C	S01_AD01	2023-11-13	N/A	Performed
WLAN ax 40 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-13	N/A	Performed
WLAN ax 80 MHz, high, U-NII-2C	S01_AD01	2023-11-14	N/A	Performed
WLAN ax 80 MHz, low, U-NII-2C	S01_AD01	2023-11-14	N/A	Performed
WLAN ax 80 MHz, low, U-NII-3	S01_AD01	2023-11-14	N/A	Performed
WLAN ax 80 MHz, mid, U-NII-1	S01_AD01	2023-11-14	N/A	Performed
WLAN ax 80 MHz, mid, U-NII-2A	S01_AD01	2023-11-14	N/A	Performed
WLAN ax 80 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-14	N/A	Performed
WLAN n 20 MHz, high, U-NII-1	S01_AD01	2023-11-06	N/A	Performed
WLAN n 20 MHz, high, U-NII-2A	S01_AD01	2023-11-06	N/A	Performed
WLAN n 20 MHz, high, U-NII-2C	S01_AD01	2023-11-06	N/A	Performed
WLAN n 20 MHz, high, U-NII-3	S01_AD01	2023-11-06	N/A	Performed
WLAN n 20 MHz, low, U-NII-1	S01_AD01	2023-11-06	N/A	Performed
WLAN n 20 MHz, low, U-NII-2A	S01_AD01	2023-11-06	N/A	Performed
WLAN n 20 MHz, low, U-NII-2C	S01_AD01	2023-11-06	N/A	Performed
WLAN n 20 MHz, low, U-NII-3	S01_AD01	2023-11-06	N/A	Performed
WLAN n 20 MHz, mid, U-NII-1	S01_AD01	2023-11-06	N/A	Performed
WLAN n 20 MHz, mid, U-NII-2A	S01_AD01	2023-11-06	N/A	Performed
WLAN n 20 MHz, mid, U-NII-2C	S01_AD01	2023-11-06	N/A	Performed
WLAN n 20 MHz, mid, U-NII-3	S01_AD01	2023-11-06	N/A	Performed
WLAN n 20 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-06	N/A	Performed
WLAN n 40 MHz, high, U-NII-1	S01_AD01	2023-11-08	N/A	Performed
WLAN n 40 MHz, high, U-NII-2A	S01_AD01	2023-11-08	N/A	Performed
WLAN n 40 MHz, high, U-NII-2C	S01_AD01	2023-11-08	N/A	Performed
WLAN n 40 MHz, high, U-NII-3	S01_AD01	2023-11-08	N/A	Performed
WLAN n 40 MHz, low, U-NII-1	S01_AD01	2023-11-08	N/A	Performed
WLAN n 40 MHz, low, U-NII-2A	S01_AD01	2023-11-08	N/A	Performed
WLAN n 40 MHz, low, U-NII-2C	S01_AD01	2023-11-08	N/A	Performed
WLAN n 40 MHz, low, U-NII-3	S01_AD01	2023-11-08	N/A	Performed
WLAN n 40 MHz, mid, U-NII-2C	S01_AD01	2023-11-08	N/A	Performed
WLAN n 40 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-08	N/A	Performed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.31, §15.407 (a)(1)**

Maximum Conducted Output Power
The measurement was performed according to ANSI C63.10, chapter 12.3.3.2 **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN a, high, U-NII-1	S01_AD01	2023-10-30	Passed	Passed
WLAN a, high, U-NII-2A	S01_AD01	2023-10-30	Passed	Passed
WLAN a, high, U-NII-2C	S01_AD01	2023-10-30	Passed	Passed
WLAN a, high, U-NII-3	S01_AD01	2023-10-30	Passed	Passed
WLAN a, low, U-NII-1	S01_AD01	2023-10-30	Passed	Passed
WLAN a, low, U-NII-2A	S01_AD01	2023-10-30	Passed	Passed
WLAN a, low, U-NII-2C	S01_AD01	2023-10-30	Passed	Passed
WLAN a, low, U-NII-3	S01_AD01	2023-10-30	Passed	Passed
WLAN a, mid, U-NII-1	S01_AD01	2023-10-30	Passed	Passed
WLAN a, mid, U-NII-2A	S01_AD01	2023-10-30	Passed	Passed
WLAN a, mid, U-NII-2C	S01_AD01	2023-10-30	Passed	Passed
WLAN a, mid, U-NII-3	S01_AD01	2023-10-30	Passed	Passed
WLAN a, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-10-30	Passed	Passed
WLAN ac 20 MHz, high, U-NII-1	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, high, U-NII-2A	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, high, U-NII-2C	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, high, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, low, U-NII-1	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, low, U-NII-2A	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, low, U-NII-2C	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, low, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, mid, U-NII-1	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, mid, U-NII-2A	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, mid, U-NII-2C	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, mid, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 40 MHz, high, U-NII-1	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, high, U-NII-2A	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, high, U-NII-2C	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, high, U-NII-3	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, low, U-NII-1	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, low, U-NII-2A	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, low, U-NII-2C	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, low, U-NII-3	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, mid, U-NII-2C	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 80 MHz, high, U-NII-2C	S01_AD01	2023-11-14	Passed	Passed
WLAN ac 80 MHz, low, U-NII-2C	S01_AD01	2023-11-14	Passed	Passed
WLAN ac 80 MHz, low, U-NII-3	S01_AD01	2023-11-14	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-1	S01_AD01	2023-11-14	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-2A	S01_AD01	2023-11-14	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.31, §15.407 (a)(1)**

Maximum Conducted Output Power
The measurement was performed according to ANSI C63.10, chapter 12.3.3.2 **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN ac 80 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-14	Passed	Passed
WLAN ax 20 MHz, high, U-NII-1	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, high, U-NII-2A	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, high, U-NII-2C	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, high, U-NII-3	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, low, U-NII-2A	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, low, U-NII-2C	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, low, U-NII-3	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, mid, U-NII-1	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, mid, U-NII-2A	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, mid, U-NII-2C	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, mid, U-NII-3	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 40 MHz, high, U-NII-1	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, high, U-NII-2A	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, high, U-NII-2C	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, high, U-NII-3	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, low, U-NII-1	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, low, U-NII-2A	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, low, U-NII-2C	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, low, U-NII-3	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, mid, U-NII-2C	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 80 MHz, high, U-NII-2C	S01_AD01	2023-11-14	Passed	Passed
WLAN ax 80 MHz, low, U-NII-2C	S01_AD01	2023-11-14	Passed	Passed
WLAN ax 80 MHz, low, U-NII-3	S01_AD01	2023-11-14	Passed	Passed
WLAN ax 80 MHz, mid, U-NII-1	S01_AD01	2023-11-14	Passed	Passed
WLAN ax 80 MHz, mid, U-NII-2A	S01_AD01	2023-11-14	Passed	Passed
WLAN ax 80 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-14	Passed	Passed
WLAN n 20 MHz, high, U-NII-1	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, high, U-NII-2A	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, high, U-NII-2C	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, high, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, low, U-NII-1	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, low, U-NII-2A	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, low, U-NII-2C	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, low, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, mid, U-NII-1	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, mid, U-NII-2A	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, mid, U-NII-2C	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, mid, U-NII-3	S01_AD01	2023-11-06	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.31, §15.407 (a)(1)**

Maximum Conducted Output Power
The measurement was performed according to ANSI C63.10, chapter 12.3.3.2 **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN n 20 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN n 40 MHz, high, U-NII-1	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, high, U-NII-2A	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, high, U-NII-2C	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, high, U-NII-3	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, low, U-NII-1	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, low, U-NII-2A	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, low, U-NII-2C	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, low, U-NII-3	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, mid, U-NII-2C	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-08	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.31, §15.407 (a) (1),(5)**

Peak Power Spectral Density
The measurement was performed according to ANSI C63.10, chapter 12.5 (SA-3) **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN a, high, U-NII-1	S01_AD01	2023-10-30	Passed	Passed
WLAN a, high, U-NII-2A	S01_AD01	2023-10-30	Passed	Passed
WLAN a, high, U-NII-2C	S01_AD01	2023-10-30	Passed	Passed
WLAN a, high, U-NII-3	S01_AD01	2023-10-30	Passed	Passed
WLAN a, low, U-NII-1	S01_AD01	2023-10-30	Passed	Passed
WLAN a, low, U-NII-2A	S01_AD01	2023-10-30	Passed	Passed
WLAN a, low, U-NII-2C	S01_AD01	2023-10-30	Passed	Passed
WLAN a, low, U-NII-3	S01_AD01	2023-10-30	Passed	Passed
WLAN a, mid, U-NII-1	S01_AD01	2023-10-30	Passed	Passed
WLAN a, mid, U-NII-2A	S01_AD01	2023-10-30	Passed	Passed
WLAN a, mid, U-NII-2C	S01_AD01	2023-10-30	Passed	Passed
WLAN a, mid, U-NII-3	S01_AD01	2023-10-30	Passed	Passed
WLAN a, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-10-30	Passed	Passed
WLAN ac 20 MHz, high, U-NII-1	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, high, U-NII-2A	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, high, U-NII-2C	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, high, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, low, U-NII-1	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, low, U-NII-2A	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, low, U-NII-2C	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, low, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, mid, U-NII-1	S01_AD01	2023-11-06	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.31, §15.407 (a) (1),(5)**

Peak Power Spectral Density
The measurement was performed according to ANSI C63.10, chapter 12.5 (SA-3) **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN ac 20 MHz, mid, U-NII-2A	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, mid, U-NII-2C	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, mid, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 20 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN ac 40 MHz, high, U-NII-1	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, high, U-NII-2A	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, high, U-NII-2C	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, high, U-NII-3	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, low, U-NII-1	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, low, U-NII-2A	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, low, U-NII-2C	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, low, U-NII-3	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, mid, U-NII-2C	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 40 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-09	Passed	Passed
WLAN ac 80 MHz, high, U-NII-2C	S01_AD01	2023-11-13	Passed	Passed
WLAN ac 80 MHz, low, U-NII-2C	S01_AD01	2023-11-13	Passed	Passed
WLAN ac 80 MHz, low, U-NII-3	S01_AD01	2023-11-13	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-1	S01_AD01	2023-11-13	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-2A	S01_AD01	2023-11-13	Passed	Passed
WLAN ac 80 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 20 MHz, high, U-NII-1	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, high, U-NII-2A	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, high, U-NII-2C	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, high, U-NII-3	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, low, U-NII-1	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, low, U-NII-2A	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, low, U-NII-2C	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, low, U-NII-3	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, mid, U-NII-1	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, mid, U-NII-2A	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, mid, U-NII-2C	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, mid, U-NII-3	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 20 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-07	Passed	Passed
WLAN ax 40 MHz, high, U-NII-1	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, high, U-NII-2A	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, high, U-NII-2C	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, high, U-NII-3	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, low, U-NII-1	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, low, U-NII-2A	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, low, U-NII-2C	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, low, U-NII-3	S01_AD01	2023-11-13	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407	**FCC §15.31, §15.407 (a) (1),(5)**
Peak Power Spectral Density The measurement was performed according to ANSI C63.10, chapter 12.5 (SA-3)	**Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	**Setup**	**Date**	**FCC**	**IC**
WLAN ax 40 MHz, mid, U-NII-2C	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 40 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-13	Passed	Passed
WLAN ax 80 MHz, high, U-NII-2C	S01_AD01	2023-11-14	Passed	Passed
WLAN ax 80 MHz, low, U-NII-2C	S01_AD01	2023-11-14	Passed	Passed
WLAN ax 80 MHz, low, U-NII-3	S01_AD01	2023-11-14	Passed	Passed
WLAN ax 80 MHz, mid, U-NII-1	S01_AD01	2023-11-14	Passed	Passed
WLAN ax 80 MHz, mid, U-NII-2A	S01_AD01	2023-11-14	Passed	Passed
WLAN ax 80 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-14	Passed	Passed
WLAN n 20 MHz, high, U-NII-1	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, high, U-NII-2A	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, high, U-NII-2C	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, high, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, low, U-NII-1	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, low, U-NII-2A	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, low, U-NII-2C	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, low, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, mid, U-NII-1	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, mid, U-NII-2A	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, mid, U-NII-2C	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, mid, U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN n 20 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-06	Passed	Passed
WLAN n 40 MHz, high, U-NII-1	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, high, U-NII-2A	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, high, U-NII-2C	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, high, U-NII-3	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, low, U-NII-1	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, low, U-NII-2A	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, low, U-NII-2C	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, low, U-NII-3	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, mid, U-NII-2C	S01_AD01	2023-11-08	Passed	Passed
WLAN n 40 MHz, straddle, U-NII-2C + U-NII-3	S01_AD01	2023-11-08	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407	**FCC §15.407 (b), (1),(2),(3),(4); FCC §15.205, §15.209, §15.407 (b) (5),(6)**
Undesirable Emissions; General Field Strength Limits The measurement was performed according to ANSI C63.10, chapter 6.4, 6.5, 6.6.5	**Final Result**

OP-Mode Radio Technology, Operating Frequency, Measurement range, Subband	**Setup**	**Date**	**FCC**	**IC**
WLAN a, high, 1GHz - 26GHz, U-NII-1	S01_AD01	2023-11-27	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407	FCC §15.407 (b), (1),(2),(3),(4); FCC §15.205, §15.209, §15.407 (b) (5),(6)

Undesirable Emissions; General Field Strength Limits

The measurement was performed according to ANSI C63.10, chapter 6.4, 6.5, 6.6.5

Final Result

OP-Mode Radio Technology, Operating Frequency, Measurement range, Subband	Setup	Date	FCC	IC
WLAN a, high, 1GHz - 26GHz, U-NII-2A	S02_AD01	2023-11-28	Passed	Passed
WLAN a, high, 1GHz - 26GHz, U-NII-2C	S02_AD01	2023-12-17	Passed	Passed
WLAN a, high, 1GHz - 26GHz, U-NII-3	S02_AD01	2023-12-16	Passed	Passed
WLAN a, high, 9kHz - 30MHz, U-NII-2C	S01_AB01	2023-10-14	Passed	Passed
WLAN a, low, 1GHz - 26GHz, U-NII-1	S02_AD01	2023-11-01	Passed	Passed
WLAN a, low, 1GHz - 26GHz, U-NII-2A	S02_AD01	2023-11-27	Passed	Passed
WLAN a, low, 1GHz - 26GHz, U-NII-2C	S02_AD01	2023-12-18	Passed	Passed
WLAN a, low, 1GHz - 26GHz, U-NII-3	S02_AD01	2023-12-16	Passed	Passed
WLAN a, low, 9kHz - 30MHz, U-NII-1	S01_AB01	2023-10-14	Passed	Passed
WLAN a, mid, 1GHz - 26GHz, U-NII-1	S02_AD01	2023-11-17	Passed	Passed
WLAN a, mid, 1GHz - 26GHz, U-NII-2A	S02_AD01	2023-11-28	Passed	Passed
WLAN a, mid, 1GHz - 26GHz, U-NII-2C	S02_AD01	2023-11-29	Passed	Passed
WLAN a, mid, 1GHz - 26GHz, U-NII-3	S02_AD01	2023-12-16	Passed	Passed
WLAN a, mid, 26GHz - 40GHz, U-NII-1	S02_AD01	2023-11-28	Passed	Passed
WLAN a, mid, 26GHz - 40GHz, U-NII-2A	S02_AD01	2023-11-28	Passed	Passed
WLAN a, mid, 26GHz - 40GHz, U-NII-2C	S02_AD01	2023-11-28	Passed	Passed
WLAN a, mid, 26GHz - 40GHz, U-NII-3	S02_AD01	2023-11-28	Passed	Passed
WLAN a, mid, 30MHz - 1GHz, U-NII-1	S01_AB01	2023-09-07	Passed	Passed
WLAN a, mid, 30MHz - 1GHz, U-NII-2A	S01_AB01	2023-09-07	Passed	Passed
WLAN a, mid, 30MHz - 1GHz, U-NII-2C	S01_AB01	2023-09-07	Passed	Passed
WLAN a, mid, 30MHz - 1GHz, U-NII-3	S01_AB01	2023-10-14	Passed	Passed
WLAN n 20 MHz, high, 1GHz - 26GHz, U-NII-1 Remark: Only harmonics tested	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, high, 1GHz - 26GHz, U-NII-2A Remark: Only harmonics tested	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, high, 1GHz - 26GHz, U-NII-2C Remark: Only harmonics tested	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, high, 1GHz - 26GHz, U-NII-3 Remark: Only harmonics tested	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, low, 1GHz - 26GHz, U-NII-1 Remark: 1-18 GHz	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, low, 1GHz - 26GHz, U-NII-2A Remark: Only harmonics tested	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, low, 1GHz - 26GHz, U-NII-2C Remark: Only harmonics tested	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, low, 1GHz - 26GHz, U-NII-3 Remark: Only harmonics tested	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, mid, 1GHz - 26GHz, U-NII-1 Remark: Only harmonics tested	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, mid, 1GHz - 26GHz, U-NII-2A Remark: Only harmonics tested	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, mid, 1GHz - 26GHz, U-NII-2C Remark: Only harmonics tested	S02_AD01	2023-12-17	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407	FCC §15.407 (b), (1),(2),(3),(4); FCC §15.205, §15.209, §15.407 (b) (5),(6)

Undesirable Emissions; General Field Strength Limits

The measurement was performed according to ANSI C63.10, chapter 6.4, 6.5, 6.6.5 **Final Result**

OP-Mode Radio Technology, Operating Frequency, Measurement range, Subband	Setup	Date	FCC	IC
WLAN n 20 MHz, mid, 1GHz - 26GHz, U-NII-3 Remark: Only harmonics tested	S02_AD01	2023-12-17	Passed	Passed
WLAN n 40 MHz, high, 1GHz - 26GHz, U-NII-1 Remark: Only harmonics tested	S02_AD01	2023-12-25	Passed	Passed
WLAN n 40 MHz, high, 1GHz - 26GHz, U-NII-3 Remark: Only harmonics tested	S02_AD01	2023-12-25	Passed	Passed
WLAN n 40 MHz, low, 1GHz - 26GHz, U-NII-1 Remark: Only harmonics tested	S02_AD01	2023-12-25	Passed	Passed
WLAN n 40 MHz, low, 1GHz - 26GHz, U-NII-3 Remark: Only harmonics tested	S02_AD01	2023-12-25	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407	FCC §15.407 (b), (1),(2),(3),(4)

Band Edge

The measurement was performed according to ANSI C63.10, chapter 6.6.5 **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN a, high, U-NII-2A	S02_AD01	2023-11-28	Passed	Passed
WLAN a, high, U-NII-2C	S02_AD01	2023-12-17	Passed	Passed
WLAN a, high, U-NII-3	S02_AD01	2023-12-23	Passed	Passed
WLAN a, low, U-NII-1	S02_AD01	2023-12-28	Passed	Passed
WLAN a, low, U-NII-2C	S02_AD01	2023-12-18	Passed	Passed
WLAN a, low, U-NII-3	S02_AD01	2023-12-28	Passed	Passed
WLAN ac 20 MHz, high, U-NII-2A	S02_AD01	2023-12-28	Passed	Passed
WLAN ac 20 MHz, high, U-NII-2C	S02_AD01	2023-12-28	Passed	Passed
WLAN ac 20 MHz, high, U-NII-3	S02_AD01	2023-12-28	Passed	Passed
WLAN ac 20 MHz, low, U-NII-1	S02_AD01	2023-12-28	Passed	Passed
WLAN ac 20 MHz, low, U-NII-2C	S02_AD01	2023-12-28	Passed	Passed
WLAN ac 20 MHz, low, U-NII-3	S02_AD01	2023-12-28	Passed	Passed
WLAN ac 40 MHz, high, U-NII-2A	S02_AD01	2023-12-28	Passed	Passed
WLAN ac 40 MHz, high, U-NII-2C	S02_AD01	2023-12-28	Passed	Passed
WLAN ac 40 MHz, high, U-NII-3	S02_AD01	2023-12-29	Passed	Passed
WLAN ac 40 MHz, low, U-NII-1	S02_AD01	2023-12-28	Passed	Passed
WLAN ac 40 MHz, low, U-NII-2C	S02_AD01	2023-12-28	Passed	Passed
WLAN ac 40 MHz, low, U-NII-3	S02_AD01	2023-12-28	Passed	Passed
WLAN ac 80 MHz, low, U-NII-2C	S02_AD01	2024-01-03	Passed	Passed
WLAN ac 80 MHz, low, U-NII-3	S02_AD01	2024-01-03	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-1	S02_AD01	2024-01-03	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-2A	S02_AD01	2024-01-03	Passed	Passed
WLAN ax 20 MHz, high, U-NII-2A	S02_AD01	2023-12-28	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.407 (b), (1),(2),(3),(4)**

Band Edge

The measurement was performed according to ANSI C63.10, chapter 6.6.5 **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN ax 20 MHz, high, U-NII-2C	S02_AD01	2023-12-28	Passed	Passed
WLAN ax 20 MHz, high, U-NII-3	S02_AD01	2023-12-28	Passed	Passed
WLAN ax 20 MHz, low, U-NII-1	S02_AD01	2023-12-28	Passed	Passed
WLAN ax 20 MHz, low, U-NII-2C	S02_AD01	2023-12-28	Passed	Passed
WLAN ax 20 MHz, low, U-NII-3	S02_AD01	2023-12-28	Passed	Passed
WLAN ax 40 MHz, high, U-NII-2A	S02_AD01	2023-12-29	Passed	Passed
WLAN ax 40 MHz, high, U-NII-2C	S02_AD01	2023-12-29	Passed	Passed
WLAN ax 40 MHz, high, U-NII-3	S02_AD01	2023-12-29	Passed	Passed
WLAN ax 40 MHz, low, U-NII-1	S02_AD01	2023-12-29	Passed	Passed
WLAN ax 40 MHz, low, U-NII-2C	S02_AD01	2023-12-29	Passed	Passed
WLAN ax 40 MHz, low, U-NII-3	S02_AD01	2023-12-29	Passed	Passed
WLAN ax 80 MHz, low, U-NII-2C	S02_AD01	2024-01-03	Passed	Passed
WLAN ax 80 MHz, low, U-NII-3	S02_AD01	2024-01-03	Passed	Passed
WLAN ax 80 MHz, mid, U-NII-1	S02_AD01	2024-01-03	Passed	Passed
WLAN ax 80 MHz, mid, U-NII-2A	S02_AD01	2024-01-03	Passed	Passed
WLAN n 20 MHz, high, U-NII-2A	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, high, U-NII-2C	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, high, U-NII-3	S02_AD01	2023-12-28	Passed	Passed
WLAN n 20 MHz, low, U-NII-1	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, low, U-NII-2C	S02_AD01	2023-12-17	Passed	Passed
WLAN n 20 MHz, low, U-NII-3	S02_AD01	2023-12-17	Passed	Passed
WLAN n 40 MHz, high, U-NII-2A	S02_AD01	2023-12-29	Passed	Passed
WLAN n 40 MHz, high, U-NII-2C	S02_AD01	2023-12-29	Passed	Passed
WLAN n 40 MHz, high, U-NII-3	S02_AD01	2023-12-29	Passed	Passed
WLAN n 40 MHz, low, U-NII-1	S02_AD01	2023-12-25	Passed	Passed
WLAN n 40 MHz, low, U-NII-2C	S02_AD01	2023-12-29	Passed	Passed
WLAN n 40 MHz, low, U-NII-3	S02_AD01	2023-12-29	Passed	Passed
WLAN a, high, U-NII-2A	S03_AD01	2024-01-02	Passed	Passed
WLAN a, high, U-NII-2C	S03_AD01	2024-01-02	Passed	Passed
WLAN a, high, U-NII-3	S03_AD01	2024-01-02	Passed	Passed
WLAN a, low, U-NII-1	S03_AD01	2024-01-02	Passed	Passed
WLAN a, low, U-NII-2C	S03_AD01	2024-01-02	Passed	Passed
WLAN a, low, U-NII-3	S03_AD01	2024-01-02	Passed	Passed
WLAN ac 20 MHz, high, U-NII-2A	S03_AD01	2024-01-07	Passed	Passed
WLAN ac 20 MHz, high, U-NII-2C	S03_AD01	2024-01-07	Passed	Passed
WLAN ac 20 MHz, high, U-NII-3	S03_AD01	2024-01-07	Passed	Passed
WLAN ac 20 MHz, low, U-NII-1	S03_AD01	2024-01-07	Passed	Passed
WLAN ac 20 MHz, low, U-NII-2C	S03_AD01	2024-01-07	Passed	Passed
WLAN ac 20 MHz, low, U-NII-3	S03_AD01	2024-01-07	Passed	Passed
WLAN ac 40 MHz, high, U-NII-2A	S03_AD01	2024-01-07	Passed	Passed

47 CFR CHAPTER I FCC PART 15 Subpart E §15.407 **FCC §15.407 (b), (1),(2),(3),(4)**

Band Edge

The measurement was performed according to ANSI C63.10, chapter 6.6.5 **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	Date	FCC	IC
WLAN ac 40 MHz, high, U-NII-2C	S03_AD01	2024-01-07	Passed	Passed
WLAN ac 40 MHz, high, U-NII-3	S03_AD01	2024-01-07	Passed	Passed
WLAN ac 40 MHz, low, U-NII-1	S03_AD01	2024-01-07	Passed	Passed
WLAN ac 40 MHz, low, U-NII-2C	S03_AD01	2024-01-07	Passed	Passed
WLAN ac 40 MHz, low, U-NII-3	S03_AD01	2024-01-07	Passed	Passed
WLAN ax 20 MHz, high, U-NII-2A	S03_AD01	2024-01-07	Passed	Passed
WLAN ax 20 MHz, high, U-NII-2C	S03_AD01	2024-01-07	Passed	Passed
WLAN ax 20 MHz, high, U-NII-3	S03_AD01	2024-01-07	Passed	Passed
WLAN ax 20 MHz, low, U-NII-1	S03_AD01	2024-01-07	Passed	Passed
WLAN ax 20 MHz, low, U-NII-2C	S03_AD01	2024-01-07	Passed	Passed
WLAN ax 20 MHz, low, U-NII-3	S03_AD01	2024-01-07	Passed	Passed
WLAN ax 40 MHz, high, U-NII-2A	S03_AD01	2023-12-28	Passed	Passed
WLAN ax 40 MHz, high, U-NII-2C	S03_AD01	2023-12-28	Passed	Passed
WLAN ax 40 MHz, high, U-NII-3	S03_AD01	2023-12-28	Passed	Passed
WLAN ax 40 MHz, low, U-NII-1	S03_AD01	2023-12-28	Passed	Passed
WLAN ax 40 MHz, low, U-NII-2C	S03_AD01	2023-12-28	Passed	Passed
WLAN ax 40 MHz, low, U-NII-3	S03_AD01	2023-12-28	Passed	Passed
WLAN n 20 MHz, high, U-NII-2A	S03_AD01	2024-01-02	Passed	Passed
WLAN n 20 MHz, high, U-NII-2C	S03_AD01	2024-01-02	Passed	Passed
WLAN n 20 MHz, high, U-NII-3	S03_AD01	2024-01-02	Passed	Passed
WLAN n 20 MHz, low, U-NII-1	S03_AD01	2024-01-02	Passed	Passed
WLAN n 20 MHz, low, U-NII-2C	S03_AD01	2024-01-02	Passed	Passed
WLAN n 20 MHz, low, U-NII-3	S03_AD01	2024-01-02	Passed	Passed
WLAN n 40 MHz, high, U-NII-2A	S03_AD01	2024-01-07	Passed	Passed
WLAN n 40 MHz, high, U-NII-2C	S03_AD01	2024-01-07	Passed	Passed
WLAN n 40 MHz, high, U-NII-3	S03_AD01	2024-01-07	Passed	Passed
WLAN n 40 MHz, low, U-NII-1	S03_AD01	2024-01-07	Passed	Passed
WLAN n 40 MHz, low, U-NII-2C	S03_AD01	2024-01-07	Passed	Passed
WLAN n 40 MHz, low, U-NII-3	S03_AD01	2024-01-07	Passed	Passed

N/A: Not applicable
N/P: Not performed

2 REVISION HISTORY / SIGNATURES

Report version control			
Version	**Release date**	**Change Description**	**Version validity**
initial	2024-02-19	--	valid
--	--	--	--

COMMENT: -

(responsible for accreditation scope)
Daniel Gall

(responsible for testing and report)
Mohamed Fraitat

7 layers GmbH, Borsigstr. 11
40880 Ratingen, Germany
Phone +49 (0)2102 749 0

3 ADMINISTRATIVE DATA

3.1 TESTING LABORATORY

Company Name:	7layers GmbH
Address:	Borsigstr. 11 40880 Ratingen Germany

The test facility is accredited by the following accreditation organisation:

Laboratory accreditation no:	DAkkS D-PL-12140-01-01| -02 | -03
FCC Designation Number:	DE0015
FCC Test Firm Registration:	929146
ISED CAB Identifier	DE0007; ISED#: 3699A
Responsible for accreditation scope:	Daniel Gall
Report Template Version:	2023-09-29

3.2 PROJECT DATA

Responsible for testing and report:	Mohamed Fraitat
Employees who performed the tests:	documented internally at 7Layers
Date of Report:	2024-02-19
Testing Period:	2023-09-07 to 2024-01-03

3.3 APPLICANT DATA

Company Name:	H&D Wireless AB
Address:	Färögatan 33, Kista Science Tower 164 51 Kista Sweden
Contact Person:	Mikael Olsson

3.4 MANUFACTURER DATA

Company Name:	please see Applicant Data
Address:	
Contact Person:	

4 TEST OBJECT DATA

4.1 GENERAL EUT DESCRIPTION

Kind of Device product description	The EUT is a Bluetooth and WLAN module.	
Product name	SPB611 module	
Type	SPB611	
Declared EUT data by the supplier		
Voltage Type	DC	
Voltage Level	3.3 V	
Tested Modulation Type	OFDM	
Specific product description	The EUT is a Bluetooth and WLAN module. For WLAN the EUT is supporting followings bands and modes in the 5 GHz band: - WLAN a-mode 20MHz - WLAN n 20 MHz and n 40 MHz (SISO and MIMO) - WLAN ac 20 MHz, 40 MHz, and 80 MHz (SISO and MIMO) - WLAN ax 20 MHz, 40 MHz, and 80 MHZ (SISO and MIMO) The U-NII bands 1, 2A, 2C and 3 are supported. For this report the EUT is a slave without radar detection in the relevant DFS bands.	
Ports of the device	- DC (connected to Power supply) - Antenna	
Antenna / Gain	External / Primary antenna (Taoglas): 5.5 dBi (in the 5 GHz Band) Secondary antenna (TE connectivity): 2.0 dBi (in the 5 GHz Band)	
Tested Datarates	WLAN a: 54 Mbps WLAN n 20, 40: MCS7 WLAN ac 20: MCS8 WLAN ac 40, 80: MCS9 WLAN ax 20, 40, 80: MCS9	
Used power setting in EUT´s test software	Mode	Power setting
	WLAN a:	15
	WLAN n20:	15
	WLAN n40:	12
	WLAN ac20:	14
	WLAN ac40:	12
	WLAN ac80:	10
	WLAN ax20:	12
	WLAN ax40:	11

	WLAN ax80:	10
Special software used for testing	Labtool on computer board provided by applicant.	

