FCC Measurement/Technical Report on

WLAN and Bluetooth module JODY-W164-03A

FCC ID: XPYJODYW164
IC: 8595A-JODYW164

Test Report Reference: MDE_UBLOX_1701_FCCb

Test Laboratory:
7layers GmbH
Borsigstrasse 11
40880 Ratingen
Germany

Note:
The following test results relate only to the devices specified in this document. This report shall not be reproduced in parts without the written approval of the test laboratory.

Table of Contents

9   Photo Report   **94**

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 (10-1-15 Edition) and 15 (10-1-15 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 Notices "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E, 789033 D02 General U-NII Test Procedures v02r01, 2017-12-14".
"Compliance measurement procedures for unlicensed-national information infrastructure devices operating in the 5250-5350 MHz and 5470-5725 MHz bands incorporating dynamic frequency selection, 905462 D02 UNII DFS Compliance Procedures New Rules v02, 2016-04-08".

ANSI C63.10-2013 is applied.

FCC ET Docket No. 13-49, FIRST REPORT AND ORDER, April 1, 2014 ("new rules") is applied.

Summary Test Results:

The EUT complied with all performed tests as listed in chapter 1.3 Measurement Summary / Signatures.

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 4: 8.8
Occupied bandwidth	§ 15.403 (i) (26 dB) / § 15.407 (e) (6 dB)	RSS-247 Issue 2: 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),(2),(3),(4)	RSS-247 Issue 2: 6.2.1.1, 6.2.2.1, 6.2.3.1, 6.2.4.1
Maximum power spectral density	§ 15.407 (a) (1),(2),(3),(5)	RSS-247 Issue 2: 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 4: 6.13/8.9/8.10; RSS-247 Issue 2: 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 4: 6.11/8.11
Transmit Power Control (TPC) and Dynamic Frequency Selection (DFS)	§ 15.407 (h)	RSS-247 Issue 2: 6.2.2.1, 6.2.3.1, 6.3
Antenna requirement	§ 15.203 / 15.204	RSS-Gen Issue 4: 8.3
Receiver spurious emissions	–	-

1.3 MEASUREMENT SUMMARY / SIGNATURES

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   **Final Result**

OP-Mode	**Setup**	**FCC**	**IC**
Operating mode			
worst case	S03_3_AD01	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   **Final Result**

OP-Mode	**Setup**	**FCC**	**IC**
Radio Technology, Operating Frequency, Subband			
WLAN a, high, U-NII-1	S01_3_AA01	Performed	N/A
WLAN a, high, U-NII-2A	S01_3_AA01	Performed	N/A
WLAN a, high, U-NII-2C	S01_3_AA01	Performed	N/A
WLAN a, high, U-NII-3	S01_3_AA01	Performed	N/A
WLAN a, low, U-NII-1	S01_3_AA01	Performed	N/A
WLAN a, low, U-NII-2A	S01_3_AA01	Performed	N/A
WLAN a, low, U-NII-2C	S01_3_AA01	Performed	N/A
WLAN a, low, U-NII-3	S01_3_AA01	Performed	N/A
WLAN a, mid, U-NII-1	S01_3_AA01	Performed	N/A
WLAN a, mid, U-NII-2A	S01_3_AA01	Performed	N/A
WLAN a, mid, U-NII-2C	S01_3_AA01	Performed	N/A
WLAN a, mid, U-NII-3	S01_3_AA01	Performed	N/A
WLAN ac 20 MHz, high, U-NII-2C	S01_3_AA01	Performed	N/A
WLAN ac 40 MHz, high, U-NII-2C	S01_3_AA01	Performed	N/A
WLAN ac 80 MHz, high, U-NII-2C	S01_3_AA01	Performed	N/A
WLAN ac 80 MHz, low, U-NII-2C	S01_3_AA01	Performed	N/A
WLAN ac 80 MHz, mid, U-NII-2C	S01_3_AA01	Performed	N/A
WLAN ac 80 MHz, mid, U-NII-1	S01_3_AA01	Performed	N/A
WLAN ac 80 MHz, mid, U-NII-2A	S01_3_AA01	Performed	N/A
WLAN ac 80 MHz, mid, U-NII-3	S01_3_AA01	Performed	N/A
WLAN n 20 MHz, high, U-NII-1	S01_3_AA01	Performed	N/A
WLAN n 20 MHz, high, U-NII-2A	S01_3_AA01	Performed	N/A
WLAN n 20 MHz, high, U-NII-2C	S01_3_AA01	Performed	N/A
WLAN n 20 MHz, high, U-NII-3	S01_3_AA01	Performed	N/A
WLAN n 20 MHz, low, U-NII-1	S01_3_AA01	Performed	N/A
WLAN n 20 MHz, low, U-NII-2A	S01_3_AA01	Performed	N/A
WLAN n 20 MHz, low, U-NII-2C	S01_3_AA01	Performed	N/A
WLAN n 20 MHz, low, U-NII-3	S01_3_AA01	Performed	N/A
WLAN n 20 MHz, mid, U-NII-1	S01_3_AA01	Performed	N/A
WLAN n 20 MHz, mid, U-NII-2A	S01_3_AA01	Performed	N/A
WLAN n 20 MHz, mid, U-NII-2C	S01_3_AA01	Performed	N/A
WLAN n 20 MHz, mid, U-NII-3	S01_3_AA01	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　　**Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	FCC	IC
WLAN n 40 MHz, high, U-NII-1	S01_3_AA01	Performed	N/A
WLAN n 40 MHz, high, U-NII-2A	S01_3_AA01	Performed	N/A
WLAN n 40 MHz, high, U-NII-2C	S01_3_AA01	Performed	N/A
WLAN n 40 MHz, high, U-NII-3	S01_3_AA01	Performed	N/A
WLAN n 40 MHz, low, U-NII-1	S01_3_AA01	Performed	N/A
WLAN n 40 MHz, low, U-NII-2A	S01_3_AA01	Performed	N/A
WLAN n 40 MHz, low, U-NII-2C	S01_3_AA01	Performed	N/A
WLAN n 40 MHz, low, U-NII-3	S01_3_AA01	Performed	N/A
WLAN n 40 MHz, mid, U-NII-2C	S01_3_AA01	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　　**Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	FCC	IC
WLAN a, high, U-NII-3	S01_3_AA01	Passed	Passed
WLAN a, low, U-NII-3	S01_3_AA01	Passed	Passed
WLAN a, mid, U-NII-3	S01_3_AA01	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, high, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, low, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, mid, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, high, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, low, U-NII-3	S01_3_AA01	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　　**Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	FCC	IC
WLAN a, high, U-NII-1	S01_3_AA01	N/A	Performed
WLAN a, high, U-NII-2A	S01_3_AA01	N/A	Performed
WLAN a, high, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN a, high, U-NII-3	S01_3_AA01	N/A	Performed
WLAN a, low, U-NII-1	S01_3_AA01	N/A	Performed
WLAN a, low, U-NII-2A	S01_3_AA01	N/A	Performed
WLAN a, low, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN a, low, U-NII-3	S01_3_AA01	N/A	Performed
WLAN a, mid, U-NII-1	S01_3_AA01	N/A	Performed
WLAN a, mid, U-NII-2A	S01_3_AA01	N/A	Performed

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　　　**Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	**Setup**	**FCC**	**IC**
WLAN a, mid, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN a, mid, U-NII-3	S01_3_AA01	N/A	Performed
WLAN ac 20 MHz, high, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN ac 40 MHz, high, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN ac 80 MHz, high, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN ac 80 MHz, low, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN ac 80 MHz, mid, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN ac 80 MHz, mid, U-NII-1	S01_3_AA01	N/A	Performed
WLAN ac 80 MHz, mid, U-NII-2A	S01_3_AA01	N/A	Performed
WLAN ac 80 MHz, mid, U-NII-3	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, high, U-NII-1	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, high, U-NII-2A	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, high, U-NII-2A	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, high, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, high, U-NII-3	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, low, U-NII-1	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, low, U-NII-2A	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, low, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, low, U-NII-3	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, mid, U-NII-1	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, mid, U-NII-1	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, mid, U-NII-2A	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, mid, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, mid, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN n 20 MHz, mid, U-NII-3	S01_3_AA01	N/A	Performed
WLAN n 40 MHz, high, U-NII-1	S01_3_AA01	N/A	Performed
WLAN n 40 MHz, high, U-NII-2A	S01_3_AA01	N/A	Performed
WLAN n 40 MHz, high, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN n 40 MHz, high, U-NII-3	S01_3_AA01	N/A	Performed
WLAN n 40 MHz, low, U-NII-1	S01_3_AA01	N/A	Performed
WLAN n 40 MHz, low, U-NII-2A	S01_3_AA01	N/A	Performed
WLAN n 40 MHz, low, U-NII-2C	S01_3_AA01	N/A	Performed
WLAN n 40 MHz, low, U-NII-3	S01_3_AA01	N/A	Performed
WLAN n 40 MHz, mid, U-NII-2C	S01_3_AA01	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　　　**Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	**Setup**	**FCC**	**IC**
WLAN a, high, U-NII-1	S01_3_AA01	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

Final Result

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	FCC	IC
WLAN a, high, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN a, high, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN a, high, U-NII-3	S01_3_AA01	Passed	Passed
WLAN a, low, U-NII-1	S01_3_AA01	Passed	Passed
WLAN a, low, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN a, low, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN a, low, U-NII-3	S01_3_AA01	Passed	Passed
WLAN a, mid, U-NII-1	S01_3_AA01	Passed	Passed
WLAN a, mid, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN a, mid, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN a, mid, U-NII-3	S01_3_AA01	Passed	Passed
WLAN ac 20 MHz, high, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN ac 40 MHz, high, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN ac 80 MHz, high, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN ac 80 MHz, low, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-2C	S01_3_AA01	Passed	N/A
WLAN ac 80 MHz, mid, U-NII-1	S01_3_AA01	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, high, U-NII-1	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, high, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, high, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, high, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, low, U-NII-1	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, low, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, low, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, low, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, mid, U-NII-1	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, mid, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, mid, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, mid, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, high, U-NII-1	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, high, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, high, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, high, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, low, U-NII-1	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, low, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, low, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, low, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, mid, U-NII-2C	S01_3_AA01	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 **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	FCC	IC
WLAN a, high, U-NII-1	S01_3_AA01	Passed	Passed
WLAN a, high, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN a, high, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN a, high, U-NII-3	S01_3_AA01	Passed	Passed
WLAN a, low, U-NII-1	S01_3_AA01	Passed	Passed
WLAN a, low, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN a, low, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN a, low, U-NII-3	S01_3_AA01	Passed	Passed
WLAN a, mid, U-NII-1	S01_3_AA01	Passed	Passed
WLAN a, mid, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN a, mid, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN a, mid, U-NII-3	S01_3_AA01	Passed	Passed
WLAN ac 20 MHz, high, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN ac 40 MHz, high, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN ac 80 MHz, high, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN ac 80 MHz, low, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-2C	S01_3_AA01	Passed	N/A
WLAN ac 80 MHz, mid, U-NII-1	S01_3_AA01	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, high, U-NII-1	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, high, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, high, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, high, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, low, U-NII-1	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, low, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, low, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, low, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, mid, U-NII-1	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, mid, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, mid, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN n 20 MHz, mid, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, high, U-NII-1	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, high, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, high, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, high, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, low, U-NII-1	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, low, U-NII-2A	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, low, U-NII-2C	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, low, U-NII-3	S01_3_AA01	Passed	Passed
WLAN n 40 MHz, mid, U-NII-2C	S01_3_AA01	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   **Final Result**

OP-Mode Radio Technology, Operating Frequency, Measurement range, Subband	Setup	FCC	IC
WLAN a, high, 1GHz - 26GHz, U-NII-1	S02_3_AB01	Passed	Passed
WLAN a, high, 1GHz - 26GHz, U-NII-2A	S02_3_AB01	Passed	Passed
WLAN a, high, 1GHz - 26GHz, U-NII-2C	S02_3_AB01	Passed	Passed
WLAN a, high, 1GHz - 26GHz, U-NII-3	S02_3_AB01	Passed	Passed
WLAN a, high, 9kHz - 30MHz, U-NII-2C	S02_3_AB01	Passed	Passed
WLAN a, low, 1GHz - 26GHz, U-NII-1	S02_3_AB01	Passed	Passed
WLAN a, low, 1GHz - 26GHz, U-NII-2A	S02_3_AB01	Passed	Passed
WLAN a, low, 1GHz - 26GHz, U-NII-2C	S02_3_AB01	Passed	Passed
WLAN a, low, 1GHz - 26GHz, U-NII-3	S02_3_AB01	Passed	Passed
WLAN a, low, 9kHz - 30MHz, U-NII-1	S02_3_AB01	Passed	Passed
WLAN a, mid, 1GHz - 26GHz, U-NII-1	S02_3_AB01	Passed	Passed
WLAN a, mid, 1GHz - 26GHz, U-NII-2A	S02_3_AB01	Passed	Passed
WLAN a, mid, 1GHz - 26GHz, U-NII-2C	S02_3_AB01	Passed	Passed
WLAN a, mid, 1GHz - 26GHz, U-NII-3	S02_3_AB01	Passed	Passed
WLAN a, mid, 26GHz - 40GHz, U-NII-1	S02_3_AA01	Passed	Passed
WLAN a, mid, 26GHz - 40GHz, U-NII-2A	S02_3_AA01	Passed	Passed
WLAN a, mid, 26GHz - 40GHz, U-NII-2C	S02_3_AA01	Passed	Passed
WLAN a, mid, 26GHz - 40GHz, U-NII-3	S02_3_AA01	Passed	Passed
WLAN a, mid, 30MHz - 1GHz, U-NII-1	S02_3_AC01	Passed	Passed
WLAN a, mid, 30MHz - 1GHz, U-NII-2A	S02_3_AC01	Passed	Passed
WLAN a, mid, 30MHz - 1GHz, U-NII-2C	S02_3_AC01	Passed	Passed
WLAN a, mid, 30MHz - 1GHz, U-NII-3	S02_3_AC01	Passed	Passed
WLAN ac 80 MHz, high, 1GHz - 26GHz, U-NII-2C Remark: Radiated only BE tested	S02_3_AC01	Failed	Failed
WLAN ac 80 MHz, low, 1GHz - 26GHz, U-NII-2C Remark: Radiated only BE tested	S02_3_AC01	Passed	Passed
WLAN ac 80 MHz, mid, 1GHz - 26GHz, U-NII-1 Remark: Radiated only BE tested	S02_3_AC01	Passed	Passed
WLAN ac 80 MHz, mid, 1GHz - 26GHz, U-NII-2A Remark: Radiated only BE tested	S02_3_AC01	Passed	Passed
WLAN ac 80 MHz, mid, 1GHz - 26GHz, U-NII-3 Remark: Radiated only BE tested	S02_3_AC01	Passed	Passed
WLAN n 20 MHz, high, 1GHz - 26GHz, U-NII-1 Remark: Radiated 1-18 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, high, 1GHz - 26GHz, U-NII-2A Remark: Radiated 1-18 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, high, 1GHz - 26GHz, U-NII-2C Remark: Radiated 1-18 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, high, 1GHz - 26GHz, U-NII-3 Remark: Radiated 1-18 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, low, 1GHz - 26GHz, U-NII-1 Remark: Radiated 1-18 GHz tested	S02_3_AB01	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　　**Final Result**

OP-Mode Radio Technology, Operating Frequency, Measurement range, Subband	Setup	FCC	IC
WLAN n 20 MHz, low, 1GHz - 26GHz, U-NII-2A Remark: Radiated 1-18 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, low, 1GHz - 26GHz, U-NII-2C Remark: Radiated 1-18 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, low, 1GHz - 26GHz, U-NII-3 Remark: Radiated 1-18 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, mid, 1GHz - 26GHz, U-NII-1 Remark: Radiated 1-18 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, mid, 1GHz - 26GHz, U-NII-2A Remark: Radiated 1-18 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, mid, 1GHz - 26GHz, U-NII-2C Remark: Radiated 1-18 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, mid, 1GHz - 26GHz, U-NII-3 Remark: Radiated 1-18 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, high, 1GHz - 26GHz, U-NII-1 Remark: Radiated 4.5-12.7 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, high, 1GHz - 26GHz, U-NII-2A Remark: Radiated 4.5-12.7 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, high, 1GHz - 26GHz, U-NII-2C Remark: Radiated 4.5-12.7 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, high, 1GHz - 26GHz, U-NII-3 Remark: Radiated 4.5-12.7 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, low, 1GHz - 26GHz, U-NII-1 Remark: Radiated 4.5-12.7 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, low, 1GHz - 26GHz, U-NII-2A Remark: Radiated 4.5-12.7 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, low, 1GHz - 26GHz, U-NII-2C Remark: Radiated 4.5-12.7 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, low, 1GHz - 26GHz, U-NII-3 Remark: Radiated 4.5-12.7 GHz tested	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, mid, 1GHz - 26GHz, U-NII-2C Remark: Radiated 4.5-12.7 GHz tested	S02_3_AB01	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　　**Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	FCC	IC
WLAN a, high, U-NII-2A	S02_3_AB01	Passed	Passed
WLAN a, high, U-NII-2C	S02_3_AB01	Passed	Passed
WLAN a, high, U-NII-3	S02_3_AB01	Passed	Passed
WLAN a, low, U-NII-1	S02_3_AB01	Passed	Passed
WLAN a, low, U-NII-2C	S02_3_AB01	Passed	Passed
WLAN a, low, U-NII-3	S02_3_AB01	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   **Final Result**

OP-Mode Radio Technology, Operating Frequency, Subband	Setup	FCC	IC
WLAN ac 80 MHz, high, U-NII-2C	S02_3_AC01	Passed	Passed
WLAN ac 80 MHz, low, U-NII-2C	S02_3_AC01	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-1	S02_3_AC01	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-2A	S02_3_AC01	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-3	S02_3_AC01	Passed	Passed
WLAN n 20 MHz, high, U-NII-2A	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, high, U-NII-2C	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, high, U-NII-3	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, low, U-NII-1	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, low, U-NII-2C	S02_3_AB01	Passed	Passed
WLAN n 20 MHz, low, U-NII-3	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, high, U-NII-2A	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, high, U-NII-2C	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, high, U-NII-3	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, low, U-NII-1	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, low, U-NII-2C	S02_3_AB01	Passed	Passed
WLAN n 40 MHz, low, U-NII-3	S02_3_AB01	Passed	Passed

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

Dynamic Frequency Selection

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

OP-Mode	Setup	FCC	IC
WLAN ac 80 MHz normal connection	S01_3_AA01	Passed	Passed
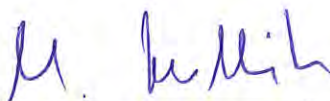
N/A: Not applicable
N/P: Not performed

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

(responsible for accreditation scope) Dipl.-Ing. Marco Kullik	(responsible for testing and report) Dipl.-Ing. Daniel Gall

2 ADMINISTRATIVE DATA

2.1 TESTING LABORATORY

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

This facility has been fully described in a report submitted to the ISED and accepted under the registration number: Site# 3699A-1.

