FCC Measurement/Technical Report on

SNM941 (SNM941-90)

FCC ID: JUP-WCSNM941
IC: 1756A-SNM941

According to FCC Part 15.407

Test Report Reference: MDE_7LUS_1601_FCCd

Test Laboratory:
7layers GmbH
Borsigstrasse 11
40880 Ratingen
Germany

Deutsche Akkreditierungsstelle D-PL-12140-01-00

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.

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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 Notice “Guidelines for Compliance Testing of Unlicensed National Information
Infrastructure (U-NII) Devices - Part 15, Subpart E, 789033 D02 General U-NII Test Procedures v01r04, 2017-05-02”.

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 §15.31, §15.403 (i)**

26 dB Bandwidth

The measurement was performed according to ANSI C63.10

OP-Mode	**Setup**	**Final Result FCC**	**IC**
Radio Technology, Operating Frequency, Subband			
WLAN a, high, U-NII-1	S01_ak02	Performed	N/A
WLAN a, high, U-NII-3	S01_ak02	Performed	N/A
WLAN a, low, U-NII-1	S01_ak02	Performed	N/A
WLAN a, low, U-NII-3	S01_ak02	Performed	N/A
WLAN a, mid, U-NII-1	S01_ak02	Performed	N/A
WLAN a, mid, U-NII-3	S01_ak02	Performed	N/A
WLAN ac 20 MHz, high, U-NII-1	S01_ak02	Performed	N/A
WLAN ac 20 MHz, high, U-NII-3	S01_ak02	Performed	N/A
WLAN ac 20 MHz, low, U-NII-1	S01_ak02	Performed	N/A
WLAN ac 20 MHz, low, U-NII-3	S01_ak02	Performed	N/A
WLAN ac 20 MHz, mid, U-NII-1	S01_ak02	Performed	N/A
WLAN ac 20 MHz, mid, U-NII-3	S01_ak02	Performed	N/A
WLAN ac 40 MHz, high, U-NII-1	S01_ak02	Performed	N/A
WLAN ac 40 MHz, high, U-NII-3	S01_ak02	Performed	N/A
WLAN ac 40 MHz, low, U-NII-1	S01_ak02	Performed	N/A
WLAN ac 40 MHz, low, U-NII-3	S01_ak02	Performed	N/A
WLAN ac 80 MHz, mid, U-NII-1	S01_ak02	Performed	N/A
WLAN ac 80 MHz, mid, U-NII-3	S01_ak02	Performed	N/A
WLAN n 20 MHz, high, U-NII-1	S01_ak02	Performed	N/A
WLAN n 20 MHz, high, U-NII-3	S01_ak02	Performed	N/A
WLAN n 20 MHz, low, U-NII-1	S01_ak02	Performed	N/A
WLAN n 20 MHz, low, U-NII-3	S01_ak02	Performed	N/A
WLAN n 20 MHz, mid, U-NII-1	S01_ak02	Performed	N/A
WLAN n 20 MHz, mid, U-NII-3	S01_ak02	Performed	N/A
WLAN n 40 MHz, high, U-NII-1	S01_ak02	Performed	N/A
WLAN n 40 MHz, high, U-NII-3	S01_ak02	Performed	N/A
WLAN n 40 MHz, low, U-NII-1	S01_ak02	Performed	N/A
WLAN n 40 MHz, low, U-NII-3	S01_ak02	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

OP-Mode	Setup	Final Result FCC	IC
Radio Technology, Operating Frequency, Subband			
WLAN a, high, U-NII-3	S01_ak02	Passed	Passed
WLAN a, low, U-NII-3	S01_ak02	Passed	Passed
WLAN a, mid, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 20 MHz, high, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 20 MHz, low, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 20 MHz, mid, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 40 MHz, high, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 40 MHz, low, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-3	S01_ak02	Passed	Passed
WLAN n 20 MHz, high, U-NII-3	S01_ak02	Passed	Passed
WLAN n 20 MHz, low, U-NII-3	S01_ak02	Passed	Passed
WLAN n 20 MHz, mid, U-NII-3	S01_ak02	Passed	Passed
WLAN n 40 MHz, high, U-NII-3	S01_ak02	Passed	Passed
WLAN n 40 MHz, low, U-NII-3	S01_ak02	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	**Setup**	**FCC**	**IC**
Radio Technology, Operating Frequency, Subband			
WLAN a, high, U-NII-1	S01_ak02	N/A	Passed
WLAN a, high, U-NII-3	S01_ak02	N/A	Passed
WLAN a, low, U-NII-1	S01_ak02	N/A	Passed
WLAN a, low, U-NII-3	S01_ak02	N/A	Passed
WLAN a, mid, U-NII-1	S01_ak02	N/A	Passed
WLAN a, mid, U-NII-3	S01_ak02	N/A	Passed
WLAN ac 20 MHz, high, U-NII-1	S01_ak02	N/A	Passed
WLAN ac 20 MHz, high, U-NII-3	S01_ak02	N/A	Passed
WLAN ac 20 MHz, low, U-NII-1	S01_ak02	N/A	Passed
WLAN ac 20 MHz, low, U-NII-3	S01_ak02	N/A	Passed
WLAN ac 20 MHz, mid, U-NII-1	S01_ak02	N/A	Passed
WLAN ac 20 MHz, mid, U-NII-3	S01_ak02	N/A	Passed
WLAN ac 40 MHz, high, U-NII-1	S01_ak02	N/A	Passed
WLAN ac 40 MHz, high, U-NII-3	S01_ak02	N/A	Passed
WLAN ac 40 MHz, low, U-NII-1	S01_ak02	N/A	Passed
WLAN ac 40 MHz, low, U-NII-3	S01_ak02	N/A	Passed
WLAN ac 80 MHz, mid, U-NII-1	S01_ak02	N/A	Passed
WLAN ac 80 MHz, mid, U-NII-3	S01_ak02	N/A	Passed
WLAN n 20 MHz, high, U-NII-1	S01_ak02	N/A	Passed
WLAN n 20 MHz, high, U-NII-3	S01_ak02	N/A	Passed
WLAN n 20 MHz, low, U-NII-1	S01_ak02	N/A	Passed
WLAN n 20 MHz, low, U-NII-3	S01_ak02	N/A	Passed
WLAN n 20 MHz, mid, U-NII-1	S01_ak02	N/A	Passed
WLAN n 20 MHz, mid, U-NII-3	S01_ak02	N/A	Passed
WLAN n 40 MHz, high, U-NII-1	S01_ak02	N/A	Passed
WLAN n 40 MHz, high, U-NII-3	S01_ak02	N/A	Passed
WLAN n 40 MHz, low, U-NII-1	S01_ak02	N/A	Passed
WLAN n 40 MHz, low, U-NII-3	S01_ak02	N/A	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

OP-Mode	Setup	Final Result FCC	IC
Radio Technology, Operating Frequency, Subband			
WLAN a, high, U-NII-1	S01_ak02	Passed	Passed
WLAN a, high, U-NII-3	S01_ak02	Passed	Passed
WLAN a, low, U-NII-1	S01_ak02	Passed	Passed
WLAN a, low, U-NII-3	S01_ak02	Passed	Passed
WLAN a, mid, U-NII-1	S01_ak02	Passed	Passed
WLAN a, mid, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 20 MHz, high, U-NII-1	S01_ak02	Passed	Passed
WLAN ac 20 MHz, high, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 20 MHz, low, U-NII-1	S01_ak02	Passed	Passed
WLAN ac 20 MHz, low, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 20 MHz, mid, U-NII-1	S01_ak02	Passed	Passed
WLAN ac 20 MHz, mid, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 40 MHz, high, U-NII-1	S01_ak02	Passed	Passed
WLAN ac 40 MHz, high, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 40 MHz, low, U-NII-1	S01_ak02	Passed	Passed
WLAN ac 40 MHz, low, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-1	S01_ak02	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-3	S01_ak02	Passed	Passed
WLAN n 20 MHz, high, U-NII-1	S01_ak02	Passed	Passed
WLAN n 20 MHz, high, U-NII-3	S01_ak02	Passed	Passed
WLAN n 20 MHz, low, U-NII-1	S01_ak02	Passed	Passed
WLAN n 20 MHz, low, U-NII-3	S01_ak02	Passed	Passed
WLAN n 20 MHz, mid, U-NII-1	S01_ak02	Passed	Passed
WLAN n 20 MHz, mid, U-NII-3	S01_ak02	Passed	Passed
WLAN n 40 MHz, high, U-NII-1	S01_ak02	Passed	Passed
WLAN n 40 MHz, high, U-NII-3	S01_ak02	Passed	Passed
WLAN n 40 MHz, low, U-NII-1	S01_ak02	Passed	Passed
WLAN n 40 MHz, low, U-NII-3	S01_ak02	Passed	Passed

Peak Power Spectral Density

The measurement was performed according to ANSI C63.10

OP-Mode	**Setup**	**Final Result FCC**	**IC**
Radio Technology, Operating Frequency, Subband			
WLAN a, high, U-NII-1	S01_ak02	Passed	Passed
WLAN a, high, U-NII-3	S01_ak02	Passed	Passed
WLAN a, low, U-NII-1	S01_ak02	Passed	Passed
WLAN a, low, U-NII-3	S01_ak02	Passed	Passed
WLAN a, mid, U-NII-1	S01_ak02	Passed	Passed
WLAN a, mid, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 20 MHz, high, U-NII-1	S01_ak02	Passed	Passed
WLAN ac 20 MHz, high, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 20 MHz, low, U-NII-1	S01_ak02	Passed	Passed
WLAN ac 20 MHz, low, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 20 MHz, mid, U-NII-1	S01_ak02	Passed	Passed
WLAN ac 20 MHz, mid, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 40 MHz, high, U-NII-1	S01_ak02	Passed	Passed
WLAN ac 40 MHz, high, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 40 MHz, low, U-NII-1	S01_ak02	Passed	Passed
WLAN ac 40 MHz, low, U-NII-3	S01_ak02	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-1	S01_ak02	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-3	S01_ak02	Passed	Passed
WLAN n 20 MHz, high, U-NII-1	S01_ak02	Passed	Passed
WLAN n 20 MHz, high, U-NII-3	S01_ak02	Passed	Passed
WLAN n 20 MHz, low, U-NII-1	S01_ak02	Passed	Passed
WLAN n 20 MHz, low, U-NII-3	S01_ak02	Passed	Passed
WLAN n 20 MHz, mid, U-NII-1	S01_ak02	Passed	Passed
WLAN n 20 MHz, mid, U-NII-3	S01_ak02	Passed	Passed
WLAN n 40 MHz, high, U-NII-1	S01_ak02	Passed	Passed
WLAN n 40 MHz, high, U-NII-3	S01_ak02	Passed	Passed
WLAN n 40 MHz, low, U-NII-1	S01_ak02	Passed	Passed
WLAN n 40 MHz, low, U-NII-3	S01_ak02	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

OP-Mode Radio Technology, Operating Frequency, Measurement range, Subband	Setup	Final Result FCC	IC
WLAN a, high, 1GHz - 26GHz, U-NII-1	DE1221004ab01	Passed	Passed
WLAN a, high, 1GHz - 26GHz, U-NII-3	DE1221004aj02	Passed	Passed
WLAN a, low, 1GHz - 26GHz, U-NII-1	DE1221004ab01	Passed	Passed
WLAN a, low, 1GHz - 26GHz, U-NII-3	DE1221004ab01	Passed	Passed
WLAN a, mid, 1GHz - 26GHz, U-NII-1	DE1221004ab01	Passed	Passed
WLAN a, mid, 1GHz - 26GHz, U-NII-3	DE1221004ab01	Passed	Passed
WLAN a, mid, 30MHz - 1GHz, U-NII-1	DE1221004af02	Passed	Passed
WLAN a, mid, 30MHz - 1GHz, U-NII-3	DE1221004af02	Passed	Passed
WLAN a, mid, 9kHz - 30MHz, U-NII-1	DE1221004af02	Passed	Passed
WLAN a, mid, 9kHz - 30MHz, U-NII-3	DE1221004af02	Passed	Passed
WLAN a, mid, 26GHz - 40GHz, U-NII-1	DE1221004ai02	Passed	Passed
WLAN a, mid, 26GHz - 40GHz, U-NII-3	DE1221004ai02	Passed	Passed
WLAN n 20 MHz, high, 1GHz - 18GHz, U-NII-1	DE1221004ai02	Passed	Passed
WLAN n 20 MHz, high, 1GHz - 18GHz, U-NII-3	DE1221004aj02	Passed	Passed
WLAN n 20 MHz, low, 1GHz - 18GHz, U-NII-1	DE1221004aj02	Passed	Passed
WLAN n 20 MHz, low, 1GHz - 18GHz, U-NII-3	DE1221004aj02	Passed	Passed
WLAN n 20 MHz, mid, 1GHz - 18GHz, U-NII-1	DE1221004ai02	Passed	Passed
WLAN n 20 MHz, mid, 1GHz - 18GHz, U-NII-3	DE1221004aj02	Passed	Passed
WLAN n 40 MHz, high, 1GHz - 18GHz, U-NII-1	DE1221004ai02	Passed	Passed
WLAN n 40 MHz, high, 1GHz - 18GHz, U-NII-3	DE1221004ai02	Passed	Passed
WLAN n 40 MHz, low, 1GHz - 18GHz, U-NII-1	DE1221004ai02	Passed	Passed
WLAN n 40 MHz, low, 1GHz - 18GHz, U-NII-3	DE1221004ai02	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	**Setup**	**FCC**	**IC**
Radio Technology, Operating Frequency, Subband			
WLAN a, high, U-NII-3	DE1221004aj02	Passed	Passed
WLAN a, low, U-NII-1	DE1221004ab01	Passed	Passed
WLAN a, low, U-NII-3	DE1221004ab01	Passed	Passed
WLAN ac 20 MHz, high, U-NII-3	DE1221004aj02	Passed	Passed
WLAN ac 20 MHz, low, U-NII-1	DE1221004aj02	Passed	Passed
WLAN ac 20 MHz, low, U-NII-3	DE1221004aj02	Passed	Passed
WLAN ac 40 MHz, high, U-NII-3	DE1221004ai02	Passed	Passed
WLAN ac 40 MHz, low, U-NII-1	DE1221004ai02	Passed	Passed
WLAN ac 40 MHz, low, U-NII-3	DE1221004ai02	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-1	DE1221004ai02	Passed	Passed
WLAN ac 80 MHz, mid, U-NII-3	DE1221004ai02	Passed	Passed
WLAN n 20 MHz, high, U-NII-3	DE1221004aj02	Passed	Passed
WLAN n 20 MHz, low, U-NII-1	DE1221004aj02	Passed	Passed
WLAN n 20 MHz, low, U-NII-3	DE1221004aj02	Passed	Passed
WLAN n 40 MHz, high, U-NII-3	DE1221004ai02	Passed	Passed
WLAN n 40 MHz, low, U-NII-1	DE1221004ai02	Passed	Passed
WLAN n 40 MHz, low, U-NII-3	DE1221004ai02	Passed	Passed