4.2 EUT MAIN COMPONENTS

Sample Name	**Sample Code**	**Description**
EUT AB01	DE1495001ab01	Radiated and conducted sample
Sample Parameter	**Value**	
Serial No.	0015	
HW Version	SPB611 R2A	
SW Version	linux-611-sdio-uart-v2.1	
Comment	-	

Sample Name	**Sample Code**	**Description**
EUT AD01	DE1495001ad01	Radiated and conducted sample
Sample Parameter	**Value**	
Serial No.	0016	
HW Version	SPB611 R2A	
SW Version	linux-611-sdio-uart-v2.1	
Comment	-	

NOTE:The short description is used to simplify the identification of the EUT in this test report.

4.3 ANCILLARY EQUIPMENT

For the purposes of this test report, ancillary equipment is defined as equipment which is used in conjunction with the EUT to provide operational and control features to the EUT. It is necessary to configure the system in a typical fashion, as a customer would normally use it. But nevertheless Ancillary Equipment can influence the test results.

Device	**Details (Manufacturer, Type Model, OUT Code)**	**Description**
-	-	-

4.4 AUXILIARY EQUIPMENT

For the purposes of this test report, auxiliary equipment is defined as equipment which is used temporarily to enable operational and control features especially used for the tests of the EUT which is not used during normal operation or equipment that is used during the tests in combination with the EUT but is not subject of this test report. It is necessary to configure the system in a typical fashion, as a customer would normally use it.
But nevertheless Auxiliary Equipment can influence the test results.

Device	**Details (Manufacturer, Type Model, HW, SW, S/N)**	**Description**
AUX1	H&D Wireless, SPIII SD-Card, -, -,	SDIO card
AUX2	Rasberry, Model 4, -, -, -,	Rasberry Pi 4 Test Jig
AUX3	Taoglas, GW.71.5153, -, - , -	Dipole Antenna primary
AUX4	TE Connectivity/Laird, 001-0012, -, -,	Dipole Antenna second
AUX5	PeakTech, 6005D (30 V / 5 A), -, -, 81062045	Lab Power Supply (provided by 7Layers).

4.5 EUT SETUPS

This chapter describes the combination of EUTs and equipment used for testing. The rationale for selecting the EUTs, ancillary and auxiliary equipment and interconnecting cables, is to test a representative configuration meeting the requirements of the referenced standards.

Setup	Combination of EUTs	Description and Rationale
S01_AB01	EUT AB01, AUX1, AUX3	Setup for radiated measurements
S01_AD01	EUT AD01, AUX1, AUX2,	Setup for radiated measurements
S02_AD01	EUT AD01, AUX1, AUX2, AUX3	Setup for radiated measurements
S03_AD01	EUT AD01, AUX1, AUX2, AUX4	Setup for radiated measurements
S04_AD01	EUT AD01, AUX1, AUX2, AUX3, AUX5	Setup for AC mains measurement

4.6 OPERATING MODES / TEST CHANNELS

This chapter describes the operating modes of the EUTs used for testing.

U-NII-Subband 1 5150 - 5250 MHz			U-NII-Subband 2A 5250 - 5350 MHz			U-NII-Subband 2C 5470 - 5725 MHz			U-NII-Subband 3 5725 - 5850 MHz			Nom. BW
low	mid	high	low	mid	high	low	mid	high	low	mid	high	20 MHz
36	40	48	52	60	64	100	116	140 / 144 [1)]	149	157	165	Ch.-No.
5180	5200	5240	5260	5300	5320	5500	5580	5700 / 5720	5745	5785	5825	MHz

low	mid	high	low	mid	high	low	mid	high	low	mid	high	40 MHz
38	-	46	54	-	62	102	110	134 / 142 [1)]	151	-	159	Ch.-No.
5190	-	5230	5270	-	5310	5510	5550	5670 / 5710	5755	-	5795	MHz

low	mid	high	low	mid	high	low	mid	high	low	mid	high	80 MHz
-	42	-	-	58	-	106	122	138 [1)]	155	-	-	Ch.-No.
-	5210	-	-	5290	-	5530	5610	5690	5775	-	-	MHz

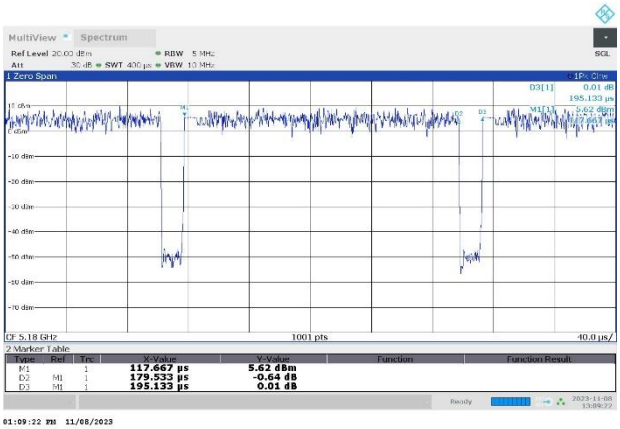
low	mid	high	low	mid	high	low	mid	high	low	mid	high	160 MHz
-	50	-	-	50	-	114	-	-	-	-	-	Ch.-No.
-	5250	-	-	5250	-	5570	-	-	-	-	-	MHz

1) Channels 144, 142 and 138 are straddle channels. Relevant high channels for upper Band Edge of band 2C are CH.140, CH. 134 and Ch 122.

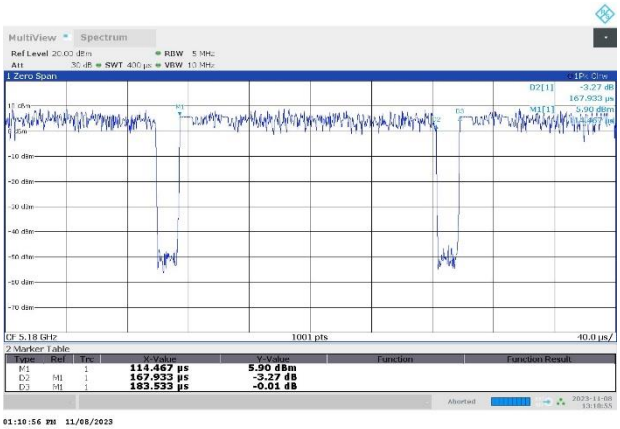
4.7 DUTY CYCLE

Test Mode	T_{on+off} (µs)	T_{on} (µs)	Duty cycle (%)
WLAN a:	195	179	92
WLAN n20:	183	168	91
WLAN n40:	115	100	87
WLAN ac20	167	151	90
WLAN ac40:	108	92	85
WLAN ac80:	80	63	79
WLAN ax20:	145	129	89
WLAN ax40:	112	96	86
WLAN ax80:	95	79	83

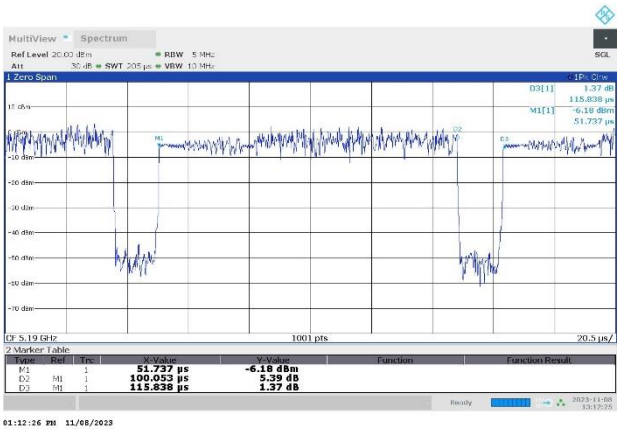
WLAN a



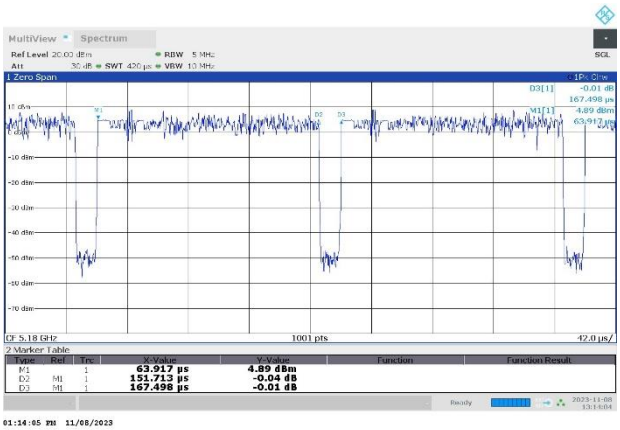
WLAN n20



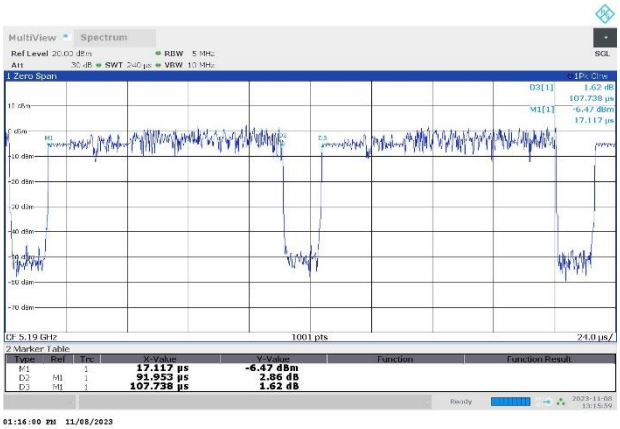
WLAN n40



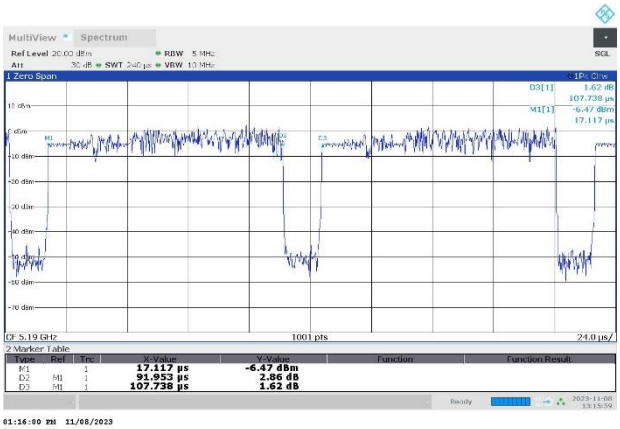
WLAN ac20



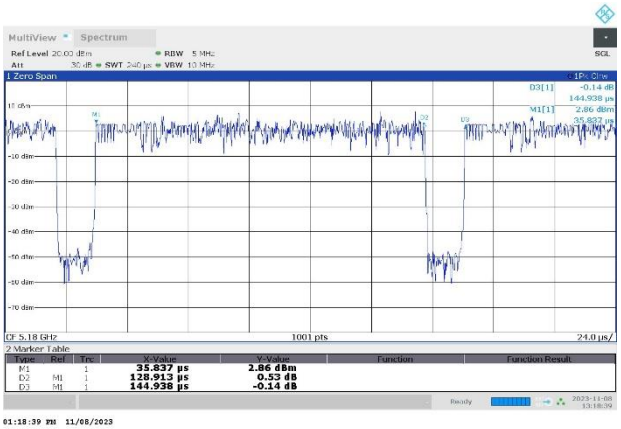
WLAN ac40



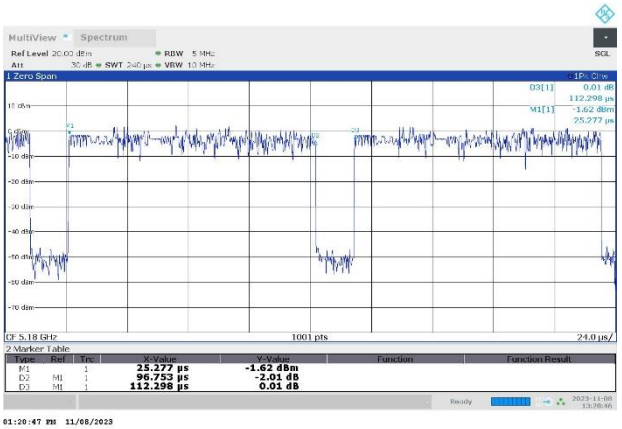
WLAN ac80



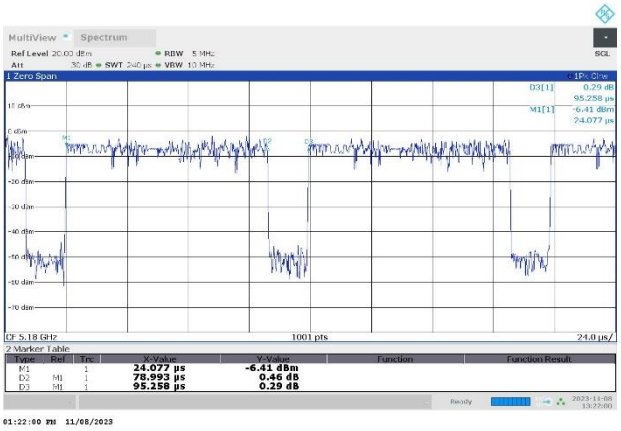
WLAN ax20



WLAN ax40



WLAN ax80



4.8 PRODUCT LABELLING

4.8.1 FCC ID LABEL

Please refer to the documentation of the applicant.

4.8.2 LOCATION OF THE LABEL ON THE EUT

Please refer to the documentation of the applicant.

5 TEST RESULTS

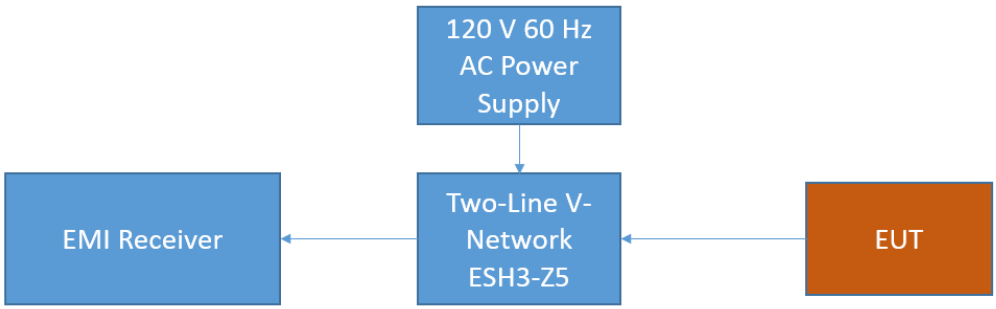
5.1 AC CONDUCTED EMISSIONS

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10, chapter 6.2

5.1.1 TEST DESCRIPTION

The test set-up was made in accordance to the general provisions of ANSI C 63.10
The Equipment Under Test (EUT) was setup in a shielded room to perform the conducted emissions measurements in a typical installation configuration. The EUT was powered from 50µH || 50 Ohm Line Impedance Stabilization Network (LISN). The LISN's unused connections were terminated with 50 Ohm loads.



FCC Conducted Emissions on AC

The measurement procedure consists of two steps. It is implemented into the EMI test software EMC-32 from R&S.

Step 1: Preliminary scan
Intention of this step is, to determine the conducted EMI-profile of the EUT.
EMI receiver settings:
- Detector: Peak – Maxhold & Average
- Frequency range: 150 kHz – 30 MHz
- Frequency steps: 2.5 kHz
- IF–Bandwidth: 9 kHz
- Measuring time / Frequency step: 100 ms (FFT-based)
- Measurement on phase + neutral lines of the power cords

On basis of this preliminary scan the highest amplitudes and the corresponding frequencies relative to the limit are identified. Emissions above the limit and emissions which are in the 10 dB range below the limit are considered.

Step 2: Final measurement
Intention of this step is, to determine the highest emissions with the settings defined in the test specification for the frequencies identified in step 1.
EMI receiver settings:
- Detector: Quasi-Peak & (CISPR) Average

- IF Bandwidth: 9 kHz
- Measuring time: 1 s / frequency

At each frequency determined in step 1, four measurements are performed in the following combinations:
1) Neutral lead - reference ground (PE grounded)
2) Phase lead - reference ground (PE grounded)
3) Neutral lead - reference ground (PE floating)
4) Phase lead - reference ground (PE floating)

The highest value is reported.

5.1.2 TEST REQUIREMENTS / LIMITS

FCC Part 15, Subpart C, §15.207

Frequency (MHz)	QP Limits (dBµV)	AV Limits (dBµV)
0.15 – 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

5.1.3 TEST PROTOCOL

Temperature: 25 °C
Air Pressure: 1007 hPa
Humidity: 38 %

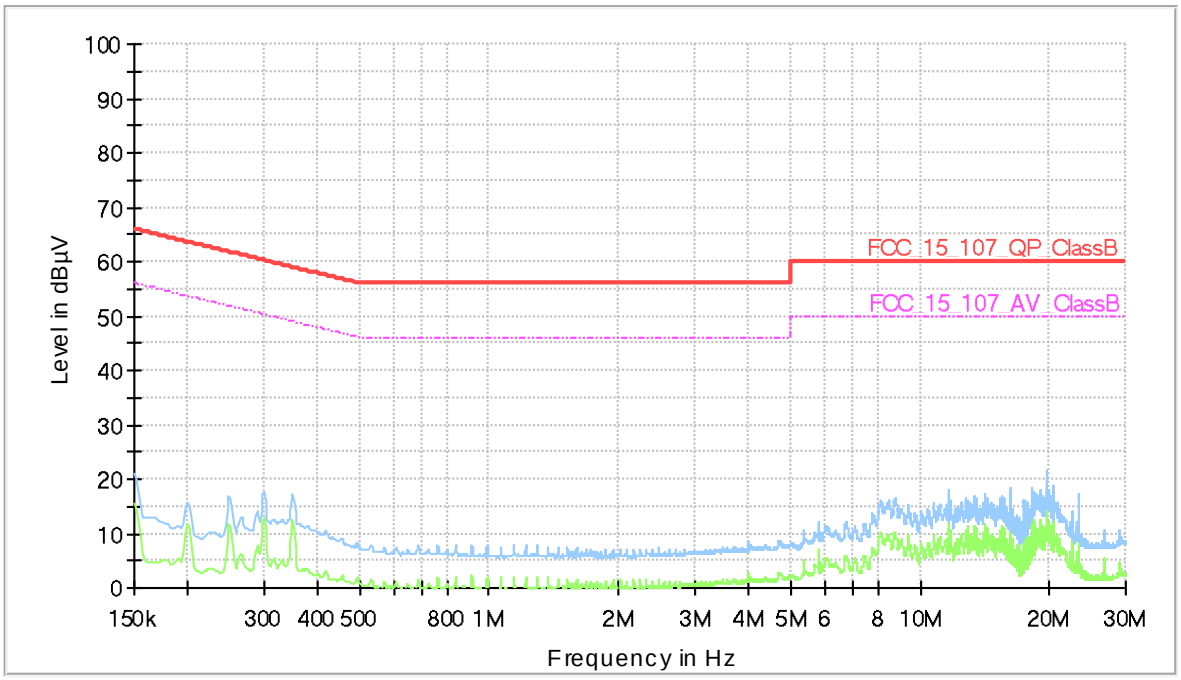
Power line	**PE**	**Frequency [MHz]**	**Measured value QP [dBµV]**	**Measured value AV [dBµV]**	**Limit [dBµV]**	**Margin [dB]**
-	-	-	-	-	-	-

Remark: Please see next sub-clause for the measurement plot.

5.1.4 MEASUREMENT PLOT (EXAMPLE PLOT, SHOWING WORST CASE, IF APPLICABLE)

Common Information

Test Description:	Conducted Emissions
Test Standard:	FCC §15.207, ANSI C63.10
EUT / Setup Code:	DE1495001ad01
Operating Conditions:	120 V 60 Hz, WLAN a-mode TX 54 Mbps Ch36
Legend:	Trace: blue = QP, green = CISPR AV; Star: red or blue = critical frequency; Rhombus: blue = final QP, green = final CISPR AV
Tested Port / used LISN:	AC mains => 1st LISN ESH3-Z5
Termination of other ports:	N/A,



5.1.5 TEST EQUIPMENT USED

- Conducted Emissions FCC

5.2 26 DB BANDWIDTH

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10, chapter 12.4.1

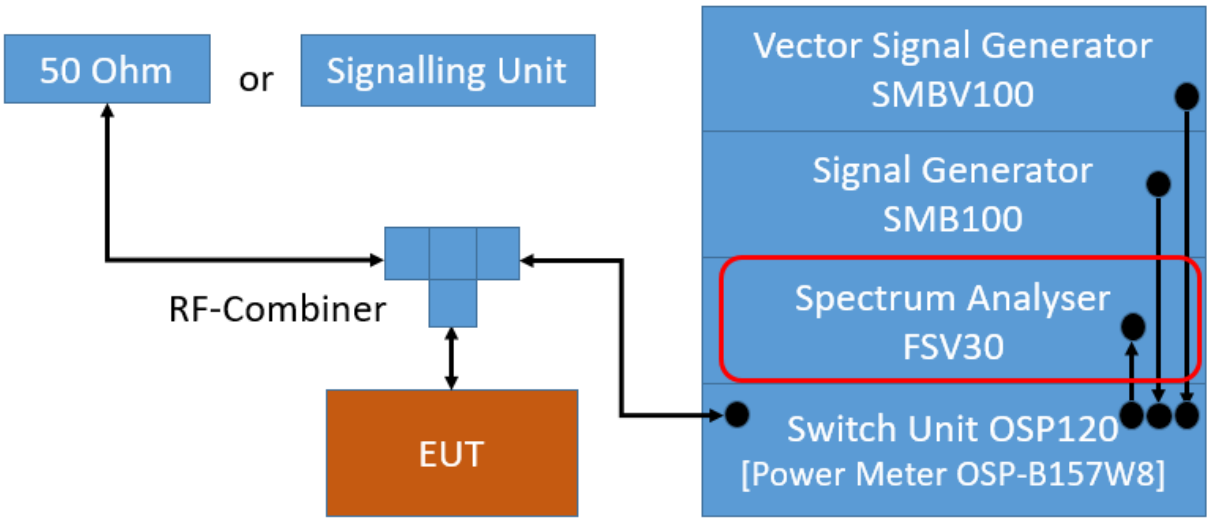
5.2.1 TEST DESCRIPTION

The Equipment Under Test (EUT) was set up to perform the occupied bandwidth measurements.
The reference level is the level of the highest amplitude signal observed from the transmitter at either the fundamental frequency or first-order modulation products in all typical modes of operation, including the unmodulated carrier, even if atypical.
The results recorded were measured with the modulation which produce the worst-case (widest) emission bandwidth.

The EUT was connected to the test system as described in the block diagram below. The complete attenuation of the measurement path is known and considered.

Analyzer settings:

- Resolution Bandwidth (RBW): initially approx. 1 % of nominal emission bandwidth
- Video Bandwidth (VBW): > RBW
- Span: 40 / 80 / 160 / 320 MHz (for 20 / 40 / 80 / 160 MHz nominal bandwidth)
- Trace: Maxhold
- Sweeps: Until the trace is stable
- Sweeptime: Auto
- Detector: Peak



TS8997; Occupied Channel Bandwidth 6 dB / 26 dB / 99 %

5.2.2 TEST REQUIREMENTS / LIMITS

FCC Part 15, Subpart E
There exist no applicable limits. The test was performed to determine the limits for the "Maximum Conducted Output Power" and DFS test cases.
Therefore no result was applied.