The test facility is also accredited by the following accreditation organisation:

Laboratory accreditation no:	DAkkS D-PL-12140-01-00
FCC Designation Number:	DE0015
FCC Test Firm Registration:	929146
Responsible for accreditation scope:	Dipl.-Ing. Marco Kullik
Report Template Version:	2018-01-10

2.2 PROJECT DATA

Responsible for testing and report:	Dipl.-Ing. Daniel Gall
Employees who performed the tests:	documented internally at 7Layers
Date of Report:	2018-05-18
Testing Period:	2017-11-08 to 2018-02-26

2.3 APPLICANT DATA

Company Name:	u-blox AG
Address:	Zürcherstrasse 68 8800 Thalwil Switzerland
Contact Person:	Mr. Filip Kruzela

2.4 MANUFACTURER DATA

Company Name:	Please see applicant data
Address:	
Contact Person:	

3   TEST OBJECT DATA

3.1   GENERAL EUT DESCRIPTION

Kind of Device product description	The EUT is a module supporting WLAN in the 2.4 GHz and 5 GHz bands as well as Bluetooth (BT) 4.2 including Bluetooth Low Energy (BT LE)
Product name	JODY-W164-03A
Type	JODY-W164-03A
Declared EUT data by the supplier	
Voltage Type	DC
Voltage Level	3.3 V
Tested Modulation Type	WLAN: Mode a: OFDM Modulation, 6Mbps 　　　　Mode n: OFDM Modulation, MCS 0 (20 / 40 MHz) 　　　　Mode ac: OFDM Modulation, MCS 0 (20 / 40 / 80 MHz)
Specific product description	The JODY-W1 is a compact automotive grade module that provides Wi-Fi, Bluetooth, and Bluetooth low energy communication. The JODY-W164-03A module can be operated in the following modes: Wi-Fi 2x2 MIMO 802.11n/ac in the 5 GHz band Wi-Fi 1x1 802.11ac in 2.4 / 5 GHz real simultaneous dual band Dual-mode Bluetooth v4.2, can be operated fully simultaneous with both the Wi-Fi modes It is equipped with two antenna pins connected to two SMA antenna connectors on the evaluation board. Maximum supported band width in 2.4 GHz WLAN mode: 20 MHz, 5 GHz WLAN mode: 80 MHz
Ports of the device	DC Power Supply Antenna ports Signal ports
Antennas	The EUT has two 50 Ohm antenna ports. No antennas are provided, an antenna gain of 2dBi is assumed for evaluation of test results.
Special software used for testing	The test modes were set using scripts that were run on a board computer with linux operating system provided by the applicant.
DFS capability	Slave without radar detection

The main components of the EUT are listed and described in chapter 3.2 EUT Main components.

3.2 EUT MAIN COMPONENTS

Sample Name	Sample Code	Description
EUT 3A	DE1015081aa01	Module on evaluation board
Sample Parameter	**Value**	
Serial No.	001	
HW Version	01	
SW Version	P8.1	
Comment		

Sample Name	Sample Code	Description
EUT 3B	DE1015081ab01	Module on evaluation board
Sample Parameter	**Value**	
Serial No.	002	
HW Version	01	
SW Version	P8.1	
Comment		

Sample Name	Sample Code	Description
EUT 3C	DE1015081ac01	Module on evaluation board
Sample Parameter	**Value**	
Serial No.	003	
HW Version	01	
SW Version	P8.1	
Comment		

Sample Name	Sample Code	Description
EUT 3D	DE1015081ad01	Module on evaluation board
Sample Parameter	**Value**	
Serial No.	004	
HW Version	01	
SW Version	P8.1	
Comment		

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

3.3 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
Evaluation Board	UBLOX, REV. B, - , -	Board the EUT is mounted to, providing ports to the EUT (DC, Antennas, wired communication)

3.4 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, HW, SW, S/N)	Description
AC/DC power supply (115 V 60 Hz)	PeakTech, -, -, 081062045	PeakTech 6005D
DFS Master	UBLOX Emmy-W163, 03, 15.68.7.p62-15.29.7.p62, 63200013740100	DFS Master for DFS tests, FCC ID: XPYEMMYW163, IC:8595A-EMMYW163

3.5 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_3_AA01	EUT 3A, Evaluation Board	Representative setup Conducted testing
S02_3_AB01	EUT 3B,	Representative setup Radiated Emissions
S02_3_AC01	EUT 3C,	Representative setup Radiated Emissions
S03_3_AD01	EUT 3D, Evaluation Board, AC/DC power supply (115 V 60 Hz)	Representative setup AC conducted emissions test
S04_3_AA01	EUT 3A, Evaluation Board, DFS Master	DFS test setup

3.6 TEST CHANNELS AND POWER SETTING

Test Channels:

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	100/104[2]	116	140/144[1]	149	157	165	**Ch.-No.**
5180	5200	5240	5260	5300	5320	5500/5520	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[2]	110	134/142[1]	151	-	159	**Ch.-No.**
5190	-	5230	5270	-	5310	5510	5550	5690/5710	5755	-	5795	**MHz**
low	mid	high	low	mid	high	low	mid	high	low	mid	high	**80 MHz**
-	42	-	-	58	-	106	122	138	-	155	-	**Ch.-No.**
-	5210	-	-	5290	-	5530	5610	5690	-	5775	-	**MHz**

1)The lower channel is applicable for a/n mode, the higher channel for ac mode ("straddle" channels acc. KDB 789033)
2)Since the power of the second lowest channel is higher than the power of the lowest channel, the second lowest was also tested for some test cases.

Power Levels:

The power levels to be used were reduced at the end of testing by the applicant. Since the higher power is worst case, the tests were not repeated with the lower power settings.

Power Setting in EUT Script used for all tests except Band edge conducted (not to be used in final product):

20 MHz Channel

Channel No.	36	40	44	48	52	56	60	64	100	104	108	112	116	120	124	128	132	136	140	144	149	153	157	161	165
Channel freq. [MHz]	5180	5200	5220	5240	5260	5280	5300	5320	5500	5520	5540	5560	5580	5600	5620	5640	5660	5680	5700	5720	5745	5765	5785	5805	5825
WLAN mode a	13	15	15	15	15	15	15	13	13	15	15	15	15	15	15	15	15	15	15	17	17	17	17	17	17
WLAN mode n	13	15	15	15	15	15	15	13	13	15	15	15	15	15	15	15	15	15	15	17	17	17	17	17	17
WLAN mode ac	13	15	15	15	15	15	15	13	13	15	15	15	15	15	15	15	15	15	15	17	17	17	17	17	17

40 MHz Channel

Channel No.	38	46	54	62	102	110	118	126	134	142	151	159
Channel freq. [MHz]	5190	5230	5270	5310	5510	5550	5590	5630	5670	5710	5755	5795
WLAN mode n	10	13	13	12	12	15	15	15	15	15	17	17
WLAN mode ac	10	13	13	12	12	15	15	15	15	15	17	17

80 MHz Channel

Channel No.	42	58	106	122	138	155
Channel freq. [MHz]	5210	5290	5530	5610	5690	5775
WLAN mode ac	10	10	12	12	15	17

Power Setting in EUT Script used for Band edge conducted (power levels of final product):

20 MHz Channel

Channel No.	36	40	44	48	52	56	60	64	100	104	108	112	116	120	124	128	132	136	140	144	149	153	157	161	165
Channel freq. [MHz]	5180	5200	5220	5240	5260	5280	5300	5320	5500	5520	5540	5560	5580	5600	5620	5640	5660	5680	5700	5720	5745	5765	5785	5805	5825
WLAN mode a	12	14	14	14	14	14	14	12	11	14	14	14	14	14	14	14	14	14	14	14	17	17	17	17	17
WLAN mode n	12	14	14	14	14	14	14	12	11	14	14	14	14	14	14	14	14	14	14	14	17	17	17	17	17
WLAN mode ac	12	14	14	14	14	14	14	12	11	14	14	14	14	14	14	14	14	14	14	14	17	17	17	17	17

40 MHz Channel

Channel No.	38	46	54	62	102	110	118	126	134	142	151	159
Channel freq. [MHz]	5190	5230	5270	5310	5510	5550	5590	5630	5670	5710	5755	5795
WLAN mode n	10	13	13	12	10	14	14	14	14	14	17	17
WLAN mode ac	10	13	13	12	10	14	14	14	14	14	17	17

80 MHz Channel

Channel No.	42	58	106	122	138	155
Channel freq. [MHz]	5210	5290	5530	5610	5690	5775
WLAN mode ac	10	10	9	12	12	15

3.7 PRODUCT LABELLING

3.7.1 FCC ID LABEL

Please refer to the documentation of the applicant.

3.7.2 LOCATION OF THE LABEL ON THE EUT

Please refer to the documentation of the applicant.

4 TEST RESULTS

4.1 AC CONDUCTED EMISSIONS

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10

4.1.1 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.

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
- 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.

4.1.2 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

4.1.3 TEST PROTOCOL

Temperature: 24 °C
Air Pressure: 986 hPa
Humidity: 37 %

Power line	Frequency [MHz]	Measured value QP [dBµV]	Measured value AV [dBµV]	QP Limit [dBµV]	AV Limit [dBµV]	Margin QP [dB]	Margin AV [dB]
N	-	-	-	-	-	> 20	> 20
L	-	-	-	-	-	> 20	> 20

Remark: Measured at 120 V 60 Hz input of lab power supply, WLAN 5 GHz, CH 48

4.1.4 MEASUREMENT PLOT (SHOWING THE HIGHEST VALUE, "WORST CASE")

Core 0:
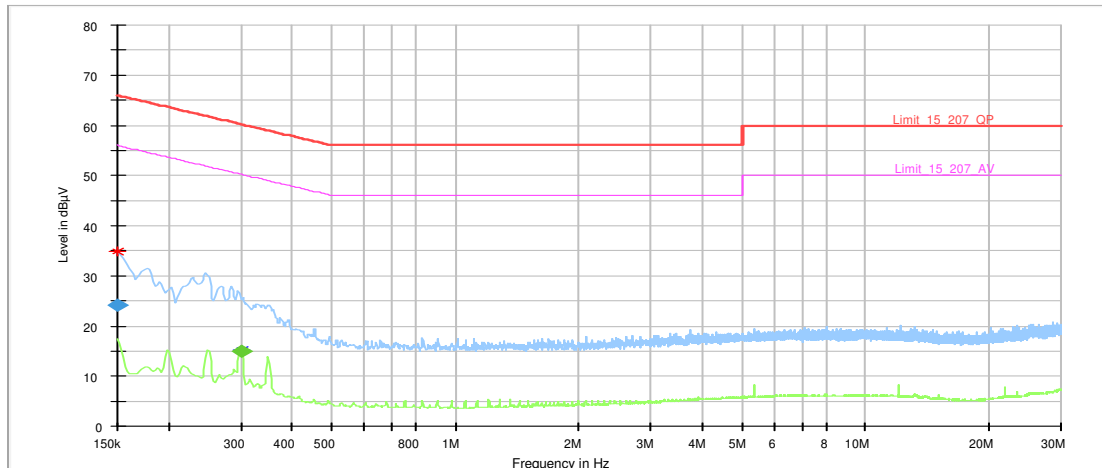
Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.150000	24.06	---	66.00	41.94	1000.0	9.000	L1	FLO	10.1
0.300750	---	15.06	50.22	35.16	1000.0	9.000	N	FLO	10.1

Core 1:

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.154500	21.64	---	65.75	44.11	1000.0	9.000	N	GND	10.1
0.350250	---	13.64	48.96	35.32	1000.0	9.000	N	FLO	10.1

4.1.5 TEST EQUIPMENT USED
- Conducted Emissions FCC

4.2   26 DB BANDWIDTH

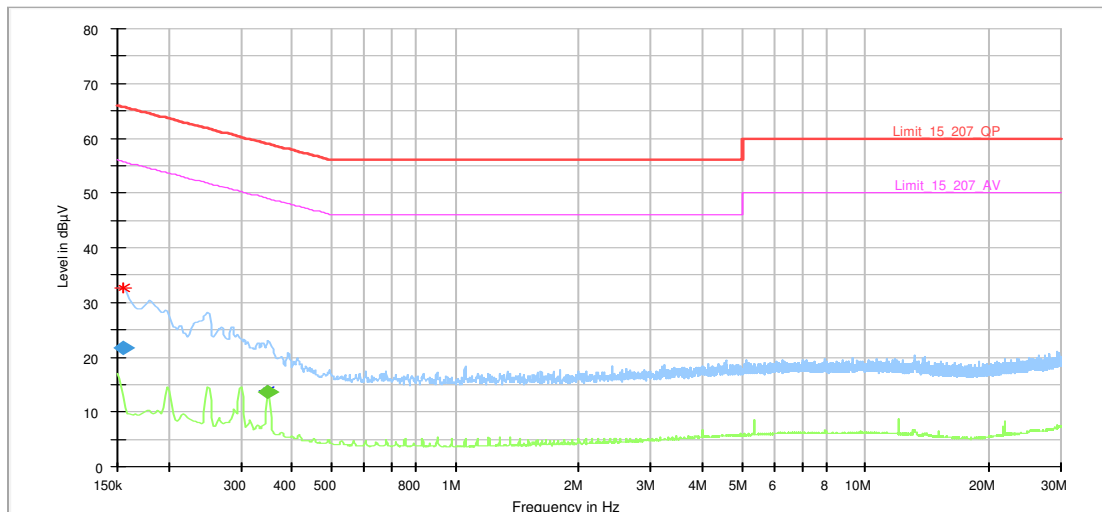Standard   **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10

4.2.1   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 spectrum analyzer via a short coax cable with a known loss.

Analyzer settings:
- See plots

4.2.2   TEST REQUIREMENTS / LIMITS

FCC Part 15, Subpart E, §15.403 (i)
There exist no applicable limits for the U-NII subbands 1, 2A and 2C. The test was performed to determine the limits for the "Maximum Conducted Output Power" test case. Therefore no result was applied.