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

(responsible for accreditation scope)
Dipl.-Ing. Marco Kullik

(responsible for testing and report)
Dipl.-Ing. Andreas Petz

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

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 FCC and accepted under the registration number 96716.

This facility has been fully described in a report submitted to the IC 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
Responsible for accreditation scope:	Dipl.-Ing. Marco Kullik
Report Template Version:	2017-07-14

2.2 PROJECT DATA

Responsible for testing and report:	Dipl.-Ing. Andreas Petz
Employees who performed the tests:	documented internally at 7Layers
Date of Report:	2017-09-28
Testing Period:	2017-04-09 to 2017-09-08

2.3 APPLICANT DATA

Company Name:	Trimble Inc.
Address:	935 Stewart Drive Sunnyvale CA, 94085 USA
Contact Person:	Mr. Eric Wilson

2.4 MANUFACTURER DATA

Company Name:	See Applicant

3 TEST OBJECT DATA

3.1 GENERAL EUT DESCRIPTION

Kind of Device product description	Telematic device
Product name	SNM941
Type	SNM941-90
Declared EUT data by the supplier	
Voltage Type	DC
Voltage Level	Nominal 24 V DC, range: 7–32 V
Tested data-rates / Modulations	mode a: OFDM, BPSK, 6 Mbps, 14 / 15 dBm *) mode n, 20 MHz: MCS0, OFDM, BPSK, 7.2 Mbps, 14 dBm mode ac, 20 MHz: MCS9, OFDM, QAM256, 96.3 Mbps, 10 dBm mode n, 40 MHz, MCS0, OFDM, BPSK, 15 Mbps, 14 dBm mode ac, 40 MHz: MCS9, OFDM, QAM256, 200 Mbps, 10 dBm mode ac, 80 MHz: MCS9, OFDM, QAM256, 433 Mbps, 10 dBm Notes: Values in dBm is the set nominal output power. *) 14 dBm set for radiated tests, 15 dBm for conducted tests.
General product description	Telematic device with built-in Wifi, Bluetooth, Bluetooth Low Energy, GPS and cellular technology.
Specific product description	The EUT is a communication unit incl. telematics capabilities with a real-time, two-way data communication link and can be integrated in a fleet and asset management system also provided by the applicant.
The EUT provides the following ports:	4 permanent 50 Ohm connectors for external antenna Automotive style multi-pin connector (it comprises USB, RS232, CAN, etc., Digital I/O, Analogue I/O, LAN / Ethernet, DC.)
Special software used for testing	LabTool (running on auxiliary laptop) – Used to set the radio into “Testmode”.

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
US Variant Standard sample	DE1221004AB01	
Sample Parameter	**Value**	
Serial No.	5644F0024	
HW Version	REV C	
SW Version	Alpha 0.0.8	
Comment		

Sample Name	Sample Code	Description
US Variant Standard sample	DE1221004AF02	
Sample Parameter	**Value**	
Serial No.	5719F00039	
HW Version	REV D	
SW Version	Beta 1.0.6	
Comment		

Sample Name	Sample Code	Description
US Variant Standard sample	DE1221004AI02	
Sample Parameter	**Value**	
Serial No.	5719F00045	
HW Version	REV D	
SW Version	Alpha 1.2.1.129	
Comment		

Sample Name	Sample Code	Description
US Variant Standard sample	DE1221004AJ02	
Sample Parameter	**Value**	
Serial No.	5719F00024	
HW Version	REV D	
SW Version	Beta 1.0.6	
Comment		

Sample Name	Sample Code	Description
US Variant Standard sample	DE1221004AK02	
Sample Parameter	**Value**	
Serial No.	5719F00018	
HW Version	REV D	
SW Version	Beta 1.0.6	
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
External Combi-Antenna	PulseLARSEN Antennas, GPSLPMB403, TPN 112057 Rev A, DE122100ANT	Ext. antenna for cellular, WLAN, BT and GNSS technologies Max. antenna gain in the relevant frequency range: 6.7 dBi.

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
Cable Harness	Trimble, 81533, Rev 07, –, –	Short Test Harness
Laptop	Dell Latitude D830, REV A02, Windows7 Engl., CN-0HN338-48643-88R-1522	Laptop used to control the devices

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
DE122100 4aj02	US Variant Standard sample, Laptop, External Combi-Antenna, Cable Harness	Sample DE1221004AJ02 with ancillary and auxiliary equipment, used for radiated tests
DE122100 4ab01	US Variant Standard sample, Laptop, External Combi-Antenna, Cable Harness	Sample DE1221004AB01 with ancillary and auxiliary equipment, used for radiated tests
DE122100 4ai02	US Variant Standard sample, Laptop, External Combi-Antenna, Cable Harness	Sample DE1221004AI02 with ancillary and auxiliary equipment, used for radiated tests
DE122100 4af02	US Variant Standard sample, Laptop, External Combi-Antenna, Cable Harness	Sample DE1221004AF02 with ancillary and auxiliary equipment, used for radiated tests
S01_ak02	US Variant Standard sample, Laptop, Cable Harness	Sample S01_ak02, used for conducted tests

3.6 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	44	48	52	56	64	100	116	140	149	157	165	Ch.-No.
5180	5220	5240	5260	5280	5320	5500	5580	5700	5745	5785	5825	MHz
low	mid	high	low	mid	high	low	mid	high	low	mid	high	40 MHz
38	-	46	54	-	62	102	110	138	151	-	159	Ch.-No.
5190	-	5230	5270	-	5310	5510	5550	5690	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

Note: Tests have been performed only in the supported U-NII sub-bands 1 and 3.

3.7 PRODUCT LABELLING, FCC ID LABEL, LOCATION OF THE LABEL ON THE EUT

Please refer to the documentation of the applicant.

4 TEST RESULTS

4.1 26 DB BANDWIDTH

Standard **FCC Part 15 Subpart E**

The test was performed according to:
ANSI C63.10

4.1.1 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): initially approx. 1 % of nominal emission bandwidth
- Video Bandwidth (VBW): > RBW z
- Span: 40 / 80 / 140 / 240 MHz (for 20 / 40 / 80 / 160 MHz nominal bandwidth)
- Trace: Maxhold
- Sweeps: 2000
- Sweeptime: 20 ms
- Detector: Sample

The measurement parameters depend on the nominal bandwidth and can be found in the measurement plot.

4.1.2 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.

4.1.3 TEST PROTOCOL

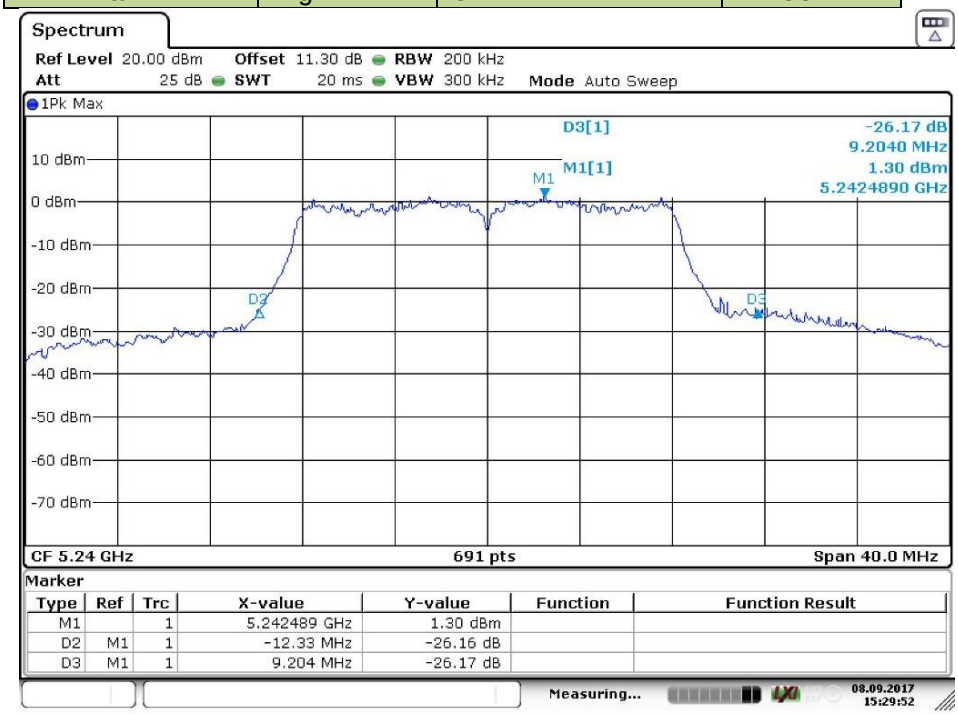
Ambient temperature: 22 °C
Air Pressure: 1013 hPa
Humidity: 41 %

Radio Technology	Operating Frequency	Subband	26 dB Bandwidth [MHz]
WLAN a	low	U-NII-1	20.029
WLAN a	mid	U-NII-1	20.203
WLAN a	high	U-NII-1	21.534
WLAN a	low	U-NII-3	19.624
WLAN a	mid	U-NII-3	19.682
WLAN a	high	U-NII-3	19.624
WLAN n 20 MHz	low	U-NII-1	20.029
WLAN n 20 MHz	mid	U-NII-1	20.434
WLAN n 20 MHz	high	U-NII-1	20.377
WLAN n 20 MHz	low	U-NII-3	20.148
WLAN n 20 MHz	mid	U-NII-3	22.923
WLAN n 20 MHz	high	U-NII-3	20.203
WLAN n 40 MHz	low	U-NII-1	41.33
WLAN n 40 MHz	high	U-NII-1	41.33
WLAN n 40 MHz	low	U-NII-3	41.10
WLAN n 40 MHz	high	U-NII-3	41.10
WLAN ac 20 MHz	low	U-NII-1	20.029
WLAN ac 20 MHz	mid	U-NII-1	20.087
WLAN ac 20 MHz	high	U-NII-1	20.087
WLAN ac 20 MHz	low	U-NII-3	20.145
WLAN ac 20 MHz	mid	U-NII-3	20.087
WLAN ac 20 MHz	high	U-NII-3	20.087
WLAN ac 40 MHz	low	U-NII-1	40.98
WLAN ac 40 MHz	high	U-NII-1	41.10
WLAN ac 40 MHz	low	U-NII-3	40.98
WLAN ac 40 MHz	high	U-NII-3	40.98
WLAN ac 80 MHz	mid	U-NII-1	83.68
WLAN ac 80 MHz	mid	U-NII-3	84.28