5.2.3 TEST PROTOCOL

Ambient temperature: 23-25 °C
Air Pressure: 990-1010 hPa
Humidity: 36-40 %

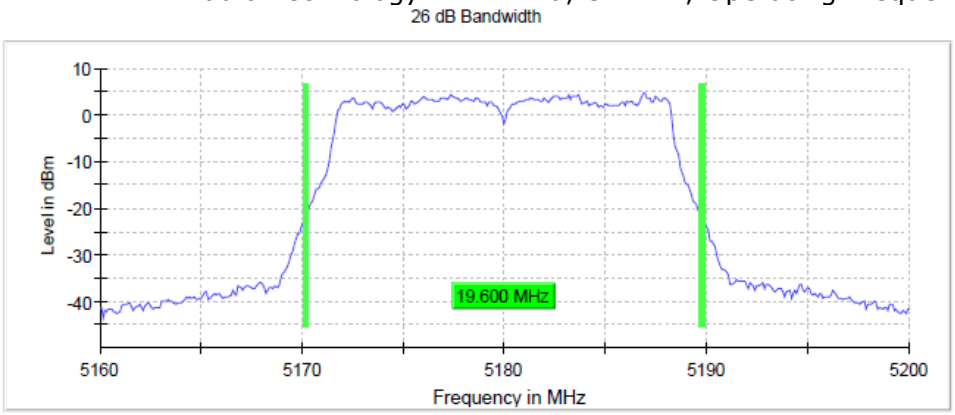
Radio Technology	Subband	Operating Frequency	26 dB Bandwidth [MHz]
WLAN a	U-NII-1	low	19.6
WLAN a	U-NII-1	mid	19.5
WLAN a	U-NII-1	high	19.6
WLAN a	U-NII-2A	low	19.5
WLAN a	U-NII-2A	mid	19.6
WLAN a	U-NII-2A	high	19.5
WLAN a	U-NII-2C	low	19.6
WLAN a	U-NII-2C	mid	19.5
WLAN a	U-NII-2C	high	19.5
WLAN a	U-NII-2C/3	straddle	19.7
WLAN a	U-NII-3	low	19.5
WLAN a	U-NII-3	mid	19.5
WLAN a	U-NII-3	high	19.5
WLAN n 20 MHz	U-NII-1	low	20.0
WLAN n 20 MHz	U-NII-1	mid	20.0
WLAN n 20 MHz	U-NII-1	high	20.0
WLAN n 20 MHz	U-NII-2A	low	20.1
WLAN n 20 MHz	U-NII-2A	mid	20.0
WLAN n 20 MHz	U-NII-2A	high	20.0
WLAN n 20 MHz	U-NII-2C	low	20.0
WLAN n 20 MHz	U-NII-2C	mid	20.0
WLAN n 20 MHz	U-NII-2C	high	20.0
WLAN n 20 MHz	U-NII-2C/3	straddle	20.0
WLAN n 20 MHz	U-NII-3	low	20.0
WLAN n 20 MHz	U-NII-3	mid	20.0
WLAN n 20 MHz	U-NII-3	high	19.9
WLAN n 40 MHz	U-NII-1	low	39.6
WLAN n 40 MHz	U-NII-1	high	39.7
WLAN n 40 MHz	U-NII-2A	low	39.8
WLAN n 40 MHz	U-NII-2A	high	39.8
WLAN n 40 MHz	U-NII-2C	low	39.9
WLAN n 40 MHz	U-NII-2C	mid	39.9
WLAN n 40 MHz	U-NII-2C	high	39.8
WLAN n 40 MHz	U-NII-2C/3	straddle	39.8
WLAN n 40 MHz	U-NII-3	low	39.8
WLAN n 40 MHz	U-NII-3	high	39.8
WLAN ac 20 MHz	U-NII-1	low	20.1
WLAN ac 20 MHz	U-NII-1	mid	20.1
WLAN ac 20 MHz	U-NII-1	high	20.1
WLAN ac 20 MHz	U-NII-2A	low	20.1
WLAN ac 20 MHz	U-NII-2A	mid	20.1
WLAN ac 20 MHz	U-NII-2A	high	20.0
WLAN ac 20 MHz	U-NII-2C	low	20.1
WLAN ac 20 MHz	U-NII-2C	mid	20.1
WLAN ac 20 MHz	U-NII-2C	high	20.1
WLAN ac 20 MHz	U-NII-2C/3	straddle	20.1
WLAN ac 20 MHz	U-NII-3	low	20.1
WLAN ac 20 MHz	U-NII-3	mid	20.1
WLAN ac 20 MHz	U-NII-3	high	20.1

WLAN ac 40 MHz	U-NII-1	low	40.1
WLAN ac 40 MHz	U-NII-1	high	40.1
WLAN ac 40 MHz	U-NII-2A	low	40.1
WLAN ac 40 MHz	U-NII-2A	high	39.9
WLAN ac 40 MHz	U-NII-2C	low	40.1
WLAN ac 40 MHz	U-NII-2C	mid	40.1
WLAN ac 40 MHz	U-NII-2C	high	40.2
WLAN ac 40 MHz	U-NII-2C/3	straddle	40.1
WLAN ac 40 MHz	U-NII-3	low	40.1
WLAN ac 40 MHz	U-NII-3	high	40.1
WLAN ac 80 MHz	U-NII-1	mid	83.0
WLAN ac 80 MHz	U-NII-2A	mid	83.0
WLAN ac 80 MHz	U-NII-2C	low	83.0
WLAN ac 80 MHz	U-NII-2C	high	82.5
WLAN ac 80 MHz	U-NII-2C/3	straddle	83.5
WLAN ac 80 MHz	U-NII-3	mid	83.0
WLAN ax 20 MHz	U-NII-1	low	20.7
WLAN ax 20 MHz	U-NII-1	mid	20.5
WLAN ax 20 MHz	U-NII-1	high	20.6
WLAN ax 20 MHz	U-NII-2A	low	20.6
WLAN ax 20 MHz	U-NII-2A	mid	20.6
WLAN ax 20 MHz	U-NII-2A	high	20.5
WLAN ax 20 MHz	U-NII-2C	low	20.4
WLAN ax 20 MHz	U-NII-2C	mid	20.6
WLAN ax 20 MHz	U-NII-2C	high	20.5
WLAN ax 20 MHz	U-NII-2C/3	straddle	20.6
WLAN ax 20 MHz	U-NII-3	low	20.6
WLAN ax 20 MHz	U-NII-3	mid	20.5
WLAN ax 20 MHz	U-NII-3	high	20.5
WLAN ax 40 MHz	U-NII-1	low	40.5
WLAN ax 40 MHz	U-NII-1	high	40.4
WLAN ax 40 MHz	U-NII-2A	low	40.2
WLAN ax 40 MHz	U-NII-2A	high	40.4
WLAN ax 40 MHz	U-NII-2C	low	40.4
WLAN ax 40 MHz	U-NII-2C	mid	40.2
WLAN ax 40 MHz	U-NII-2C	high	40.2
WLAN ax 40 MHz	U-NII-2C/3	straddle	40.4
WLAN ax 40 MHz	U-NII-3	low	40.5
WLAN ax 40 MHz	U-NII-3	high	40.4
WLAN ax 80 MHz	U-NII-1	mid	81.5
WLAN ax 80 MHz	U-NII-2A	mid	81.5
WLAN ax 80 MHz	U-NII-2C	low	81.5
WLAN ax 80 MHz	U-NII-2C	high	81.5
WLAN ax 80 MHz	U-NII-2C/3	straddle	81.5
WLAN ax 80 MHz	U-NII-3	mid	81.5

Remark: Please see next sub-clause for the measurement plot.

5.2.4 MEASUREMENT PLOT (EXAMPLE PLOT, SHOWING WORST CASE, IF APPLICABLE)

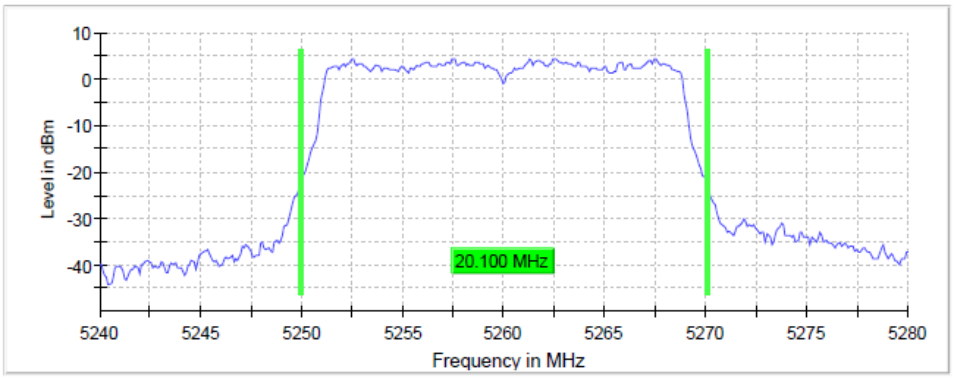
Radio Technology = WLAN a, UNII- 1, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.16000 GHz
Stop Frequency	5.20000 GHz
Span	40.000 MHz
RBW	200.000 kHz
VBW	1.000 MHz
SweepPoints	400
Sweeptime	1.000 ms
Reference Level	10.000 dBm
Attenuation	20.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	48 / max. 150
Stable	5 / 5
Max Stable Difference	0.01 dB

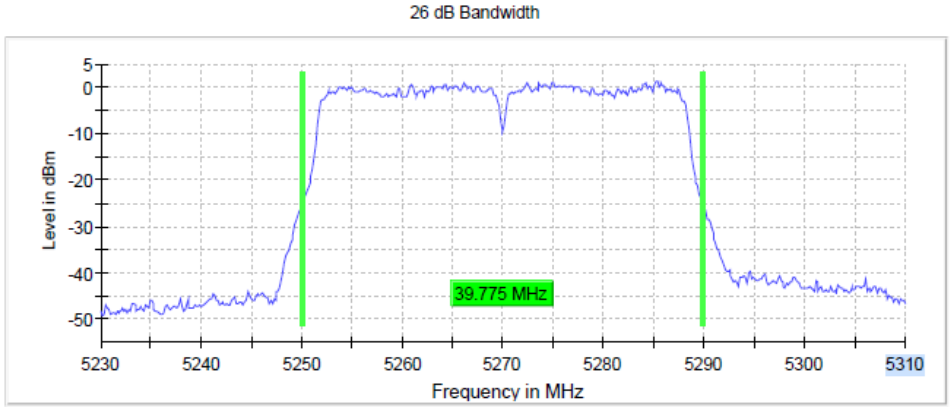
Radio Technology = WLAN n 20, UNII- 2A, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.24000 GHz
Stop Frequency	5.28000 GHz
Span	40.000 MHz
RBW	200.000 kHz
VBW	1.000 MHz
SweepPoints	400
Sweeptime	1.000 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	61 / max. 150
Stable	5 / 5
Max Stable Difference	0.05 dB

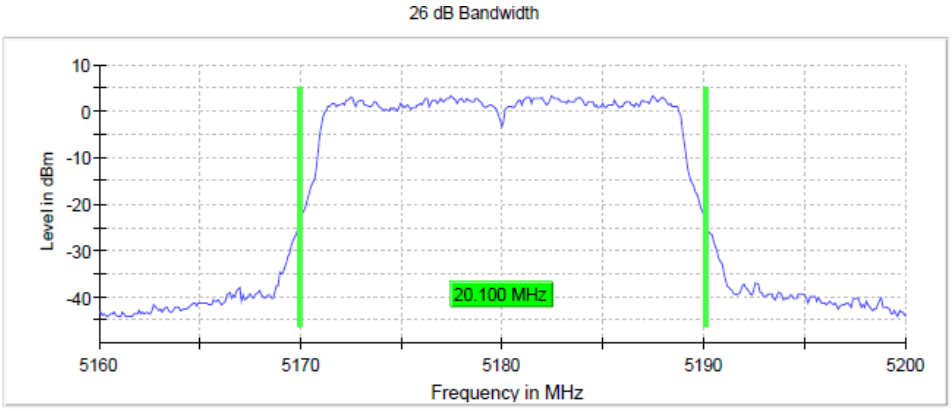
Radio Technology = WLAN n 40, UNII- 2C, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.23000 GHz
Stop Frequency	5.31000 GHz
Span	80.000 MHz
RBW	300.000 kHz
VBW	1.000 MHz
SweepPoints	533
Sweeptime	1.000 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	80 / max. 150
Stable	5 / 5
Max Stable Difference	0.20 dB

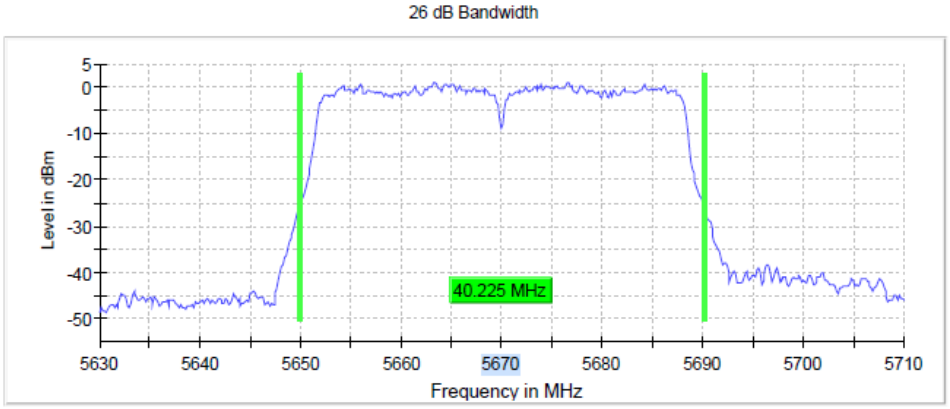
Radio Technology = WLAN ac 20, UNII- 1, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.16000 GHz
Stop Frequency	5.20000 GHz
Span	40.000 MHz
RBW	200.000 kHz
VBW	1.000 MHz
SweepPoints	400
Sweeptime	1.000 ms
Reference Level	10.000 dBm
Attenuation	20.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	59 / max. 150
Stable	5 / 5
Max Stable Difference	0.17 dB

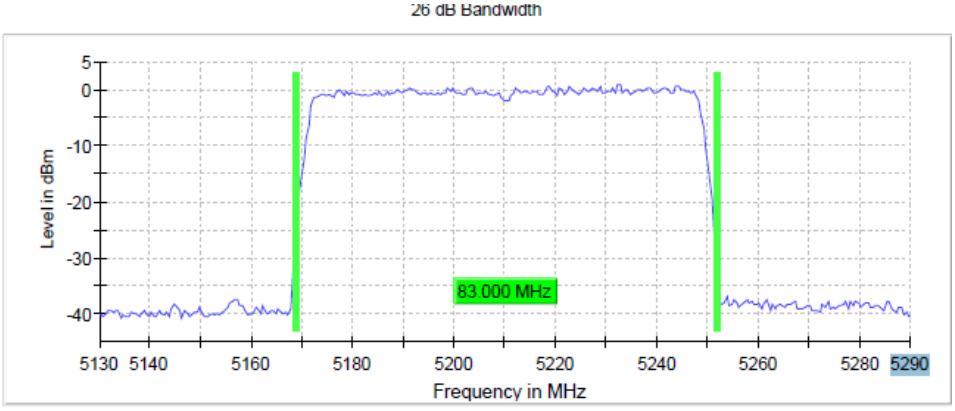
Radio Technology = WLAN ac 40, UNII- 2C, Operating Frequency = high



Measurement

Setting	Instrument Value
Start Frequency	5.63000 GHz
Stop Frequency	5.71000 GHz
Span	80.000 MHz
RBW	300.000 kHz
VBW	1.000 MHz
SweepPoints	533
Sweeptime	1.000 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	69 / max. 150
Stable	5 / 5
Max Stable Difference	0.11 dB

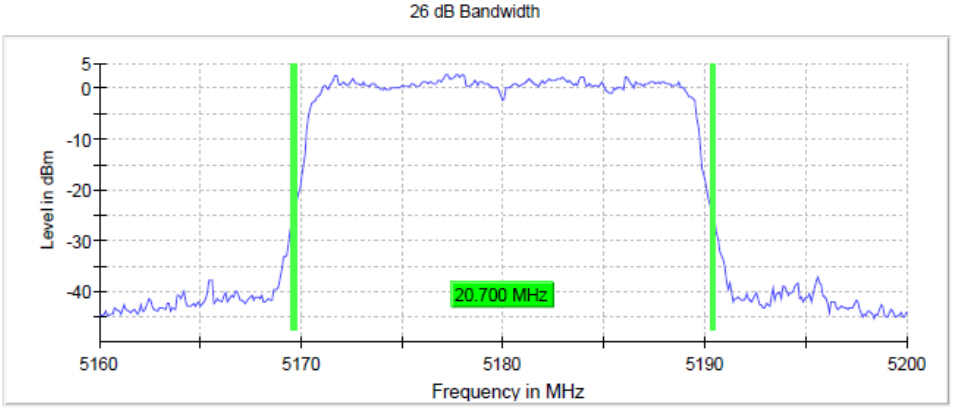
Radio Technology = WLAN ac 80, UNII- 21, Operating Frequency = mid



Measurement

Setting	Instrument Value
Start Frequency	5.13000 GHz
Stop Frequency	5.29000 GHz
Span	160.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	320
Sweeptime	1.000 ms
Reference Level	10.000 dBm
Attenuation	20.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	52 / max. 150
Stable	5 / 5
Max Stable Difference	0.08 dB

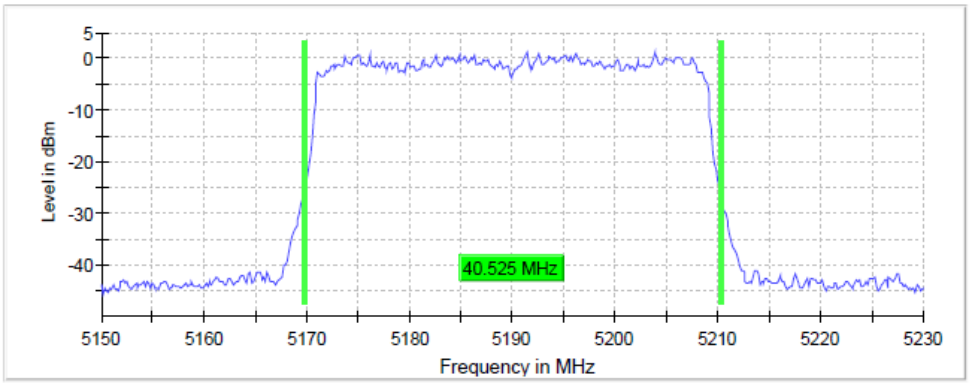
Radio Technology = WLAN ax 20, UNII- 1, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.16000 GHz
Stop Frequency	5.20000 GHz
Span	40.000 MHz
RBW	200.000 kHz
VBW	1.000 MHz
SweepPoints	400
Sweeptime	1.000 ms
Reference Level	10.000 dBm
Attenuation	20.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	88 / max. 150
Stable	5 / 5
Max Stable Difference	0.18 dB

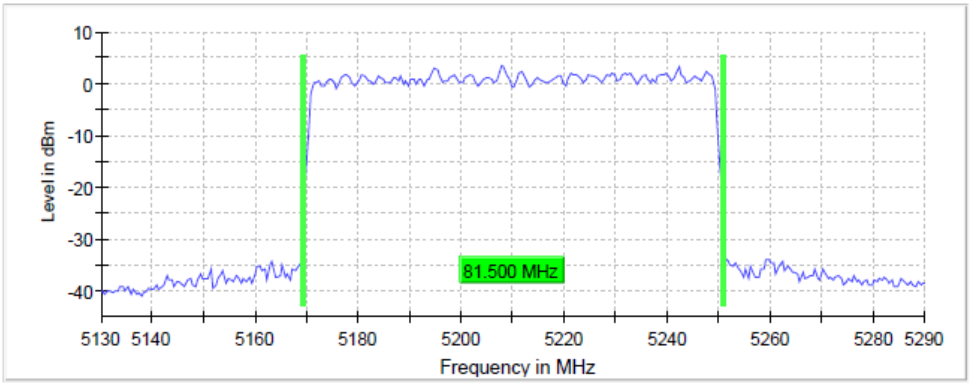
Radio Technology = WLAN ax 40, UNII- 1, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.15000 GHz
Stop Frequency	5.23000 GHz
Span	80.000 MHz
RBW	300.000 kHz
VBW	1.000 MHz
SweepPoints	533
Sweeptime	1.000 ms
Reference Level	10.000 dBm
Attenuation	20.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	107 / max. 150
Stable	5 / 5
Max Stable Difference	0.00 dB

Radio Technology = WLAN ax 80, UNII- 1, Operating Frequency = mid



Measurement

Setting	Instrument Value
Start Frequency	5.13000 GHz
Stop Frequency	5.29000 GHz
Span	160.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	320
Sweeptime	1.000 ms
Reference Level	10.000 dBm
Attenuation	20.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	87 / max. 150
Stable	5 / 5
Max Stable Difference	0.04 dB

5.2.5 TEST EQUIPMENT USED

- R&S TS8997

5.3 6 DB BANDWIDTH

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10, chapter 6.9.2

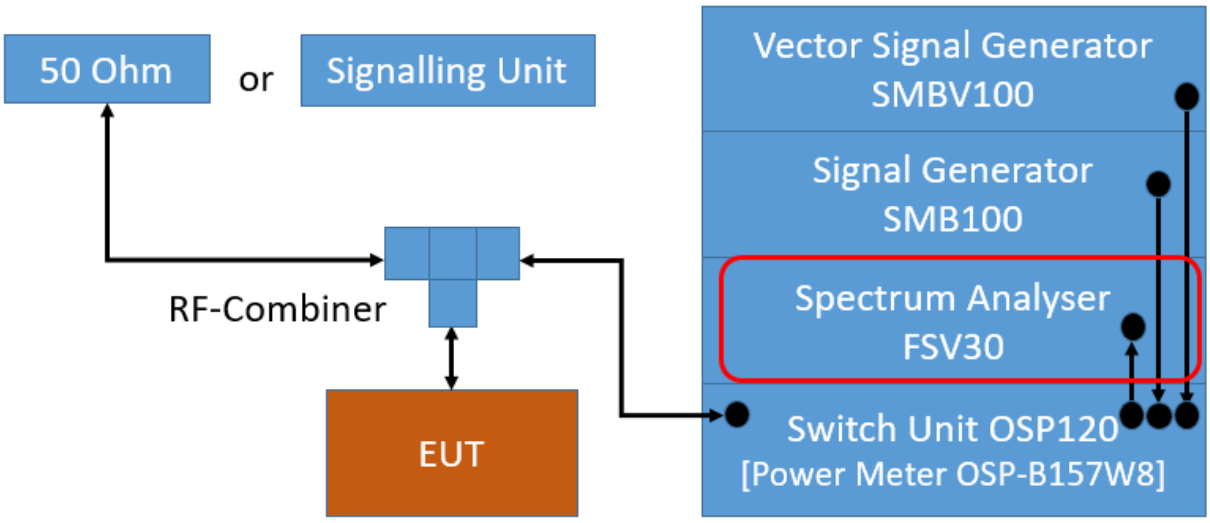
5.3.1 TEST DESCRIPTION

The Equipment Under Test (EUT) was setup in a shielded room to perform the occupied bandwidth measurements.
The reference level is the level of the highest amplitude signal observed from the transmitter at either the fundamental frequency or first-order modulation products in all typical modes of operation, including the unmodulated carrier, even if atypical.
The results recorded were measured with the modulation which produce the worst-case (smallest) emission bandwidth.

The EUT was connected to the test system as described in the block diagram below. The complete attenuation of the measurement path is known and considered.

Analyzer settings:

- Resolution Bandwidth (RBW): 100 kHz
- Video Bandwidth (VBW): 300 kHz
- Span: 40 / 80 / 160 / 320 MHz (for 20 / 40 / 80 / 160 MHz nominal bandwidth))
- Trace: Maxhold
- Sweeps: Until the trace is stable
- Sweeptime: Auto
- Detector: Peak



TS8997; Occupied Channel Bandwidth 6 dB / 26 dB / 99 %

5.3.2 TEST REQUIREMENTS / LIMITS

FCC Part 15, Subpart E, §15.407 (e)
Within the 5.725-5.850 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

5.3.3 TEST PROTOCOL

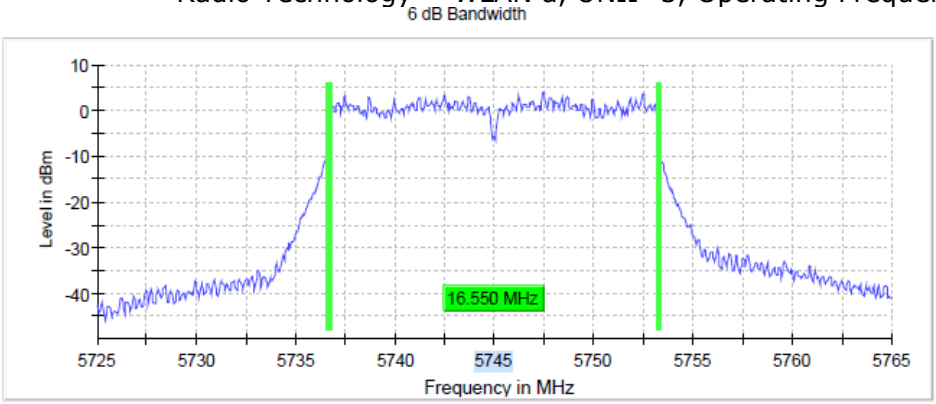
Ambient temperature: °C
Air Pressure: hPa
Humidity: %

Radio Technology	Operating Frequency	6 dB Bandwidth [MHz]	Limit [MHz]	Margin [MHz]
WLAN a	straddle	16.6	0.5	16.10
WLAN a	low	16.6	0.5	16.10
WLAN a	mid	16.6	0.5	16.05
WLAN a	high	16.6	0.5	16.05
WLAN n 20 MHz	straddle	17.8	0.5	17.25
WLAN n 20 MHz	low	17.8	0.5	17.25
WLAN n 20 MHz	mid	17.8	0.5	17.25
WLAN n 20 MHz	high	17.8	0.5	17.25
WLAN n 40 MHz	straddle	36.5	0.5	35.95
WLAN n 40 MHz	low	36.5	0.5	35.95
WLAN n 40 MHz	high	36.5	0.5	35.95
WLAN ac 20 MHz	straddle	17.8	0.5	17.25
WLAN ac 20 MHz	low	17.8	0.5	17.25
WLAN ac 20 MHz	mid	17.8	0.5	17.25
WLAN ac 20 MHz	high	17.8	0.5	17.25
WLAN ac 40 MHz	straddle	36.5	0.5	35.95
WLAN ac 40 MHz	low	36.5	0.5	35.95
WLAN ac 40 MHz	high	36.5	0.5	35.95
WLAN ac 80 MHz	straddle	76.6	0.5	76.10
WLAN ac 80 MHz	mid	76.6	0.5	76.05
WLAN ax 20 MHz	straddle	18.7	0.5	18.15
WLAN ax 20 MHz	low	18.7	0.5	18.15
WLAN ax 20 MHz	mid	18.7	0.5	18.15
WLAN ax 20 MHz	high	18.7	0.5	18.15
WLAN ax 40 MHz	straddle	37.6	0.5	37.10
WLAN ax 40 MHz	low	37.9	0.5	37.35
WLAN ax 40 MHz	high	37.9	0.5	37.35
WLAN ax 80 MHz	mid	78.2	0.5	77.70

Remark: Please see next sub-clause for the measurement plot.