4.2.3 TEST PROTOCOL

Ambient temperature: 25 °C
Air Pressure: 1002 hPa
Humidity: 35 %

Radio Technology	Operating Frequency	Sub-band	26 dB Bandwidth Core 0 [MHz]	26 dB Bandwidth Core 1 [MHz]
WLAN a	low	U-NII-1	21.4	**21.2**
WLAN a	mid	U-NII-1	23.6	21.5
WLAN a	high	U-NII-1	23.7	23.0
WLAN a	low	U-NII-2A	24.5	22.8
WLAN a	mid	U-NII-2A	22.0	21.8
WLAN a	high	U-NII-2A	21.5	21.5
WLAN a	low (5500 MHz)	U-NII-2C	25.1	21.4
WLAN a	low (5520 MHz)	U-NII-2C	24.9	21.6
WLAN a	mid	U-NII-2C	28.1	21.6
WLAN a	high	U-NII-2C	28.2	21.9
WLAN a	low	U-NII-3	36.9	32.2
WLAN a	mid	U-NII-3	35.6	32.3
WLAN a	high	U-NII-3	35.6	32.8
WLAN n 20 MHz	low	U-NII-1	21.7	21.7
WLAN n 20 MHz	mid	U-NII-1	22.6	25.0
WLAN n 20 MHz	high	U-NII-1	26.1	22.8
WLAN n 20 MHz	low	U-NII-2A	25.8	24.3
WLAN n 20 MHz	mid	U-NII-2A	26.5	24.8
WLAN n 20 MHz	high	U-NII-2A	22.4	22.2
WLAN n 20 MHz	low (5500 MHz)	U-NII-2C	25.5	22.4
WLAN n 20 MHz	low (5520 MHz)	U-NII-2C	31.1	27.1
WLAN n 20 MHz	mid	U-NII-2C	30.2	24.7
WLAN n 20 MHz	high	U-NII-2C	28.6	25.8
WLAN n 20 MHz	low	U-NII-3	41.2	34.9
WLAN n 20 MHz	mid	U-NII-3	**41.3**	35.4
WLAN n 20 MHz	high	U-NII-3	40.8	36.7
WLAN n 40 MHz	low	U-NII-1	**40.3**	40.3
WLAN n 40 MHz	high	U-NII-1	40.6	40.5
WLAN n 40 MHz	low	U-NII-2A	40.4	40.6
WLAN n 40 MHz	high	U-NII-2A	40.8	47.0
WLAN n 40 MHz	low	U-NII-2C	40.6	46.7
WLAN n 40 MHz	mid	U-NII-2C	68.6	50.4
WLAN n 40 MHz	high	U-NII-2C	56.6	48.6
WLAN n 40 MHz	low	U-NII-3	81.8	74.2
WLAN n 40 MHz	high	U-NII-3	**82.6**	74.6
WLAN ac 20 MHz	high	U-NII-2C	33.6	26.0
WLAN ac 40 MHz	high	U-NII-2C	56.4	51.5
WLAN ac 80 MHz	mid	U-NII-1	**82.1**	82.1
WLAN ac 80 MHz	mid	U-NII-2A	86.9	86.9
WLAN ac 80 MHz	low	U-NII-2C	83.3	82.6
WLAN ac 80 MHz	mid	U-NII-2C	83.1	86.4
WLAN ac 80 MHz	high	U-NII-2C	105.0	98.6
WLAN ac 80 MHz	mid	U-NII-3	**160.1**	132.3

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

4.2.4 MEASUREMENT PLOT (SHOWING HIGHEST AND LOWEST MEASURED BANDWIDTH PER SET BANDWIDTH)

Radio Technology = WLAN a, Band = U-NII-1, Operating Frequency = low, Core 1
(S01_3_AA01)
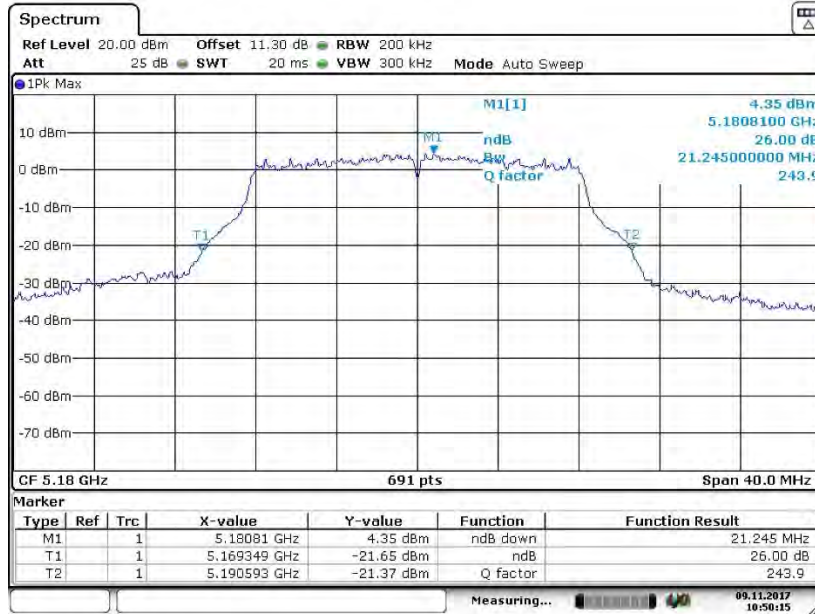
Date: 9.NOV.2017 10:50:15

Radio Technology = WLAN n20, Band = U-NII-3, Operating Frequency = mid, Core 0
(S01_3_AA01)
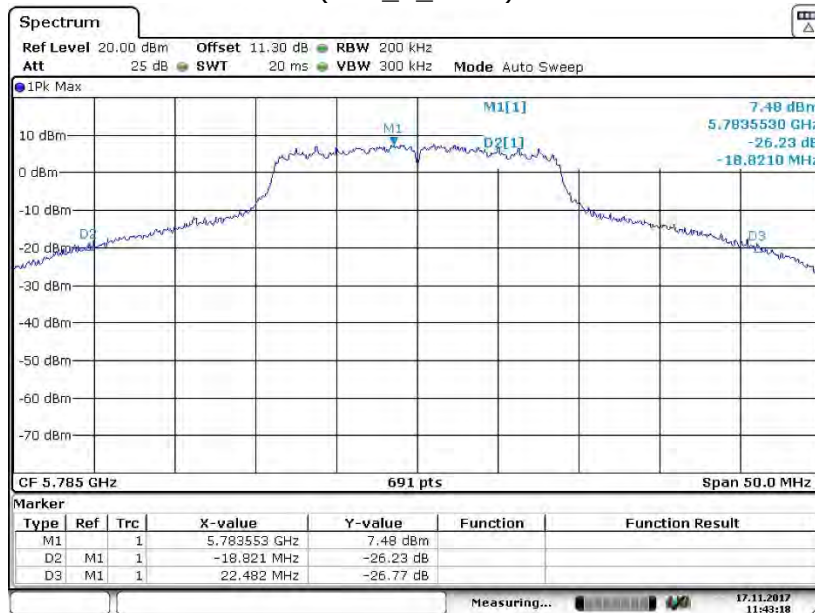
Date: 17.NOV.2017 11:43:18

Radio Technology = WLAN n40, Band = U-NII-1, Operating Frequency = low, Core 0 (S01_3_AA01)
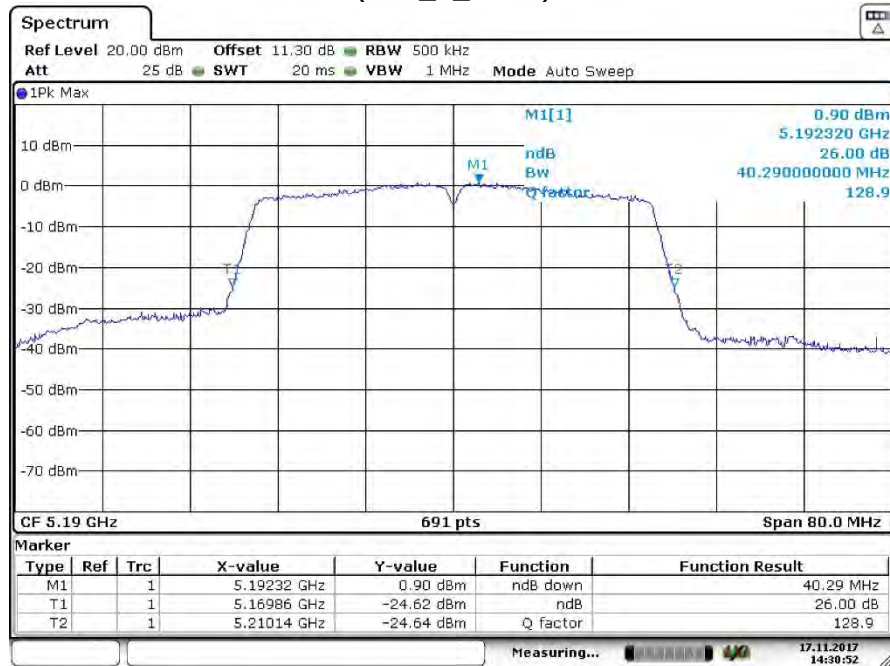
Date: 17.NOV.2017 14:30:52

Radio Technology = WLAN n40, Band = U-NII-3, Operating Frequency = high, Core 0 (S01_3_AA01)
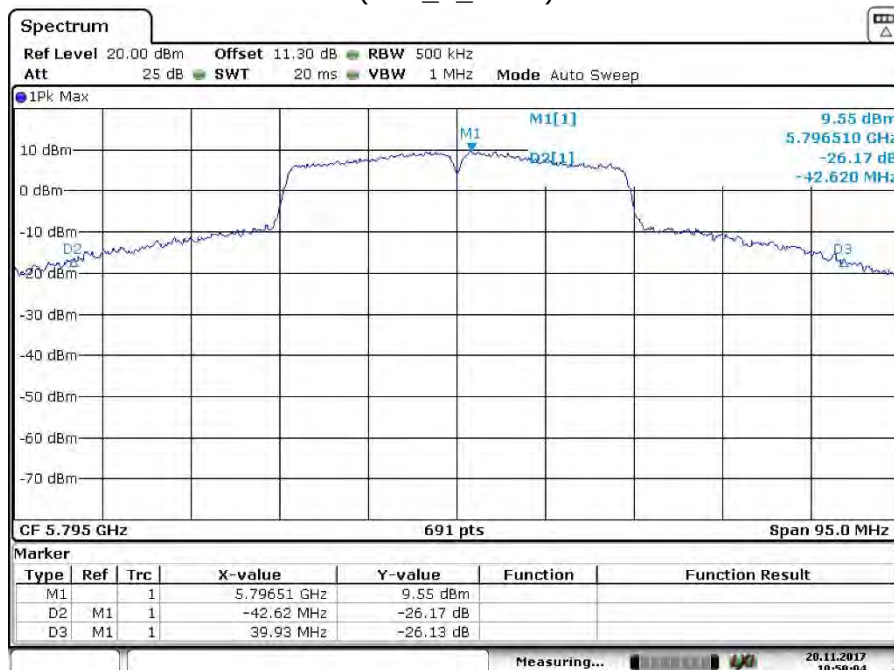
Date: 20.NOV.2017 10:50:04

Radio Technology = WLAN ac80, Band = U-NII-1, Operating Frequency = mid, Core 0 (S01_3_AA01)

Date: 26.FEB.2018 15:06:34

Radio Technology = WLAN ac80, Band = U-NII-3, Operating Frequency = mid, Core 0 (S01_3_AA01)
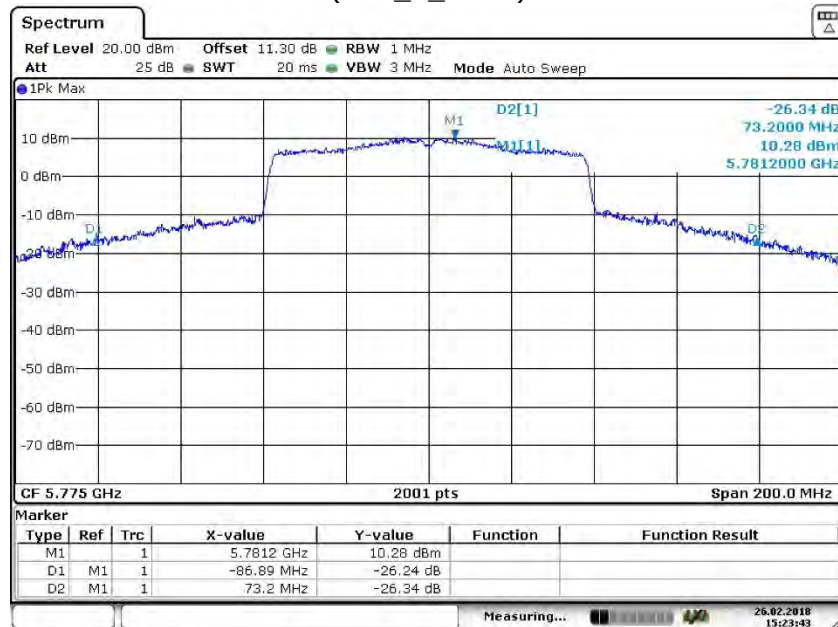
Date: 26.FEB.2018 15:23:43

4.2.5 TEST EQUIPMENT USED
- R&S TS8997

4.3 6 DB BANDWIDTH

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10

4.3.1 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 spectrum analyzer via a short coax cable with a known loss.

Analyzer settings:
- Resolution Bandwidth (RBW): 100 kHz
- Video Bandwidth (VBW): 300 kHz
- Span: 30 / 60 / 100 MHz (for 20 / 40 / 80 MHz nominal bandwidth)
- Trace: Maxhold
- Sweeptime: 37.9 / 75.8 / 113.8 µs
- Detector: Peak

4.3.2 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.

4.3.3 TEST PROTOCOL

Ambient temperature: 25 °C
Air Pressure: 1002 hPa
Humidity: 35 %

Radio Technology	Operating Frequency	Sub-band	6 dB Bandwidth Core 0 [MHz]	Limit [MHz]	Margin [MHz]	6 dB Bandwidth Core 1 [MHz]	Limit [MHz]	Margin [MHz]
WLAN a	low	U-NII-3	16.4	0.5	15.9	**16.4**	0.5	15.9
WLAN a	mid	U-NII-3	**16.3**	0.5	15.8	16.4	0.5	15.9
WLAN a	high	U-NII-3	16.4	0.5	15.9	16.4	0.5	15.9
WLAN n 20 MHz	low	U-NII-3	17.6	0.5	17.1	17.6	0.5	17.1
WLAN n 20 MHz	mid	U-NII-3	17.6	0.5	17.1	17.6	0.5	17.1
WLAN n 20 MHz	high	U-NII-3	17.6	0.5	17.1	17.6	0.5	17.1
WLAN n 40 MHz	low	U-NII-3	36.3	0.5	35.8	36.3	0.5	35.8
WLAN n 40 MHz	high	U-NII-3	36.2	0.5	35.7	36.2	0.5	35.7
WLAN ac 80 MHz	mid	U-NII-3	75.7	0.5	75.2	76.0	0.5	75.5

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

4.3.4 MEASUREMENT PLOT (SHOWING THE HIGHEST VALUE, "WORST CASE")

Radio Technology = WLAN a, Operating Frequency = mid, Core 0
(S01_3_AA01)
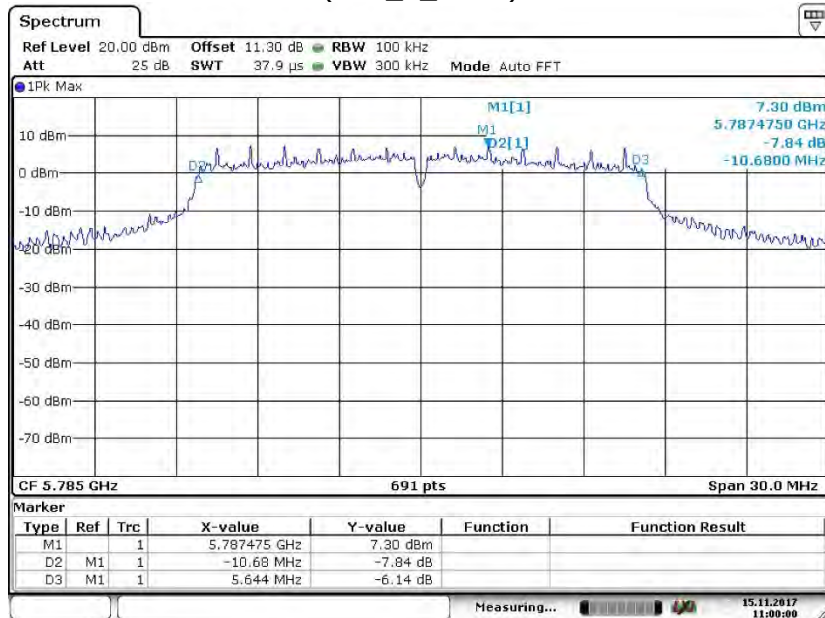
Date: 15.NOV.2017 11:00:00

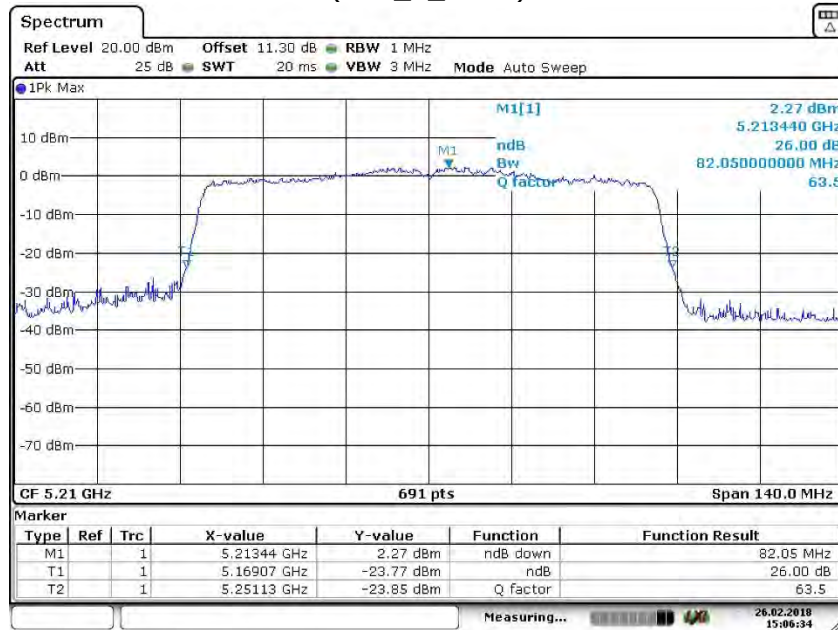### Radio Technology = WLAN a, Operating Frequency = low, Core 1
(S01_3_AA01)
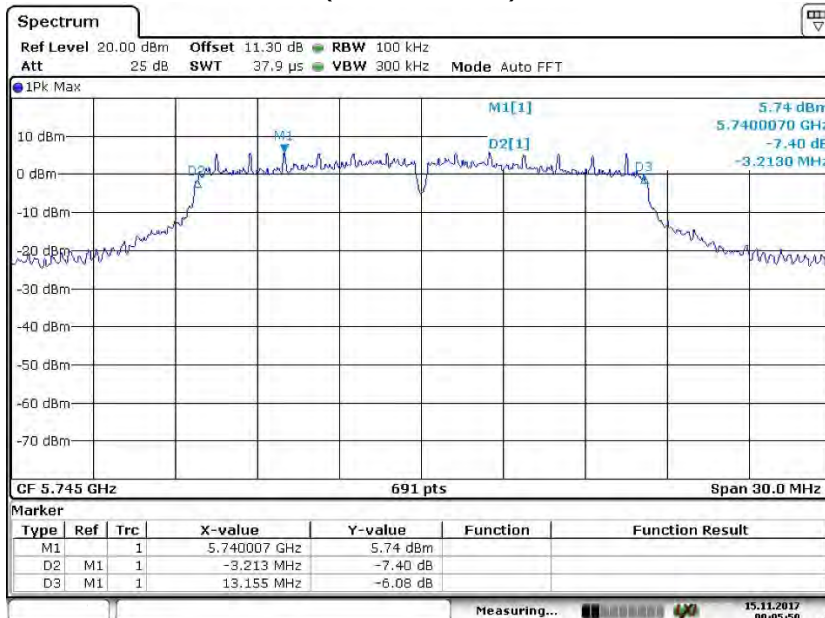
Date: 15.NOV.2017 09:05:59

4.3.5 TEST EQUIPMENT USED
- R&S TS8997

4.4 99 % BANDWIDTH

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10

4.4.1 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 spectrum analyzer via a short coax cable with a known loss.