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

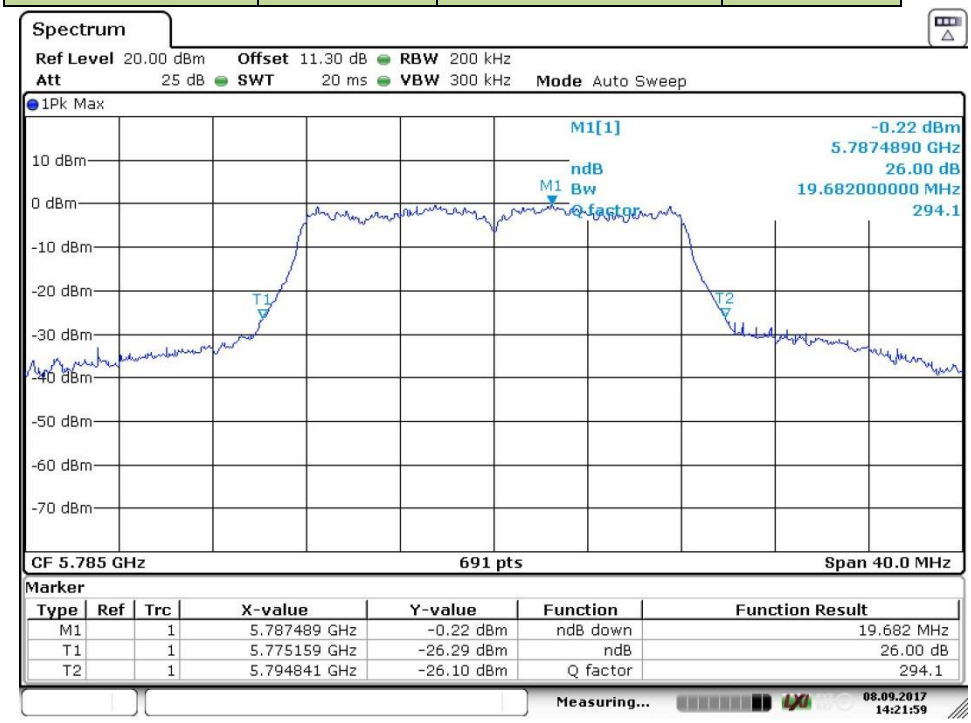
4.1.4 MEASUREMENT PLOT (SHOWING THE HIGHEST VALUE, “WORST CASE”)