5.3.4 MEASUREMENT PLOT (EXAMPLE PLOT, SHOWING WORST CASE, IF APPLICABLE)

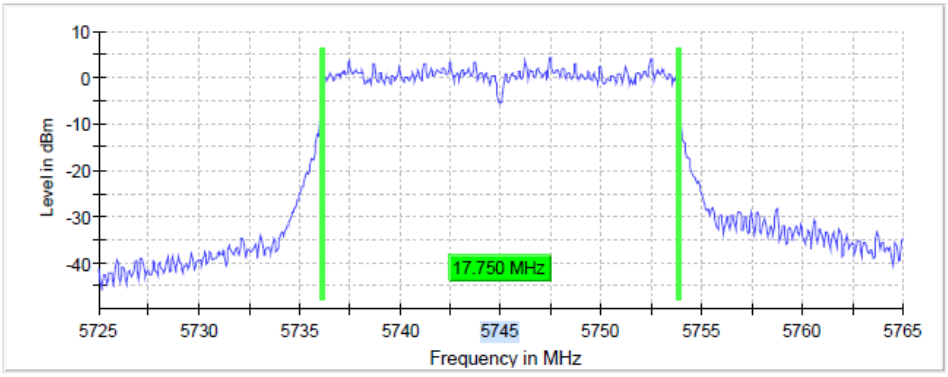
Radio Technology = WLAN a, UNII- 3, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.72500 GHz
Stop Frequency	5.76500 GHz
Span	40.000 MHz
RBW	100.000 kHz
VBW	300.000 kHz
SweepPoints	800
Sweeptime	1.040 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	74 / max. 150
Stable	5 / 5
Max Stable Difference	0.19 dB

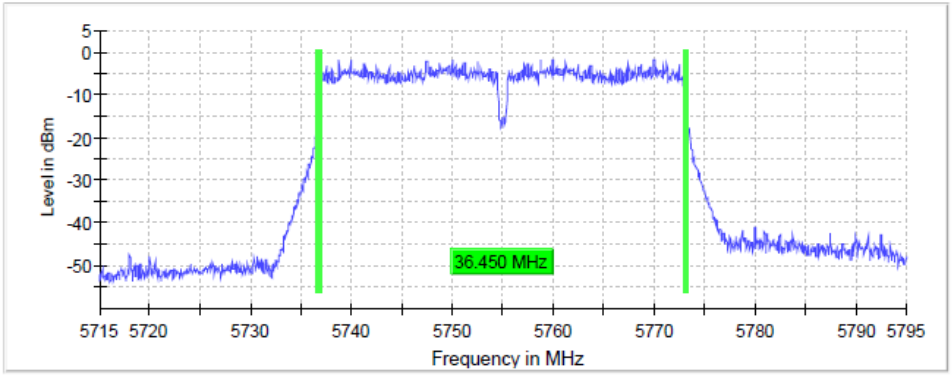
Radio Technology = WLAN n 20, UNII- 3, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.72500 GHz
Stop Frequency	5.76500 GHz
Span	40.000 MHz
RBW	100.000 kHz
VBW	300.000 kHz
SweepPoints	800
Sweeptime	1.040 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	67 / max. 150
Stable	5 / 5
Max Stable Difference	0.22 dB

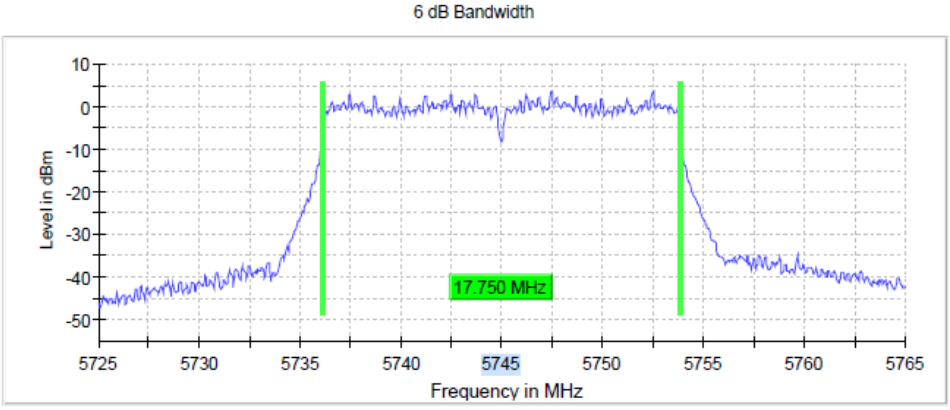
Radio Technology = WLAN n 40, UNII- 3, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.71500 GHz
Stop Frequency	5.79500 GHz
Span	80.000 MHz
RBW	100.000 kHz
VBW	300.000 kHz
SweepPoints	1600
Sweeptime	1.600 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	94 / max. 150
Stable	5 / 5
Max Stable Difference	0.06 dB

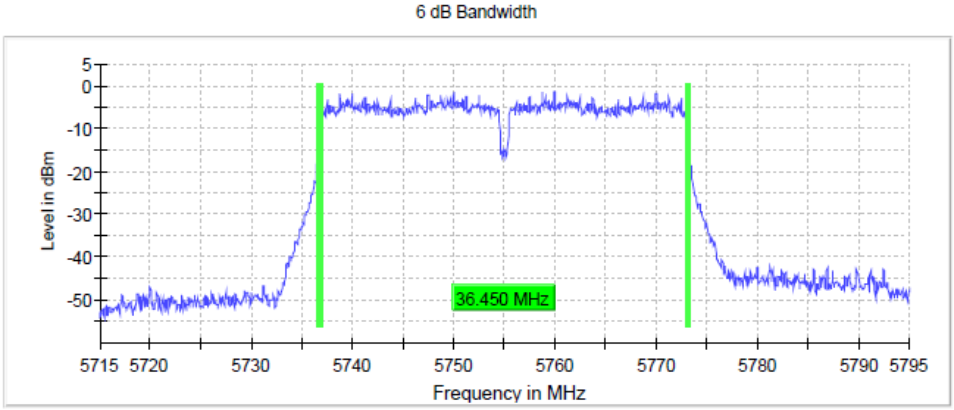
Radio Technology = WLAN ac 20, UNII- 3, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.72500 GHz
Stop Frequency	5.76500 GHz
Span	40.000 MHz
RBW	100.000 kHz
VBW	300.000 kHz
SweepPoints	800
Sweeptime	1.040 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	49 / max. 150
Stable	5 / 5
Max Stable Difference	0.06 dB

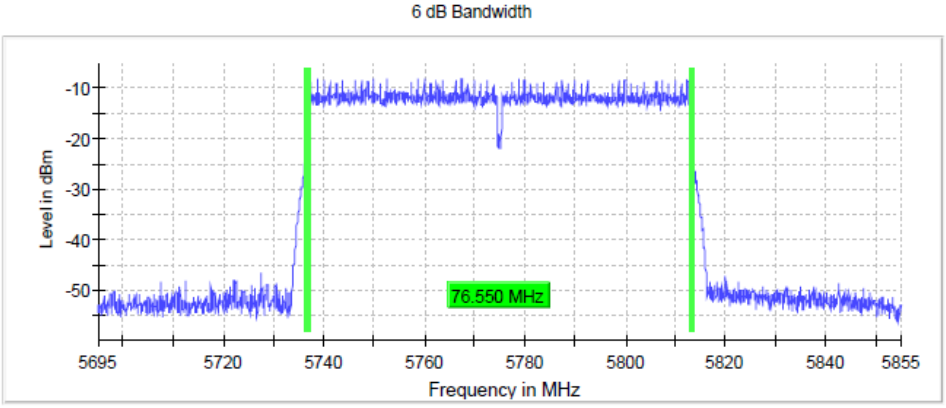
Radio Technology = WLAN ac 40, UNII- 3, Operating Frequency =low



Measurement

Setting	Instrument Value
Start Frequency	5.71500 GHz
Stop Frequency	5.79500 GHz
Span	80.000 MHz
RBW	100.000 kHz
VBW	300.000 kHz
SweepPoints	1600
Sweeptime	1.600 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	99 / max. 150
Stable	5 / 5
Max Stable Difference	0.28 dB

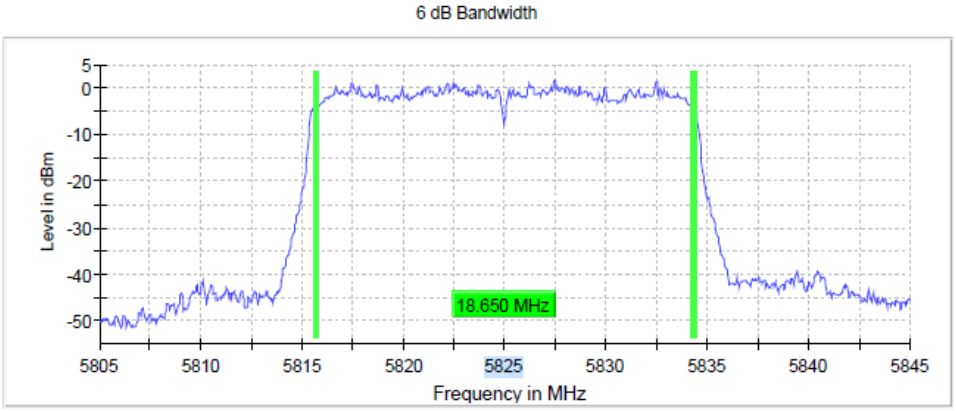
Radio Technology = WLAN ac 80, UNII- 3, Operating Frequency = mid



Measurement

Setting	Instrument Value
Start Frequency	5.69500 GHz
Stop Frequency	5.85500 GHz
Span	160.000 MHz
RBW	100.000 kHz
VBW	300.000 kHz
SweepPoints	3200
Sweeptime	3.200 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	125 / max. 150
Stable	5 / 5
Max Stable Difference	0.06 dB

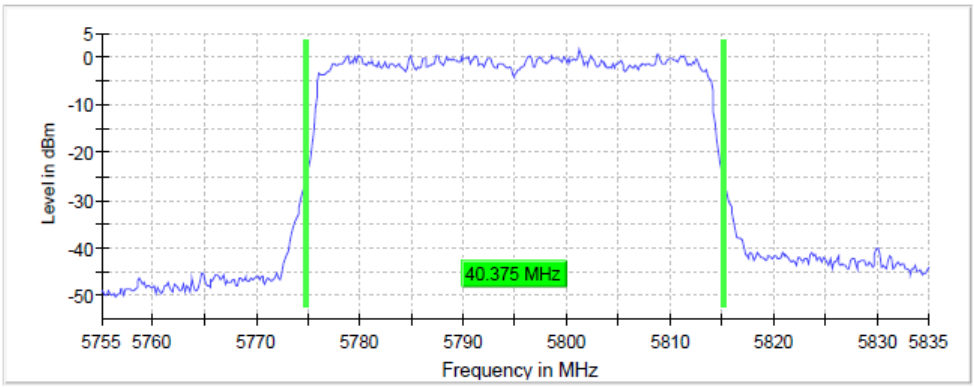
Radio Technology = WLAN ax 20, UNII- 3, Operating Frequency = high



Measurement

Setting	Instrument Value
Start Frequency	5.80500 GHz
Stop Frequency	5.84500 GHz
Span	40.000 MHz
RBW	100.000 kHz
VBW	300.000 kHz
SweepPoints	800
Sweeptime	1.040 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	90 / max. 150
Stable	5 / 5
Max Stable Difference	0.25 dB

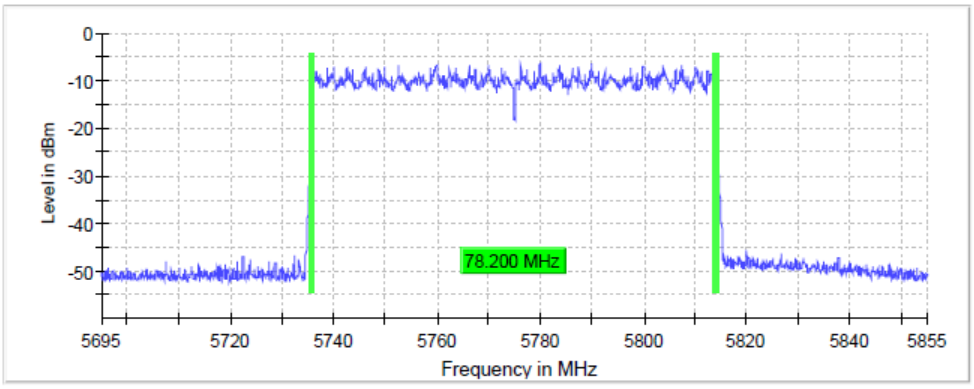
Radio Technology = WLAN ax 40, UNII- 3, Operating Frequency =high



Measurement

Setting	Instrument Value
Start Frequency	5.75500 GHz
Stop Frequency	5.83500 GHz
Span	80.000 MHz
RBW	300.000 kHz
VBW	1.000 MHz
SweepPoints	533
Sweeptime	1.000 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	86 / max. 150
Stable	5 / 5
Max Stable Difference	0.15 dB

Radio Technology = WLAN ax 80, UNII- 3, Operating Frequency = mid



Measurement

Setting	Instrument Value
Start Frequency	5.69500 GHz
Stop Frequency	5.85500 GHz
Span	160.000 MHz
RBW	100.000 kHz
VBW	300.000 kHz
SweepPoints	3200
Sweeptime	3.200 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	129 / max. 150
Stable	5 / 5
Max Stable Difference	0.00 dB

5.3.5 TEST EQUIPMENT USED

- R&S TS8997

5.4 99 % BANDWIDTH

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10, chapter 12.4.2 (6.9.3)

5.4.1 TEST DESCRIPTION

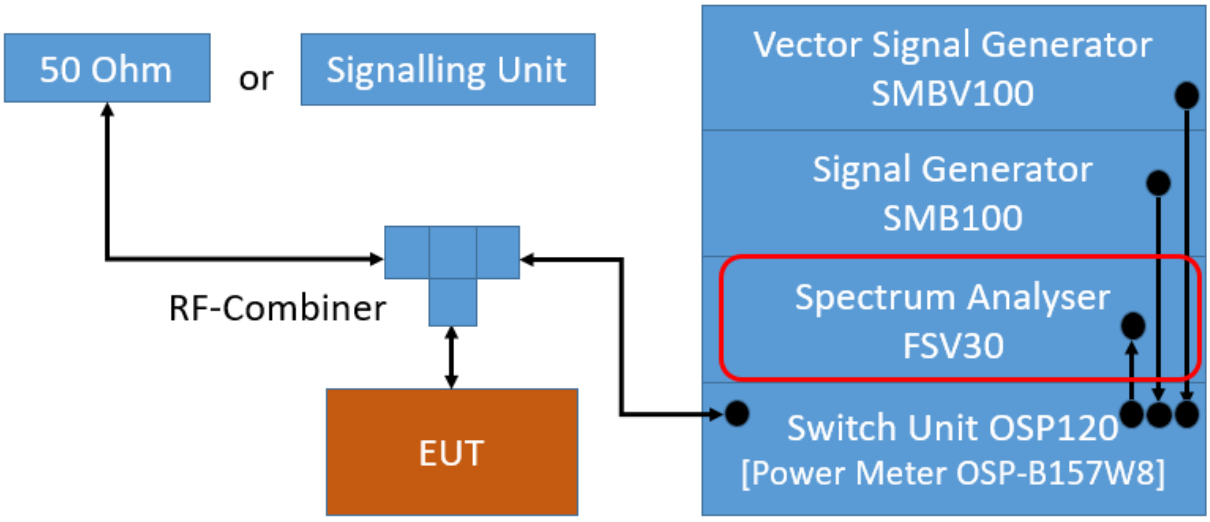
The Equipment Under Test (EUT) was set up to perform the occupied bandwidth measurements.
The reference level is the level of the highest amplitude signal observed from the transmitter at either the fundamental frequency or first-order modulation products in all typical modes of operation, including the unmodulated carrier, even if atypical.
The results recorded were measured with the modulation which produce the worst-case (widest) emission bandwidth.

The EUT was connected to the test system as described in the block diagram below. The complete attenuation of the measurement path is known and considered.

Analyzer settings:

- Resolution Bandwidth (RBW): approx. ≥ 1 % of the span, but not below
- Video Bandwidth (VBW): ≥ 3 times the RBW
- Span: 40 / 80 / 160 / 320 MHz (for 20 / 40 / 80 / 160 MHz nominal bandwidth)
- Trace: Maxhold
- Sweeps: Until the trace is stable
- Sweeptime: Auto
- Detector: Peak

The 99 % measurement function of the spectrum analyser function was used to determine the 99 % bandwidth.



TS8997; Occupied Channel Bandwidth 6 dB / 26 dB / 99 %

5.4.2 TEST REQUIREMENTS / LIMITS

No applicable limit.
The test was performed to determine the limits for the “Maximum Conducted Output Power” and DFS test cases.

5.4.3 TEST PROTOCOL

Ambient temperature: 23-25 °C
Air Pressure: 990-1010 hPa
Humidity: 36-40 %

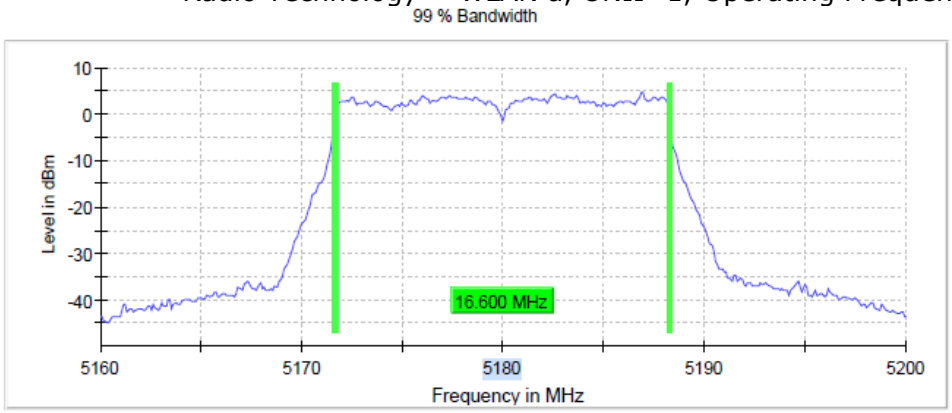
Radio Technology	Subband	Operating Frequency	99% Bandwidth [MHz]
WLAN a	U-NII-1	low	16.6
WLAN a	U-NII-1	mid	16.6
WLAN a	U-NII-1	high	16.6
WLAN a	U-NII-2A	low	16.6
WLAN a	U-NII-2A	mid	16.6
WLAN a	U-NII-2A	high	16.6
WLAN a	U-NII-2C	low	16.6
WLAN a	U-NII-2C	mid	16.6
WLAN a	U-NII-2C	high	16.6
WLAN a	U-NII-2C/3	straddle	16.6
WLAN a	U-NII-3	low	16.6
WLAN a	U-NII-3	mid	16.6
WLAN a	U-NII-3	high	16.6
WLAN n 20 MHz	U-NII-1	low	17.7
WLAN n 20 MHz	U-NII-1	mid	17.8
WLAN n 20 MHz	U-NII-1	high	17.7
WLAN n 20 MHz	U-NII-2A	low	17.7
WLAN n 20 MHz	U-NII-2A	mid	17.7
WLAN n 20 MHz	U-NII-2A	high	17.7
WLAN n 20 MHz	U-NII-2C	low	17.7
WLAN n 20 MHz	U-NII-2C	mid	17.7
WLAN n 20 MHz	U-NII-2C	high	17.7
WLAN n 20 MHz	U-NII-2C/3	straddle	17.7
WLAN n 20 MHz	U-NII-3	low	17.7
WLAN n 20 MHz	U-NII-3	mid	17.8
WLAN n 20 MHz	U-NII-3	high	17.8
WLAN n 40 MHz	U-NII-1	low	36.3
WLAN n 40 MHz	U-NII-1	high	36.3
WLAN n 40 MHz	U-NII-2A	low	36.3
WLAN n 40 MHz	U-NII-2A	high	36.3
WLAN n 40 MHz	U-NII-2C	low	36.3
WLAN n 40 MHz	U-NII-2C	mid	36.3
WLAN n 40 MHz	U-NII-2C	high	36.3
WLAN n 40 MHz	U-NII-2C/3	straddle	36.3
WLAN n 40 MHz	U-NII-3	low	36.3
WLAN n 40 MHz	U-NII-3	high	36.3
WLAN ac 20 MHz	U-NII-1	low	17.7
WLAN ac 20 MHz	U-NII-1	mid	17.7
WLAN ac 20 MHz	U-NII-1	high	17.7
WLAN ac 20 MHz	U-NII-2A	low	17.7
WLAN ac 20 MHz	U-NII-2A	mid	17.7
WLAN ac 20 MHz	U-NII-2A	high	17.8
WLAN ac 20 MHz	U-NII-2C	low	17.7
WLAN ac 20 MHz	U-NII-2C	mid	17.7
WLAN ac 20 MHz	U-NII-2C	high	17.8
WLAN ac 20 MHz	U-NII-2C/3	straddle	17.8
WLAN ac 20 MHz	U-NII-3	low	17.8
WLAN ac 20 MHz	U-NII-3	mid	17.7
WLAN ac 20 MHz	U-NII-3	high	17.8
WLAN ac 40 MHz	U-NII-1	low	36.3
WLAN ac 40 MHz	U-NII-1	high	36.3
WLAN ac 40 MHz	U-NII-2A	low	36.3
WLAN ac 40 MHz	U-NII-2A	high	36.3
WLAN ac 40 MHz	U-NII-2C	low	36.3
WLAN ac 40 MHz	U-NII-2C	mid	36.3
WLAN ac 40 MHz	U-NII-2C	high	36.3
WLAN ac 40 MHz	U-NII-2C/3	straddle	36.3
WLAN ac 40 MHz	U-NII-3	low	36.3

WLAN ac 40 MHz	U-NII-3	high	36.3
WLAN ac 80 MHz	U-NII-1	mid	76.5
WLAN ac 80 MHz	U-NII-2A	mid	76.5
WLAN ac 80 MHz	U-NII-2C	low	77.0
WLAN ac 80 MHz	U-NII-2C	high	76.5
WLAN ac 80 MHz	U-NII-2C/3	straddle	76.5
WLAN ac 80 MHz	U-NII-3	mid	76.5
WLAN ax 20 MHz	U-NII-1	low	18.8
WLAN ax 20 MHz	U-NII-1	mid	18.8
WLAN ax 20 MHz	U-NII-1	high	18.8
WLAN ax 20 MHz	U-NII-2A	low	18.9
WLAN ax 20 MHz	U-NII-2A	mid	18.8
WLAN ax 20 MHz	U-NII-2A	high	18.9
WLAN ax 20 MHz	U-NII-2C	low	18.9
WLAN ax 20 MHz	U-NII-2C	mid	18.8
WLAN ax 20 MHz	U-NII-2C	high	18.8
WLAN ax 20 MHz	U-NII-2C/3	straddle	18.8
WLAN ax 20 MHz	U-NII-3	low	18.8
WLAN ax 20 MHz	U-NII-3	mid	18.8
WLAN ax 20 MHz	U-NII-3	high	18.8
WLAN ax 40 MHz	U-NII-1	low	37.5
WLAN ax 40 MHz	U-NII-1	high	37.8
WLAN ax 40 MHz	U-NII-2A	low	37.8
WLAN ax 40 MHz	U-NII-2A	high	37.8
WLAN ax 40 MHz	U-NII-2C	low	37.8
WLAN ax 40 MHz	U-NII-2C	mid	37.8
WLAN ax 40 MHz	U-NII-2C	high	37.8
WLAN ax 40 MHz	U-NII-2C/3	straddle	37.8
WLAN ax 40 MHz	U-NII-3	low	37.5
WLAN ax 40 MHz	U-NII-3	high	37.8
WLAN ax 80 MHz	U-NII-1	mid	78.0
WLAN ax 80 MHz	U-NII-2A	mid	77.5
WLAN ax 80 MHz	U-NII-2C	low	78.0
WLAN ax 80 MHz	U-NII-2C	high	77.5
WLAN ax 80 MHz	U-NII-2C/3	straddle	77.5
WLAN ax 80 MHz	U-NII-3	mid	77.5

Remark: Please see next sub-clause for the measurement plot.

5.4.4 MEASUREMENT PLOT (EXAMPLE PLOT, SHOWING WORST CASE, IF APPLICABLE)

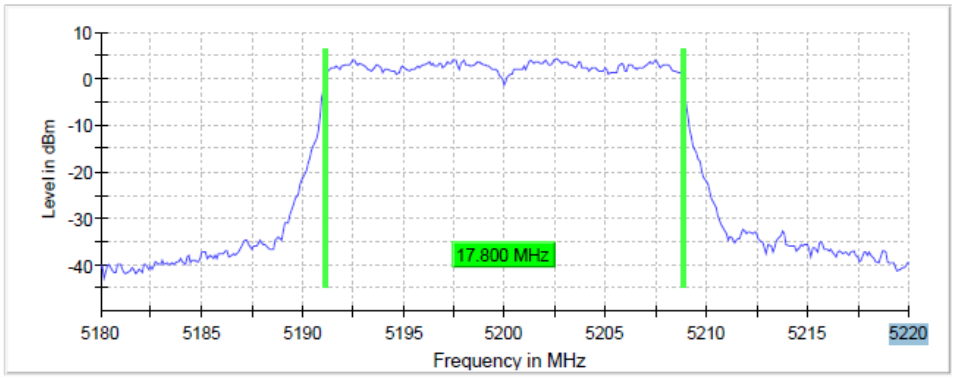
Radio Technology = WLAN a, UNII- 1, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.16000 GHz
Stop Frequency	5.20000 GHz
Span	40.000 MHz
RBW	200.000 kHz
VBW	1.000 MHz
SweepPoints	400
Sweeptime	1.000 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	37 / max. 150
Stable	5 / 5
Max Stable Difference	0.11 dB

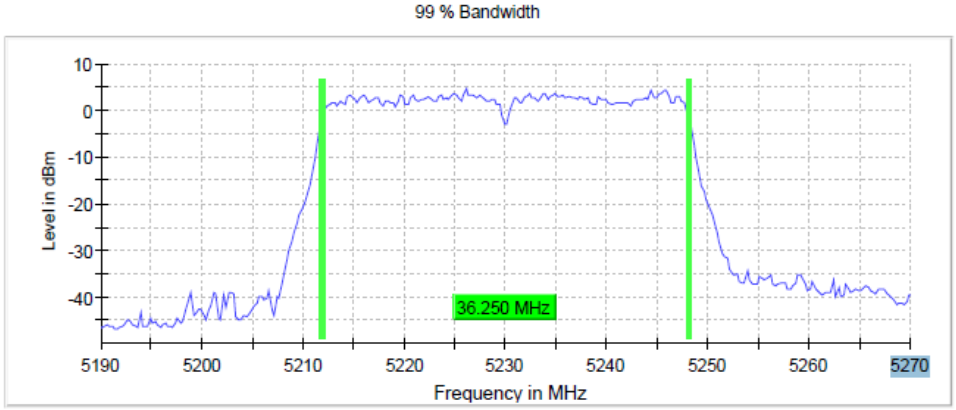
Radio Technology = WLAN n 20, UNII- 1, Operating Frequency = mid



Measurement

Setting	Instrument Value
Start Frequency	5.18000 GHz
Stop Frequency	5.22000 GHz
Span	40.000 MHz
RBW	200.000 kHz
VBW	1.000 MHz
SweepPoints	400
Sweeptime	1.000 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	56 / max. 150
Stable	5 / 5
Max Stable Difference	0.29 dB

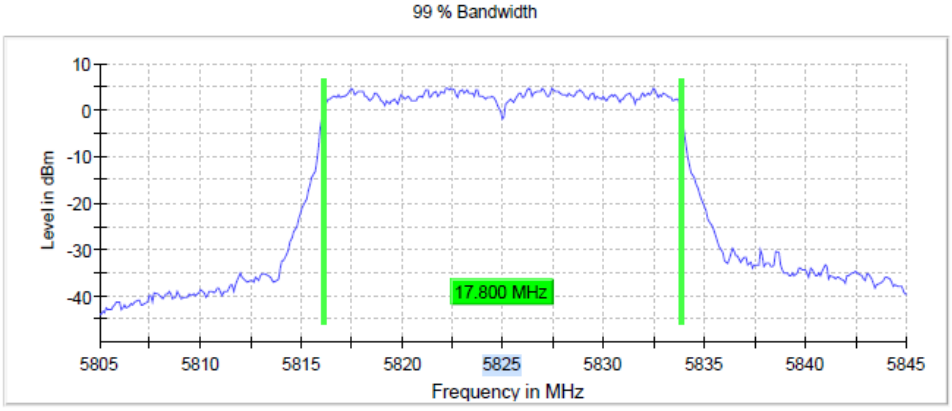
Radio Technology = WLAN n 40, UNII- 2A, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.19000 GHz
Stop Frequency	5.27000 GHz
Span	80.000 MHz
RBW	500.000 kHz
VBW	2.000 MHz
SweepPoints	320
Sweeptime	1.000 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	59 / max. 150
Stable	5 / 5
Max Stable Difference	0.20 dB