Analyzer settings:
- Resolution Bandwidth (RBW): approx. ≥ 1 % of the span, but not below
- Video Bandwidth (VBW): ≥ 3 times the RBW
- Span: 40 / 80 / 160 MHz (for 20 / 40 / 80 MHz nominal bandwidth)
- Trace: Maxhold
- Sweeps: 2000
- Sweeptime: 20 ms
- Detector: Sample

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

4.4.2 TEST REQUIREMENTS / LIMITS

No applicable limit:

4.4.3 TEST PROTOCOL

Ambient temperature: 25 °C
Air Pressure: 1002 hPa
Humidity: 35 %

Radio Technology	Operating Frequency	Subband	99% Bandwidth Core 0 [MHz]	99% Bandwidth Core 1 [MHz]
WLAN a	low	U-NII-1	17.5	17.6
WLAN a	mid	U-NII-1	17.7	17.7
WLAN a	high	U-NII-1	17.7	17.7
WLAN a	low	U-NII-2A	17.9	17.8
WLAN a	mid	U-NII-2A	17.9	17.8
WLAN a	high	U-NII-2A	17.6	17.6
WLAN a	low (5500 MHz)	U-NII-2C	17.9	17.7
WLAN a	low (5520 MHz)	U-NII-2C	17.9	17.8
WLAN a	mid	U-NII-2C	18.2	17.8
WLAN a	high	U-NII-2C	18.2	17.8
WLAN a	low	U-NII-3	20.6	18.6
WLAN a	mid	U-NII-3	20.7	18.6
WLAN a	high	U-NII-3	21.5	18.9
WLAN n 20 MHz	low	U-NII-1	18.6	18.6
WLAN n 20 MHz	mid	U-NII-1	18.6	18.7
WLAN n 20 MHz	high	U-NII-1	18.6	18.7
WLAN n 20 MHz	low	U-NII-2A	18.8	18.8
WLAN n 20 MHz	mid	U-NII-2A	18.8	18.7
WLAN n 20 MHz	high	U-NII-2A	18.7	18.7
WLAN n 20 MHz	low (5500 MHz)	U-NII-2C	18.8	18.6
WLAN n 20 MHz	low (5520 MHz)	U-NII-2C	18.8	18.9
WLAN n 20 MHz	mid	U-NII-2C	19.0	18.9
WLAN n 20 MHz	high	U-NII-2C	18.9	18.8
WLAN n 20 MHz	low	U-NII-3	21.2	19.5
WLAN n 20 MHz	mid	U-NII-3	21.0	19.3
WLAN n 20 MHz	high	U-NII-3	**22.3**	**19.6**
WLAN n 40 MHz	low	U-NII-1	36.4	36.4
WLAN n 40 MHz	high	U-NII-1	36.4	36.6
WLAN n 40 MHz	low	U-NII-2A	36.5	36.5
WLAN n 40 MHz	high	U-NII-2A	36.5	36.5
WLAN n 40 MHz	low (5510 MHz)	U-NII-2C	36.5	36.6
WLAN n 40 MHz	low (5530 MHz)	U-NII-2C	36.7	36.7
WLAN n 40 MHz	mid	U-NII-2C	36.7	36.7
WLAN n 40 MHz	high	U-NII-2C	36.7	36.7
WLAN n 40 MHz	low	U-NII-3	39.1	37.2
WLAN n 40 MHz	high	U-NII-3	**39.5**	**37.2**
WLAN ac 20 MHz	high	U-NII-2C	18.8	18.8
WLAN ac 40 MHz	high	U-NII-2C	36.7	36.6
WLAN ac 80 MHz	mid	U-NII-1	75.7	75.7
WLAN ac 80 MHz	mid	U-NII-2A	75.7	75.9
WLAN ac 80 MHz	low	U-NII-2C	75.9	75.9
WLAN ac 80 MHz	mid	U-NII-2C	75.9	75.9
WLAN ac 80 MHz	high	U-NII-2C	76.2	76.2
WLAN ac 80 MHz	mid	U-NII-3	**77.3**	**76.4**

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

4.4.4 MEASUREMENT PLOT (SHOWING HIGHEST VALUE FOR EACH BW)

Radio Technology = WLAN n 20 MHz, Operating Frequency = high, Subband U-NII-3
(S01_3_AA01)
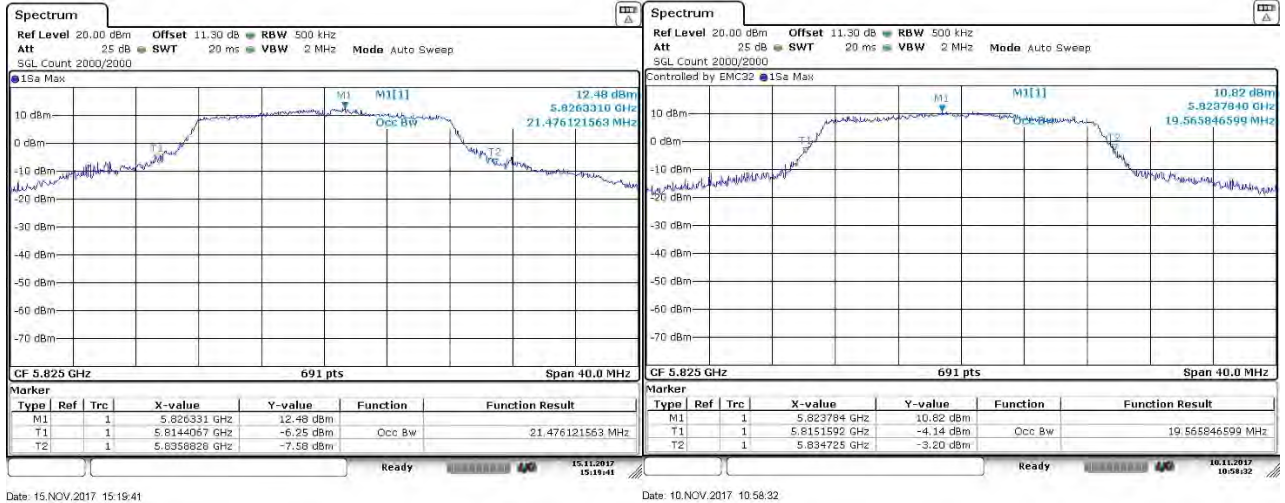
Core 0

Core 1

Radio Technology = WLAN n 40 MHz, Operating Frequency = high, Subband U-NII-3
(S01_3_AA01)
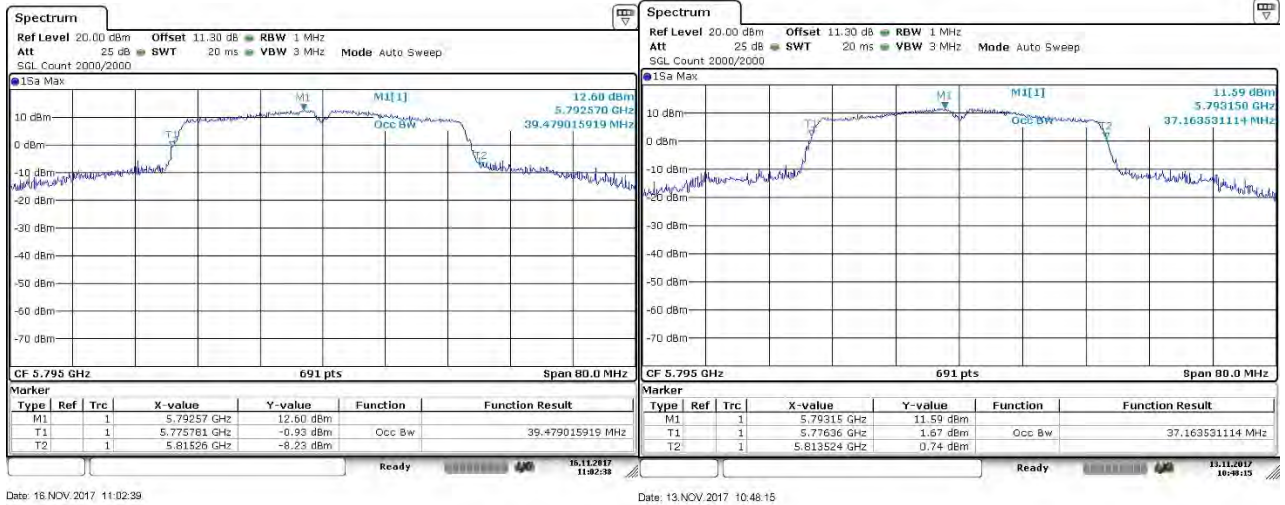
Core 0

Core 1

Radio Technology = WLAN ac 80 MHz, Operating Frequency = high, Subband U-NII-3 (S01_3_AA01)
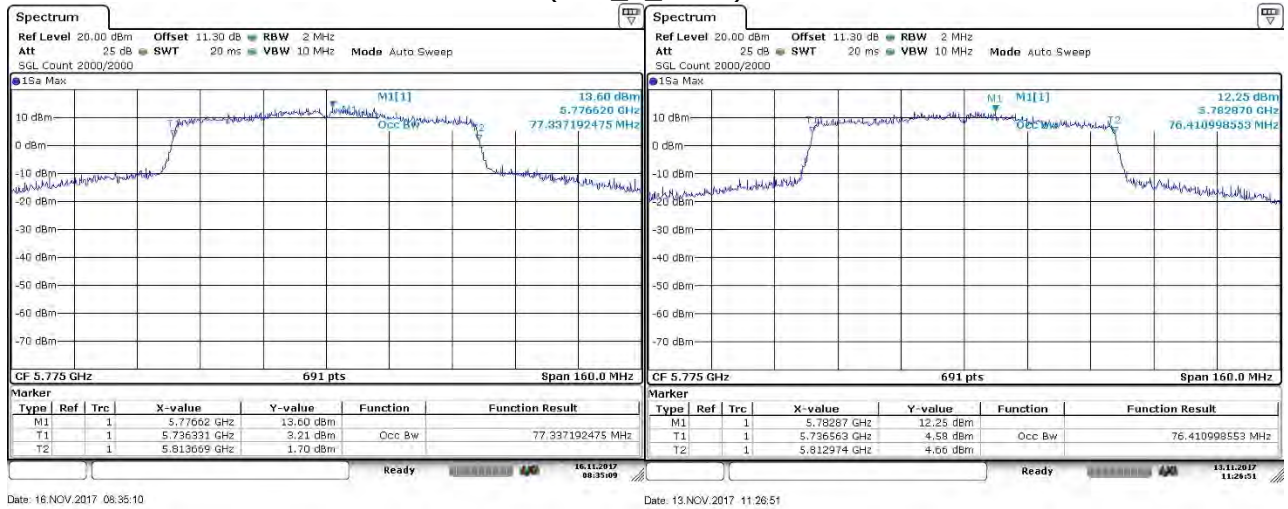
Core 0   Core 1

4.4.5   TEST EQUIPMENT USED
-   R&S TS8997

4.5 MAXIMUM CONDUCTED OUTPUT POWER

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10

4.5.1 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. The reference level of the spectrum analyzer was set higher than the output power of the EUT.

The EUT was connected to the spectrum analyzer via a short coax cable with a known loss.

Analyzer settings:
- Resolution Bandwidth (RBW): 1 MHz
- Video Bandwidth (VBW): 3 MHz
- Trace: Average, RMS power averaging mode
- Sweeps: 1000
- Sweeptime: 20 ms
- Detector: RMS
- Trigger: gated mode

The channel power function of the spectrum analyser was used (Used channel bandwidth = nominal bandwidth)

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**.

4.5.2 TEST REQUIREMENTS / LIMITS

A) FCC
For systems using digital modulation techniques in the 5.15 – 5.25 GHz bands:
§15.407 (a) (1)
Limit: 50 mW (17 dBm) or 4 dBm + 10 log (26 dB bandwidth/MHz) whatever is the lesser.
FCC ET Docket No. 13-49, FIRST REPORT AND ORDER, April 1, 2014 ("new rules"):
§15.407 (a) (1) (i): Outdoor access point:
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) (iv): Mobile and portable client devices:

Limit: 250 mW (24 dBm) provided the maximum antenna gain does not exceed 6 dBi.

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

For systems using digital modulation techniques in the 5.725 – 5.850 GHz bands:
§15.407 (a) (3)
Limit: 1 W (30 dBm) or 17 dBm + 10 log (26 dB bandwidth/MHz) whatever is the lesser.
FCC ET Docket No. 13-49, FIRST REPORT AND ORDER, April 1, 2014 ("new rules"):
§15.407 (a) (3):
Limit: 1 W (30 dBm).

§15.407 (a) (4):
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.

RSS-247, 6.2.1 (1), Band 5150-5250 MHz, indoor operation only:
Limit (e.i.r.p.): 200 mW (23 dBm) or 10 + 10 log10 B [dBm], whichever power is less.
B is the 99% emission bandwidth in MHz.

RSS-247, 6.2.2 (1), Band 5250-5350 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: For EUTs operating at a higher e.i.r.p. than 200 mW (23 dBm), compliance with the e.i.r.p. elevation mask is required.

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.

RSS-247, 6.2.4 (1), Band 5725-5825 MHz:
Limits:
Maximum conducted Power: 1W (30 dBm) or 17 + 10 log10 B [dBm], whichever power is less.
e.i.r.p.: 4.0 W (36 dBm) or 23 + 10 log10 B [dBm], whichever power is less.