WLAN a	high	U-NII-1	21.534



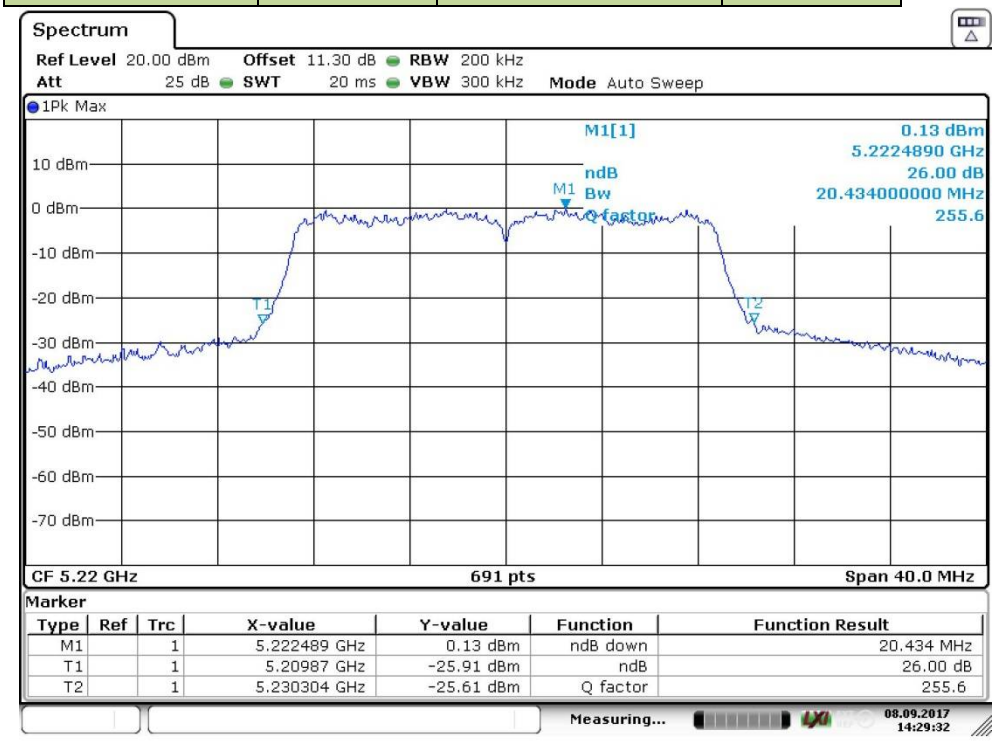
Date: 8.SEP.2017 15:29:53

WLAN a	mid	U-NII-3	19.682



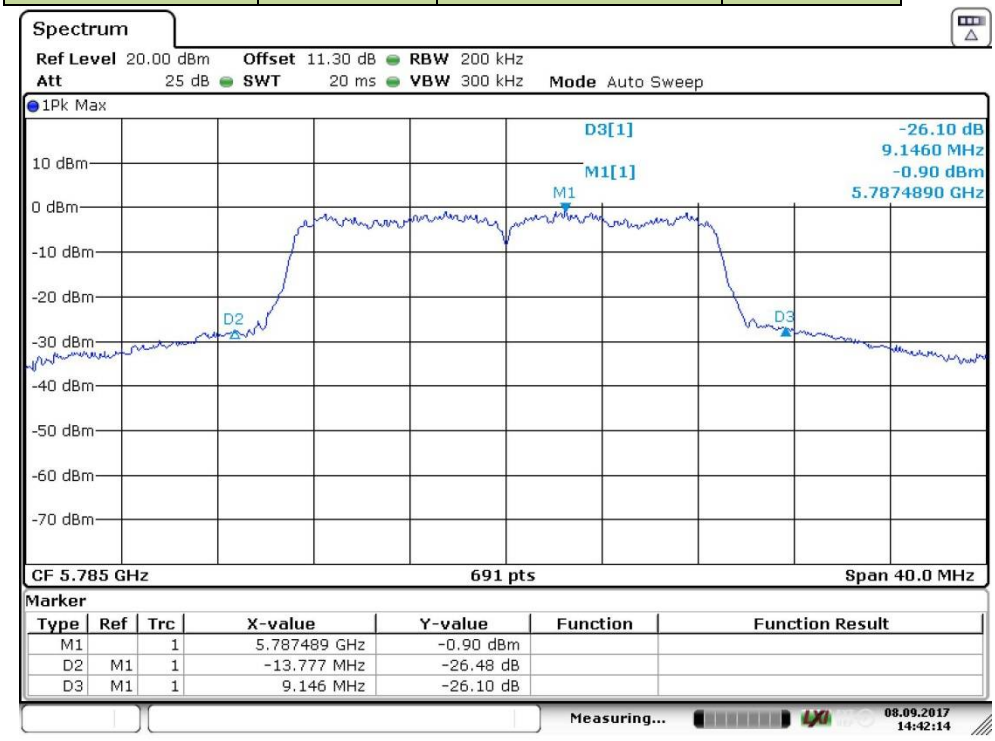
Date: 8.SEP.2017 14:21:59

WLAN n 20 MHz	mid	U-NII-1	20.434



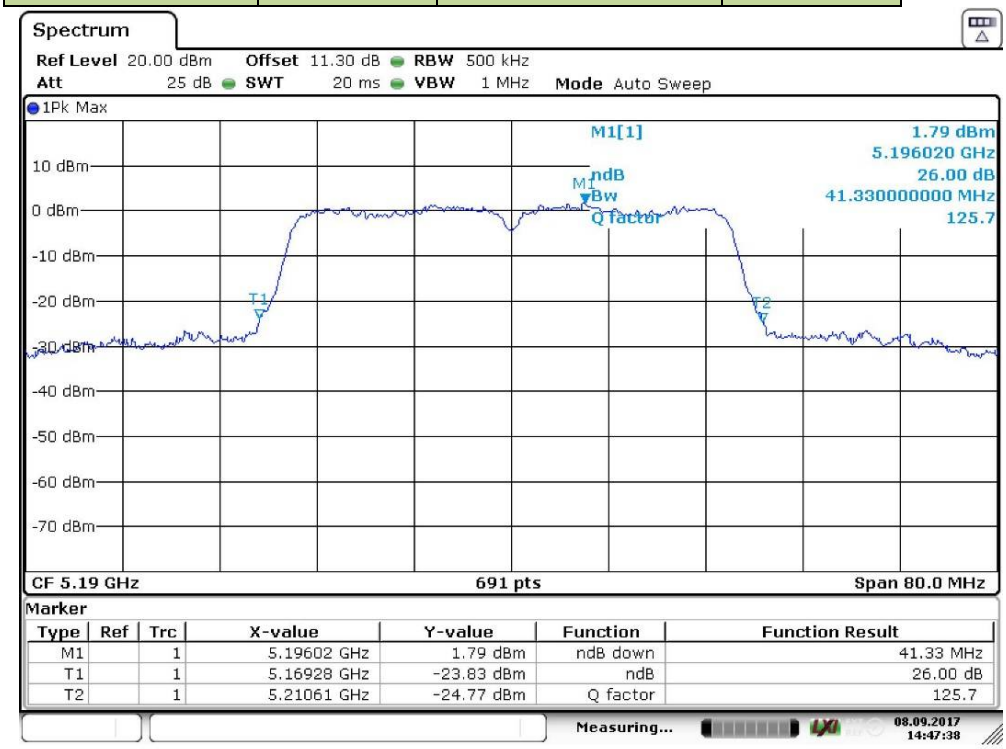
Date: 8.SEP.2017 14:29:32

WLAN n 20 MHz	mid	U-NII-3	22.923



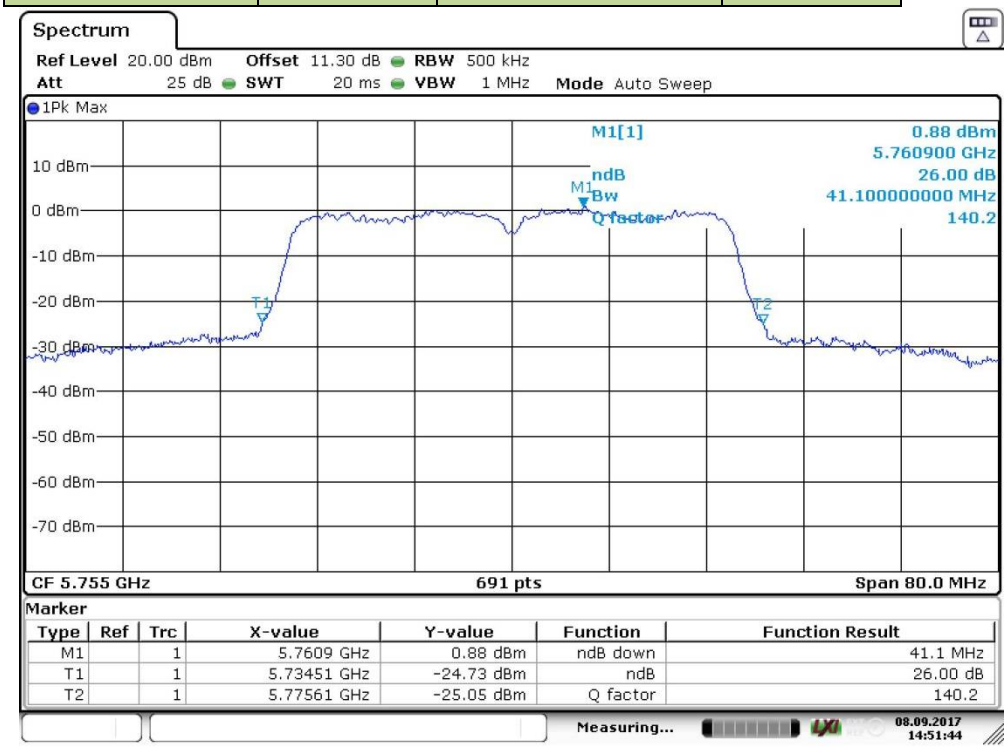
Date: 8.SEP.2017 14:42:14

WLAN n 40 MHz	low	U-NII-1	41.33



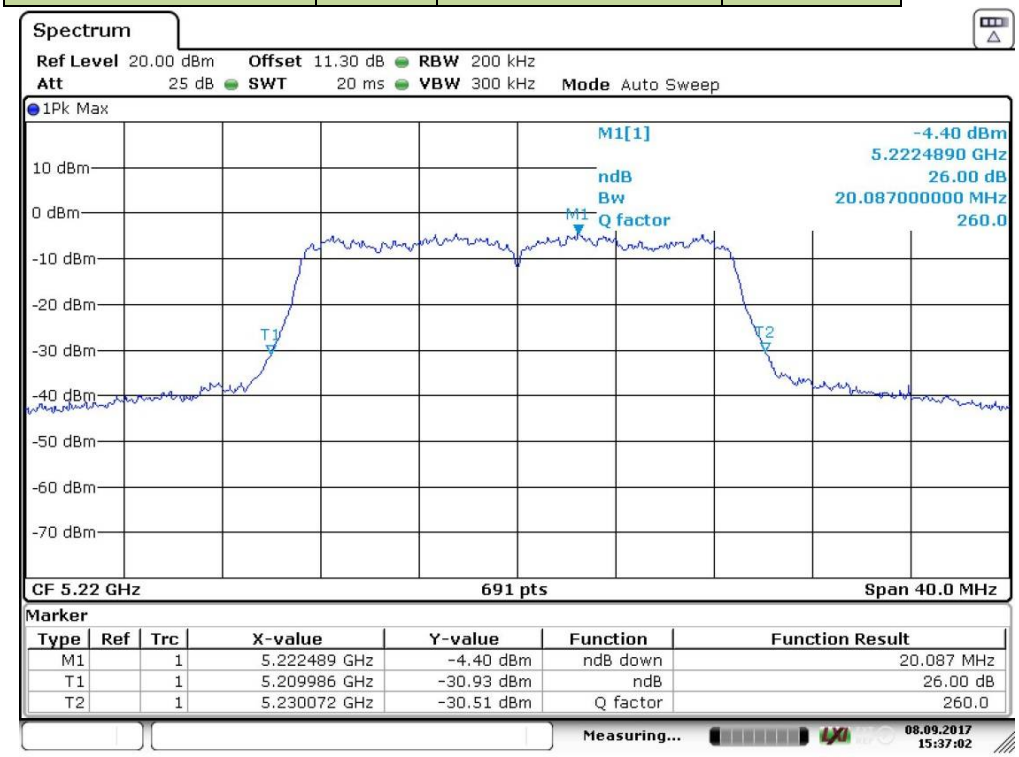
Date: 8.SEP.2017 14:47:39

WLAN n 40 MHz	low	U-NII-3	41.10



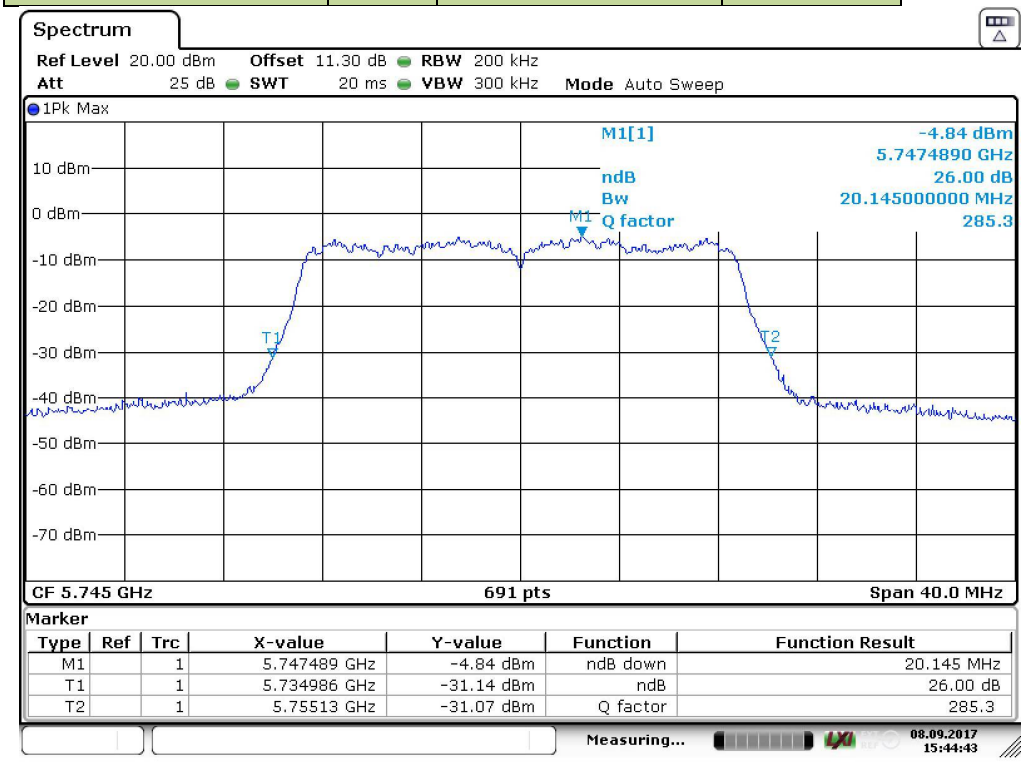
Date: 8.SEP.2017 14:51:44

WLAN ac 20 MHz	mid	U-NII-1	20.087



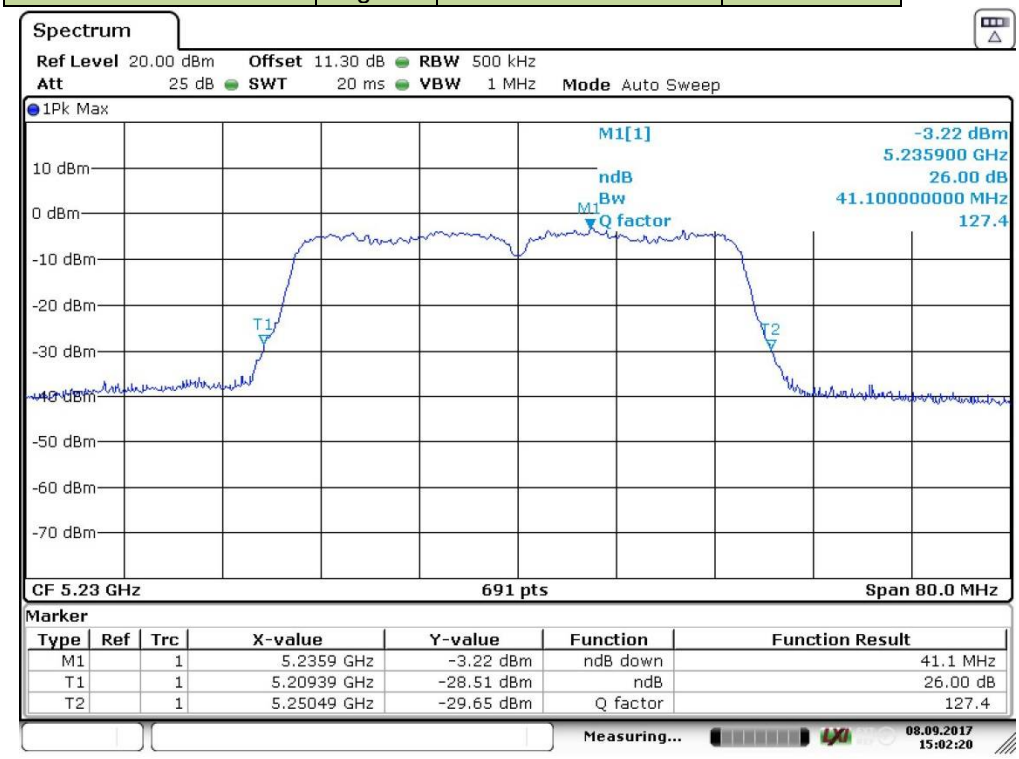
Date: 8.SEP.2017 15:37:03

WLAN ac 20 MHz	low	U-NII-3	20.145



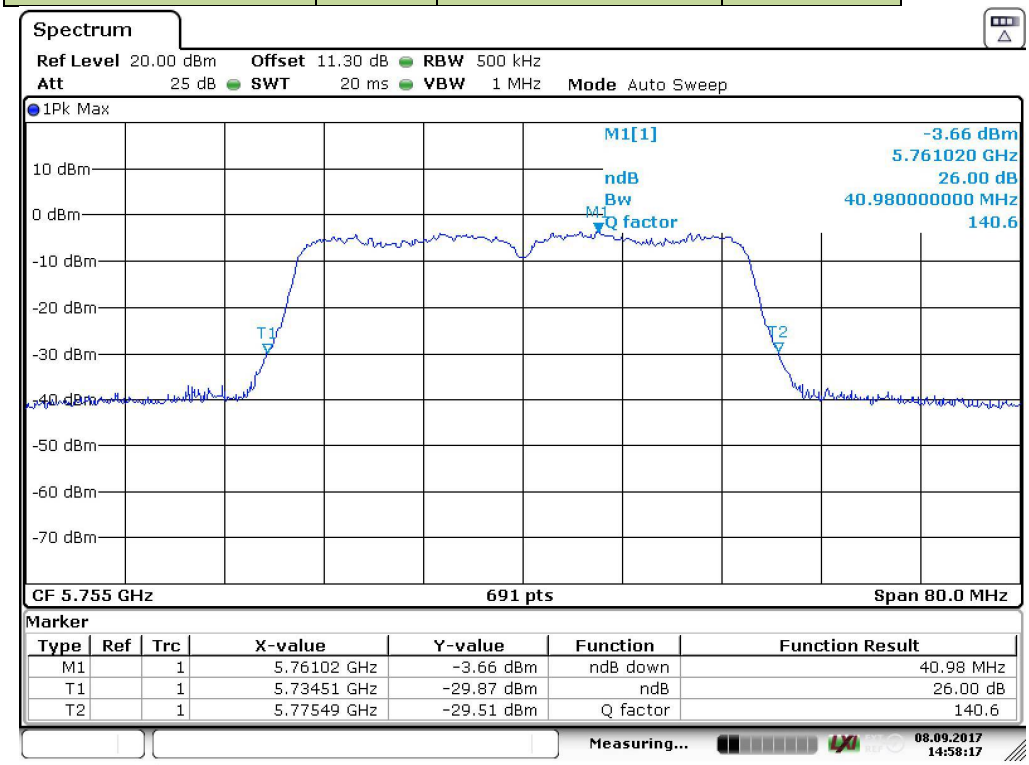
Date: 8.SEP.2017 15:44:43

WLAN ac 40 MHz	high	U-NII-1	41.10



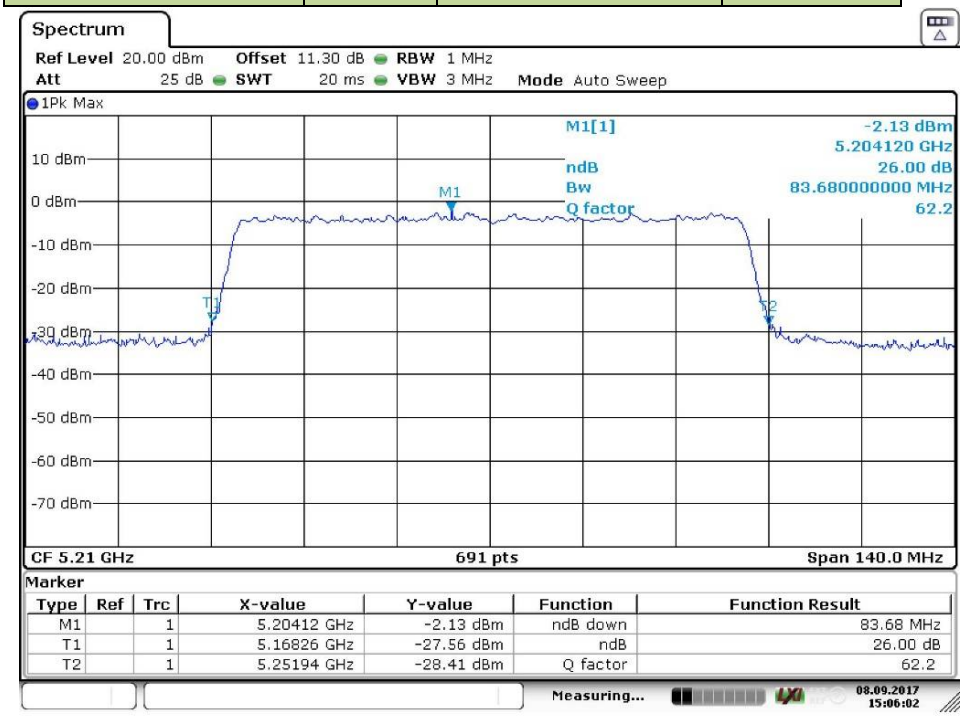
Date: 8.SEP.2017 15:02:20

WLAN ac 40 MHz	low	U-NII-3	40.98



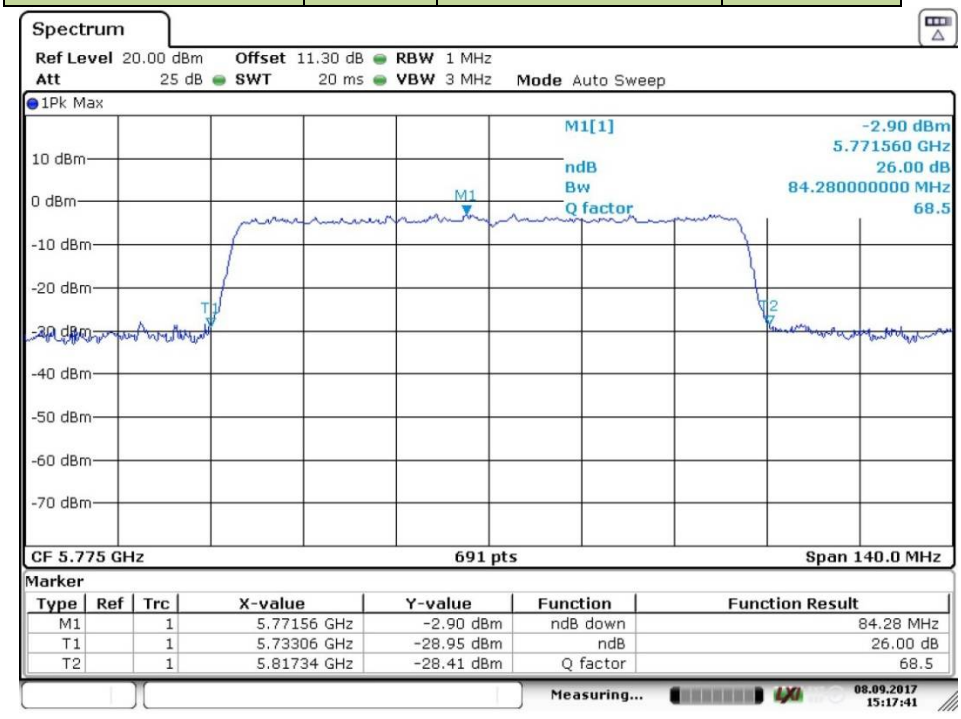
Date: 8.SEP.2017 14:58:18

WLAN ac 80 MHz	mid	U-NII-1	83.68



Date: 8.SEP.2017 15:06:02

WLAN ac 80 MHz	mid	U-NII-3	84.28



Date: 8.SEP.2017 15:17:41

4.1.5 TEST EQUIPMENT USED

- R&S TS8997

4.2 6 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 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: 40 / 80 / 140 / 240 MHz (for 20 / 40 / 80 / 160 MHz nominal bandwidth)
- Trace: Maxhold
- Sweeps: 2000
- Sweeptime: coupled (see measurement plot)
- Detector: Peak

4.2.2 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.