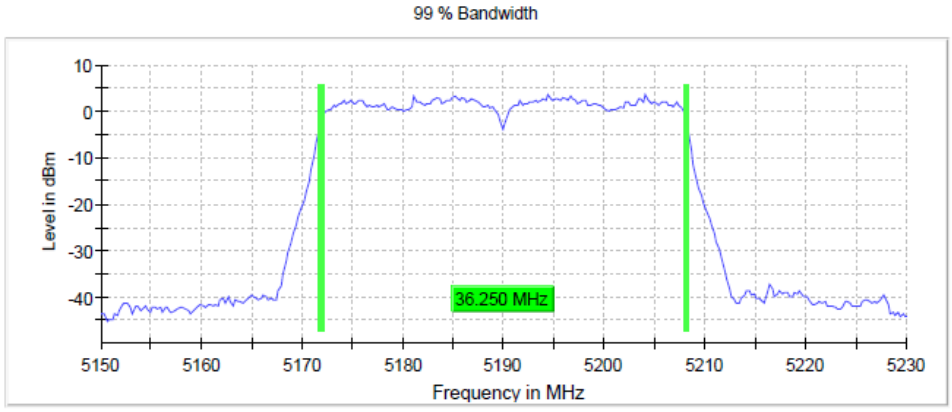
Radio Technology = WLAN ac 20, UNII- 3, Operating Frequency = high



Measurement

Setting	Instrument Value
Start Frequency	5.80500 GHz
Stop Frequency	5.84500 GHz
Span	40.000 MHz
RBW	200.000 kHz
VBW	1.000 MHz
SweepPoints	400
Sweeptime	1.000 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	39 / max. 150
Stable	5 / 5
Max Stable Difference	0.18 dB

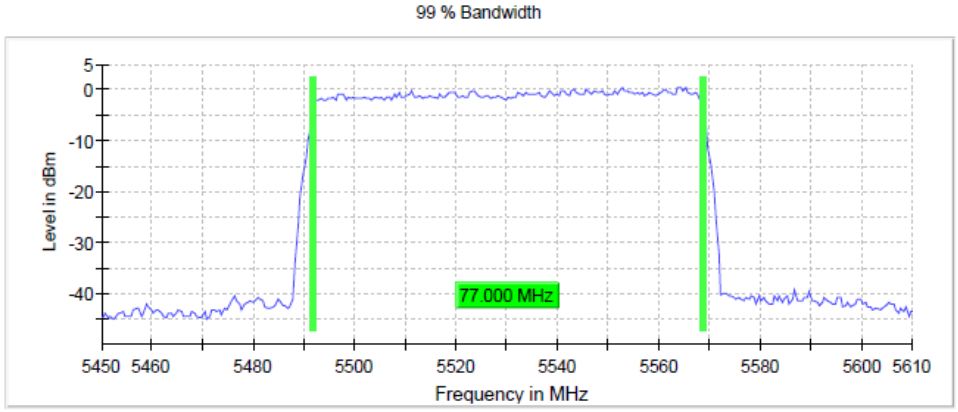
Radio Technology = WLAN ac 40, UNII- 1, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.15000 GHz
Stop Frequency	5.23000 GHz
Span	80.000 MHz
RBW	500.000 kHz
VBW	2.000 MHz
SweepPoints	320
Sweeptime	1.000 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	77 / max. 150
Stable	5 / 5
Max Stable Difference	0.25 dB

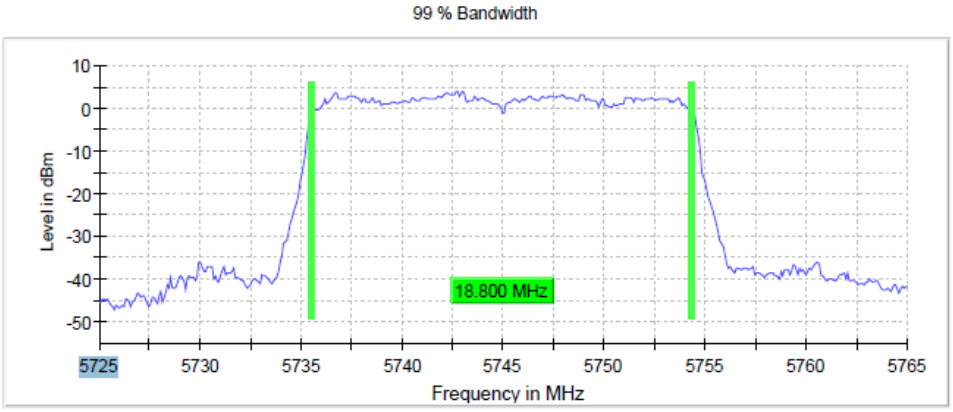
Radio Technology = WLAN ac 80, UNII- 2C, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.45000 GHz
Stop Frequency	5.61000 GHz
Span	160.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	320
Sweeptime	1.000 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	51 / max. 150
Stable	5 / 5
Max Stable Difference	0.16 dB

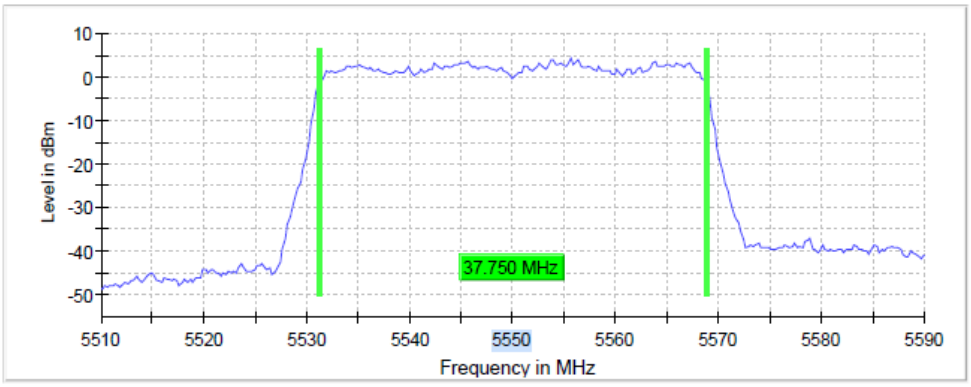
Radio Technology = WLAN ax 20, UNII- 2C, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.72500 GHz
Stop Frequency	5.76500 GHz
Span	40.000 MHz
RBW	200.000 kHz
VBW	1.000 MHz
SweepPoints	400
Sweeptime	1.000 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	113 / max. 150
Stable	5 / 5
Max Stable Difference	0.28 dB

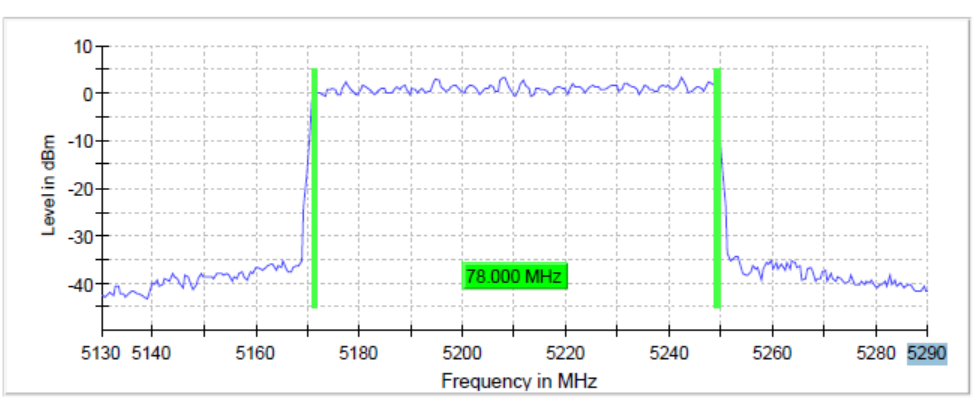
Radio Technology = WLAN ax 40, UNII- 2C, Operating Frequency = mid



Measurement

Setting	Instrument Value
Start Frequency	5.51000 GHz
Stop Frequency	5.59000 GHz
Span	80.000 MHz
RBW	500.000 kHz
VBW	2.000 MHz
SweepPoints	320
Sweeptime	1.000 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	66 / max. 150
Stable	5 / 5
Max Stable Difference	0.00 dB

Radio Technology = WLAN ax 80, UNII- 1, Operating Frequency = mid



Measurement

Setting	Instrument Value
Start Frequency	5.13000 GHz
Stop Frequency	5.29000 GHz
Span	160.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	320
Sweeptime	1.000 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	MaxPeak
SweepCount	200
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	77 / max. 150
Stable	5 / 5
Max Stable Difference	0.03 dB

5.4.5 TEST EQUIPMENT USED

- R&S TS8997

5.5 MAXIMUM CONDUCTED OUTPUT POWER

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10, chapter 12.3.3.2

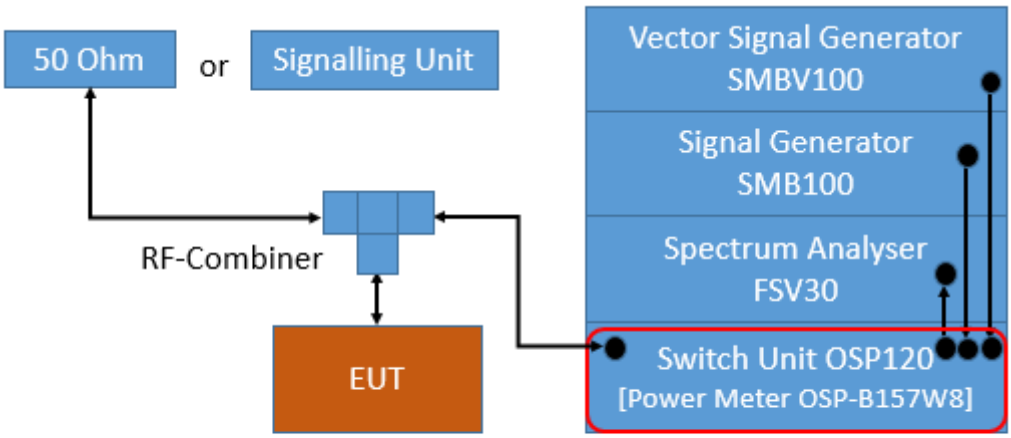
5.5.1 TEST DESCRIPTION

The Equipment Under Test (EUT) was set up to perform the output power measurements. The results recorded were measured with the modulation which produces the worst-case (highest) output power

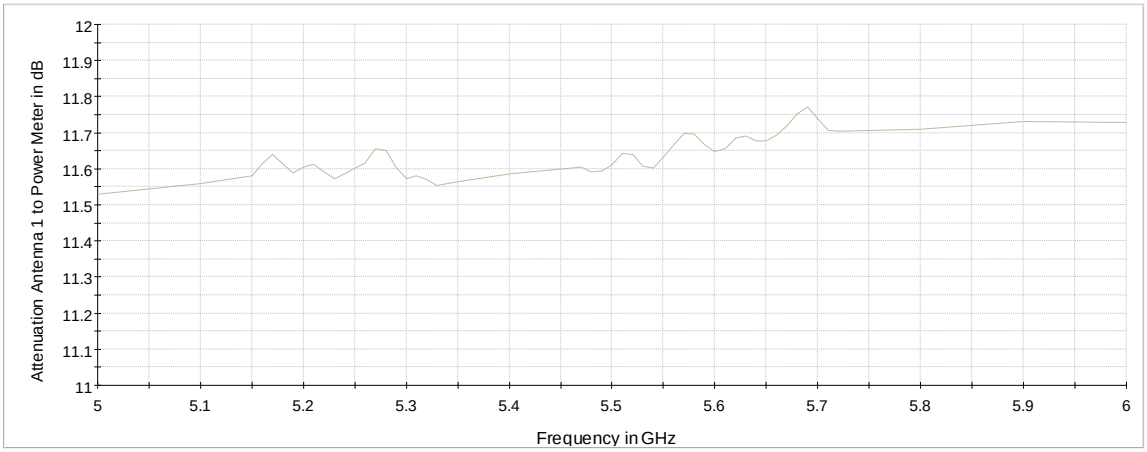
For U-NII bands 1, 2A, 2C, 3:
The EUT was connected to the test system as described in the block diagram below. The complete attenuation of the measurement path is known and considered.

The OSP-B157W is a gated RF average power meter with a signal bandwidth > 300 MHz.

Note:
The measurement was performed according FCC Public Note "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E, 789033 D02", method **PM-G**.



TS8997; Maximum Conducted Output Power



Attenuation of measurement path

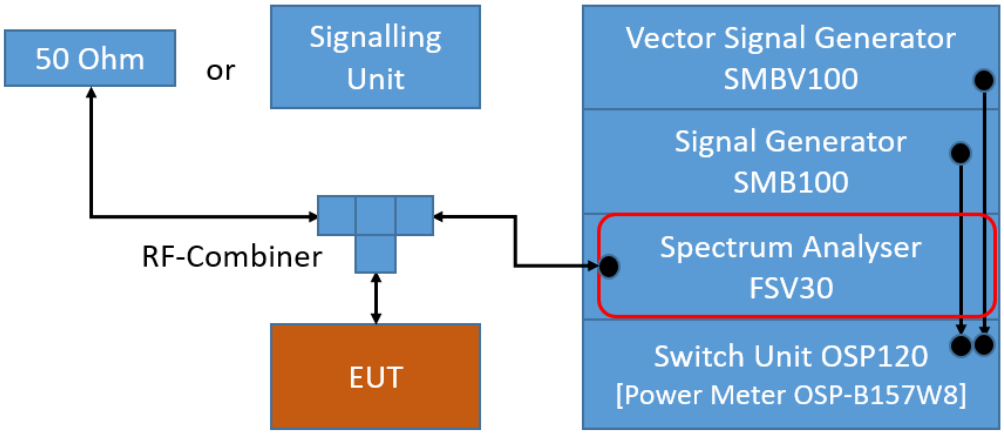
For U-NII bands 5,6,7,8:
The EUT was connected to the test system as described in the block diagram below. The complete attenuation of the measurement path is known and considered.

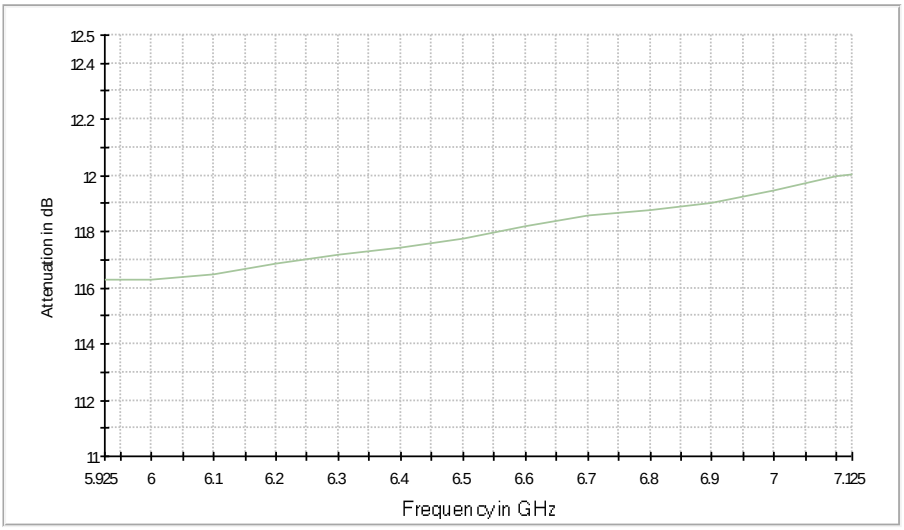
Analyzer settings:

- Resolution Bandwidth (RBW): 1 MHz
- Video Bandwidth (VBW): 3 MHz
- Trace: Average, RMS power averaging mode
- Sweeps: at least 100
- Sweeptime: Auto
- Detector: RMS
- Trigger: free run (DC >98 %) or gated mode (DC< 98 %)

See worst case result plots for details

Note:
The measurement was performed according FCC Public Note "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E, 789033 D02", method **SA-1**.





Attenuation of measurement path

5.5.2 TEST REQUIREMENTS / LIMITS

A) FCC

FCC Part 15, Subpart E, §15.407 (a) (1) (i): Outdoor access point:
For systems using digital modulation techniques in the 5.15 – 5.25 GHz bands:
Limit: 1 W (30 dBm) provided the maximum antenna gain does not exceed 6 dBi.
The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
§15.407 (a) (1) (ii): Indoor access point:
Limit: 1 W (30 dBm) provided the maximum antenna gain does not exceed 6 dBi.
§15.407 (a) (1) (iii): Fixed point-to-point access points:
Limit: 1 W (30 dBm) provided the maximum antenna gain does not exceed 23 dBi.
§15.407 (a) (1) (iv): Client devices:
Limit: 250 mW (24 dBm) provided the maximum antenna gain does not exceed 6 dBi.

FCC Part 15, Subpart E, §15.407 (a) (2)
For systems using digital modulation techniques in the 5.25 – 5.35 GHz and 5.47 – 5.725 GHz bands:
Limit: 250 mW (24 dBm) or 11 dBm + 10 log (26 dB bandwidth/MHz) whatever is the lesser.

FCC Part 15, Subpart E, §15.407 (a) (3):
For systems using digital modulation techniques in the 5.725 – 5.850 GHz bands:
Limit: 1 W (30 dBm) provided the maximum antenna gain does not exceed 6 dBi. The antenna gain limitation is not applicable for fixed point-to-point devices.

FCC Part 15, Subpart E, §15.407 (a) (4):
For a standard power access point and fixed client devices in the 5.925 – 6.425 GHz and 6.525 – 6.875 GHz bands:
Limit: 4 W (36 dBm) e.i.r.p.
For outdoor devices, the maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

FCC Part 15, Subpart E, §15.407 (a) (5):
For an indoor access point in the 5.925 – 7.125 GHz bands:
Limit: 1 W (30 dBm)e.i.r.p.

FCC Part 15, Subpart E, §15.407 (a) (6):
For a subordinate device operating under an indoor access point in the 5.925 – 7.125 GHz bands:
Limit: 1 W (30 dBm)e.i.r.p.

FCC Part 15, Subpart E, §15.407 (a) (7):
For a client device, except for fixed client devices, operating under standard power access point in the 5.925-6.425 GHz and 6.525-6.875 GHz bands:
Limit: 1 W (30 dBm)e.i.r.p.
The client device must limit it's power to no more than 6 dB below its associated standard power access point's authorized transmit power.

FCC Part 15, Subpart E, §15.407 (a) (8):
For client devices operating under the control of an indoor access point in the 5.925 – 7.125 GHz bands:
Limit: 250 mW (24 dBm)e.i.r.p.

FCC Part 15, Subpart E, §15.407 (a) (11):
The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

B) IC

Different frequency bands and limits apply, as compared to the FCC requirements.

All frequency bands: B is the 99% emission bandwidth in MHz.

RSS-247, 6.2.1.1, Band 5150-5250 MHz, indoor operation only, except for OEM devices installed by vehicle manufacturers:

Limits:
For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 $\log_{10}$B, dBm, whichever is less. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW. (e.i.r.p.)

Other devices: 200 mW (23 dBm) or 10 + 10 $\log_{10}$B [dBm], whichever power is less.

RSS-247, 6.2.2.1, Band 5250-5350 MHz:
Limits:
For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or 1.76 + 10 $\log_{10}$B, dBm, whichever is less. Devices shall implement TPC in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
Devices, other devices than installed in vehicles:
Maximum conducted Power: 250 mW (24 dBm) or 11 + 10 log10 B [dBm], whichever power is less.
e.i.r.p.: 1.0 W (30 dBm) or 17 + 10 log10 B [dBm], whichever power is less.

Outdoor fixed devices with a maximum e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. at different elevations, where θ is the angle above the local horizontal plane (of the Earth) as shown below:

i.-13 dBW/MHzfor 0°≤ θ< 8°
ii.-13 −0.716 (θ-8) dBW/MHzfor 8° ≤ θ< 40°
iii.-35.9 −1.22 (θ-40) dBW/MHzfor 40° ≤ θ ≤45°
iv.-42 dBW/MHzfor θ > 45°

RSS-247, 6.2.3.1, Bands 5470-5600 MHz and 5650-5725 MHz:
Limits:
Maximum conducted Power: 250 mW (24 dBm) or 11 + 10 log10 B [dBm], whichever power is less.
e.i.r.p.: 1.0 W (30 dBm) or 17 + 10 log10 B [dBm], whichever power is less.

Note: Devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

RSS-247, 6.2.4.1, Band 5725-5850 MHz:
Limits:
Maximum conducted Power: 1 W (30 dBm)
e.i.r.p.: 4 W (36 dBm)

5.5.3 TEST PROTOCOL

Ambient temperature: 23-26 °C
Air Pressure: 990-1010 hPa
Humidity: 38-45 %

WLAN a-Mode; 20 MHz; 54 Mbit/s

U-NII-Subband	TX Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	FCC Cond. Limit [dBm]	Margin [dB]	FCC EIRP Limit [dBm]	Margin [dB]	ISED Cond. Limit [dBm]	Margin [dB]	ISED EIRP Limit [dBm]	Margin [dB]
1	5180	14.1	19.6	24.0	9.9	30.0	10.4	N/A	-	22.2	2.6
	5200	14.2	19.7	24.0	9.8	30.0	10.3	N/A	-	22.2	2.5
	5240	14.6	20.1	24.0	9.4	30.0	9.9	N/A	-	22.2	2.1
2A	5260	14.4	19.9	23.9	9.5	30.0	10.1	23.2	8.8	29.2	9.3
	5300	14.5	20.0	23.9	9.4	30.0	10.0	23.2	8.7	29.2	9.2
	5320	14.5	20.0	23.9	9.4	30.0	10.0	23.2	8.7	29.2	9.2
2C	5500	13.6	19.1	23.9	10.3	30.0	10.9	23.2	9.6	29.2	10.1
	5580	14.5	20.0	23.9	9.4	30.0	10.0	23.2	8.7	29.2	9.2
	5700	14.5	20.0	23.9	9.4	30.0	10.0	23.2	8.7	29.2	9.2
2C+3	5720	15.4	20.9	23.9	8.6	30.0	9.1	23.2	7.8	29.2	8.3
3	5745	15.1	20.6	30.0	14.9	36.0	15.4	30.0	14.9	36.0	15.4
	5785	15.0	20.5	30.0	15.0	36.0	15.5	30.0	15.0	36.0	15.5
	5825	15.3	20.8	30.0	14.7	36.0	15.2	30.0	14.7	36.0	15.2

WLAN n-Mode; 20 MHz; MCS 7; SISO

U-NII-Subband	TX Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	FCC Cond. Limit [dBm]	Margin [dB]	FCC EIRP Limit [dBm]	Margin [dB]	ISED Cond. Limit [dBm]	Margin [dB]	ISED EIRP Limit [dBm]	Margin [dB]
1	5180	14.1	19.6	24.0	9.9	30.0	10.4	N/A	-	22.5	2.9
	5200	14.1	19.6	24.0	9.9	30.0	10.4	N/A	-	22.5	2.9
	5240	14.6	20.1	24.0	9.4	30.0	9.9	N/A	-	22.5	2.4
2A	5260	14.4	19.9	24.0	9.6	30.0	10.1	23.5	9.1	29.5	9.6
	5300	14.5	20.0	24.0	9.5	30.0	10.0	23.5	9.0	29.5	9.5
	5320	14.5	20.0	24.0	9.5	30.0	10.0	23.5	9.0	29.5	9.5
2C	5500	13.6	19.1	24.0	10.4	30.0	10.9	23.5	9.9	29.5	10.4
	5580	14.4	19.9	24.0	9.6	30.0	10.1	23.5	9.0	29.5	9.5
	5700	14.5	20.0	24.0	9.5	30.0	10.0	23.5	9.0	29.5	9.5
2C+3	5720	15.5	21.0	24.0	8.5	30.0	9.0	23.5	8.0	29.5	8.5
3	5745	15.3	20.8	30.0	14.8	36.0	15.3	30.0	14.8	36.0	15.3
	5785	15.2	20.7	30.0	14.8	36.0	15.3	30.0	14.8	36.0	15.3
	5825	15.4	20.9	30.0	14.6	36.0	15.1	30.0	14.6	36.0	15.1

WLAN n-Mode; 40 MHz; MCS 7; SISO

U-NII-Subband	TX Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	FCC Cond. Limit [dBm]	Margin [dB]	FCC EIRP Limit [dBm]	Margin [dB]	ISED Cond. Limit [dBm]	Margin [dB]	ISED EIRP Limit [dBm]	Margin [dB]
1	5190	11.4	16.9	24.0	12.6	30.0	13.1	N/A	-	23.0	6.1
	5230	11.8	17.3	24.0	12.2	30.0	12.7	N/A	-	23.0	5.7
2A	5270	11.5	17.0	24.0	12.5	30.0	13.0	24.0	12.5	30.0	13.0
	5310	11.7	17.2	24.0	12.3	30.0	12.8	24.0	12.3	30.0	12.8
2C	5510	10.7	16.2	24.0	13.3	30.0	13.8	24.0	13.3	30.0	13.8
	5550	11.3	16.8	24.0	12.7	30.0	13.2	24.0	12.7	30.0	13.2
	5670	11.6	17.1	24.0	12.4	30.0	12.9	24.0	12.4	30.0	12.9
2C+3	5710	11.7	17.2	24.0	12.3	30.0	12.8	24.0	12.3	30.0	12.8
3	5755	12.3	17.8	30.0	17.7	36.0	18.2	30.0	17.7	36.0	18.2
	5795	12.1	17.6	30.0	17.9	36.0	18.4	30.0	17.9	36.0	18.4

WLAN ac-Mode; 20 MHz; MCS 8; SISO

U-NII-Subband	TX Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	FCC Cond. Limit [dBm]	Margin [dB]	FCC EIRP Limit [dBm]	Margin [dB]	ISED Cond. Limit [dBm]	Margin [dB]	ISED EIRP Limit [dBm]	Margin [dB]
1	5180	13.1	18.6	24.0	10.9	30.0	11.4	N/A	-	22.5	3.9
	5200	13.2	18.7	24.0	10.8	30.0	11.3	N/A	-	22.5	3.8
	5240	13.7	19.2	24.0	10.3	30.0	10.8	N/A	-	22.5	3.3
2A	5260	13.6	19.1	24.0	10.4	30.0	10.9	23.5	9.9	29.5	10.4
	5300	13.6	19.1	24.0	10.4	30.0	10.9	23.5	9.9	29.5	10.4
	5320	12.6	18.1	24.0	11.4	30.0	11.9	23.5	10.9	29.5	11.4
2C	5500	12.6	18.1	24.0	11.4	30.0	11.9	23.5	10.9	29.5	11.4
	5580	13.5	19.0	24.0	10.5	30.0	11.0	23.5	10.0	29.5	10.5
	5700	13.6	19.1	24.0	10.4	30.0	10.9	23.5	9.9	29.5	10.4
2C+3	5720	14.5	20.0	24.0	9.5	30.0	10.0	23.5	9.0	29.5	9.5
3	5745	14.5	20.0	30.0	15.5	36.0	16.0	30.0	15.5	36.0	16.0
	5785	14.4	19.9	30.0	15.6	36.0	16.1	30.0	15.6	36.0	16.1
	5825	14.6	20.1	30.0	15.4	36.0	15.9	30.0	15.4	36.0	15.9