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

4.5.3 TEST PROTOCOL

Measured Single Core Output
Core 0

Ambient temperature: 25 °C
Air Pressure: 1002 hPa
Humidity: 35 %
WLAN a-Mode; 20 MHz; 6 Mbit/s

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
1	36	5180	12.7	14.7	24.0	11.3	N/A	-	22.4	7.7	1)
	40	5200	14.4	16.4	24.0	9.6	N/A	-	22.4	6.1	1)
	48	5240	14.3	16.3	24.0	9.7	N/A	-	22.5	6.1	1)
2A	52	5260	14.9	16.9	24.0	9.1	23.5	8.7	29.5	12.7	1)
	60	5300	14.7	16.7	24.0	9.3	23.5	8.8	29.5	12.8	1)
	64	5320	12.4	14.4	24.0	11.6	23.5	11.0	29.5	15.0	1)
2C	100	5500	13.1	15.1	24.0	10.9	23.5	10.4	29.5	14.4	
	104	5520	15.3	17.3	24.0	8.7	23.6	8.3	29.6	12.3	
	116	5580	15.3	17.3	24.0	8.7	23.6	8.3	29.6	12.3	
	140	5700	15.2	17.2	24.0	8.8	23.6	8.4	29.6	12.4	
3	149	5745	17.8	19.8	30.0	12.2	30.0	12.2	36.0	16.2	
	157	5785	17.8	19.8	30.0	12.2	30.0	12.2	36.0	16.2	
	165	5825	**18.0**	20.0	30.0	12.0	30.0	12.0	36.0	16.0	

WLAN n-Mode; 20 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
1	36	5180	12.6	14.6	24.0	11.4	N/A	-	22.7	8.1	1)
	40	5200	14.3	16.3	24.0	9.7	N/A	-	22.7	6.5	1)
	48	5240	14.2	16.2	24.0	9.8	N/A	-	22.7	6.5	1)
2A	52	5260	14.8	16.8	24.0	9.2	23.7	9.0	29.7	13.0	1)
	60	5300	14.7	16.7	24.0	9.3	24.0	9.3	30.0	13.3	1)
	64	5320	12.4	14.4	24.0	11.6	23.7	11.3	29.7	15.3	1)
2C	100	5500	13.0	15.0	24.0	11.0	23.7	10.7	29.7	14.7	
	104	5520	15.3	17.3	24.0	8.7	23.8	8.5	29.8	12.5	
	116	5580	15.2	17.2	24.0	8.8	23.8	8.6	29.8	12.6	
	140	5700	15.1	17.1	24.0	8.9	23.8	8.7	29.8	12.7	
3	149	5745	17.8	19.8	30.0	12.2	30.0	12.2	36.0	16.2	
	157	5785	17.8	19.8	30.0	12.2	30.0	12.2	36.0	16.2	
	165	5825	**17.9**	19.9	30.0	12.1	30.0	12.1	36.0	16.1	

WLAN n-Mode; 40 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
1	38	5190	8.6	10.6	24.0	15.4	N/A	-	23.0	12.4	1)
	46	5230	11.5	13.5	24.0	12.5	N/A	-	23.0	9.5	1)
2A	54	5270	11.7	13.7	24.0	12.3	24.0	12.3	30.0	16.3	1)
	62	5310	10.6	12.6	24.0	13.4	24.0	13.4	30.0	17.4	1)
2C	102	5510	11.0	13.0	24.0	13.0	24.0	13.0	30.0	17.0	
	110	5550	13.9	15.9	24.0	10.1	24.0	10.1	30.0	14.1	
	134	5670	13.8	15.8	24.0	10.3	24.0	10.3	30.0	14.3	
3	151	5755	**17.5**	19.5	30.0	12.5	30.0	12.5	36.0	16.5	
	159	5795	17.5	19.5	30.0	12.5	30.0	12.5	36.0	16.5	

WLAN ac-Mode; 20 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
2C	144	5720	15.0	17.0	24.0	9.0	23.8	8.8	29.8	12.8	

WLAN ac-Mode; 40 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
2C	142	5710	13.9	15.9	24.0	10.1	24.0	10.1	30.0	14.1	

WLAN ac-Mode; 80 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
1	42	5210	8.5	10.5	24.0	15.6	N/A	-	23.0	12.6	1)
2A	58	5290	11.2	13.2	24.0	12.9	24.0	12.9	30.0	16.9	1)
2C	106	5530	10.7	12.7	24.0	13.3	24.0	13.3	30.0	17.3	
	122	5610	10.6	12.6	24.0	13.4	24.0	13.4	30.0	17.4	
	138	5690	13.4	15.4	24.0	10.6	24.0	10.6	30.0	14.6	
3	155	5775	**17.0**	19.0	30.0	13.0	30.0	13.0	36.0	17.0	

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

Measured Single Core Output
Core 1

WLAN a-Mode; 20 MHz; 6 Mbit/s

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
1	36	5180	12.9	14.9	24.0	11.1	N/A	-	22.5	7.5	1)
	40	5200	15.2	17.2	24.0	8.8	N/A	-	22.5	5.2	1)
	48	5240	14.6	16.6	24.0	9.4	N/A	-	22.5	5.9	1)
2A	52	5260	15.3	17.3	24.0	8.7	23.5	8.2	29.5	12.2	1)
	60	5300	15.3	17.3	24.0	8.7	23.5	8.1	29.5	12.1	1)
	64	5320	13.5	15.5	24.0	10.5	23.5	10.0	29.5	14.0	1)
2C	100	5500	13.6	15.6	24.0	10.4	23.5	9.9	29.5	13.9	
	104	5520	15.3	17.3	24.0	8.7	23.5	8.2	29.5	12.2	
	116	5580	15.2	17.2	24.0	8.8	23.5	8.3	29.5	12.3	
	140	5700	15.0	17.0	24.0	9.1	23.5	8.6	29.5	12.6	
3	149	5745	**16.9**	18.9	30.0	13.1	30.0	13.1	36.0	17.1	
	157	5785	16.7	18.7	30.0	13.3	30.0	13.3	36.0	17.3	
	165	5825	16.5	18.5	30.0	13.5	30.0	13.5	36.0	17.5	

WLAN n-Mode; 20 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
1	36	5180	12.7	14.7	24.0	11.3	N/A	-	22.7	8.0	1)
	40	5200	15.1	17.1	24.0	8.9	N/A	-	22.7	5.6	1)
	48	5240	14.4	16.4	24.0	9.6	N/A	-	22.7	6.3	1)
2A	52	5260	15.3	17.3	24.0	8.7	23.7	8.5	29.7	12.5	1)
	60	5300	15.1	17.1	24.0	8.9	23.9	8.8	29.9	12.8	1)
	64	5320	13.4	15.4	24.0	10.6	23.7	10.3	29.7	14.3	1)
2C	100	5500	13.5	15.5	24.0	10.5	23.7	10.2	29.7	14.2	
	104	5520	15.2	17.2	24.0	8.8	23.8	8.5	29.8	12.5	
	116	5580	15.1	17.1	24.0	8.9	23.8	8.7	29.8	12.7	
	140	5700	14.9	16.9	24.0	9.1	23.7	8.9	29.7	12.9	
3	149	5745	**16.8**	18.8	30.0	13.2	30.0	13.2	36.0	17.2	
	157	5785	16.6	18.6	30.0	13.4	30.0	13.4	36.0	17.4	
	165	5825	16.3	18.3	30.0	13.7	30.0	13.7	36.0	17.7	

WLAN n-Mode; 40 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
1	38	5190	9.9	11.9	24.0	14.1	N/A	-	23.0	11.1	1)
	46	5230	12.8	14.8	24.0	11.2	N/A	-	23.0	8.2	1)
2A	54	5270	12.8	14.8	24.0	11.2	24.0	11.2	30.0	15.2	1)
	62	5310	11.7	13.7	24.0	12.3	24.0	12.3	30.0	16.3	1)
2C	102	5510	12.0	14.0	24.0	12.0	24.0	12.0	30.0	16.0	
	110	5550	14.5	16.5	24.0	9.5	24.0	9.5	30.0	13.5	
	134	5670	14.3	16.3	24.0	9.7	24.0	9.7	30.0	13.7	
3	151	5755	**16.4**	18.4	30.0	13.6	30.0	13.6	36.0	17.6	
	159	5795	16.4	18.4	30.0	13.7	30.0	13.7	36.0	17.7	

WLAN ac-Mode; 20 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
2C	144	5720	15.6	17.6	24.0	8.4	23.7	8.1	29.7	12.1	

WLAN ac-Mode; 40 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
2C	142	5710	15.0	17.0	24.0	9.0	24.0	9.0	30.0	13.0	

WLAN ac-Mode; 80 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
1	42	5210	10.2	12.2	24.0	13.8	N/A	-	23.0	10.8	1)
2A	58	5290	13.0	15.0	24.0	11.0	24.0	11.0	30.0	15.0	1)
2C	106	5530	12.0	14.0	24.0	12.0	24.0	12.0	30.0	16.0	
	122	5610	11.9	13.9	24.0	12.1	24.0	12.1	30.0	16.1	
	138	5690	14.3	16.3	24.0	9.7	24.0	9.7	30.0	13.7	
3	155	5775	**16.1**	18.1	30.0	13.9	30.0	13.9	36.0	17.9	

Calculated MIMO Output
Core 0 + Core 1

WLAN n-Mode; 20 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Power Core 0 [dBm]	Power Core 1 [dBm]	
1	36	5180	15.7	17.7	24.0	8.3	12.6	12.7	1)
	40	5200	17.7	19.7	24.0	6.3	14.3	15.1	1)
	48	5240	17.3	19.3	24.0	6.7	14.2	14.4	1)
2A	52	5260	18.0	20.0	24.0	6.0	14.8	15.3	
	60	5300	17.9	19.9	24.0	6.1	14.7	15.1	
	64	5320	15.9	17.9	24.0	8.1	12.4	13.4	
2C	100	5500	16.3	18.3	24.0	7.7	13.0	13.5	
	104	5520	18.3	20.3	24.0	5.7	15.3	15.2	
	116	5580	18.1	20.1	24.0	5.9	15.2	15.1	
	140	5700	18.0	20.0	24.0	6.0	15.1	14.9	
3	149	5745	20.3	22.3	30.0	9.7	17.8	16.8	
	157	5785	20.3	22.3	30.0	9.7	17.8	16.6	
	165	5825	20.2	22.2	30.0	9.8	17.9	16.3	

table continued			IC				
U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
1	36	5180	N/A		22.7	5.0	
	44	5220	N/A		22.7	3.0	
	48	5240	N/A		22.7	3.4	
2A	52	5260	23.5	5.5	29.7	9.7	1)
	56	5280	23.5	5.6	29.7	9.8	1)
	64	5320	23.5	7.5	29.7	11.8	1)
2C	100	5500	23.5	7.3	29.7	11.4	
	104	5520	23.6	5.3	29.8	9.5	
	116	5580	23.6	5.5	29.8	9.7	
	140	5700	23.6	5.6	29.8	9.8	
3	149	5745	30.0	9.7	36.0	13.7	
	157	5785	30.0	9.7	36.0	13.7	
	165	5825	30.0	9.8	36.0	13.8	

WLAN n-Mode; 40 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Power Core 0 [dBm]	Power Core 1 [dBm]	
1	38	5190	12.3	14.3	24.0	11.7	8.6	9.9	1)
	46	5230	15.2	17.2	24.0	8.8	11.5	12.8	1)
2A	54	5270	15.3	17.3	24.0	8.7	11.7	12.8	
	62	5310	14.2	16.2	24.0	9.8	10.6	11.7	
2C	102	5510	14.6	16.6	24.0	9.4	11.0	12.0	
	110	5550	17.2	19.2	24.0	6.8	13.9	14.5	
	134	5670	17.0	19.0	24.0	7.0	13.8	14.3	
3	151	5755	20.0	22.0	30.0	10.0	17.5	16.4	
	159	5795	20.0	22.0	30.0	10.0	17.5	16.4	

WLAN ac-Mode; 20 MHz; MCS0 (table continued)

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
					IC		
1	38	5190	N/A		23.0	8.7	
	46	5230	N/A		23.0	5.8	
2A	54	5270	24.0	11.7	30.0	12.7	1)
	62	5310	24.0	8.7	30.0	13.8	1)
2C	102	5510	24.0	9.8	30.0	13.4	
	110	5550	24.0	9.4	30.0	10.8	
	134	5670	24.0	6.8	30.0	11.0	
3	151	5755	30.0	13.0	36.0	14.0	
	159	5795	30.0	10.0	36.0	14.0	

WLAN ac-Mode; 20 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Power Core 0 [dBm]	Power Core 1 [dBm]
2C	144	5720	18.3	20.3	24.0	5.7	15.0	15.6

table continued

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]
					IC	
2C	144	5720	23.8	5.5	29.8	9.5

WLAN ac-Mode; 40 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Power Core 0 [dBm]	Power Core 1 [dBm]
2C	142	5710	17.5	19.5	24.0	6.5	13.9	15.0

table continued

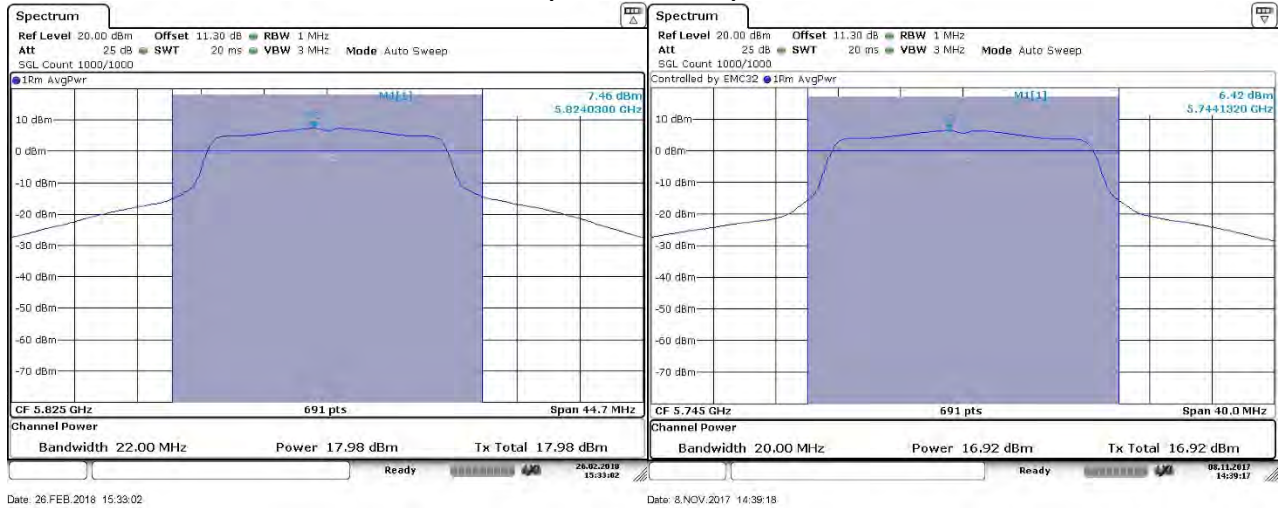| U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]
					IC	
2C	142	5710	24.0	21.0	30.0	10.5

WLAN n-Mode; 80 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Power Core 0 [dBm]	Power Core 1 [dBm]	
1	42	5210	12.4	14.4	24.0	11.6	8.5	10.2	1)
2A	58	5290	15.2	17.2	24.0	8.8	11.2	13.0	
2C	106	5530	14.4	16.4	24.0	9.6	10.7	12.0	
	122	5610	14.3	16.3	24.0	9.7	10.6	11.9	
	138	5690	16.9	18.9	24.0	7.1	13.4	14.3	
3	155	5775	19.6	21.6	30.0	10.4	17.0	16.1	

table continued

U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
					IC		
1	42	5210	N/A		23.0	8.6	
2A	58	5290	24.0	8.8	30.0	12.8	1)
2C	106	5530	24.0	9.6	30.0	13.6	
	122	5610	24.0	9.7	30.0	13.7	
	138	5690	24.0	7.1	30.0	11.1	
3	155	5775	30.0	10.4	36.0	14.4	

4.5.4   MEASUREMENT PLOT (SHOWING THE HIGHEST VALUE, "WORST CASE")

Radio Technology = WLAN a 20 MHz, Subband U-NII-3
(S01_3_AA01)

Core 0, highest channel   Core 1, lowest channel

Radio Technology = WLAN n 20 MHz, Operating Frequency = high, Subband U-NII-3
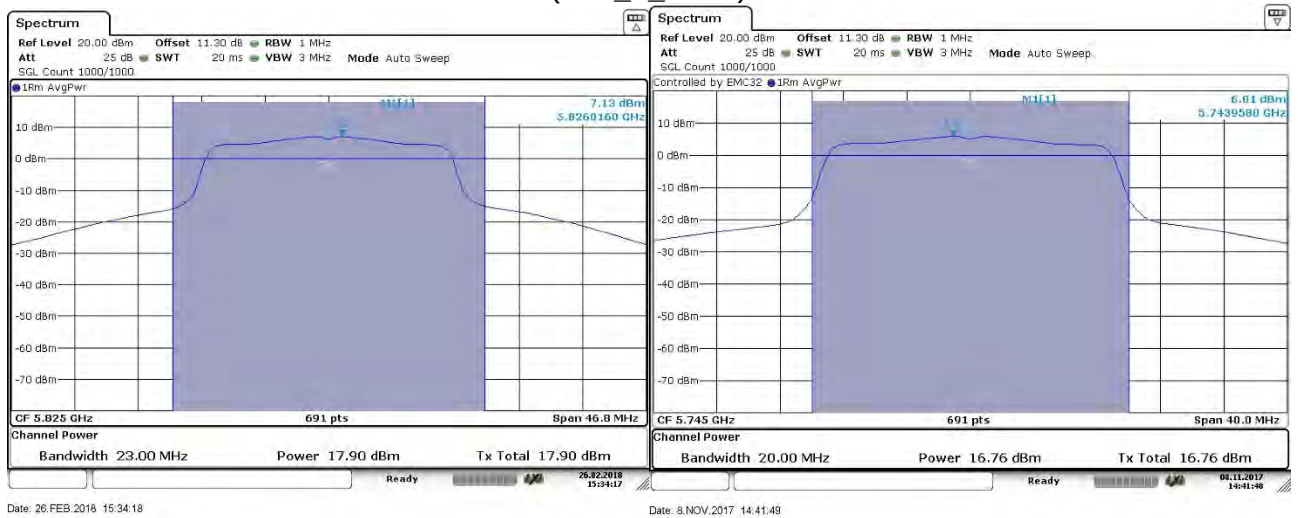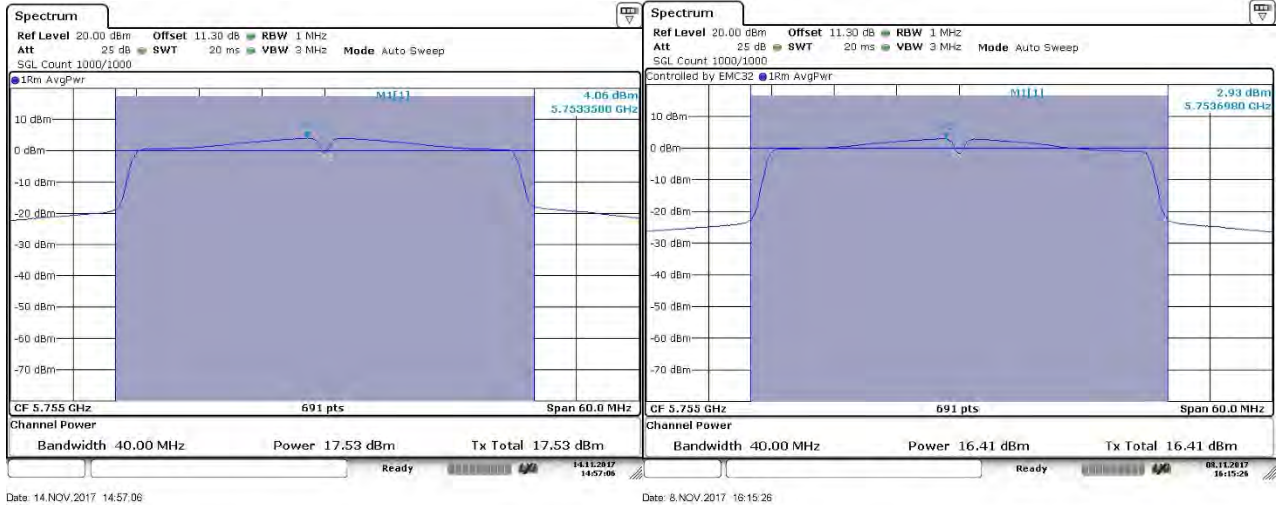(S01_3_AA01)