4.2.3 TEST PROTOCOL

Ambient temperature: 22 °C
Air Pressure: 1013 hPa
Humidity: 41 %

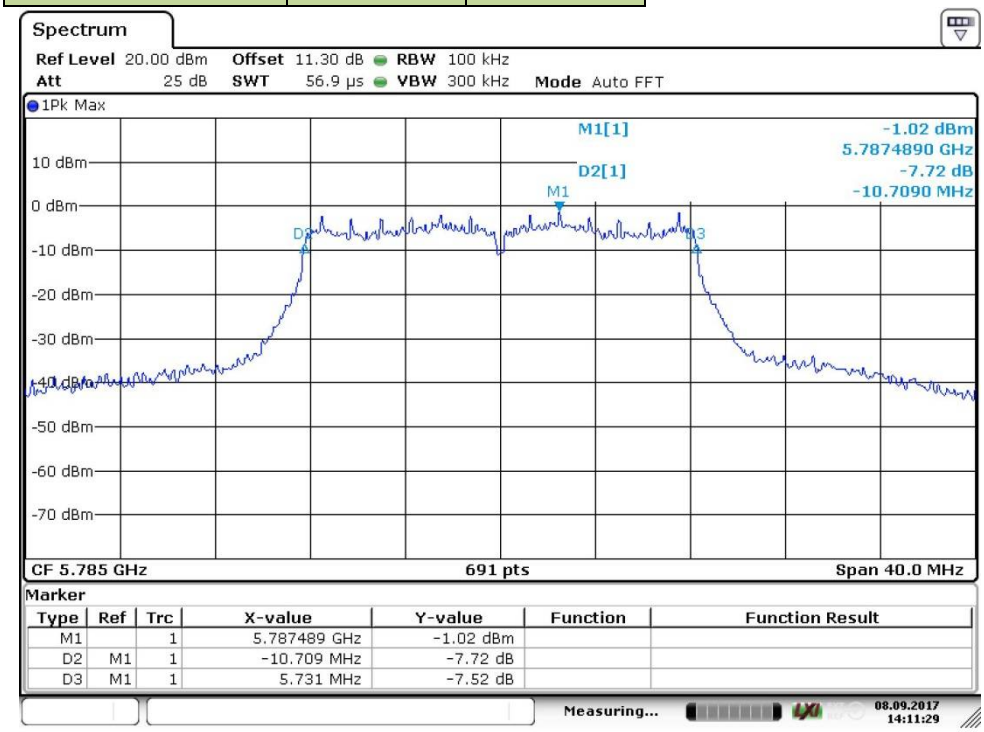
U-NII 3

Radio Technology	Operating Frequency	6 dB Bandwidth [MHz]	Limit [MHz]	Margin [MHz]	Min. 6 dB Frequency [MHz]	Max. 6 dB Frequency [MHz]
WLAN a	low	16.440	0.500	15.940	-10.709	5.731
WLAN a	mid	16.440	0.500	15.940	-10.709	5.731
WLAN a	high	16.440	0.500	15.940	-10.709	5.731
WLAN n 20 MHz	low	17.656	0.500	17.156	-11.346	6.310
WLAN n 20 MHz	mid	17.656	0.500	17.156	-11.346	6.310
WLAN n 20 MHz	high	17.656	0.500	17.156	-11.346	6.310
WLAN n 40 MHz	low	35.840	0.500	35.340	-21.600	14.240
WLAN n 40 MHz	high	35.950	0.500	35.450	-21.650	14.300
WLAN ac 20 MHz	low	17.540	0.500	17.040	-11.230	6.310
WLAN ac 20 MHz	mid	17.656	0.500	17.156	-11.346	6.310
WLAN ac 20 MHz	high	17.656	0.500	17.156	-11.346	6.310
WLAN ac 40 MHz	low	35.770	0.500	35.270	-21.530	14.240
WLAN ac 40 MHz	high	35.820	0.500	35.320	-21.530	14.290
WLAN ac 80 MHz	mid	76.760	0.500	76.260	-33.340	43.420

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

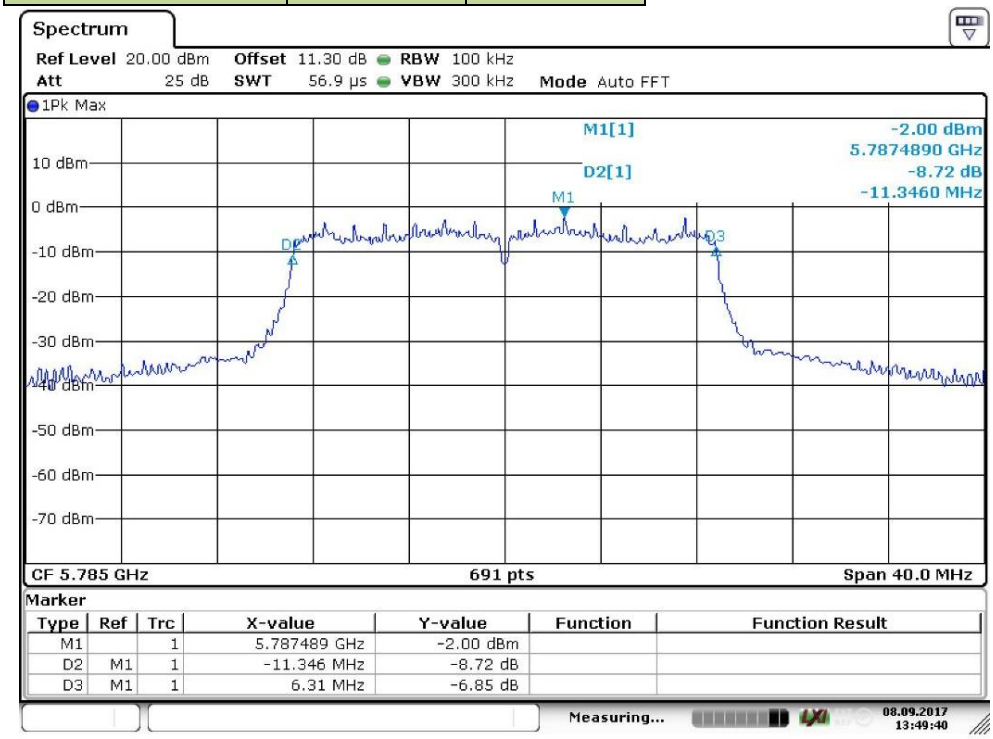
4.2.4 MEASUREMENT PLOT (SHOWING THE HIGHEST VALUE, “WORST CASE”)