WLAN ac-Mode; 40 MHz; MCS 9; SISO

U-NII-Subband	TX Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	FCC Cond. Limit [dBm]	Margin [dB]	FCC EIRP Limit [dBm]	Margin [dB]	ISED Cond. Limit [dBm]	Margin [dB]	ISED EIRP Limit [dBm]	Margin [dB]
1	5190	11.3	16.8	24.0	12.7	30.0	13.2	N/A	-	23.0	6.2
	5230	11.7	17.2	24.0	12.3	30.0	12.8	N/A	-	23.0	5.8
2A	5270	11.4	16.9	24.0	12.6	30.0	13.1	24.0	12.6	30.0	13.1
	5310	11.4	16.9	24.0	12.6	30.0	13.1	24.0	12.6	30.0	13.1
2C	5510	10.6	16.1	24.0	13.4	30.0	13.9	24.0	13.4	30.0	13.9
	5550	11.2	16.7	24.0	12.8	30.0	13.3	24.0	12.8	30.0	13.3
	5670	11.6	17.1	24.0	12.4	30.0	12.9	24.0	12.4	30.0	12.9
2C+3	5710	11.7	17.2	24.0	12.3	30.0	12.8	24.0	12.3	30.0	12.8
3	5755	12.3	17.8	30.0	17.7	36.0	18.2	30.0	17.7	36.0	18.2
	5795	12.3	17.8	30.0	17.7	36.0	18.2	30.0	17.7	36.0	18.2

WLAN ac-Mode; 80 MHz; MCS 9; SISO

U-NII-Subband	TX Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	FCC Cond. Limit [dBm]	Margin [dB]	FCC EIRP Limit [dBm]	Margin [dB]	ISED Cond. Limit [dBm]	Margin [dB]	ISED EIRP Limit [dBm]	Margin [dB]
1	5210	9.5	15.0	24.0	14.5	30.0	15.0	N/A	-	23.0	8.0
2A	5290	9.5	15.0	24.0	14.5	30.0	15.0	24.0	14.5	30.0	15.0
2C	5530	9.0	14.5	24.0	15.0	30.0	15.5	24.0	15.0	30.0	15.5
	5610	10.0	15.5	24.0	14.0	30.0	14.5	24.0	14.0	30.0	14.5
2C+3	5690	10.0	15.5	24.0	14.0	30.0	14.5	24.0	14.0	30.0	14.5
3	5775	10.2	15.7	30.0	19.8	36.0	20.3	30.0	19.8	36.0	20.3

WLAN ax-Mode; 20 MHz; MCS 9; SISO

U-NII-Subband	TX Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	FCC Cond. Limit [dBm]	Margin [dB]	FCC EIRP Limit [dBm]	Margin [dB]	ISED Cond. Limit [dBm]	Margin [dB]	ISED EIRP Limit [dBm]	Margin [dB]
	5200	11.5	17.0	24.0	12.5	30.0	13.0	N/A	-	22.7	5.7
	5240	11.6	17.1	24.0	12.4	30.0	12.9	N/A	-	22.7	5.7
2A	5260	12.1	17.6	24.0	11.9	30.0	12.4	N/A	-	22.7	5.6
	5300	11.7	17.2	24.0	12.3	30.0	12.8	23.8	11.6	29.8	12.1
	5320	11.8	17.3	24.0	12.2	30.0	12.7	23.7	12.1	29.7	12.6
2C	5500	12.0	17.5	24.0	12.0	30.0	12.5	23.8	11.9	29.8	12.4
	5580	10.9	16.4	24.0	13.1	30.0	13.6	23.8	11.8	29.8	12.3
	5700	12.0	17.5	24.0	12.0	30.0	12.5	23.7	12.8	29.7	13.3
2C+3	5720	12.7	18.2	24.0	11.3	30.0	11.8	23.7	11.8	29.7	12.3
3	5745	12.0	17.5	30.0	18.0	36.0	18.5	23.7	11.0	29.7	11.5
	5785	12.7	18.2	30.0	17.3	36.0	17.8	30.0	18.0	36.0	18.5
	5825	12.5	18.0	30.0	17.5	36.0	18.0	30.0	17.3	36.0	17.8

WLAN ax-Mode; 40 MHz; MCS 9; SISO

U-NII-Subband	TX Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	FCC Cond. Limit [dBm]	Margin [dB]	FCC EIRP Limit [dBm]	Margin [dB]	ISED Cond. Limit [dBm]	Margin [dB]	ISED EIRP Limit [dBm]	Margin [dB]
1	5190	12.8	18.3	24.0	11.2	30.0	11.7	N/A	-	23.0	4.7
	5230	10.6	16.1	24.0	13.4	30.0	13.9	N/A	-	23.0	6.9
2A	5270	10.7	16.2	24.0	13.3	30.0	13.8	24.0	13.3	30.0	13.8
	5310	10.8	16.3	24.0	13.2	30.0	13.7	24.0	13.2	30.0	13.7
2C	5510	9.9	15.4	24.0	14.1	30.0	14.6	24.0	14.1	30.0	14.6
	5550	10.5	16.0	24.0	13.5	30.0	14.0	24.0	13.5	30.0	14.0
	5670	10.7	16.2	24.0	13.3	30.0	13.8	24.0	13.3	30.0	13.8
2C+3	5710	10.7	16.2	24.0	13.3	30.0	13.8	24.0	13.3	30.0	13.8
3	5755	11.4	16.9	30.0	18.6	36.0	19.1	30.0	18.6	36.0	19.1
	5795	11.3	16.8	30.0	18.7	36.0	19.2	30.0	18.7	36.0	19.2

WLAN ax-Mode; 80 MHz; MCS 9; SISO

U-NII-Subband	TX Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	FCC Cond. Limit [dBm]	Margin [dB]	FCC EIRP Limit [dBm]	Margin [dB]	ISED Cond. Limit [dBm]	Margin [dB]	ISED EIRP Limit [dBm]	Margin [dB]
1	5210	9.7	15.2	24.0	14.3	30.0	14.8	N/A	-	23.0	7.8
2A	5290	9.7	15.2	24.0	14.3	30.0	14.8	24.0	14.3	30.0	14.8
2C	5530	9.2	14.7	24.0	14.8	30.0	15.3	24.0	14.8	30.0	15.3
	5610	10.2	15.7	24.0	13.8	30.0	14.3	24.0	13.8	30.0	14.3
2C+3	5690	9.8	15.3	24.0	14.2	30.0	14.7	24.0	14.2	30.0	14.7
3	5775	10.4	15.9	30.0	19.6	36.0	20.1	30.0	19.6	36.0	20.1

Remark: Please see next sub-clause for the measurement plot.

5.5.4 MEASUREMENT PLOT (EXAMPLE PLOT, SHOWING WORST CASE, IF APPLICABLE)

Power Meter Measurement, no plots provided.

5.5.5 TEST EQUIPMENT USED

- R&S TS8997

5.6 PEAK POWER SPECTRAL DENSITY

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10, chapter 12.5 (SA-3)

5.6.1 TEST DESCRIPTION

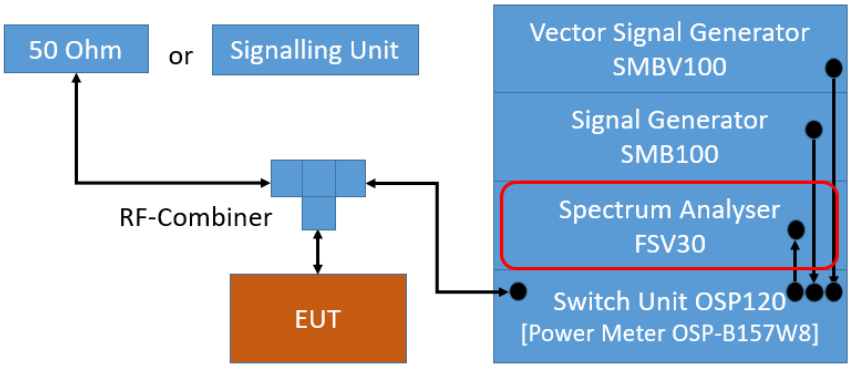
The Equipment Under Test (EUT) was set up in a shielded room to perform the Maximum Power Spectral Density measurements.
The results recorded were measured with the modulation which produces the worst-case (highest) output power.

For U-NII bands 1, 2A, 2C, 3:
The EUT was connected to the test system as described in the block diagram below. The complete attenuation of the measurement path is known and considered.

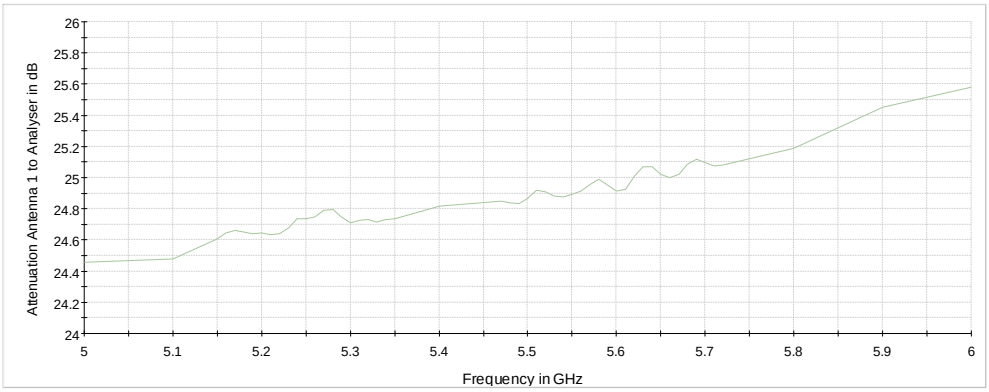
Analyzer settings:

- Resolution Bandwidth (RBW): 1 MHz (for subband 3: 500 kHz)
- Video Bandwidth (VBW): 3 MHz (for subband 3: 2 MHz)
- Trace: Max Hold
- Sweeps: till stable (at least 180, max. 900)
- Sweeptime: ≤ Number of sweep points x Min. Transmitter on time
- Detector: RMS
- Trigger: free run

Note:
The analyser settings are according FCC Public Note "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E, 789033 D02", method **SA-3**.



TS8997; Maximum Power Spectral Density



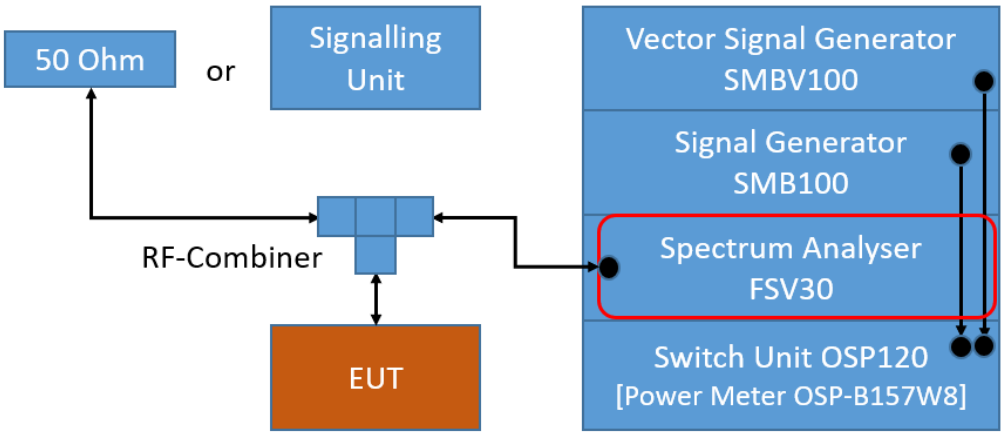
Attenuation of the measurement path

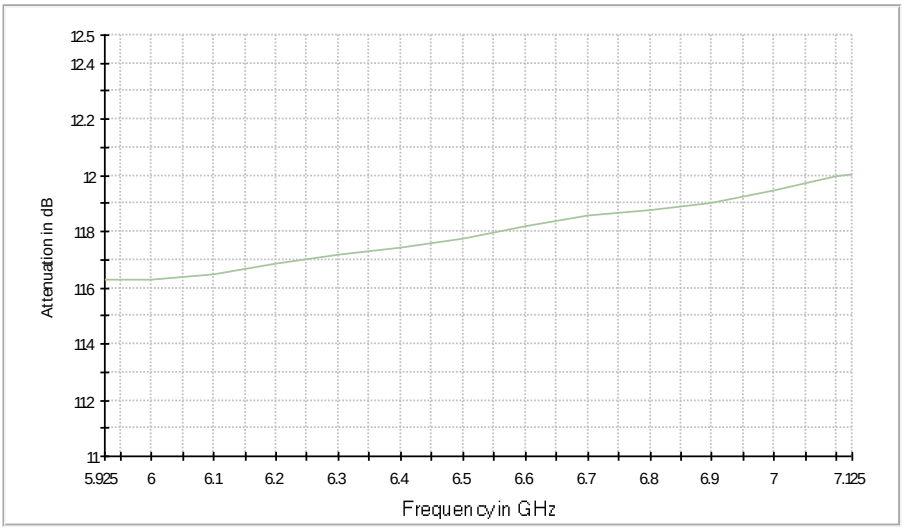
For U-NII bands 5, 6, 7, 8:
The EUT was connected to the test system as described in the block diagram below. The complete attenuation of the measurement path is known and considered.

Analyzer settings:

- Resolution Bandwidth (RBW): 1 MHz
- Video Bandwidth (VBW): 3 MHz
- Trace: Average, RMS power averaging mode
- Sweeps: at least 100
- Sweeptime: Auto
- Detector: RMS
- Trigger: free run (DC >98 %) or gated mode (DC< 98 %)

Note:
The analyser settings are according FCC Public Note "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E, 789033 D02", method **SA-1**.





Attenuation of measurement path

5.6.2 TEST REQUIREMENTS / LIMITS

A) FCC
FCC Part 15, Subpart E, §15.407 (a) (1)
For systems using digital modulation techniques in the 5.15 – 5.25 GHz bands:
(i) and (ii), outdoor and indoor access points: Limit: 17 dBm/MHz.
(iv), mobile and portable client devices: Limit: 11 dBm/MHz.

FCC Part 15, Subpart E, §15.407 (a) (2)
For systems using digital modulation techniques in the 5.25 – 5.35 GHz and 5.47 – 5.725 GHz bands:
Limit: 11 dBm/MHz.

FCC Part 15, Subpart E, §15.407 (a) (3)
For systems using digital modulation techniques in the 5.725 – 5.850 GHz bands:
Limit: 30 dBm/500 kHz.

FCC Part 15, Subpart E, §15.407 (a) (4):
For a standard power access point and fixed client devices in the 5.925 – 6.425 GHz and 6.525 – 6.875 GHz bands:
Limit: 23 dBm/MHz e.i.r.p.

FCC Part 15, Subpart E, §15.407 (a) (5):
For an indoor access point in the 5.925 – 7.125 GHz bands:
Limit: 5 dBm/MHz e.i.r.p.

FCC Part 15, Subpart E, §15.407 (a) (6):
For a subordinate device operating under an indoor access point in the 5.925 – 7.125 GHz bands:
Limit: 5 dBm/MHz e.i.r.p.

FCC Part 15, Subpart E, §15.407 (a) (7):

For a client device, except for fixed client devices, operating under standard power access point in the 5.925-6.425 GHz and 6.525-6.875 GHz bands:
Limit: 17 dBm/MHz e.i.r.p.

FCC Part 15, Subpart E, §15.407 (a) (8):
For client devices operating under the control of an indoor access point in the 5.925 – 7.125 GHz bands:
Limit: -1 dBm/MHz e.i.r.p.

B) IC
Different frequency bands and limits apply, as compared to the FCC requirements.

RSS-247, 6.2.1 (1), Band 5150-5250 MHz, indoor operation only:
Limit (e.i.r.p.): 10 dBm/MHz.

RSS-247, 6.2.2 (1), Band 5250-5350 MHz:
Limit: 11 dBm/MHz.

RSS-247, 6.2.3 (1), Bands 5470-5600 MHz and 5650-5725 MHz:
Limit: 11 dBm/MHz.

RSS-247, 6.2.4 (1), Band 5725-5850 MHz:
Limit: 30 dBm/500 kHz.

5.6.3 TEST PROTOCOL

Ambient temperature: 23-26 °C
Air Pressure: 990-1010 hPa
Humidity: 38-45 %
WLAN a-Mode; 20 MHz; 54 Mbit/s

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	E.I.R.P MPSD [dBm/MHz]	FCC Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED E.I.R.P limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]
1	36	5180	2.4	7.9	11.0	8.6	N/A	-	10.0	2.1
	40	5200	2.2	7.7	11.0	8.8	N/A	-	10.0	2.3
	48	5240	2.7	8.2	11.0	8.3	N/A	-	10.0	1.8
2A	52	5260	2.3	7.8	11.0	8.7	11.0	8.7	N/A	-
	60	5300	2.4	7.9	11.0	8.6	11.0	8.6	N/A	-
	64	5320	2.5	8.0	11.0	8.5	11.0	8.5	N/A	-
2C	100	5500	1.9	7.4	11.0	9.1	11.0	9.1	N/A	-
	116	5580	2.9	8.4	11.0	8.1	11.0	8.1	N/A	-
	140	5700	2.7	8.2	11.0	8.3	11.0	8.3	N/A	-
2C+3	144	5720	3.6	9.1	11.0	7.4	11.0	7.4	N/A	-
3	149	5745	0.5	6.0	30.0	29.5	30.0	29.5	N/A	-
	157	5785	0.4	5.9	30.0	29.6	30.0	29.6	N/A	-
	165	5825	0.8	6.3	30.0	29.2	30.0	29.2	N/A	-

WLAN n-Mode; 20 MHz; MCS 7; SISO

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	E.I.R.P MPSD [dBm/MHz]	FCC Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED E.I.R.P limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]
1	36	5180	2.2	7.7	11.0	8.8	N/A	-	10.0	2.3
	40	5200	2.1	7.6	11.0	8.9	N/A	-	10.0	2.4
	48	5240	2.6	8.1	11.0	8.4	N/A	-	10.0	1.9
2A	52	5260	2.3	7.8	11.0	8.7	11.0	8.7	N/A	-
	60	5300	2.4	7.9	11.0	8.6	11.0	8.6	N/A	-
	64	5320	2.4	7.9	11.0	8.6	11.0	8.6	N/A	-
2C	100	5500	1.8	7.3	11.0	9.2	11.0	9.2	N/A	-
	116	5580	2.7	8.2	11.0	8.3	11.0	8.3	N/A	-
	140	5700	2.6	8.1	11.0	8.4	11.0	8.4	N/A	-
2C+3	144	5720	3.5	9.0	11.0	7.5	11.0	7.5	N/A	-
3	149	5745	0.4	5.9	30.0	29.6	30.0	29.6	N/A	-
	157	5785	0.4	5.9	30.0	29.6	30.0	29.6	N/A	-
	165	5825	0.8	6.3	30.0	29.2	30.0	29.2	N/A	-

WLAN n-Mode; 40 MHz; MCS 7; SISO

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	E.I.R.P MPSD [dBm/MHz]	FCC Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED E.I.R.P limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]
1	38	5190	-3.6	1.9	11.0	14.6	N/A	-	10.0	8.1
	46	5230	-3.1	2.4	11.0	14.1	N/A	-	10.0	7.6
2A	54	5270	-3.4	2.1	11.0	14.4	11.0	14.4	N/A	-
	62	5310	-3.3	2.2	11.0	14.3	11.0	14.3	N/A	-
2C	102	5510	-4.0	1.5	11.0	15.0	11.0	15.0	N/A	-
	110	5550	-3.4	2.1	11.0	14.4	11.0	14.4	N/A	-
	134	5670	-3.3	2.2	11.0	14.3	11.0	14.3	N/A	-
2C+3	142	5710	-3.3	2.2	11.0	14.3	11.0	14.3	N/A	-
3	151	5755	-5.3	0.2	30.0	35.3	30.0	35.3	N/A	-
	159	5795	-5.3	0.2	30.0	35.3	30.0	35.3	N/A	-

WLAN ac-Mode; 20 MHz; MCS 8; SISO

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	E.I.R.P MPSD [dBm/MHz]	FCC Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED E.I.R.P limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]
1	36	5180	1.3	6.8	11.0	9.7	N/A	-	10.0	3.2
	40	5200	1.2	6.7	11.0	9.8	N/A	-	10.0	3.3
	48	5240	1.8	7.3	11.0	9.2	N/A	-	10.0	2.7
2A	52	5260	1.5	7.0	11.0	9.5	11.0	9.5	N/A	-
	60	5300	1.6	7.1	11.0	9.4	11.0	9.4	N/A	-
	64	5320	1.7	7.2	11.0	9.3	11.0	9.3	N/A	-
2C	100	5500	0.9	6.4	11.0	10.1	11.0	10.1	N/A	-
	116	5580	1.8	7.3	11.0	9.2	11.0	9.2	N/A	-
	140	5700	1.8	7.3	11.0	9.2	11.0	9.2	N/A	-
2C+3	144	5720	2.6	8.1	11.0	8.4	11.0	8.4	N/A	-
3	149	5745	-0.1	5.4	30.0	30.1	30.0	30.1	N/A	-
	157	5785	-0.3	5.2	30.0	30.3	30.0	30.3	N/A	-
	165	5825	0.1	5.6	30.0	29.9	30.0	29.9	N/A	-

WLAN ac-Mode; 40 MHz; MCS 9; SISO

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	E.I.R.P MPSD [dBm/MHz]	FCC Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED E.I.R.P limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]
1	38	5190	-3.6	1.9	11.0	14.6	N/A	-	10.0	8.1
	46	5230	-3.1	2.4	11.0	14.1	N/A	-	10.0	7.6
2A	54	5270	-3.6	1.9	11.0	14.6	11.0	14.6	N/A	-
	62	5310	-3.6	1.9	11.0	14.6	11.0	14.6	N/A	-
2C	102	5510	-4.1	1.4	11.0	15.1	11.0	15.1	N/A	-
	110	5550	-3.4	2.1	11.0	14.4	11.0	14.4	N/A	-
	134	5670	-3.4	2.1	11.0	14.4	11.0	14.4	N/A	-
2C+3	142	5710	-3.3	2.2	11.0	14.3	11.0	14.3	N/A	-
3	151	5755	-5.1	0.4	30.0	35.1	30.0	35.1	N/A	-
	159	5795	-5.1	0.4	30.0	35.1	30.0	35.1	N/A	-

WLAN ac-Mode; 80 MHz; MCS 9; SISO

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	E.I.R.P MPSD [dBm/MHz]	FCC Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED E.I.R.P limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]
1	42	5210	-6.7	-1.2	11.0	17.7	N/A	-	10.0	11.2
2A	58	5290	-6.9	-1.4	11.0	17.9	11.0	17.9	N/A	-
2C	106	5530	-7.2	-1.7	11.0	18.2	11.0	18.2	N/A	-
	122	5610	-6.8	-1.3	11.0	17.8	11.0	17.8	N/A	-
2C+3	138	5690	-7.8	-2.3	11.0	18.8	11.0	18.8	N/A	-
3	155	5775	-9.1	-3.6	30.0	39.1	30.0	39.1	N/A	-

WLAN ax-Mode; 20 MHz; MCS 9; SISO

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	E.I.R.P MPSD [dBm/MHz]	FCC Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED E.I.R.P limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]
1	36	5180	-0.5	5.0	11.0	11.5	N/A	-	10.0	5.0
	40	5200	-0.5	5.0	11.0	11.5	N/A	-	10.0	5.0
	48	5240	0.1	5.6	11.0	10.9	N/A	-	10.0	4.4
2A	52	5260	-0.5	5.0	11.0	11.5	11.0	11.5	N/A	-
	60	5300	-0.3	5.2	11.0	11.3	11.0	11.3	N/A	-
	64	5320	-0.1	5.4	11.0	11.1	11.0	11.1	N/A	-
2C	100	5500	-1.0	4.5	11.0	12.0	11.0	12.0	N/A	-
	116	5580	0.1	5.6	11.0	10.9	11.0	10.9	N/A	-
	140	5700	0.0	5.5	11.0	11.0	11.0	11.0	N/A	-
2C+3	144	5720	0.7	6.2	11.0	10.3	11.0	10.3	N/A	-
3	149	5745	-2.0	3.5	30.0	32.0	30.0	32.0	N/A	-
	157	5785	-2.1	3.4	30.0	32.1	30.0	32.1	N/A	-
	165	5825	-1.8	3.7	30.0	31.8	30.0	31.8	N/A	-

WLAN ax-Mode; 40 MHz; MCS 9; SISO

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	E.I.R.P MPSD [dBm/MHz]	FCC Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED E.I.R.P limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]
1	38	5190	-4.5	1.0	11.0	15.5	N/A	-	10.0	9.0
	46	5230	-4.0	1.5	11.0	15.0	N/A	-	10.0	8.5
2A	54	5270	-4.4	1.1	11.0	15.4	11.0	15.4	N/A	-
	62	5310	-4.3	1.2	11.0	15.3	11.0	15.3	N/A	-
2C	102	5510	-4.8	0.7	11.0	15.8	11.0	15.8	N/A	-
	110	5550	-4.3	1.2	11.0	15.3	11.0	15.3	N/A	-
	134	5670	-5.7	-0.2	11.0	16.7	11.0	16.7	N/A	-
2C+3	142	5710	-5.4	0.1	11.0	16.4	11.0	16.4	N/A	-
3	151	5755	-6.9	-1.4	30.0	36.9	30.0	36.9	N/A	-
	159	5795	-7.1	-1.6	30.0	37.1	30.0	37.1	N/A	-

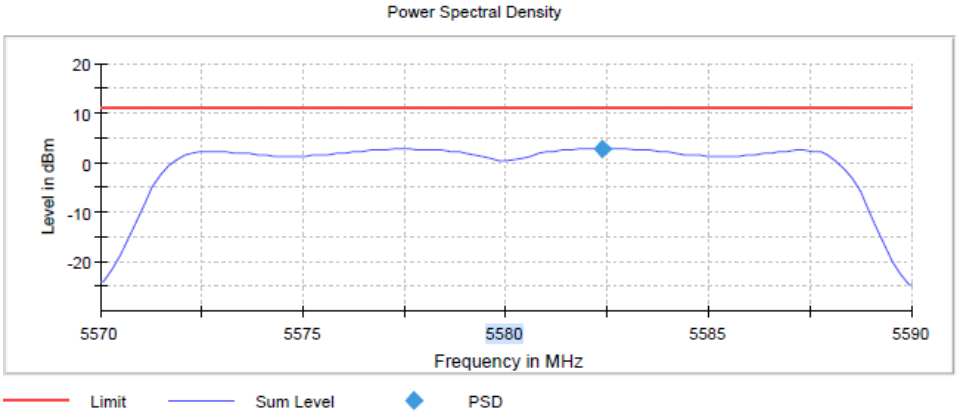
WLAN ax-Mode; 80 MHz; MCS 9; SISO

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	E.I.R.P MPSD [dBm/MHz]	FCC Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED Limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]	ISED E.I.R.P limit [dBm/MHz] or [dBm/500kHz] (U-NII-3)	Margin [dB]
1	42	5210	-5.5	0.0	11.0	16.5	N/A	-	10.0	10.0
2A	58	5290	-5.4	0.1	11.0	16.4	11.0	16.4	N/A	-
2C	106	5530	-6.0	-0.5	11.0	17.0	11.0	17.0	N/A	-
	122	5610	-5.1	0.4	11.0	16.1	11.0	16.1	N/A	-
2C+3	138	5690	-6.1	-0.6	11.0	17.1	11.0	17.1	N/A	-
3	155	5775	-6.0	-0.5	30.0	36.0	30.0	36.0	N/A	-

Remark: Please see next sub-clause for the measurement plot.