Core 0, highest channel   Core 1, lowest channel
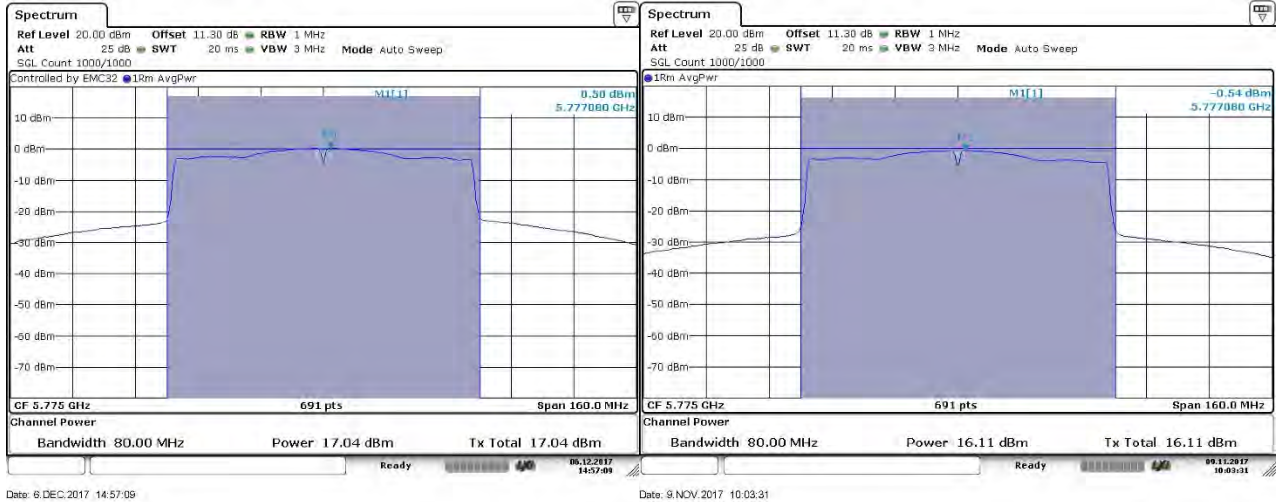
Radio Technology = WLAN n 40 MHz, Operating Frequency = low, Subband U-NII-3
(S01_3_AA01)

| Core 0 | Core 1 |

Radio Technology = WLAN ac 80 MHz, Operating Frequency = mid, Subband U-NII-3
(S01_3_AA01)

| Core 0 | Core 1 |

4.5.5   TEST EQUIPMENT USED
- R&S TS8997

4.6 PEAK POWER SPECTRAL DENSITY

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10

4.6.1 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.

The EUT was connected to the spectrum analyzer via a short coax cable with a known loss.

Analyzer settings:
- Resolution Bandwidth (RBW): 1 MHz
- Video Bandwidth (VBW): 3 MHz
- Trace: Average, RMS power averaging mode
- Sweeps: 100
- Sweeptime: 5 ms
- Detector: RMS
- Trigger: gated mode

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**.

4.6.2 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.

Note: The limit will be also fulfilled when measuring at any bandwidth greater than 500 kHz. This applies to signals where the maximum conducted output power was measured at a bandwidth exceeding 500 kHz and which fulfil that limit of 30 dBm.

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.

4.6.3   TEST PROTOCOL

Measured Single Core Output
Core 0

Ambient temperature: 25 °C
Air Pressure: 1002 hPa
Humidity: 35 %
WLAN a-Mode; 20 MHz; 6 Mbit/s

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	IC Limit [dBm/MHz]	Margin [dB]	IC EIRP MPSD
1	36	5180	2.2	11.0	8.8	10.0	5.8	4.2
	40	5200	3.9	11.0	7.1	10.0	4.1	5.9
	48	5240	3.8	11.0	7.2	10.0	4.2	5.8
2A	52	5260	4.3	11.0	6.7	11.0	6.7	unit:
	60	5300	4.2	11.0	6.8	11.0	6.8	dBm/
	64	5320	1.9	11.0	9.1	11.0	9.1	MHz
2C	100	5500	2.6	11.0	8.4	11.0	8.4	
	104	5520	4.8	11.0	6.2	11.0	6.2	
	116	5580	4.8	11.0	6.2	11.0	6.2	
	140	5700	4.7	11.0	6.3	11.0	6.3	
3	149	5745	7.2	30.0	22.8	30.0	22.8	
	157	5785	7.3	30.0	22.7	30.0	22.7	
	165	5825	**7.5**	30.0	22.5	30.0	22.5	

WLAN n-Mode; 20 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	IC Limit [dBm/MHz]	Margin [dB]	IC EIRP MPSD
1	36	5180	1.8	11.0	9.3	10.0	6.3	3.8
	40	5200	3.5	11.0	7.5	10.0	4.5	5.5
	48	5240	3.5	11.0	7.5	10.0	4.5	5.5
2A	52	5260	4.0	11.0	7.0	11.0	7.0	unit:
	60	5300	4.0	11.0	7.0	11.0	7.0	dBm/
	64	5320	1.6	11.0	9.4	11.0	9.4	MHz
2C	100	5500	2.3	11.0	8.7	11.0	8.7	
	104	5520	4.5	11.0	6.5	11.0	6.5	
	116	5580	4.4	11.0	6.6	11.0	6.6	
	140	5700	4.3	11.0	6.7	11.0	6.7	
3	149	5745	7.0	30.0	23.0	30.0	23.0	
	157	5785	7.1	30.0	22.9	30.0	22.9	
	165	5825	**7.1**	30.0	22.9	30.0	22.9	

WLAN n-Mode; 40 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	IC Limit [dBm/MHz]	Margin [dB]	IC EIRP MPSD
1	38	5190	-4.9	11.0	15.9	10.0	12.9	-2.9
	46	5230	-1.9	11.0	12.9	10.0	9.9	0.1
2A	54	5270	-1.8	11.0	12.8	11.0	12.8	unit:
	62	5310	-3.0	11.0	14.0	11.0	14.0	dBm/
2C	102	5510	-2.5	11.0	13.5	11.0	13.5	MHz
	110	5550	0.4	11.0	10.6	11.0	10.6	
	134	5670	0.3	11.0	10.7	11.0	10.7	
3	151	5755	**4.1**	30.0	25.9	30.0	25.9	
	159	5795	4.0	30.0	26.0	30.0	26.0	

WLAN ac-Mode; 20 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	IC Limit [dBm/MHz]	Margin [dB]	IC EIRP MPSD
2C	144	5720	4.3	11.0	6.7	11.0	6.7	

WLAN ac-Mode; 40 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	IC Limit [dBm/MHz]	Margin [dB]	IC EIRP MPSD
2C	142	5710	0.5	11.0	10.5	11.0	10.5	

WLAN ac-Mode; 80 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	IC Limit [dBm/MHz]	Margin [dB]	IC EIRP MPSD
1	42	5210	-8.1	11.0	19.1	10.0	16.1	-6.1
2A	58	5290	-5.3	11.0	16.3	11.0	16.3	unit:
2C	106	5530	-5.8	11.0	16.8	11.0	16.8	dBm/
	122	5610	-6.0	11.0	17.0	11.0	17.0	MHz
	138	5690	-3.2	11.0	14.2	11.0	14.2	
3	155	5775	**0.5**	30.0	29.5	30.0	29.5	

Measured Single Core Output
Core 1

WLAN a-Mode; 20 MHz; 6 Mbit/s

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	IC Limit [dBm/MHz]	Margin [dB]	IC EIRP MPSD
1	36	5180	2.4	11.0	8.6	10.0	5.6	4.4
	40	5200	4.7	11.0	6.3	10.0	3.3	6.7
	48	5240	4.1	11.0	6.9	10.0	3.9	6.1
2A	52	5260	4.8	11.0	6.2	11.0	6.2	unit:
	60	5300	4.8	11.0	6.2	11.0	6.2	MHz
	64	5320	3.0	11.0	8.0	11.0	8.0	
2C	100	5500	3.1	11.0	7.9	11.0	7.9	
	104	5520	4.8	11.0	6.2	11.0	6.2	
	116	5580	4.7	11.0	6.3	11.0	6.3	
	140	5700	4.5	11.0	6.5	11.0	6.5	
3	149	5745	**6.4**	30.0	23.6	30.0	23.6	
	157	5785	6.2	30.0	23.8	30.0	23.8	
	165	5825	5.9	30.0	24.1	30.0	24.1	

WLAN n-Mode; 20 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	IC Limit [dBm/MHz]	Margin [dB]	IC EIRP MPSD
1	36	5180	2.0	11.0	9.0	10.0	6.0	4.0
	40	5200	4.4	11.0	6.6	10.0	3.6	6.4
	48	5240	3.7	11.0	7.3	10.0	4.3	5.7
2A	52	5260	4.5	11.0	6.5	11.0	6.5	unit:
	60	5300	4.4	11.0	6.7	11.0	6.7	MHz
	64	5320	2.6	11.0	8.4	11.0	8.4	
2C	100	5500	2.7	11.0	8.3	11.0	8.3	
	104	5520	4.5	11.0	6.5	11.0	6.5	
	116	5580	4.3	11.0	6.7	11.0	6.7	
	140	5700	4.1	11.0	6.9	11.0	6.9	
3	149	5745	**6.0**	30.0	24.0	30.0	24.0	
	157	5785	5.8	30.0	24.2	30.0	24.2	
	165	5825	5.5	30.0	24.5	30.0	24.5	

WLAN n-Mode; 40 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	IC Limit [dBm/MHz]	Margin [dB]	IC EIRP MPSD
1	38	5190	-3.6	11.0	14.6	10.0	11.6	-1.6
	46	5230	-0.7	11.0	11.7	10.0	8.7	1.4
2A	54	5270	-0.7	11.0	11.7	11.0	11.7	unit:
	62	5310	-1.8	11.0	12.8	11.0	12.8	dBm/
2C	102	5510	-1.5	11.0	12.5	11.0	12.5	MHz
	110	5550	1.0	11.0	10.0	11.0	10.0	
	134	5670	0.8	11.0	10.2	11.0	10.2	
3	151	5755	**2.9**	30.0	27.1	30.0	27.1	
	159	5795	2.9	30.0	27.1	30.0	27.1	

WLAN ac-Mode; 20 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	IC Limit [dBm/MHz]	Margin [dB]	IC EIRP MPSD
2C	144	5720	4.8	11.0	6.2	11.0	6.2	

WLAN ac-Mode; 40 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	IC Limit [dBm/MHz]	Margin [dB]	IC EIRP MPSD
2C	142	5710	1.5	11.0	9.5	11.0	9.5	

WLAN ac-Mode; 80 MHz; x Mbit/s MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	IC Limit [dBm/MHz]	Margin [dB]	IC EIRP MPSD
1	42	5210	-6.3	11.0	17.3	10.0	14.3	-4.3
2A	58	5290	-3.6	11.0	14.6	11.0	14.6	unit:
2C	106	5530	-4.6	11.0	15.6	11.0	15.6	dBm/
	122	5610	-4.7	11.0	15.7	11.0	15.7	MHz
	138	5690	-2.3	11.0	13.3	11.0	13.3	
3	155	5775	**-0.5**	30.0	30.5	30.0	30.5	

Calculated MIMO Output
Core 0 + Core 1

Ambient temperature: 25 °C
Air Pressure: 1002 hPa
Humidity: 35 %
WLAN n-Mode; 20 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	Power Core 0 [dBm/MHz]	Power Core 1 [dBm/MHz]
1	36	5180	4.9	11.0	6.1	1.8	2.0
	40	5200	7.0	11.0	4.0	3.5	4.4
	48	5240	6.6	11.0	4.4	3.5	3.7
2A	52	5260	7.3	11.0	3.7	4.0	4.5
	60	5300	7.2	11.0	3.8	4.0	4.4
	64	5320	5.2	11.0	5.8	1.6	2.6
2C	100	5500	5.5	11.0	5.5	2.3	2.7
	104	5520	7.5	11.0	3.5	4.5	4.5
	116	5580	7.4	11.0	3.6	4.4	4.3
	140	5700	7.2	11.0	3.8	4.3	4.1
3	149	5745	9.5	30.0	20.5	7.0	6.0
	157	5785	9.5	30.0	20.5	7.1	5.8
	165	5825	9.4	30.0	20.6	7.1	5.5

table continued					
U-NII-Subband	Ch. No.	Freq. [MHz]	IC EIRP MPSD	IC Limit [dBm/MHz]	Margin [dB]
1	36	5180	6.9	10.0	3.1
	44	5220	9.0	10.0	1.0
	48	5240	8.6	10.0	1.4
2A	52	5260	unit:	11.0	3.7
	56	5280	dBm/	11.0	3.8
	64	5320	MHz	11.0	5.8
2C	100	5500		11.0	5.5
	116	5580		11.0	3.6
	140	5700		11.0	3.8
3	149	5745		30.0	20.5
	157	5785		30.0	20.5
	165	5825		30.0	20.6

WLAN n-Mode; 40 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/MHz]	FCC Limit [dBm/MHz]	Margin [dB]	Power Core 0 [dBm/MHz]	Power Core 1 [dBm/MHz]
1	38	5190	-1.2	11.0	12.2	-4.9	-3.6
	46	5230	1.8	11.0	9.2	-1.9	-0.7
2A	54	5270	1.8	11.0	9.2	-1.8	-0.7
	62	5310	0.7	11.0	10.3	-3.0	-1.8
2C	102	5510	1.1	11.0	9.9	-2.5	-1.5
	110	5550	3.8	11.0	7.2	0.4	1.0
	134	5670	3.6	11.0	7.4	0.3	0.8
3	151	5755	6.5	30.0	23.5	4.1	2.9
	159	5795	6.5	30.0	23.5	4.0	2.9

table continued					
U-NII-Subband	Ch. No.	Freq. [MHz]	IC EIRP MPSD	IC Limit [dBm/MHz]	Margin [dB]
1	38	5190	0.8	10.0	9.2
	46	5230	3.8	10.0	6.2
2A	54	5270	unit:	11.0	9.2
	62	5310	dBm/	11.0	10.3
2C	102	5510	MHz	11.0	9.9
	110	5550		11.0	7.2
	134	5670		11.0	7.4
3	151	5755		30.0	23.5
	159	5795		30.0	23.5

WLAN ac-Mode; 20 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/ MHz]	FCC Limit [dBm/MHz]	Margin [dB]	Power Core 0 [dBm/MHz]	Power Core 1 [dBm/MHz]
2C	144	5720	7.6	11.0	3.4	4.3	4.8

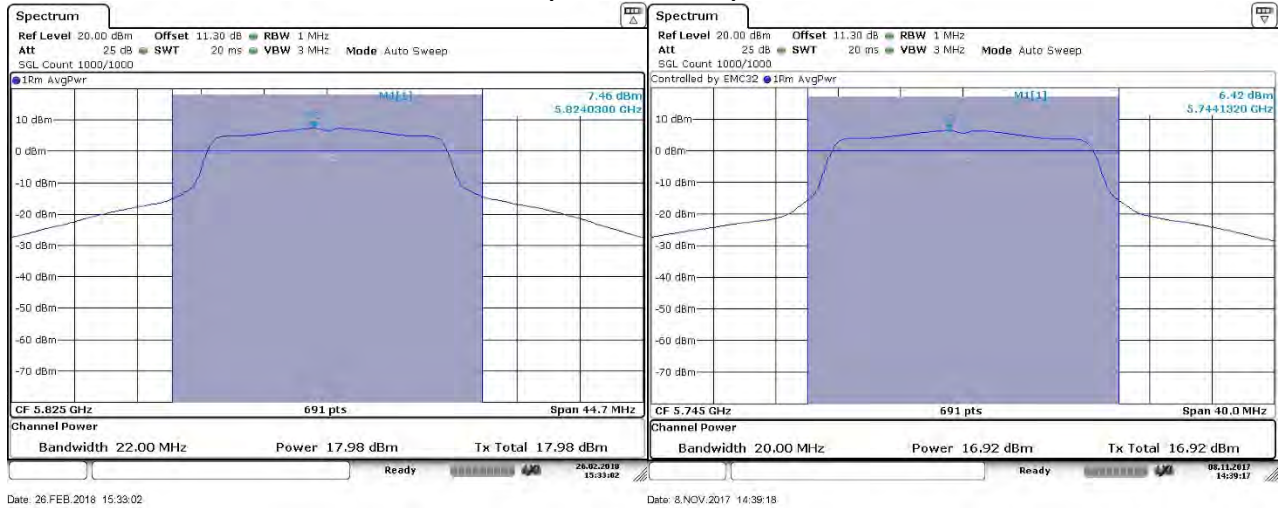| table continued					
U-NII-Subband	Ch. No.	Freq. [MHz]	IC EIRP MPSD	IC Limit [dBm/MHz]	Margin [dB]
2C	144	5720		11.0	3.4

WLAN ac-Mode; 40 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/ MHz]	FCC Limit [dBm/MHz]	Margin [dB]	Power Core 0 [dBm/MHz]	Power Core 1 [dBm/MHz]
2C	142	5710	4.0	11.0	7.0	0.5	1.5

table continued					
U-NII-Subband	Ch. No.	Freq. [MHz]	IC EIRP MPSD	IC Limit [dBm/MHz]	Margin [dB]
2C	142	5710		11.0	7.0

WLAN ac-Mode; 80 MHz; MCS0

U-NII-Subband	Ch. No.	Freq. [MHz]	MPSD [dBm/ MHz]	FCC Limit [dBm/MHz]	Margin [dB]	Power Core 0 [dBm/MHz]	Power Core 1 [dBm/MHz]
1	42	5210	-4.1	11.0	15.1	-8.1	-6.3
2A	58	5290	-1.4	11.0	12.4	-5.3	-3.6
2C	106	5530	-2.1	11.0	13.1	-5.8	-4.6
	122	5610	-2.3	11.0	13.3	-6.0	-4.7
	138	5690	0.3	11.0	10.7	-3.2	-2.3
3	155	5775	3.0	30.0	27.0	0.5	-0.5

table continued					
U-NII-Subband	Ch. No.	Freq. [MHz]	IC EIRP MPSD	IC Limit [dBm/MHz]	Margin [dB]
1	42	5210	-2.1	10.0	12.1
2A	58	5290	unit:	11.0	12.4
2C	106	5530	dBm/	11.0	13.1
	122	5610	MHz	11.0	13.3
	138	5690		11.0	10.7
3	155	5775		30.0	27.0

Remark: Please see next sub-clause for the measurement plot.
        PSD of Band 3 measured with 1 MHz instead of 500 kHz (worse case).