WLAN a	mid	16.440



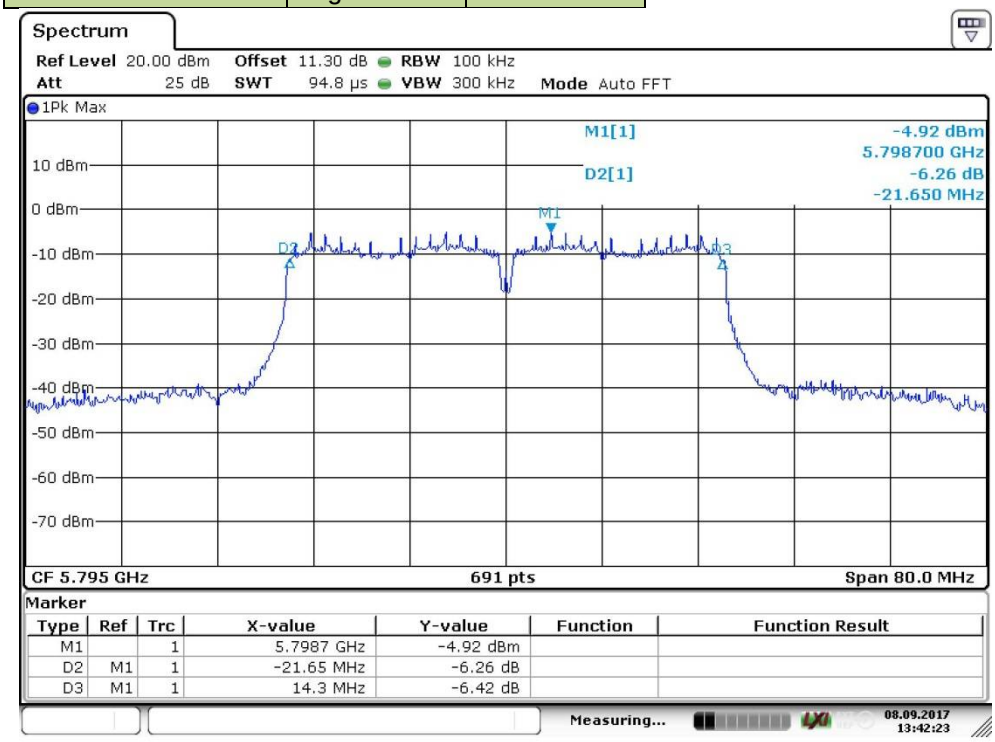
Date: 8.SEP.2017 14:11:29

WLAN n 20 MHz	mid	17.656



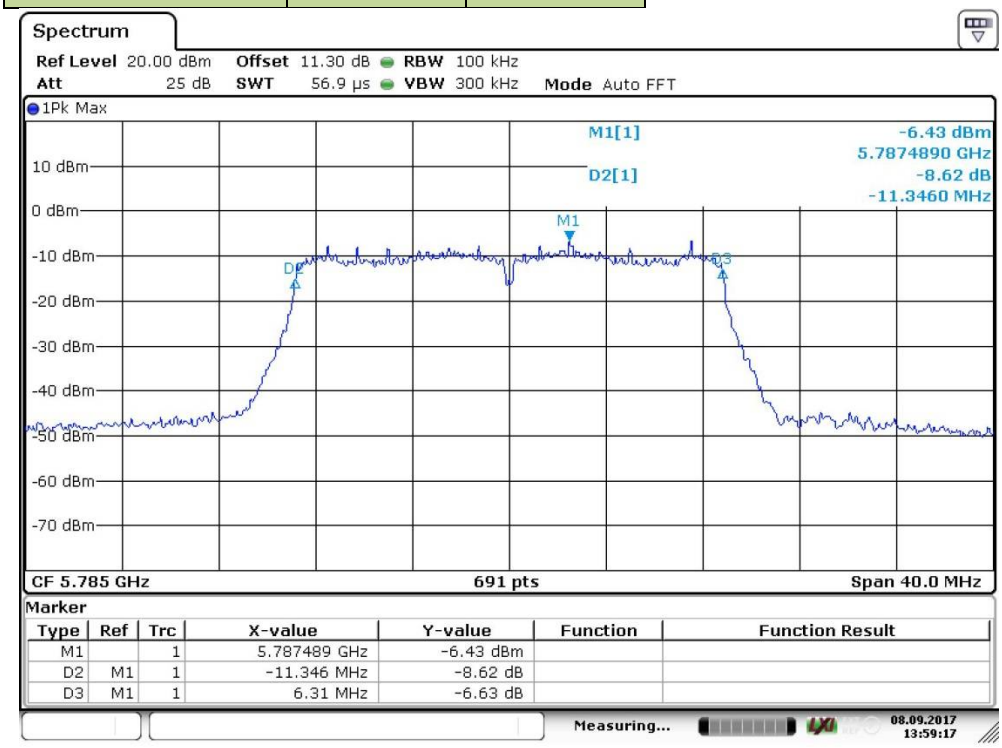
Date: 8.SEP.2017 13:49:40

WLAN n 40 MHz	high	35.950



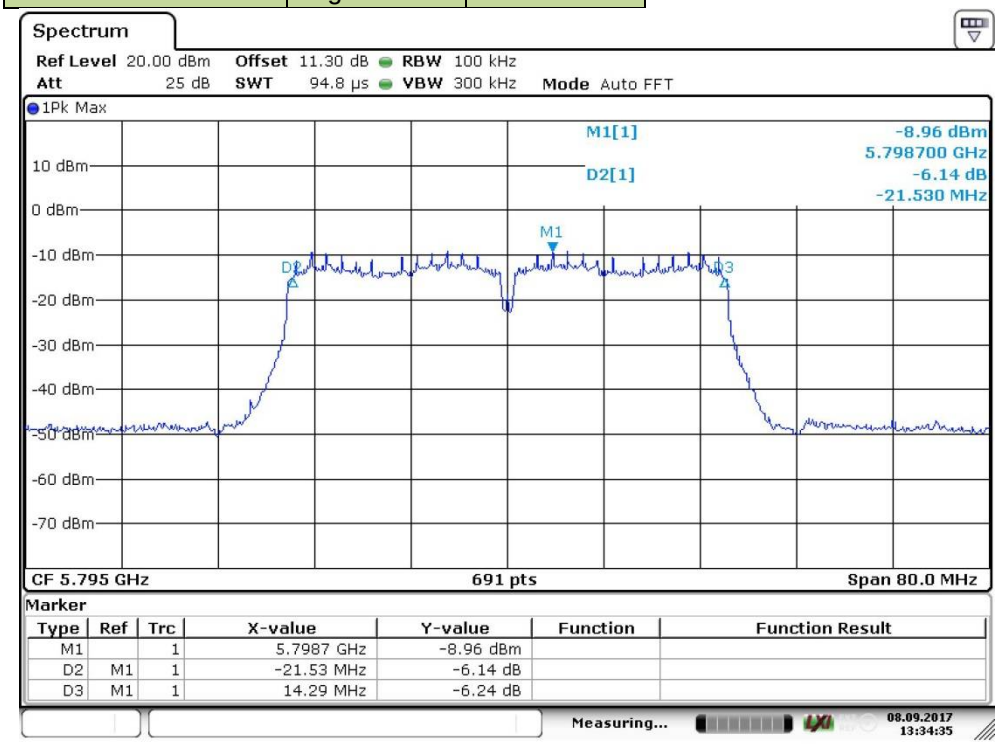
Date: 8.SEP.2017 13:42:24

WLAN ac 20 MHz	mid	17.656



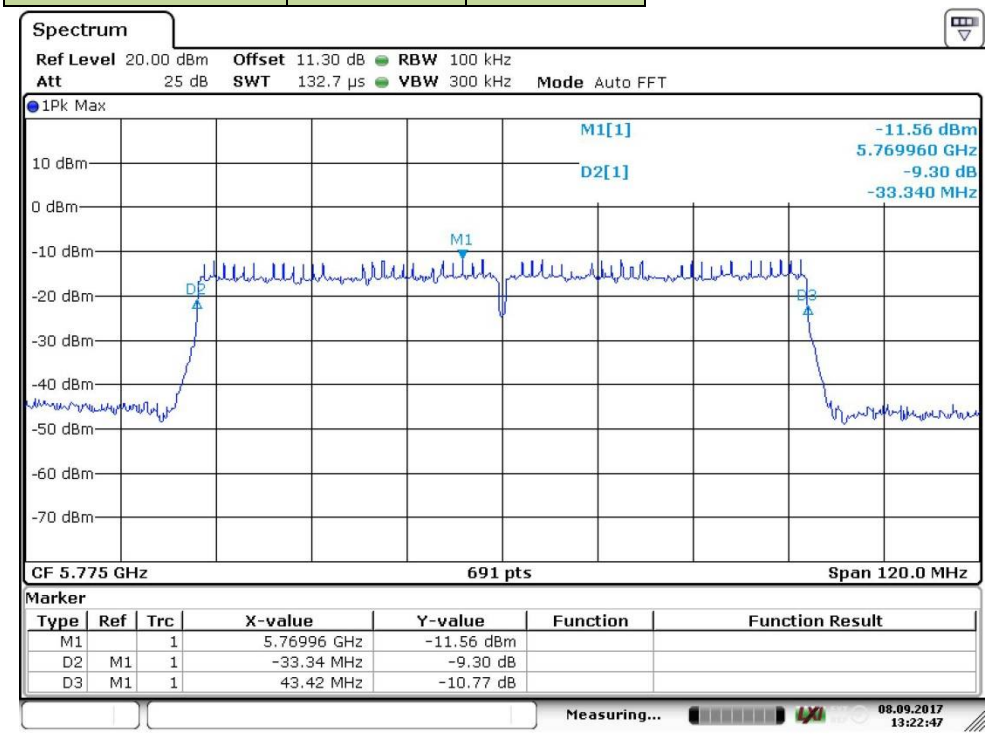
Date: 8.SEP.2017 13:59:18

WLAN ac 40 MHz	high	35.820



Date: 8.SEP.2017 13:34:35

WLAN ac 80 MHz	mid	76.760



Date: 8.SEP.2017 13:22:48

4.2.5 TEST EQUIPMENT USED

- R&S TS8997

4.3 99 % 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 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 / 240 MHz (for 20 / 40 / 80 / 160 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.

4.3.2 TEST REQUIREMENTS / LIMITS

No applicable limit:

4.3.3 TEST PROTOCOL

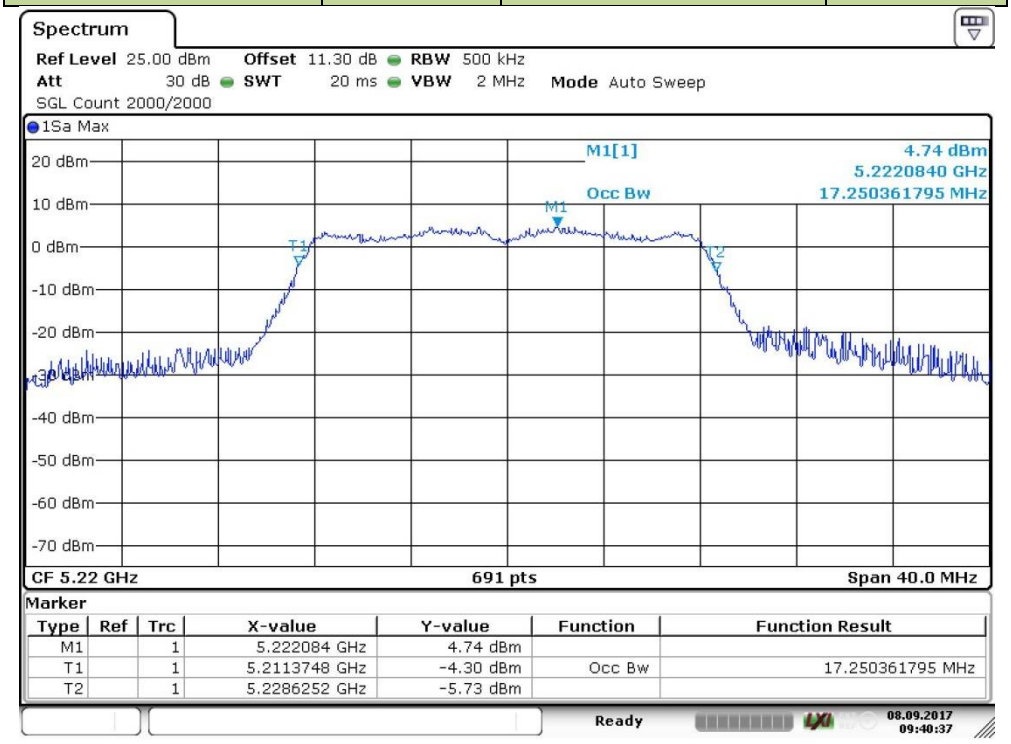
Ambient temperature: 22 °C
Air Pressure: 1013 hPa
Humidity: 41 %

Radio Technology	Operating Frequency	Subband	99% Bandwidth [MHz]
WLAN a	low	U-NII-1	17.192
WLAN a	mid	U-NII-1	17.250
WLAN a	high	U-NII-1	17.192
WLAN a	low	U-NII-3	17.366
WLAN a	mid	U-NII-3	17.192
WLAN a	high	U-NII-3	17.192
WLAN n 20 MHz	low	U-NII-1	17.945
WLAN n 20 MHz	mid	U-NII-1	17.887
WLAN n 20 MHz	high	U-NII-1	18.002
WLAN n 20 MHz	low	U-NII-3	17.945
WLAN n 20 MHz	mid	U-NII-3	17.887
WLAN n 20 MHz	high	U-NII-3	18.003
WLAN n 40 MHz	low	U-NII-1	36.469
WLAN n 40 MHz	high	U-NII-1	36.469
WLAN n 40 MHz	low	U-NII-3	36.351
WLAN n 40 MHz	high	U-NII-3	36.469
WLAN ac 20 MHz	low	U-NII-1	18.003
WLAN ac 20 MHz	mid	U-NII-1	17.887
WLAN ac 20 MHz	high	U-NII-1	17.945
WLAN ac 20 MHz	low	U-NII-3	17.945
WLAN ac 20 MHz	mid	U-NII-3	17.945
WLAN ac 20 MHz	high	U-NII-3	17.887
WLAN ac 40 MHz	low	U-NII-1	36.237
WLAN ac 40 MHz	high	U-NII-1	36.469
WLAN ac 40 MHz	low	U-NII-3	36.353
WLAN ac 40 MHz	high	U-NII-3	36.353
WLAN ac 80 MHz	mid	U-NII-1	76.643
WLAN ac 80 MHz	mid	U-NII-3	76.643

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

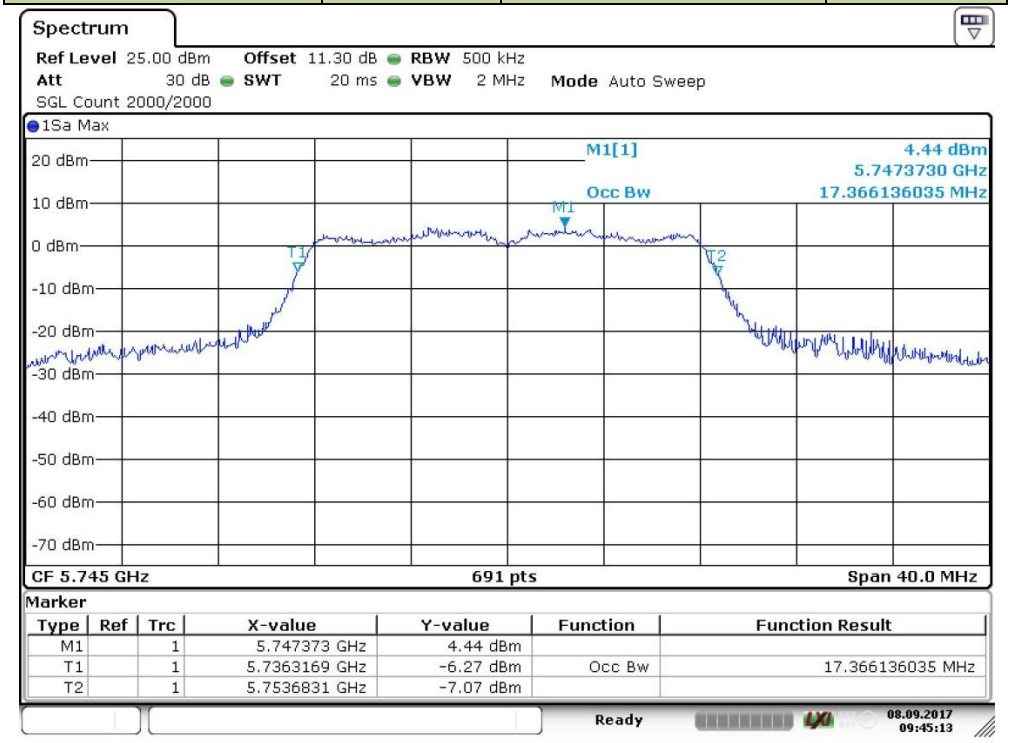
4.3.4 MEASUREMENT PLOT (SHOWING THE HIGHEST VALUE, “WORST CASE”)