5.6.4 MEASUREMENT PLOT (EXAMPLE PLOT, SHOWING WORST CASE, IF APPLICABLE)

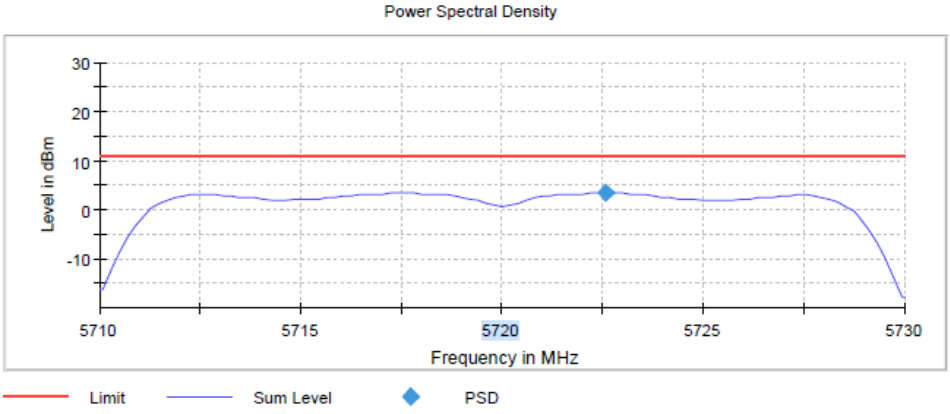
Radio Technology = WLAN a, UNII- 2C, Operating Frequency = mid



Measurement

Setting	Instrument Value
Start Frequency	5.57000 GHz
Stop Frequency	5.59000 GHz
Span	20.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	101
Sweeptime	1.010 s
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	RMS
SweepCount	60
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	4 / max. 15
Stable	3 / 3
Max Stable Difference	0.00 dB

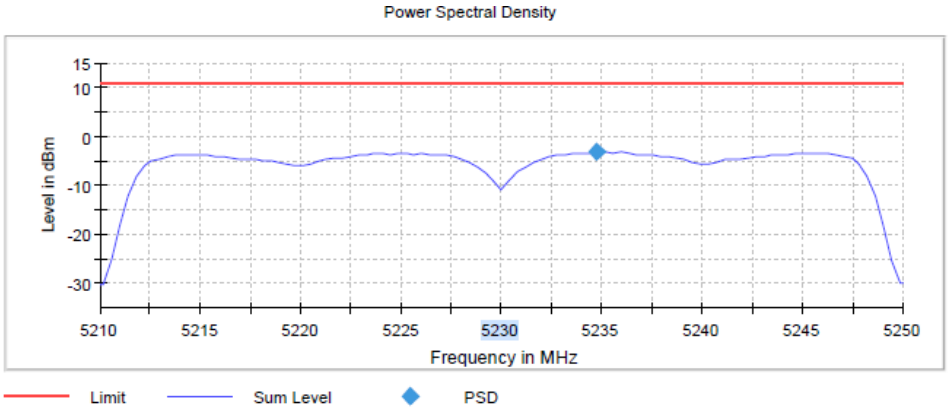
Radio Technology = WLAN n 20, UNII- 2C+3, Operating Frequency = straddle



Measurement

Setting	Instrument Value
Start Frequency	5.71000 GHz
Stop Frequency	5.73000 GHz
Span	20.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	101
Sweeptime	1.010 s
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	RMS
SweepCount	60
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	4 / max. 15
Stable	3 / 3
Max Stable Difference	0.00 dB

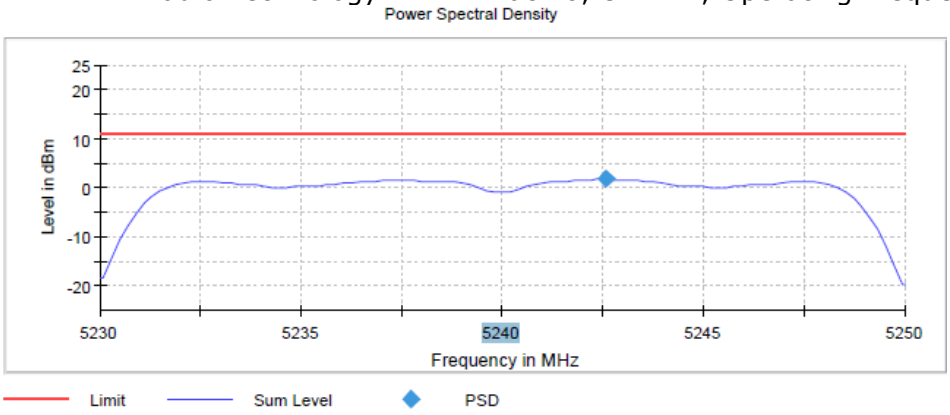
Radio Technology = WLAN n 40, UNII- 1, Operating Frequency = mid



Measurement

Setting	Instrument Value
Start Frequency	5.21000 GHz
Stop Frequency	5.25000 GHz
Span	40.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	101
Sweeptime	1.010 s
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	RMS
SweepCount	60
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	4 / max. 15
Stable	3 / 3
Max Stable Difference	0.02 dB

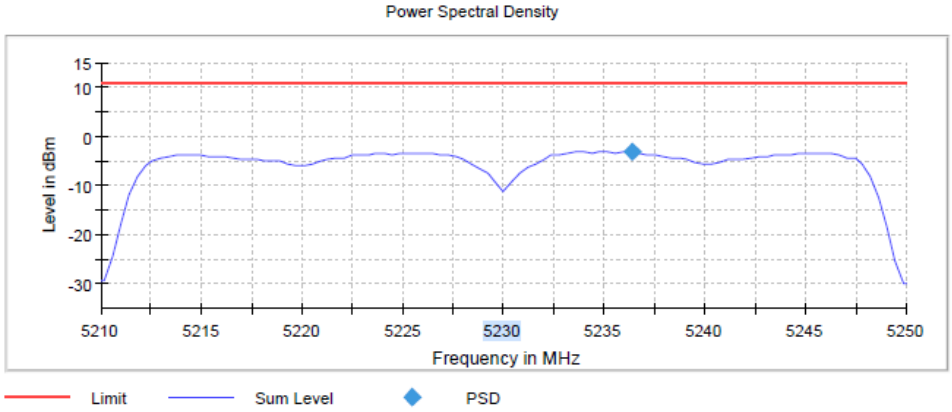
Radio Technology = WLAN ac 20, UNII- 1, Operating Frequency = high



Measurement

Setting	Instrument Value
Start Frequency	5.23000 GHz
Stop Frequency	5.25000 GHz
Span	20.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	101
Sweeptime	1.010 s
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	RMS
SweepCount	60
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	4 / max. 15
Stable	3 / 3
Max Stable Difference	0.01 dB

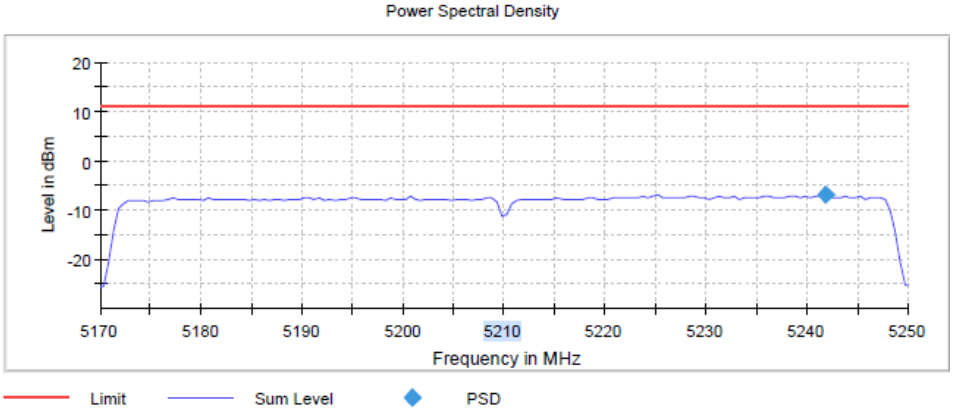
Radio Technology = WLAN ac 40, UNII- 1, Operating Frequency = mid



Measurement

Setting	Instrument Value
Start Frequency	5.21000 GHz
Stop Frequency	5.25000 GHz
Span	40.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	101
Sweeptime	1.010 s
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	RMS
SweepCount	60
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	4 / max. 15
Stable	3 / 3
Max Stable Difference	0.01 dB

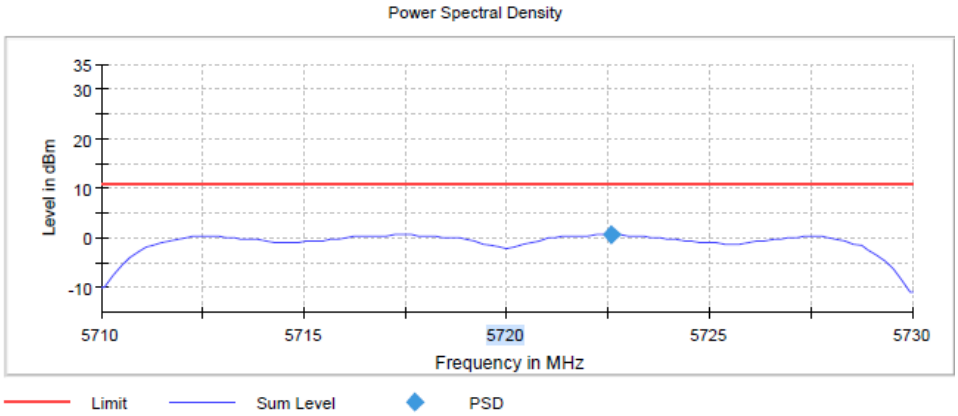
Radio Technology = WLAN ac 80, UNII- 1, Operating Frequency = low



Measurement

Setting	Instrument Value
Start Frequency	5.17000 GHz
Stop Frequency	5.25000 GHz
Span	80.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	160
Sweeptime	3.200 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	RMS
SweepCount	18751
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	5 / max. 15
Stable	3 / 3
Max Stable Difference	0.30 dB

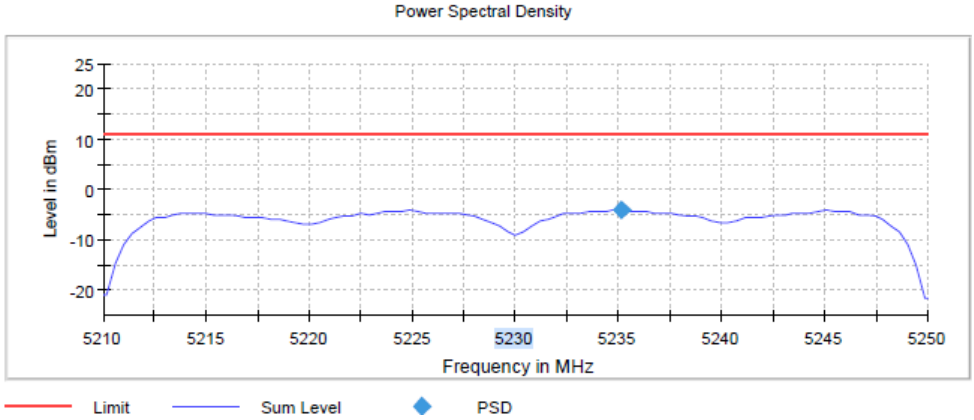
Radio Technology = WLAN ax 20, UNII- 2C+3, Operating Frequency = straddle



Measurement

Setting	Instrument Value
Start Frequency	5.71000 GHz
Stop Frequency	5.73000 GHz
Span	20.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	101
Sweeptime	1.010 s
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	RMS
SweepCount	60
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	4 / max. 15
Stable	3 / 3
Max Stable Difference	0.00 dB

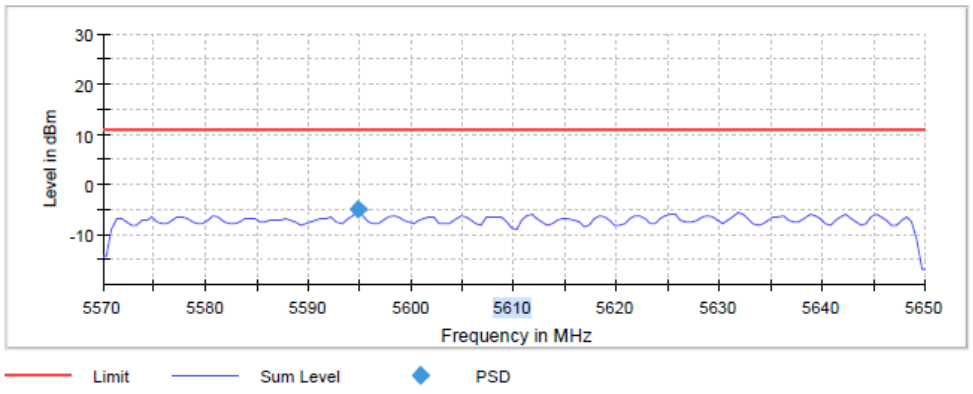
Radio Technology = WLAN ax 40, UNII- 1, Operating Frequency = mid



Measurement

Setting	Instrument Value
Start Frequency	5.21000 GHz
Stop Frequency	5.25000 GHz
Span	40.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	101
Sweeptime	1.010 s
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	RMS
SweepCount	60
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	4 / max. 15
Stable	3 / 3
Max Stable Difference	0.01 dB

Radio Technology = WLAN ax 80, UNII- 2C, Operating Frequency = high



Measurement

Setting	Instrument Value
Start Frequency	5.57000 GHz
Stop Frequency	5.65000 GHz
Span	80.000 MHz
RBW	1.000 MHz
VBW	3.000 MHz
SweepPoints	160
Sweeptime	3.200 ms
Reference Level	0.000 dBm
Attenuation	10.000 dB
Detector	RMS
SweepCount	18751
Filter	3 dB
Trace Mode	Max Hold
Sweeptype	Sweep
Preamp	off
Stablemode	Trace
Stablevalue	0.30 dB
Run	4 / max. 15
Stable	3 / 3
Max Stable Difference	0.00 dB

5.6.5 TEST EQUIPMENT USED

- R&S TS8997

5.7 UNDESIRABLE EMISSIONS; GENERAL FIELD STRENGTH LIMITS

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10, chapter 6.4, 6.5, 6.6.5

5.7.1 TEST DESCRIPTION

The test set-up was made in accordance to the general provisions of ANSI C63.10 in a typical installation configuration. The measurements were performed according the following sub-chapters of ANSI C63.10:

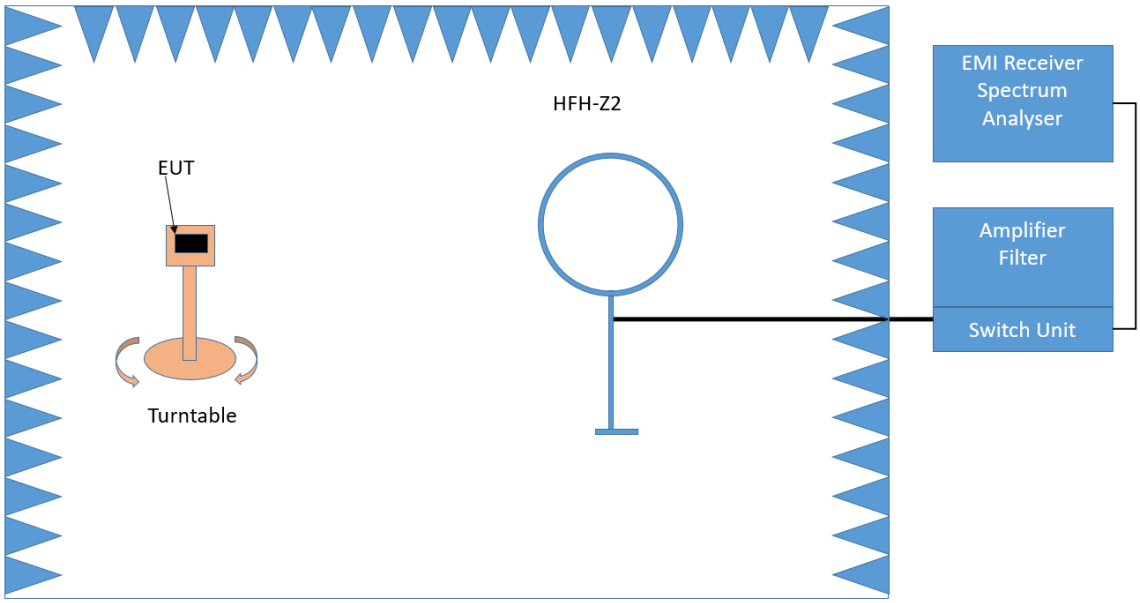
- < 30 MHz: Chapter 6.4
- 30 MHz – 1 GHz: Chapter 6.5
- > 1 GHZ: Chapter 6.6 (procedure according 6.6.5 used)

The measurement procedure is implemented into the EMI test software EMC32 from R&S. Exploratory tests are performed at 3 orthogonal axes to determine the worst-case orientation of a body-worn or handheld EUT. The final test on all kind of EUTs is also performed at 3 axes. A pre-check is performed while the EUT is powered.

Below 1 GHz:

The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The influence of the EUT support table that is used between 30–1000 MHz was evaluated.

1. Measurement up to 30 MHz



Test Setup; Spurious Emission Radiated (SAC), 9 kHz – 30 MHz

The Loop antenna HFH2-Z2 is used.

Step 1: pre measurement

- Anechoic chamber

- Antenna distance: 3 m
- Detector: Peak-Maxhold
- Frequency range: 0.009 - 0.15 MHz and 0.15 – 30 MHz
- Frequency steps: 0.05 kHz and 2.25 kHz
- IF–Bandwidth: 0.2 kHz and 9 kHz
- Measuring time / Frequency step: 100 ms (FFT-based)

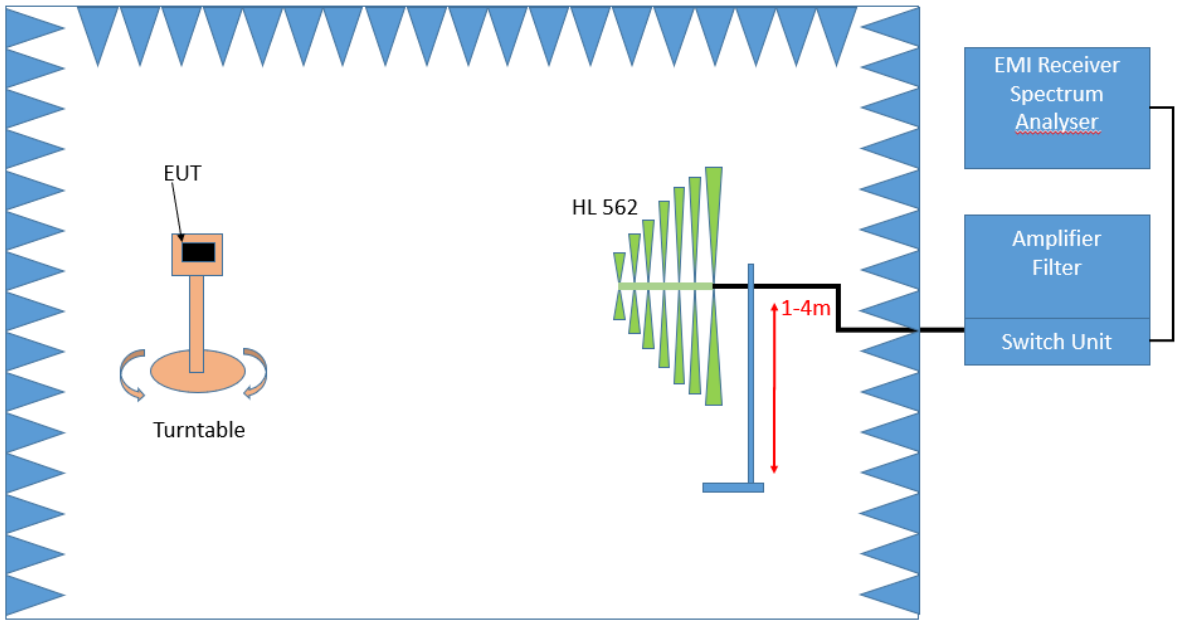
Intention of this step is, to determine the radiated EMI-profile of the EUT. Afterwards the relevant emissions for the final measurement are identified.

Step 2: final measurement

For the relevant emissions determined in step 1, an additional measurement with the following settings will be performed. Intention of this step is to find the maximum emission level.

- Open area test side
- Antenna distance: according to the Standard
- Detector: Quasi-Peak
- Frequency range: 0.009 – 30 MHz
- Frequency steps: measurement at frequencies detected in step 1
- IF–Bandwidth: 0.2 - 10 kHz
- Measuring time / Frequency step: 1 s

2. Measurement above 30 MHz and up to 1 GHz



Test Setup; Spurious Emission Radiated (SAC), 30 MHz- 1GHz

Step 1: Preliminary scan

This is a preliminary test to identify the highest amplitudes relative to the limit.

Settings for step 1:

- Antenna distance: 3 m
- Detector: Peak-Maxhold / Quasipeak (FFT-based)
- Frequency range: 30 – 1000 MHz
- Frequency steps: 30 kHz
- IF–Bandwidth: 120 kHz
- Measuring time / Frequency step: 100 ms
- Turntable angle range: –180° to 90°
- Turntable step size: 90°
-- Height variation range: 1 – 4 m

- Height variation step size: 1.5 m
- Polarisation: Horizontal + Vertical

Intention of this step is, to determine the radiated EMI-profile of the EUT. Afterwards the relevant emissions for the final measurement are identified.

Step 2: Adjustment measurement

In this step the accuracy of the turntable azimuth and antenna height will be improved. This is necessary to find out the maximum value of every frequency.

For each frequency, which was determined the turntable azimuth and antenna height will be adjusted. The turntable azimuth will slowly vary by 360°. During this action, the value of emission is continuously measured. The turntable azimuth at the highest emission will be recorded and adjusted. In this position, the antenna height will also slowly vary by 1 – 4 meter. During this action, the value of emission is also continuously measured. The antenna height of the highest emission will also be recorded and adjusted.

- Detector: Peak – Maxhold
- Measured frequencies: in step 1 determined frequencies
- IF – Bandwidth: 120 kHz
- Measuring time: 100 ms
- Turntable angle range: 360 °
- Height variation range:1 – 4 m
- Antenna Polarisation: max. value determined in step 1

Step 3: Final measurement with QP detector

With the settings determined in step 2, the final measurement will be performed:

EMI receiver settings for step 3:

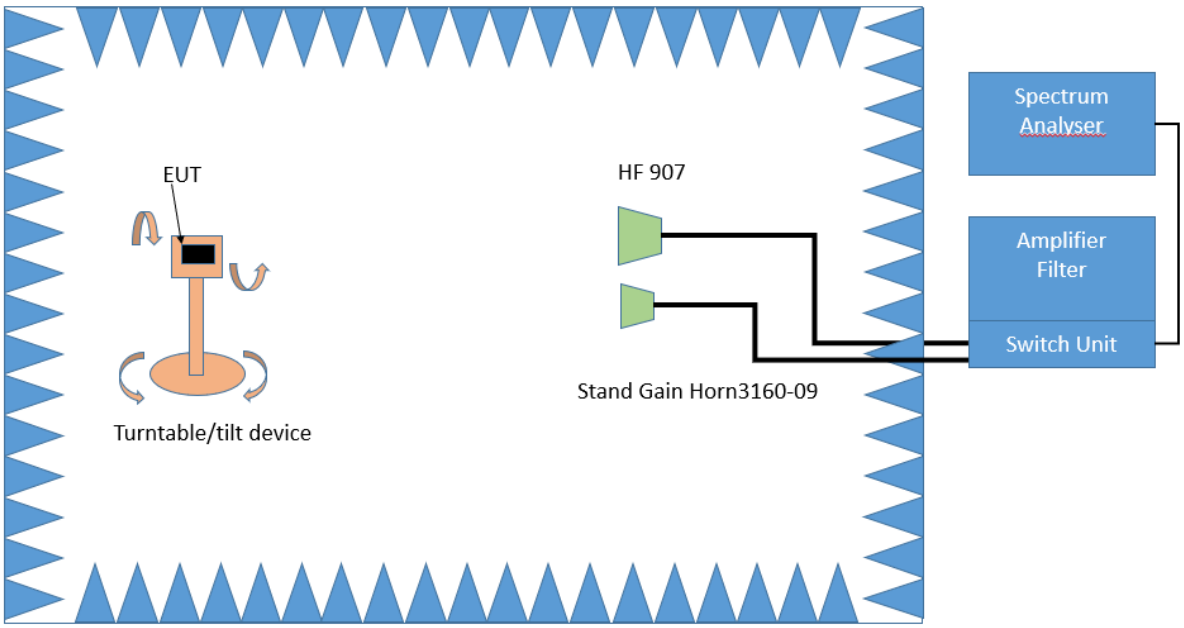
- Detector: Quasi-Peak (< 1 GHz)
- Measured frequencies: in step 1 determined frequencies
- IF – Bandwidth: 120 kHz
- Measuring time: 1 s

After the measurement a plot will be generated which contains a diagram with the results of the preliminary scan and a chart with the frequencies and values of the results of the final measurement.

Above 1 GHz:

The Equipment Under Test (EUT) was set up on a non-conductive support (tilt device) at 1.5 m height in the fully-anechoic chamber.
All steps were performed with one height (1.5 m) of the receiving antenna only.

3. Measurement 1 GHz up to 26.5 GHz



Test Setup; Spurious Emission Radiated (FAC), 1 GHz-26.5 GHz

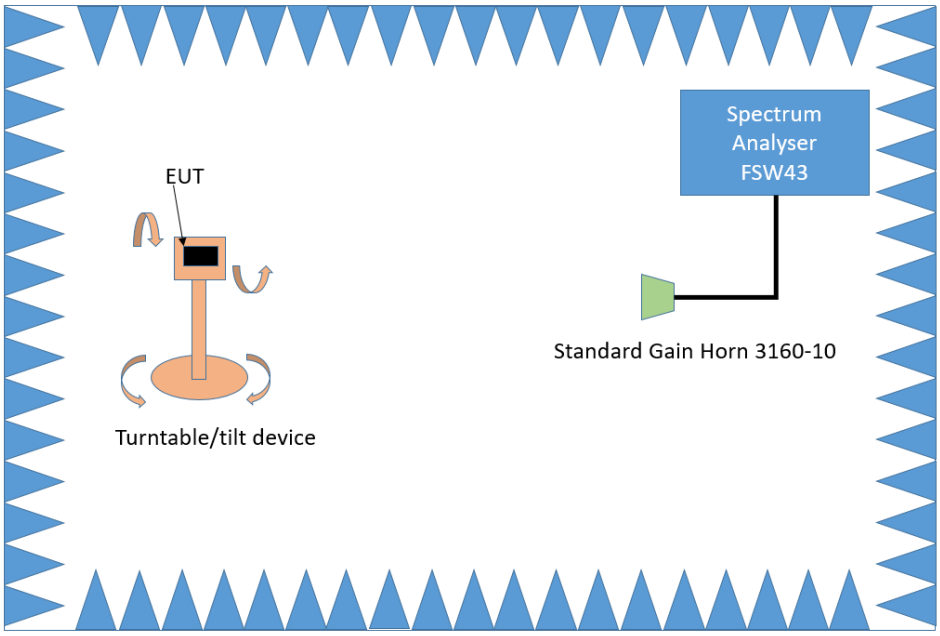
Step 1:
The Equipment Under Test (EUT) was set up on a non-conductive support (tilt device) at 1.5 m height in the fully-anechoic chamber.
All steps were performed with one height (1.5 m) of the receiving antenna only.
The EUT is turned during the preliminary measurement across the elevation axis, with a step size of 90 °.
The turn table step size (azimuth angle) for the preliminary measurement is 45 °.

Step 2:
Due to the fact, that in this frequency range the test is performed in a fully anechoic room, the height scan of the receiving antenna instep 2 is omitted. Instead of this, a maximum search with a step size ± 45° for the elevation axis is performed.
The turn table azimuth will slowly vary by ± 22.5°.
The elevation angle will slowly vary by ± 45°
EMI receiver settings (for all steps):
- Detector: Peak, Average
- IF Bandwidth = 1 MHz

Step 3:
Spectrum analyser settings for step 3:
- Detector: Peak / Average
- Measured frequencies: in step 1 determined frequencies
- IF – Bandwidth: 1 MHz
- Measuring time: 1 s

4. Measurement above 26.5 GHz up to 40 GHz
The following modifications, compared to the frequency range 1 GHz – 26.5 GHz, apply to the measurement procedure for the frequency range above 26.5 GHz:

- Measurement distance: 1m



Test Setup; Spurious Emission Radiated (FAC), 26.5 – 40 GHz

5.7.2 TEST REQUIREMENTS / LIMITS

A) FCC

FCC Part 15 Subpart E, §15.407 (b)(1)
For transmitters operating in the 5150–5250 MHz band:
Limit: –27 dBm/MHz EIRP outside of the band 5150–5350 MHz.