4.6.4 MEASUREMENT PLOT (SHOWING THE HIGHEST VALUE, "WORST CASE")
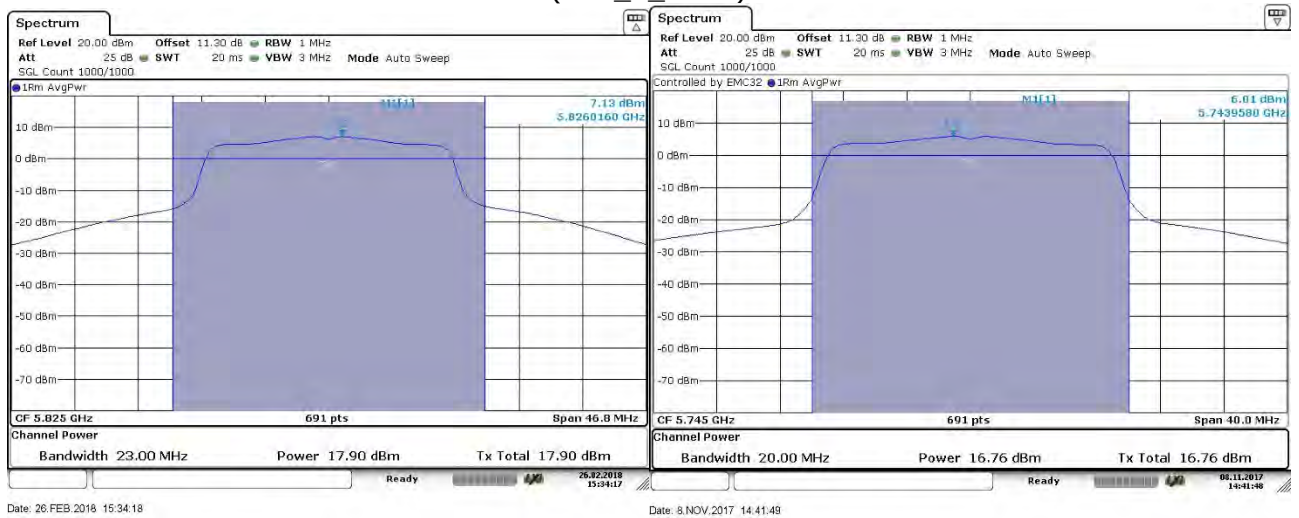
Radio Technology = WLAN a 20 MHz, Subband U-NII-3
(S01_3_AA01)

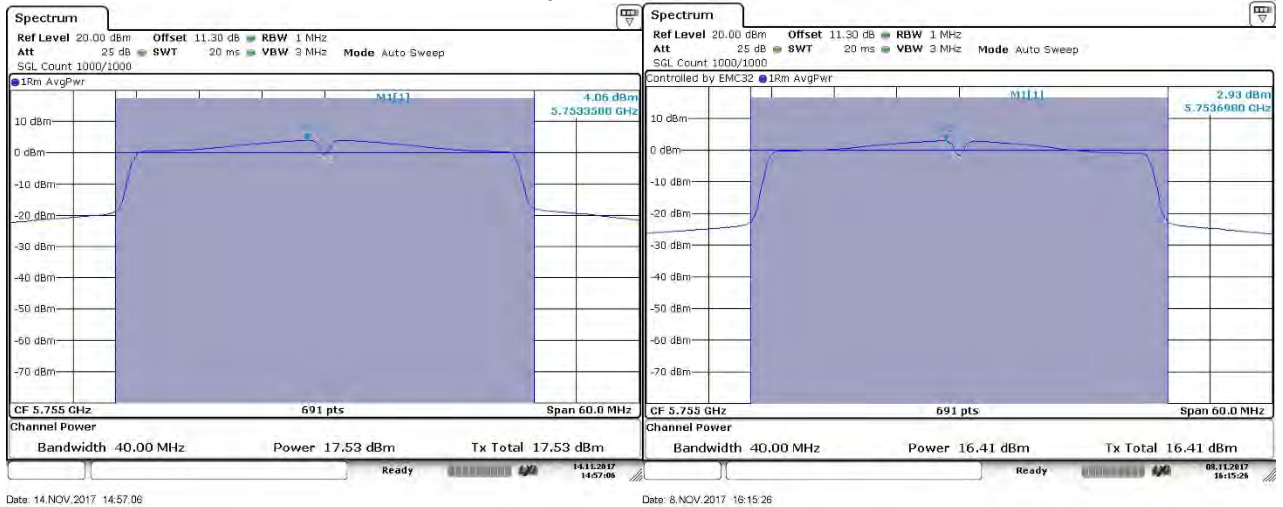Core 0, highest channel   Core 1, lowest channel

Radio Technology = WLAN n 20 MHz, Operating Frequency = high, Subband U-NII-3
(S01_3_AA01)

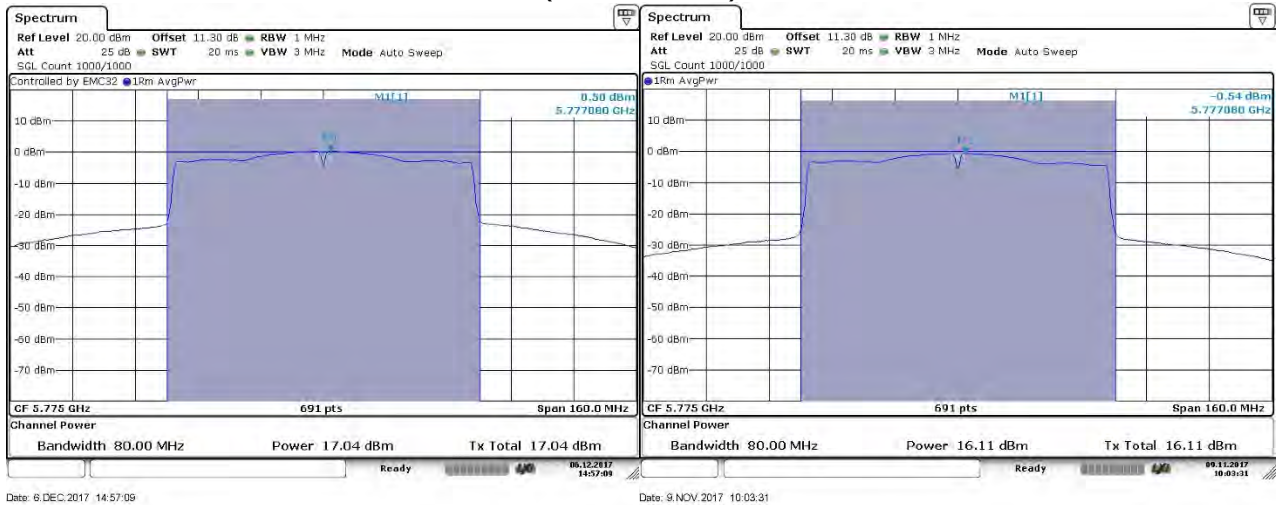Core 0, highest channel   Core 1, lowest channel

Radio Technology = WLAN n 40 MHz, Operating Frequency = low, Subband U-NII-3 (S01_3_AA01)

Core 0   Core 1

Radio Technology = WLAN ac 80 MHz, Operating Frequency = mid, Subband U-NII-3 (S01_3_AA01)

Core 0   Core 1

4.6.5 TEST EQUIPMENT USED
- R&S TS8997

4.7 UNDESIRABLE EMISSIONS; GENERAL FIELD STRENGTH LIMITS

Standard **FCC Part 15 Subpart E**

4.7.1 RADIATED MEASUREMENTS (ANTENNA PORTS TERMINATED WITH 50 OHM)

The test was performed according to:
ANSI C63.10

4.7.1.1 Test Description

The test set-up was made in accordance to the general provisions of ANSI C63.10 in a typical installation configuration. The Equipment Under Test (EUT) was set up on a non-conductive table 1.0 x 2.0 m² in the semi-anechoic chamber. The influence of the EUT support table that is used between 30–1000 MHz was evaluated.

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 from a DC power source.

1. Measurement up to 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

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 – 3 m
- Height variation step size: 2 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 ± 45° around this value. 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 ± 100 cm around the antenna height determined. 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: ± 45 ° around the determined value
- Height variation range: ± 100 cm around the determined value
- Antenna Polarisation: max. value determined in step 1

Step 3: Final measurement with QP detector
With the settings determined in step 3, the final measurement will be performed:
EMI receiver settings for step 4:
- 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.

3. Measurement above 1 GHz
The following modifications apply to the measurement procedure for the frequency range above 1 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 °.
Above 26 GHz the measurement distance is reduced to 1 m.
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

4.7.1.2   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 EIRP at >= 75 MHz away from the band edge,
     75 MHz to 25 MHz away from the band edge increasing linearly to 10 dBm/MHz
     25 MHz to 5 MHz away from the band edge increasing linearly to 15.6 dBm/MHz
     5 MHz to the band edge increasing linearly to 27 dBm/MHz

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.
Note: No operation is permitted for the frequency range 5600–5650 MHz.

RSS-247, 6.2.4.2, Emissions outside the band 5725-5825 MHz:
Limit: −27 dBm/MHz EIRP at >= 75 MHz away from the band edge,
     75 MHz to 25 MHz away from the band edge increasing linearly to 10 dBm/MHz

25 MHz to 5 MHz away from the band edge increasing linearly to 15.6 dBm/MHz
5 MHz to the band edge increasing linearly to 27 dBm/MHz

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 on next page):
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.

4.7.1.3　Test Protocol

Ambient temperature: **20–26 °C**
Air Pressure: **999–1026 hPa**
Humidity: **30–47 %**

WLAN a-Mode; 20 MHz; 6 Mbit/s

Applied duty cycle correction (AV): 0 dB

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level [dBµV/m]	Detec-tor	RBW [kHz]	Limit [dBµV/m]	Margin [dB]	Limit Type
36	5180	-	-	Peak	-	-	>6	-
44	5220	-	-	Peak	-	-	>6	-
48	5240	-	-	Peak	-	-	>6	-
25	5260	-	-	Peak	-	-	>6	-
56	5280	-	-	Peak	-	-	>6	-
64	5320	-	-	Peak	-	-	>6	-
100	5500	-	-	Peak	-	-	>6	-
116	5580	-	-	Peak	-	-	>6	-
140	5700	-	-	Peak	-	-	>6	-
149	5745	-	-	Peak	-	-	>6	-
157	5785	-	-	Peak	-	-	>6	-
165	5825	-	-	Peak	-	-	>6	-

WLAN n-Mode; 20 MHz; MCS 0

Applied duty cycle correction (AV): 0 dB

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level [dBµV/m]	Detec-tor	RBW [kHz]	Limit [dBµV/m]	Margin [dB]	Limit Type
36	5180	-	-	Peak	-	-	>6	-
44	5220	-	-	Peak	-	-	>6	-
48	5240	-	-	Peak	-	-	>6	-
25	5260	-	-	Peak	-	-	>6	-
56	5280	-	-	Peak	-	-	>6	-
64	5320	-	-	Peak	-	-	>6	-
100	5500	-	-	Peak	-	-	>6	-
116	5580	-	-	Peak	-	-	>6	-
140	5700	-	-	Peak	-	-	>6	-
149	5745	-	-	Peak	-	-	>6	-
157	5785	-	-	Peak	-	-	>6	-
165	5825	-	-	Peak	-	-	>6	-

| WLAN n-Mode; 40 MHz; MCS 0									
Applied duty cycle correction (AV): 0 dB									
Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level [dBµV/m]	Detec-tor	RBW [kHz]	Limit [dBµV/m]	Margin [dB]	Limit Type
38	5190	-	-	Peak	-	-	>6	-
46	5230	-	-	Peak	-	-	>6	-
54	5270	-	-	Peak	-	-	>6	-
62	5310	-	-	Peak	-	-	>6	-
102	5510	-	-	Peak	-	-	>6	-
118	5590	-	-	Peak	-	-	>6	-
134	5670	-	-	Peak	-	-	>6	-
151	5755	-	-	Peak	-	-	>6	-
159	5795	-	-	Peak	-	-	>6	-

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

4.7.1.4   Measurement Plot (showing the highest value, "worst case")

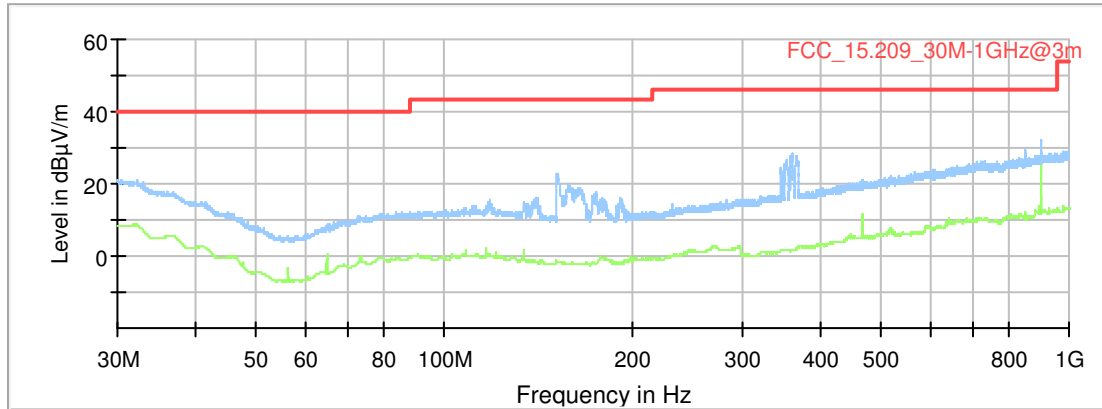Radio Technology = WLAN a 20 MHz, Range 9 kHz – 30 MHz, Core 0, Channel 140 (S01_3_AB01)
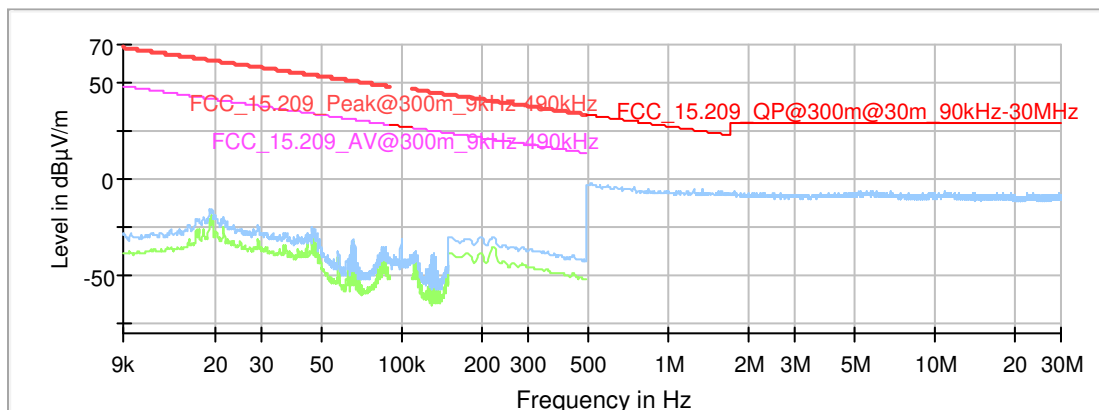
Final_Result