WLAN a	mid	U-NII-1	17.250



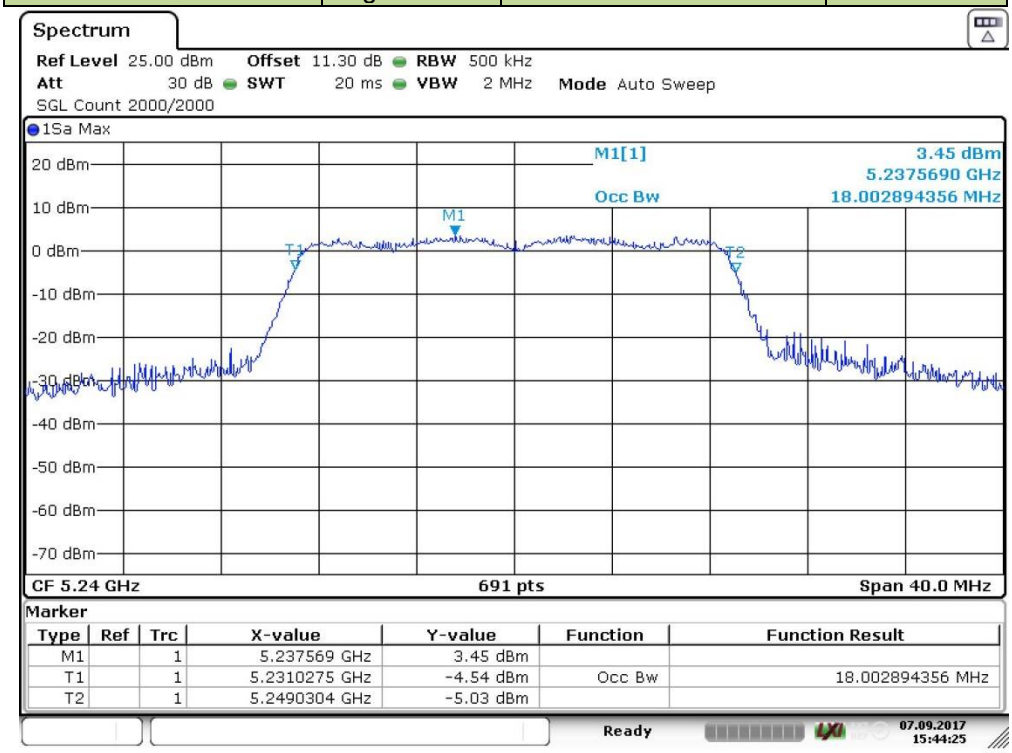
Date: 8.SEP.2017 09:40:38

WLAN a	low	U-NII-3	17.366



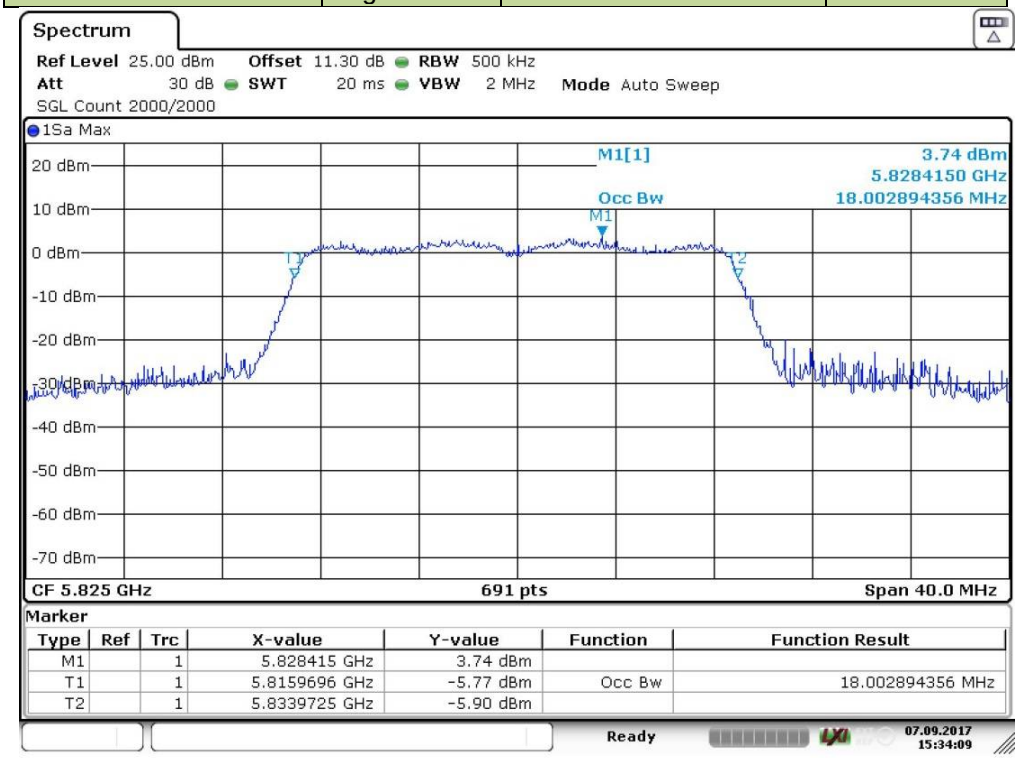
Date: 8.SEP.2017 09:45:13

WLAN n 20 MHz	high	U-NII-1	18.002



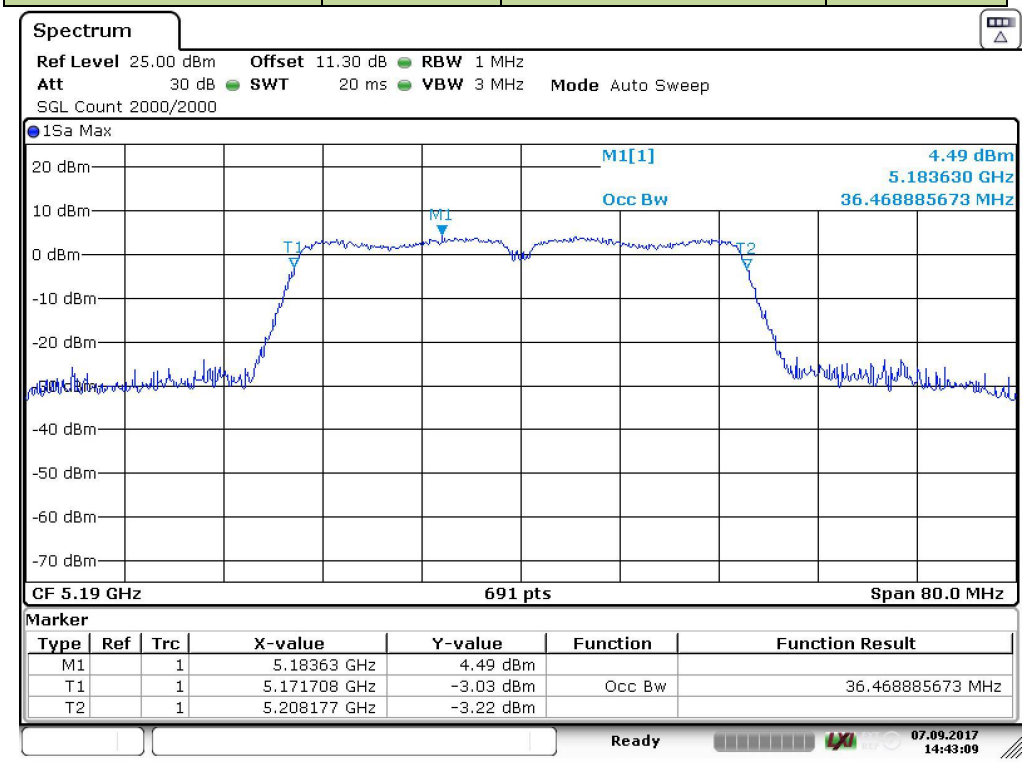
Date: 7.SEP.2017 15:44:26

WLAN n 20 MHz	high	U-NII-3	18.003



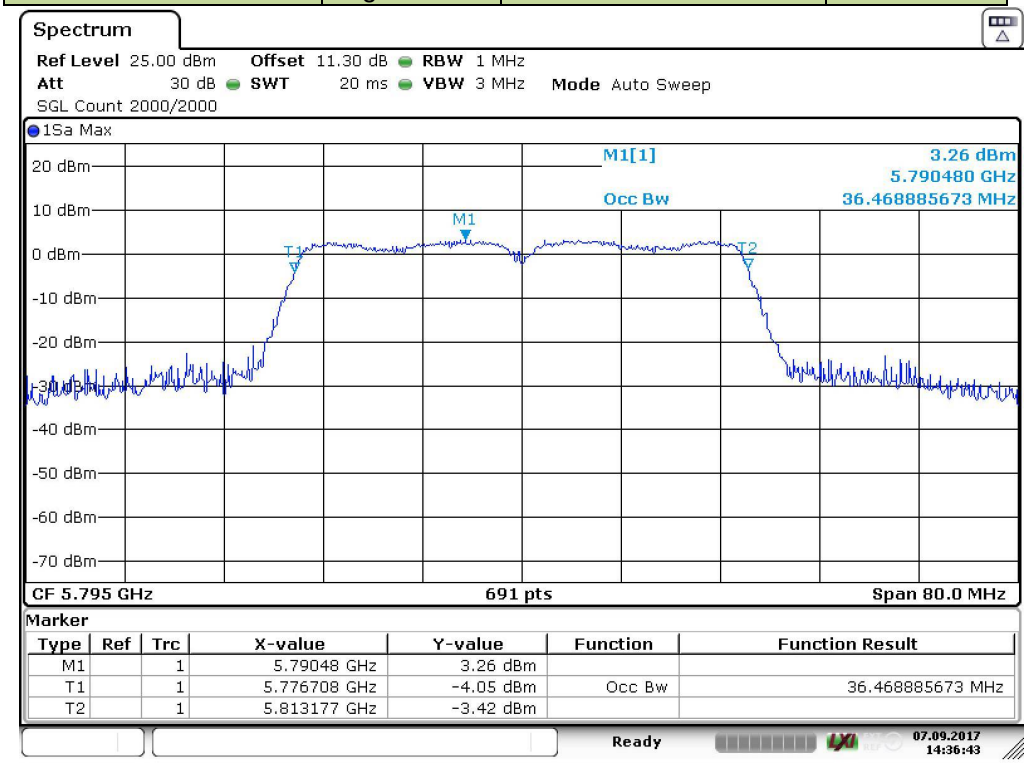
Date: 7.SEP.2017 15:34:09

WLAN n 40 MHz	low	U-NII-1	36.469



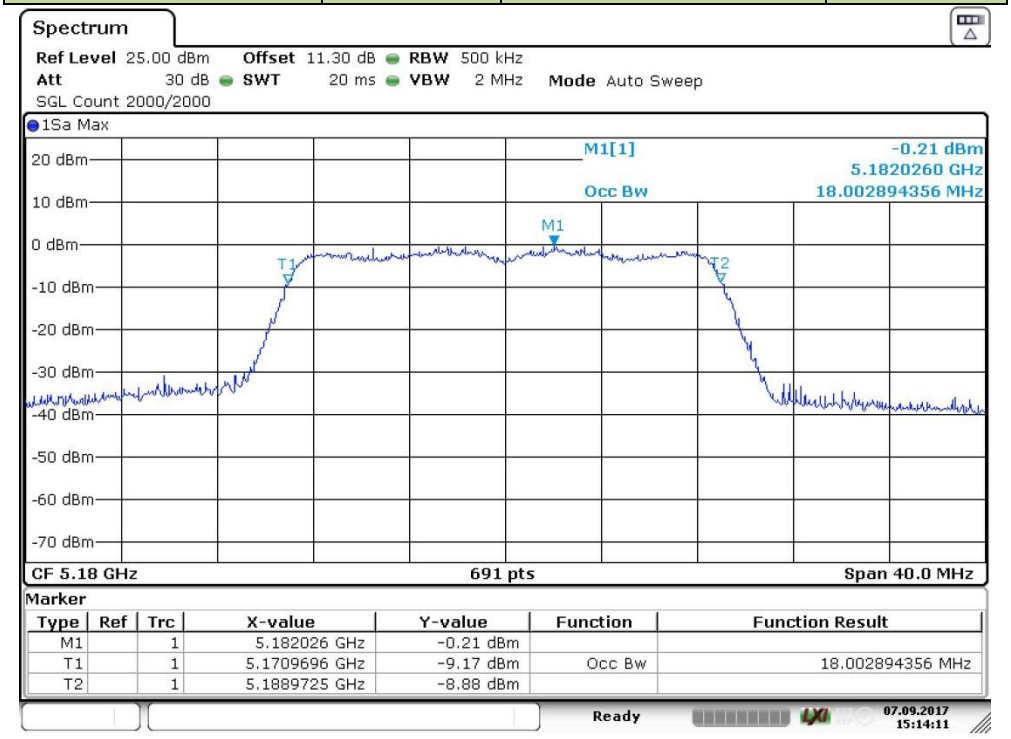
Date: 7.SEP.2017 14:43:10

WLAN n 40 MHz	high	U-NII-3	36.469



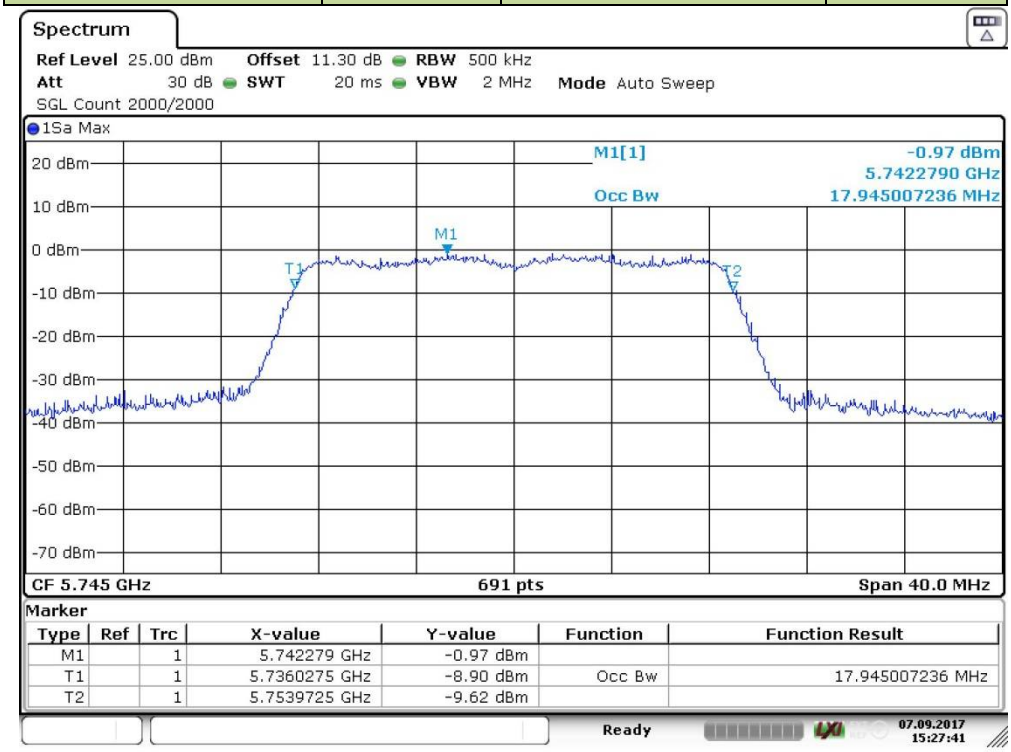
Date: 7.SEP.2017 14:36:43

WLAN ac 20 MHz	low	U-NII-1	18.003



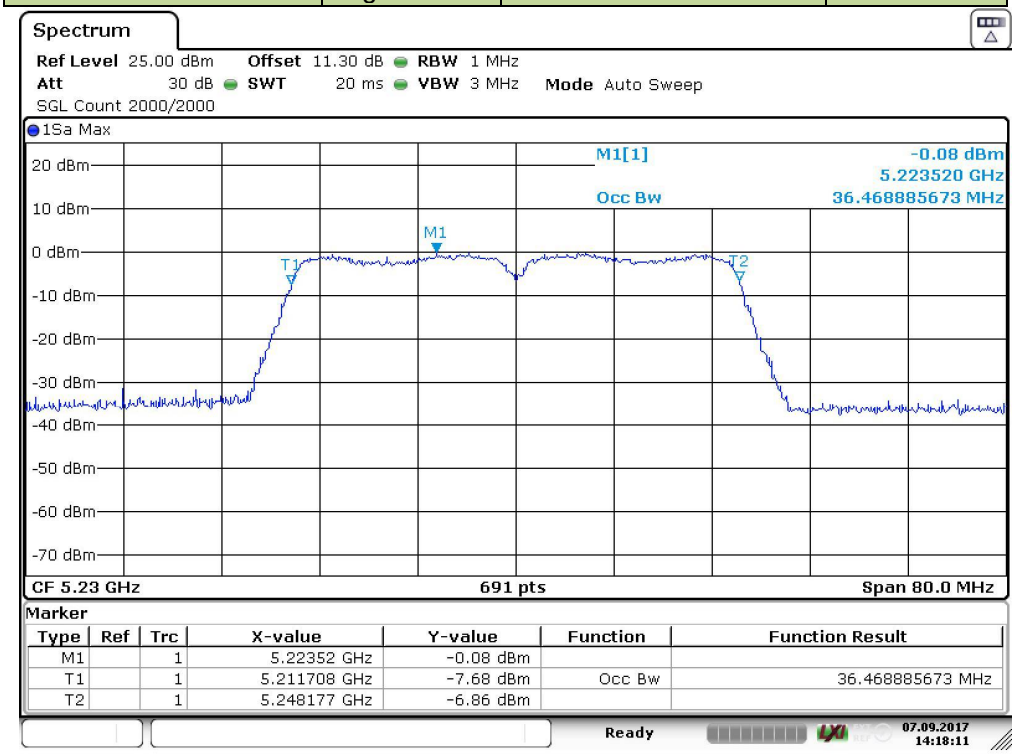
Date: 7.SEP.2017 15:14:11

WLAN ac 20 MHz	low	U-NII-3	17.945



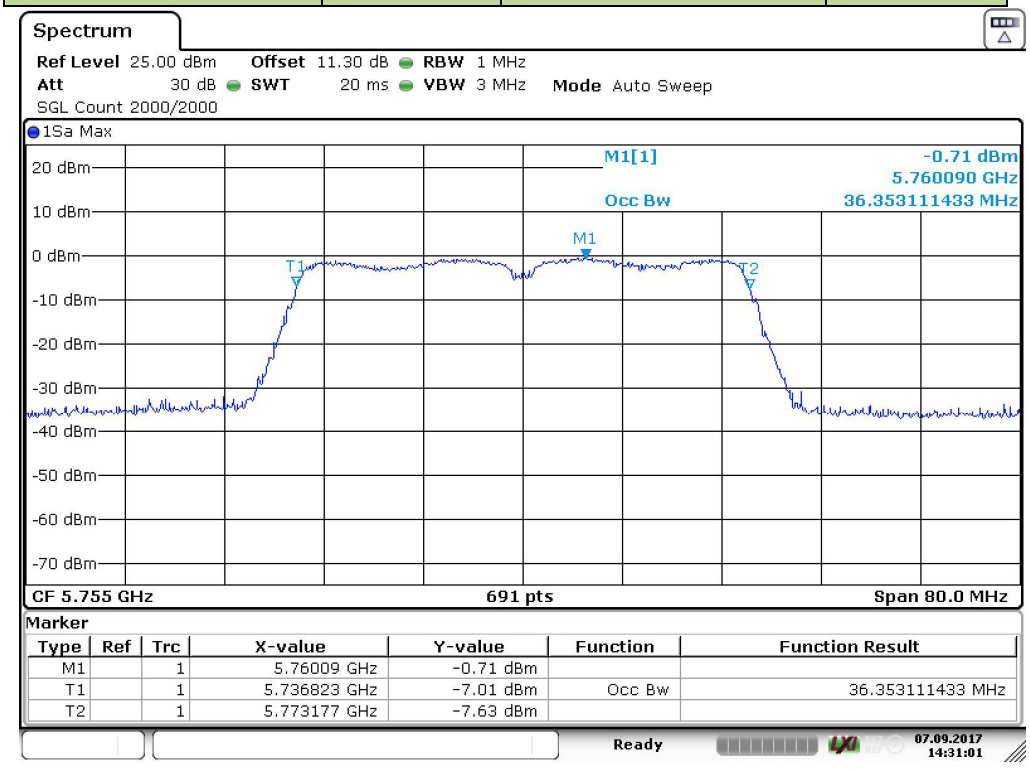
Date: 7.SEP.2017 15:27:42

WLAN ac 40 MHz	high	U-NII-1	36.469



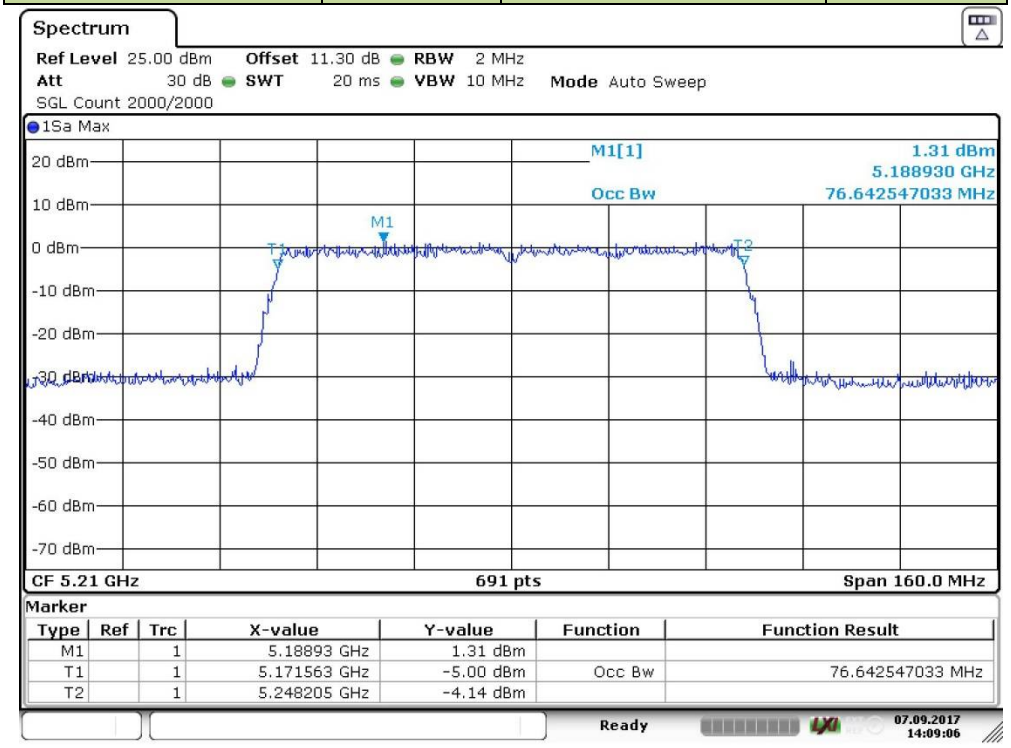
Date: 7.SEP.2017 14:18:11