FCC Part 15 Subpart E, §15.407 (b)(2)
For transmitters operating in the 5250–5350 MHz band:
Limit: –27 dBm/MHz EIRP outside of the band 5150–5350 MHz.

FCC Part 15 Subpart E, §15.407 (b)(3)
For transmitters operating in the 5470–5725 MHz band:
Limit: –27 dBm/MHz EIRP outside of the band 5470–5725 MHz.

FCC Part 15 Subpart E, §15.407 (b)(4)
For transmitters operating in the 5725–5850 MHz band:
Limit: –27 dBm/MHz at 75 MHz or more above or below the band edge
increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge
increasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edge
increasing linearly to 27 dBm/MHz at the band edge.

FCC Part 15 Subpart E, §15.407 (b) (5)

For transmitters operating within the 5.925-7.125 GHz band:
Limit: –27 dBm/MHz EIRP outside of the band 5.925-7.125 GHz.

FCC Part 15 Subpart E, §15.407 (b) (6)
For transmitters operating within the 5.925-7.125 GHz bands:
Power spectral density must be suppressed by 20 dB at 1 MHz outside of channel edge, by 28 dB at one channel bandwidth from the channel center, and by 40 dB at one- and one-half times the channel bandwidth away from channel center. At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and at frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression. Emissions removed from the channel center by more than one- and one-half times the channel bandwidth must be suppressed by at least 40 dB.

B) IC
Different frequency bands and limits apply, as compared to the FCC requirements.

RSS-247, 6.2.1.2, Emissions outside the band 5150-5250 MHz, indoor operation only:
Limit: –27 dBm/MHz EIRP outside of the band 5150–5250 MHz.

RSS-247, 6.2.2.2, Emissions outside the band 5250-5350 MHz:
Limit: –27 dBm/MHz EIRP outside of the band 5250–5350 MHz.

RSS-247, 6.2.3.2, Emissions outside the bands 5470-5600 MHz and 5650-5725 MHz:
Limit: –27 dBm/MHz EIRP outside of the band 5470–5725 MHz.
However, devices with bandwidth overlapping the band edge of 5725 MHz can meet the emission limit of -27 dBm/MHz e.i.r.p.at 5850 MHz instead of 5725 MHz.
Note: No operation is permitted for the frequency range 5600–5650 MHz.

RSS-247, 6.2.4.2, Emissions outside the band 5725-5850 MHz:

a. 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 Bm/MHz at 5 MHz above or below the band edges;
b. 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;
c. 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and
d. -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

C) FCC & IC

FCC Part 15 Subpart E, §15.405
The provisions of §§ 15.203 and 15.205 are included.

§15.407 (b)(6)
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209.

§15.407 (b)(7)
The provisions of §15.205 apply to intentional radiators operating under this section

FCC Part 15, Subpart C, §15.209, Radiated Emission Limits

Frequency in MHz	Limit (µV/m)	Measurement distance (m)	Limits (dBµV/m)

0.009 – 0.49	2400/F(kHz)@300m	3	(48.5 – 13.8)@300m
0.49 – 1.705	24000/F(kHz)@30m	3	(33.8 – 23.0)@30m
1.705 – 30	30@30m	3	29.5@30m

The measured values are corrected with an inverse linear distance extrapolation factor (40 dB/decade) according FCC 15.31 (2).

Frequency in MHz	Limit (µV/m)	Measurement distance (m)	Limits (dBµV/m)
30 – 88	100@3m	3	40.0@3m
88 – 216	150@3m	3	43.5@3m
216 – 960	200@3m	3	46.0@3m
960 - 26000	500@3m	3	54.0@3m
26000 - 40000	500@3m	1	54.0@3m

The measured values above 26 GHz are corrected with an inverse linear distance extrapolation factor (20 dB/decade).

§15.35(b) ..., there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit....

Used conversion factor:

- Limit (dBµV/m) = 20 log (Limit (µV/m)/1µV/m)
- Limit (dBµV/m) = EIRP [dBm] – 20 log (d [m]) + 104.8

Limit types (in result tables):
RB – Emissions falls into a "Restricted Band" according FCC §§15.205 and 15.209 *)
UE – "Undesirable Emission Limit" according FCC §15.407
BE-RB – Band Edge Limit basing on "Restricted Band Limits"
BE-UE – Band Edge Limit basing on "Undesirable Emission Limit"
*) Below 1 GHz the limits of §15.209 are applied for all frequencies.

5.7.3 TEST PROTOCOL

Ambient temperature: 24-26 °C
Air Pressure: 990-1013 hPa
Humidity: 36-40 %

WLAN a-Mode; 20 MHz; 54 Mbit/s
Applied duty cycle correction (AV): 0.7 dB

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level [dBµV/m]	Detector	RBW [kHz]	Limit [dBµV/m]	Margin [dB]	Limit Type	RSE Level uncorrect. [dBµV/m]
36	5180	-	-		1000	-	-	UE	-
44	5220	160.0	26.6	QP	120	43.5	16.9	RB	26.59
44	5220	291.9	19.5	QP	120	46.0	26.5	RB	19.46
44	5220	800.0	25.8	QP	120	46.0	20.2	RB	25.84
44	5220	844.6	17.3	QP	120	46.0	28.7	RB	17.27
44	5220	-	-	-	1000	-	-	UE	-
48	5240	-	-	-	1000	-	-	UE	-
52	5260	-	-	-	1000	-	-	UE	-
64	5320	5350.0	46.4	AV	1000	54.0	7.6	RB	45.7
64	5320	5350.0	60.2	PEAK	1000	74.0	13.8	RB	60.2
64	5320	5350.7	45.9	AV	1000	54.0	8.1	RB	45.2
64	5320	5350.7	58.8	PEAK	1000	74.0	15.2	RB	58.8
100	5500	-	-	-	1000	-	-	UE	-
116	5580	-	-	-	1000	-	-	UE	-
116	5580	-	-	-	1000	-	-	UE	-
140	5700	-	-	-	1000	-	-	UE	-
140	5700	-	-	-	1000	-	-	UE	-
149	5745	-	-	-	1000	-	-	UE	-
157	5785	81.0	19.9	QP	120	40.0	20.1	RB	19.92
157	5785	121.0	17.4	QP	120	43.5	26.1	RB	17.39
157	5785	324.1	19.5	QP	120	46.0	26.5	RB	19.47
157	5785	442.1	20.8	QP	120	46.0	25.2	RB	20.79
157	5785	11568.5	42.3	AV	1000	54.0	11.7	RB	41.6
157	5785	11568.5	54.9	PEAK	1000	74.0	19.1	RB	54.9
165	5825	-	-	-	1000	-	-	UE	-

WLAN n-Mode; 20 MHz; MCS 7; SISO
Applied duty cycle correction (AV): 0.7 dB

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level [dBµV/m]	Detector	RBW [kHz]	Limit [dBµV/m]	Margin [dB]	Limit Type	RSE Level uncorrect. [dBµV/m]
36	5180	-	-	-	1000	-	-	UE	-
44	5220	15619.5	43.9	AV	1000	54.0	10.1	RB	43.2
44	5220	15619.5	55.7	PEAK	1000	74.0	18.3	RB	55.7
48	5240	-	-	-	1000	-	-	UE	-
52	5260	10526.5	38.5	AV	1000	-	-	UE	37.8
52	5260	10526.5	50.7	PEAK	1000	68.2	17.5	UE	50.7
52	5260	15843.5	40.9	AV	1000	54.0	13.1	RB	40.2
52	5260	15843.5	53.2	PEAK	1000	74.0	20.8	RB	53.2
64	5320	5351.3	46.5	AV	1000	54.0	7.5	RB	45.8
64	5320	5351.3	60.5	PEAK	1000	74.0	13.5	RB	60.5
100	5500	5459.4	46.5	AV	1000	54.0	7.5	RB	45.8
100	5500	5459.4	64.0	PEAK	1000	74.0	10.0	RB	64
100	5500	5459.9	46.5	AV	1000	54.0	7.5	RB	45.8
100	5500	5459.9	64.9	PEAK	1000	74.0	9.1	RB	64.9
100	5500	5470.0	46.3	AV	1000	-	-	UE	45.6
100	5500	5470.0	65.6	PEAK	1000	68.2	2.6	UE	65.6
100	5500	5727.9	45.5	AV	1000	-	-	UE	44.8
100	5500	5727.9	58.1	PEAK	1000	68.2	10.1	UE	58.1
100	5500	17031.4	44.7	AV	1000	-	-	UE	44
100	5500	17031.4	56.9	PEAK	1000	68.2	11.3	UE	56.9

116	5580	5728.8	45.5	AV	1000	-	-	UE	44.8
116	5580	5728.8	57.6	PEAK	1000	68.2	10.6	UE	57.6
116	5580	17038.3	44.9	AV	1000	-	-	UE	44.2
116	5580	17038.3	57.7	PEAK	1000	68.2	10.5	UE	57.7
140	5700	-	-		1000	-	-	UE	-
149	5745	-	-	AV	1000	-	-	UE	-
157	5785	11569.9	55.7	PEAK	1000	74.0	18.3	RB	55.7
157	5785	11569.9	43.0	AV	1000	54.0	11.0	RB	42.3
157	5785	17438.0	57.1	PEAK	1000	68.2	11.1	UE	57.1
157	5785	17438.0	44.8	AV	1000	-	-	UE	44.1
165	5825	-	-		1000	-	-	UE	-

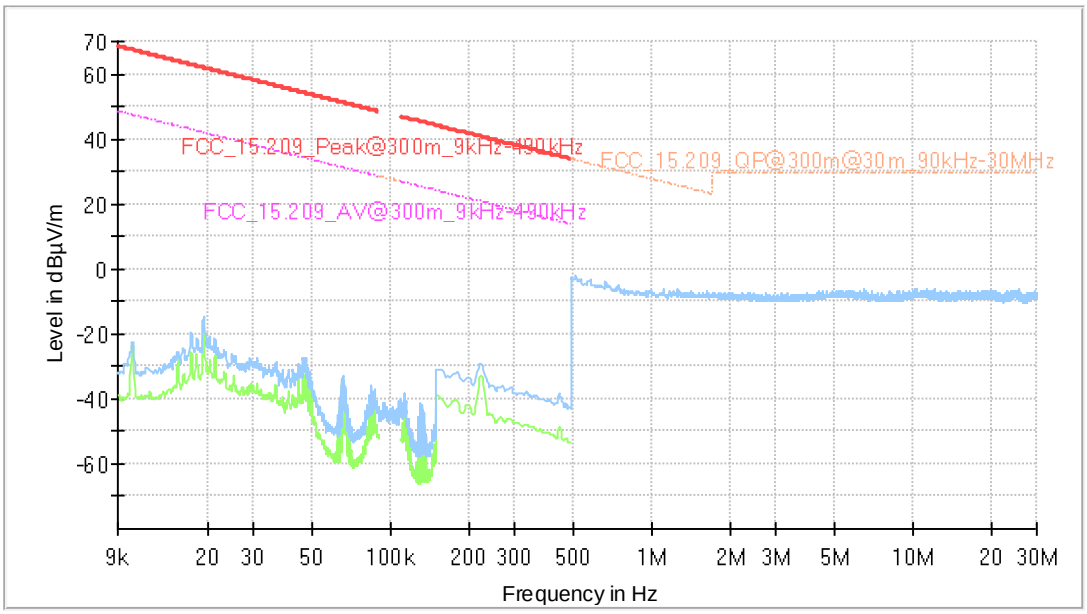
WLAN n-Mode; 40 MHz; MCS 7; SISO
Applied duty cycle correction (AV): 1.2 dB

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level [dBµV/m]	Detector	RBW [kHz]	Limit [dBµV/m]	Margin [dB]	Limit Type	RSE Level uncorrect. [dBµV/m]
38	5190	-	-	-	1000	-	-	UE	-
46	5230	-	-	-	1000	-	-	UE	-
151	5755	-	-	-	1000	-	-	UE	-
159	5795	-	-	-	1000	-	-	UE	-

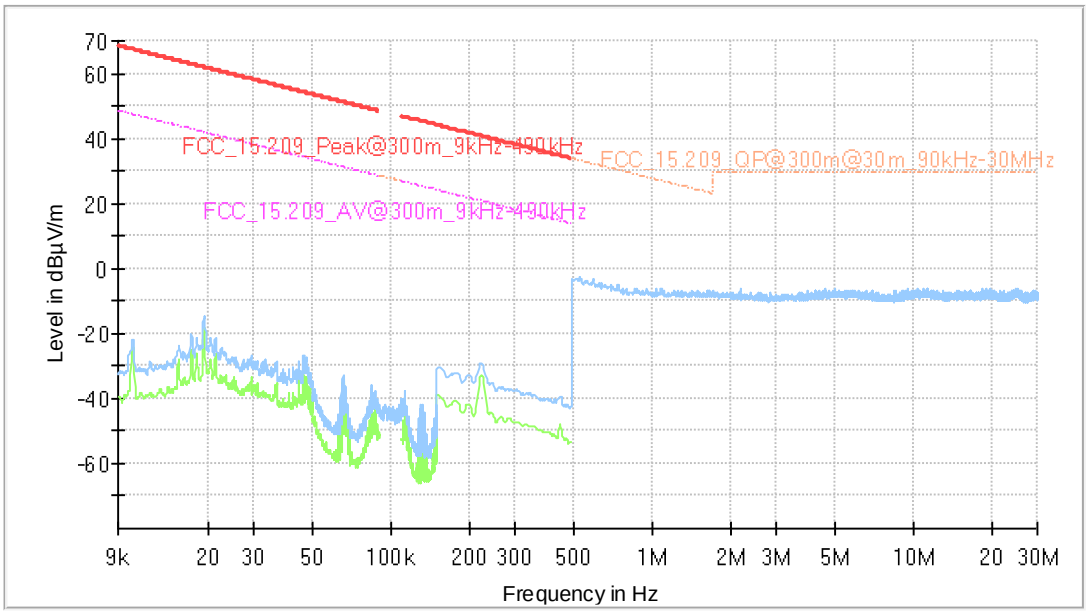
Remark: Please see next sub-clause for the measurement plot.

5.7.4 MEASUREMENT PLOT (EXAMPLE PLOT, SHOWING WORST CASE, IF APPLICABLE)

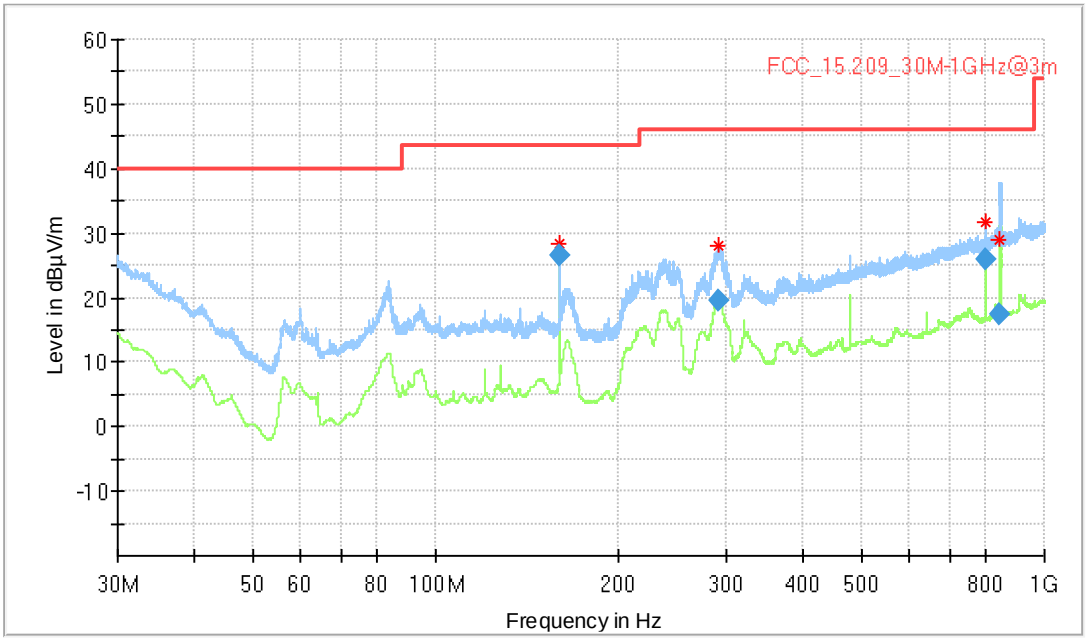
Radio Technology = WLAN a, Operating Frequency = low, Measurement range = 9kHz - 30MHz, Subband = U-NII-1



Radio Technology = WLAN a, Operating Frequency = high, Measurement range = 9kHz - 30MHz, Subband = U-NII-2C



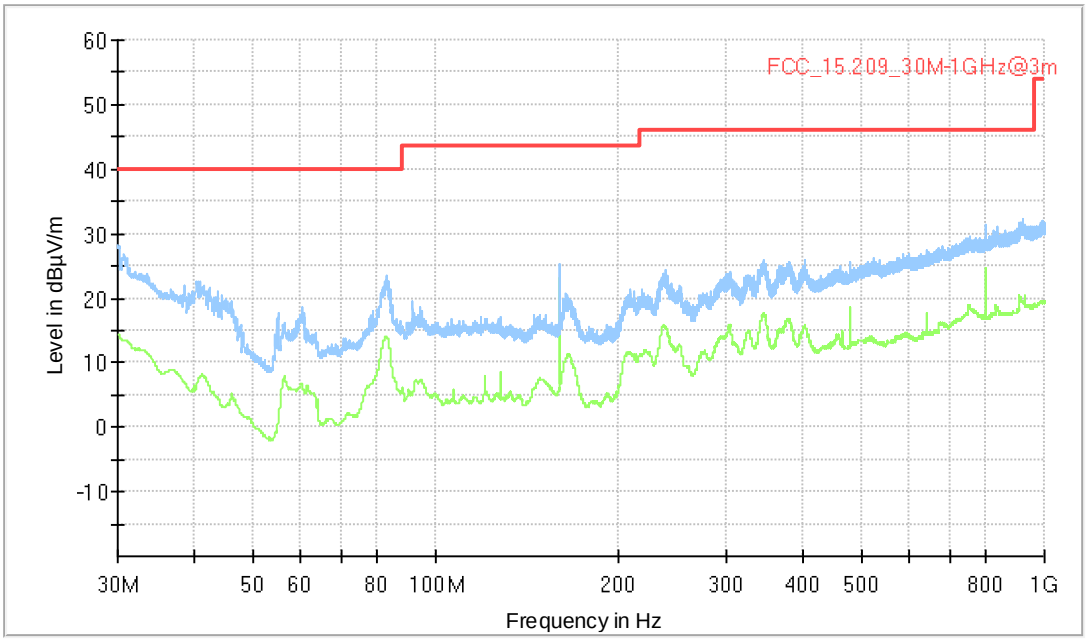
Radio Technology = WLAN a, Operating Frequency = mid, Measurement range = 30MHz - 1GHz, Subband = U-NII-1



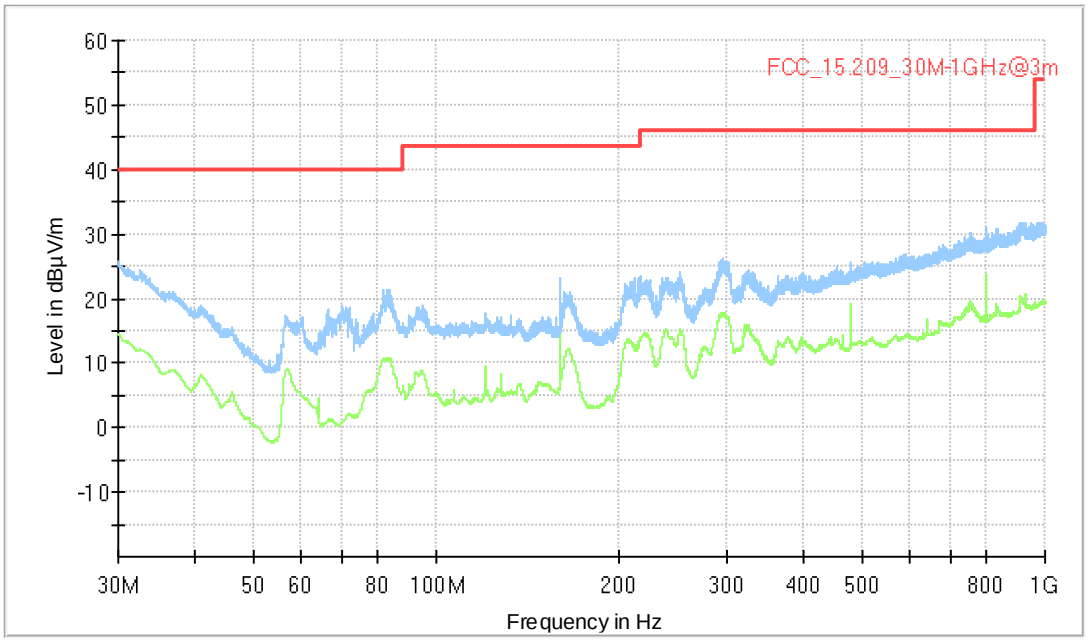
Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
159.990000	26.59	43.50	16.91	1000.0	120.000	162.0	H	-173.0	9.2
291.930000	19.46	46.00	26.54	1000.0	120.000	122.0	H	94.0	13.3
799.980000	25.84	46.00	20.16	1000.0	120.000	102.0	H	53.0	23.7
844.560000	17.27	46.00	28.73	1000.0	120.000	359.0	V	144.0	24.2

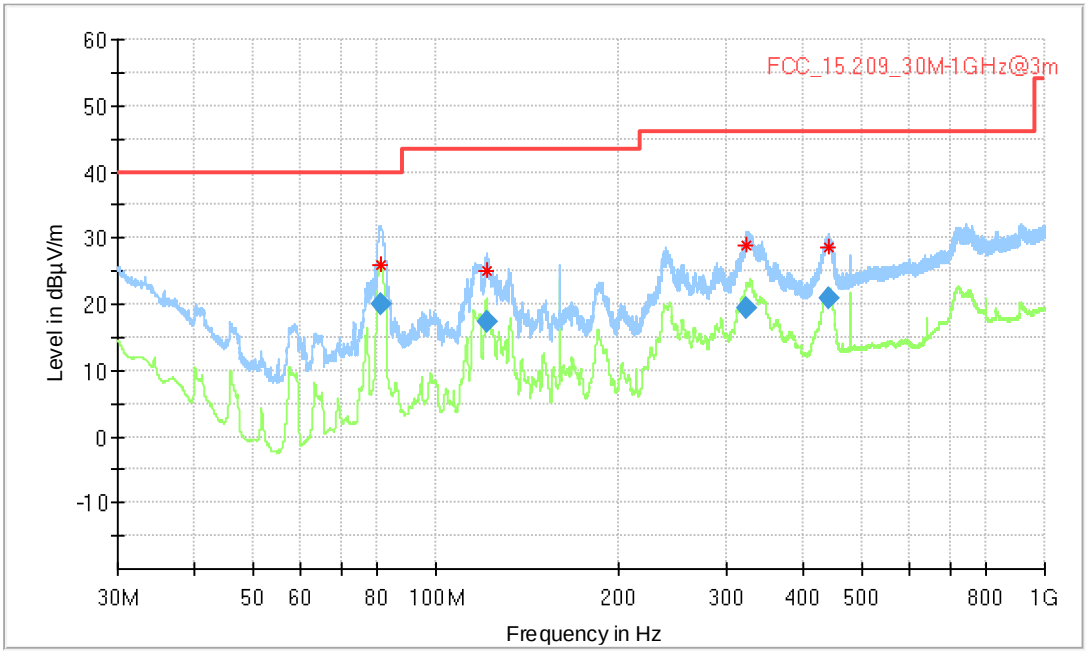
Radio Technology = WLAN a, Operating Frequency = mid, Measurement range = 30MHz - 1GHz, Subband = U-NII-2A



Radio Technology = WLAN a, Operating Frequency = mid, Measurement range = 30MHz - 1GHz, Subband = U-NII-2C



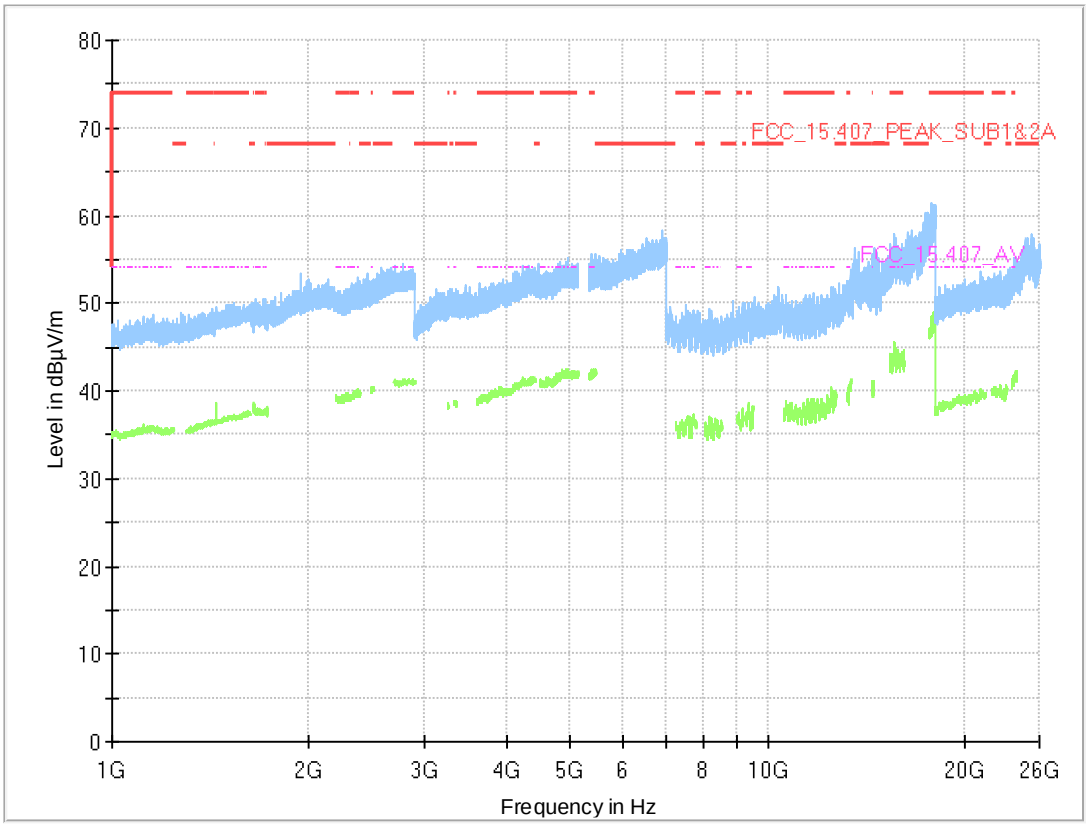
Radio Technology = WLAN a, Operating Frequency = mid, Measurement range = 30MHz - 1GHz, Subband = U-NII-3



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
81.000000	19.92	40.00	20.08	1000.0	120.000	117.0	V	-46.0	9.8
121.020000	17.39	43.50	26.11	1000.0	120.000	222.0	H	-178.0	11.9
324.120000	19.47	46.00	26.53	1000.0	120.000	106.0	H	-168.0	14.6
442.050000	20.79	46.00	25.21	1000.0	120.000	221.0	H	-131.0	17.8

Radio Technology = WLAN a, Operating Frequency = low, Subband = U-NII-1
Measurement range = 1GHz - 26GHz,



Radio Technology = WLAN a, Operating Frequency = mid, Subband = U-NII-1
Measurement range = 1GHz - 26GHz,