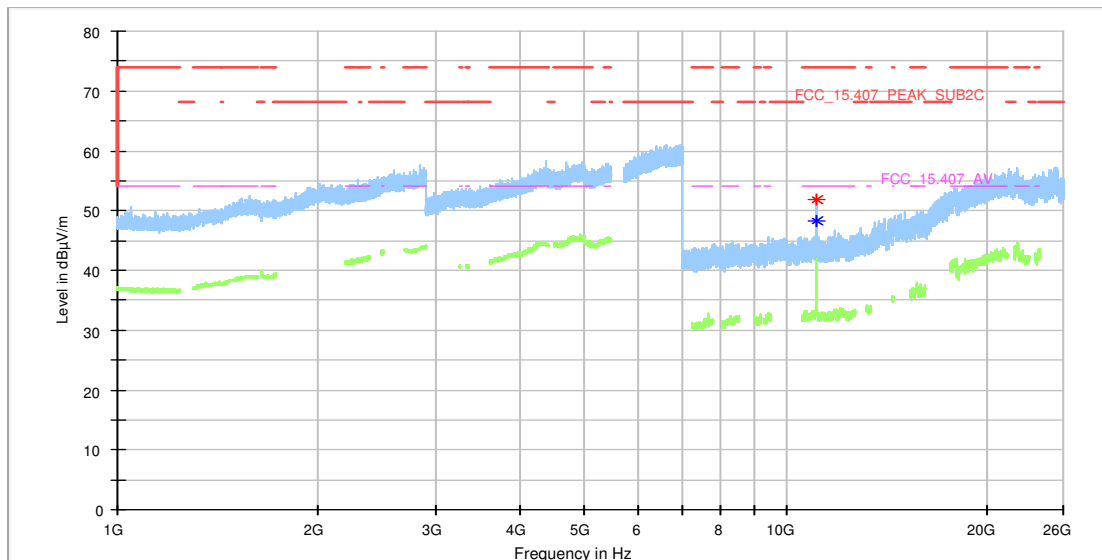| Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
---	---	---	---	---	---	---	---		---	---	

Radio Technology = WLAN a 20 MHz, Range 30 MHz – 1 GHz, Core 1, Channel 116 (S01_3_AC01)

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
---	---	---	---	---	---	---		---	---	

Radio Technology = WLAN a 20 MHz, Range 1 GHz – 26 GHz, Core 1, Channel 116 (S01_3_AB01)

Critical_Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
11159.965000	---	48.37	54.00	5.63	---	---	150.0	V	0.0	0.0
11159.965000	51.87	---	74.00	22.13	---	---	150.0	V	0.0	0.0

Radio Technology = WLAN a 20 MHz, Range 26 GHz – 40 GHz, Core 0, Channel 44 (S01_3_AA01)
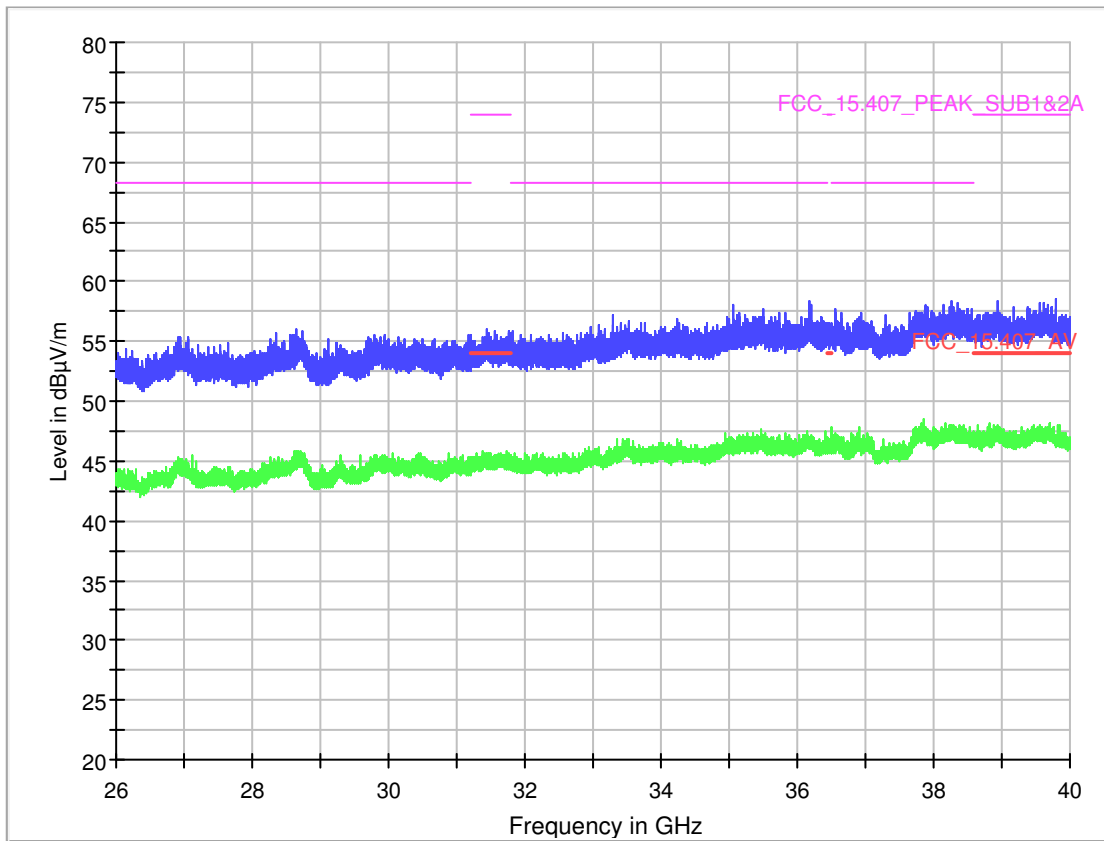
4.7.2 CONDUCTED MEASUREMENTS AT ANTENNA PORT

The test was performed according to:
ANSI C63.10

4.7.2.1 Test Description

The Equipment Under Test (EUT) was set up to perform the conducted spurious emissions measurements. The antenna port of the EUT was connected to spectrum analyzer via a short coax cable with a known cable loss C_L. The measured voltage U_{meas} at the 50 Ohm input of the analyser was used to calculate the EUT output power at the antenna port:

$P = U_{meas} + C_L - 107$

    where
    P is the output power in dBm
    U_{meas} is the measured voltage at the 50 Ohm input of the analyzer in dBµV
    C_L is the cable loss of the used cable.

The maximum transmit isotropically antenna gain G_i (in dBi) was added to the measured output power P to determine the equivalent isotropically radiated power EIRP.

$EIRP = P + Gi$

    where
    P is the output power in dBm
    G_i is maximum transmit antenna gain in dBi.

The resultant EIRP level was converted to an equivalent electric filed strength using the following relationship:

$E = EIRP - 20 \log d + 104.8$

    where
    E is the electric field strength in dBµV/m
    EIRP is the equivalent isotropically radiated power in dBm
    d is the specified measurement distance in m.

The appropriate maximum ground reflection factor was added to the EIRP:
    6 dB for frequencies ≤ 30 MHz;
    4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive; and
    0 dB for frequencies > 1000 MHz).

Frequency range [MHz]	measurement distance d [m]	-20 log d [dB]	ground reflection factor [dB]
0,009 – 0,49	300	-49,54	6
0,49 – 30	30	-29,54	6
30 – 1000	3	-9,54	4,7
>1000	3	-9,54	0

For the MIMO values of Core 0 + Core 1, the measured dBm values were converted to mW, than added together, reconverted to dBm and afterwards converted to dBµV/m as described above.

1. Measurement up to 30 MHz

Step 1: pre measurement
This is a preliminary test to identify the highest amplitudes relative to the limit.

- •Detector: Peak-Maxhold/ Quasipeak (FFT-based)
- •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 EMI-profile of the EUT. Afterwards the relevant emissions for the final measurement are identified.

Step 2: final measurement
EMI receiver settings:

- • Detector: Peak / Average / Quasi-Peak (depending on frequency)
- • Frequency range: 0.009 – 30 MHz
- • Frequency steps: measurement at frequencies detected in step 1
- • IF–Bandwidth: 0.2 - 10 kHz (depending on frequency)
- • Measuring time / Frequency step: 1 s

2. Measurement above 30 MHz and up to 1 GHz

Step 1: pre measurement
This is a preliminary test to identify the highest amplitudes relative to the limit.
Settings:

- • 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

Step 2: final measurement
EMI receiver settings:

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

3. Measurement above 1 GHz

Step 1: pre measurement
Ssettings:

- • Detector: Peak, Average
- • IF Bandwidth = 1 MHz

Step 2: final measurement
Spectrum analyzer settings:

- • Detector: Peak / Average
- • Measured frequencies: in step 1 determined frequencies
- • IF – Bandwidth: 1 MHz
- • Measuring time: 1 s

4.7.2.2   Test Requirements / Limits

Please see test description for radiated measurement

4.7.2.3 Test Protocol

Ambient temperature: 20–25 °C
Air Pressure: 981–1026 hPa
Humidity: 34–44 %

WLAN a-Mode; 20 MHz; 6 Mbit/s

Applied duty cycle correction (AV): 0 dB

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level Core 0 [dBµV/m]	Spurious Level Core 1 [dBµV/m]	Spurious Level Core 0 + 1 [dBµV/m]	Detec-tor	RBW [kHz]	Limit [dBµV/m]	Margin [dB]	Limit Type
36	5180	10353.4	51.2	45.4	52.2	PEAK	1000	68.0	16.8	UE
40	5200	10402.5	51.7	45.1	52.6	PEAK	1000	68.0	16.3	UE
40	5200	15602.9	51.7	45.0	52.5	PEAK	1000	74.0	22.3	RB
40	5200	15602.4	39.0	34.4	40.3	AV	1000	54.0	15.0	RB
48	5240	10482.9	48.5	43.7	49.7	PEAK	1000	68.0	19.5	UE
48	5240	15721.6	51.1	46.8	52.5	PEAK	1000	74.0	22.9	RB
48	5240	15717.1	38.8	35.5	40.5	AV	1000	54.0	15.2	RB
52	5260	10522.3	47.7	44.0	49.2	PEAK	1000	68.0	20.3	UE
52	5260	15775.1	51.0	45.7	52.1	PEAK	1000	74.0	23.0	RB
52	5260	15780.5	38.6	35.1	40.2	AV	1000	54.0	15.4	RB
60	5300	15902.2	48.3	45.4	50.1	PEAK	1000	74.0	25.7	RB
60	5300	15900.8	36.7	34.0	38.6	AV	1000	54.0	17.3	RB
64	5320	-	-	-	-	Peak	-	-	-	-
100	5500	10999.2	51.8	44.0	52.5	PEAK	1000	74.0	22.2	RB
100	5500	11000.3	39.2	33.4	40.2	AV	1000	54.0	14.8	RB
104	5520	11038.4	49.2	44.2	50.4	PEAK	1000	74.0	24.8	RB
104	5520	11042.4	38.7	33.1	39.8	AV	1000	54.0	15.3	RB
116	5580	11159.3	**52.4**	45.8	53.3	PEAK	1000	74.0	21.6	RB
116	5580	11159.1	40.9	34.7	41.8	AV	1000	54.0	13.1	RB
140	5700	11399.5	51.5	47.3	52.9	PEAK	1000	74.0	22.5	RB
140	5700	11401.5	40.2	36.5	41.7	AV	1000	54.0	13.8	RB
149	5745	11489.5	52.1	47.5	53.4	PEAK	1000	74.0	21.9	RB
149	5745	11492.6	41.2	37.1	42.6	AV	1000	54.0	12.8	RB
157	5785	11570.0	51.9	48.3	53.5	PEAK	1000	74.0	22.1	RB
157	5785	11566.6	**41.5**	36.8	42.8	AV	1000	54.0	12.5	RB
165	5825	11652.8	52.1	48.1	53.6	PEAK	1000	74.0	21.9	RB
165	5825	11646.1	41.2	37.7	42.8	AV	1000	54.0	12.8	RB

WLAN n-Mode; 20 MHz; MCS 0										
Applied duty cycle correction (AV): 0 dB										
Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level Core 0 [dBµV/m]	Spurious Level Core 1 [dBµV/m]	Spurious Level Core 0 + 1 [dBµV/m]	Detec-tor	RBW [kHz]	Limit [dBµV/m]	Margin [dB]	Limit Type
36	5180	10359.4	51.6	44.9	52.4	PEAK	1000	68.0	15.6	UE
40	5200	10398.2	51.5	45.2	52.4	PEAK	1000	68.0	15.6	UE
40	5200	15597.5	52.2	46.1	53.2	PEAK	1000	74.0	20.8	RB
40	5200	15604.3	38.5	34.5	40.0	AV	1000	54.0	14.0	RB
48	5240	10479.0	48.3	44.3	49.8	PEAK	1000	68.0	18.2	UE
48	5240	15720.7	51.2	46.5	52.5	PEAK	1000	74.0	21.5	RB
48	5240	15718.5	38.3	35.3	40.1	AV	1000	54.0	13.9	RB
52	5260	10521.0	47.8	44.4	49.4	PEAK	1000	68.0	18.6	UE
52	5260	15775.4	50.2	45.7	51.5	PEAK	1000	74.0	22.5	RB
52	5260	15779.5	38.6	35.1	40.2	AV	1000	54.0	13.8	RB
60	5300	-	-	-	-	Peak	-	-	>6	-
64	5320	-	-	-	-	Peak	-	-	>6	-
100	5500	10999.5	48.7	44.1	50.0	PEAK	1000	74.0	24.0	RB
100	5500	10999.8	37.2	33.0	38.6	AV	1000	54.0	15.4	RB
104	5520	11039.6	49.0	44.3	50.3	PEAK	1000	74.0	23.7	RB
104	5520	11040.2	38.8	33.2	39.9	AV	1000	54.0	14.1	RB
116	5580	11158.5	51.2	44.4	52.0	PEAK	1000	74.0	22.0	RB
116	5580	11159.3	39.7	34.0	40.7	AV	1000	54.0	13.3	RB
144	5720	-	-	-	-	PEAK	-	-	>6	-
149	5745	11491.6	**52.7**	47.1	53.8	PEAK	1000	74.0	20.2	RB
149	5745	11491.6	40.4	36.2	41.8	AV	1000	54.0	12.2	RB
157	5785	11567.9	51.1	46.7	52.4	PEAK	1000	74.0	21.6	RB
157	5785	11571.1	**41.4**	36.0	42.5	AV	1000	54.0	11.5	RB
165	5825	11653.3	51.9	46.7	53.0	PEAK	1000	74.0	21.0	RB
165	5825	11652.6	41.0	36.3	42.3	AV	1000	54.0	11.7	RB

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level Core 0 [dBµV/m]	Spurious Level Core 1 [dBµV/m]	Spurious Level Core 0 + 1 [dBµV/m]	Detec-tor	RBW [kHz]	Limit [dBµV/m]	Margin [dB]	Limit Type
WLAN n-Mode; 40 MHz; MCS 0										
Applied duty cycle correction (AV): 0 dB										
38	5190	10380.1	45.2	44.0	47.7	PEAK	1000	68.0	20.3	UE
46	5230	10445.3	46.3	44.3	48.4	PEAK	1000	68.0	19.6	UE
54	5270	-	-	-	-	PEAK	-	-	>6	-
62	5310	-	-	-	-	PEAK	-	-	>6	-
102	5510	11029.2	46.5	43.9	48.4	PEAK	1000	74.0	25.6	RB
102	5510	11020.0	35.1	32.4	37.0	AV	1000	54.0	17.0	RB
110	5550	11098.0	47.5	44.7	49.3	PEAK	1000	74.0	24.7	RB
110	5550	11103.0	36.0	32.9	37.7	AV	1000	54.0	16.3	RB
118	5590	11178.5	47.4	44.5	49.2	PEAK	1000	74.0	24.8	RB
118	5590	11178.1	36.2	33.3	38.0	AV	1000	54.0	16.0	RB
134	5670	11348.8	48.1	45.7	50.1	PEAK	1000	74.0	23.9	RB
134	5670	11337.1	36.1	33.7	38.1	AV	1000	54.0	15.9	RB
151	5755	11506.6	48.7	45.3	50.3	PEAK	1000	74.0	23.7	RB
151	5755	11507.5	38.1	34.6	39.7	AV	1000	54.0	14.3	RB
159	5795	11590.2	**50.0**	45.3	51.3	PEAK	1000	74.0	22.7	RB
159	5795	11587.3	**38.1**	34.4	39.6	AV	1000	54.0	14.4	RB

Ch. No.	Ch. Center Freq. [MHz]	Spurious Freq. [MHz]	Spurious Level Core 0 [dBµV/m]	Spurious Level Core 1 [dBµV/m]	Spurious Level Core 0 + 1 [dBµV/m]	Detec-tor	RBW [kHz]	Limit [dBµV/m]	Margin [dB]	Limit Type
WLAN ac-Mode; 80 MHz; MCS 0										
Applied duty cycle correction (AV): 0 dB										
42	5210	-	-	-	-	PEAK	-	-	>6	-
58	5290	-	-	-	-	PEAK	-	-	>6	-
106	5530	-	-	-	-	PEAK	-	-	>6	-
122	5610	-	-	-	-	PEAK	-	-	>6	-
138	5690	-	-	-	-	PEAK	-	-	>6	-
155	5775	11559.2	**47.1**	44.4	49.0	PEAK	1000	74.0	25.0	RB
155	5775	11549.5	**36.0**	33.4	37.9	AV	1000	54.0	16.1	RB

Remark: Please see next sub-clause for the measurement plot.
Values at band edges are not given, see Band Edge Test Case for the respective results.