WLAN ac 40 MHz	low	U-NII-3	36.353



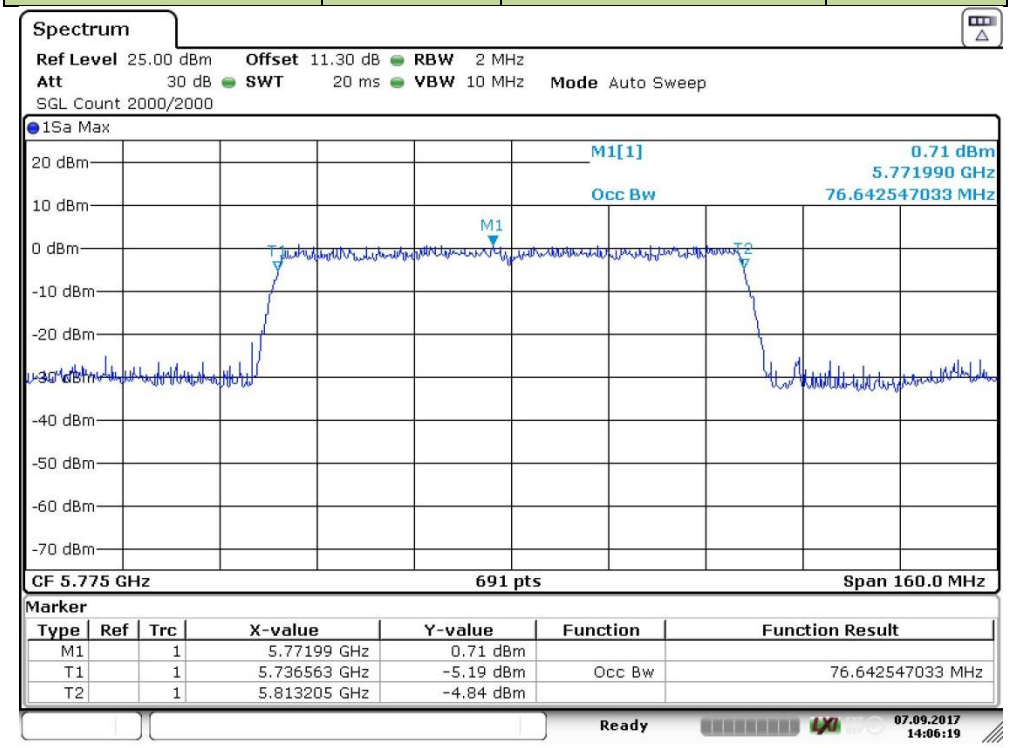
Date: 7.SEP.2017 14:31:02

WLAN ac 80 MHz	mid	U-NII-1	76.643



Date: 7.SEP.2017 14:09:06

WLAN ac 80 MHz	mid	U-NII-3	76.643



Date: 7.SEP.2017 14:06:19

4.3.5 TEST EQUIPMENT USED

- R&S TS8997

4.4 MAXIMUM CONDUCTED OUTPUT POWER

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 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: 100
- 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**.

4.4.2 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, provided the maximum antenna gain does not exceed 6 dBi.

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), provided the maximum antenna gain does not exceed 6 dBi.

§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.
OEM devices installed in vehicles:
Limit (e.i.r.p.): 30 mW (14.8 dBm) or 1.76 + 10 log10B [dBm], whichever is less.

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 5725-5850 MHz:
Limits:
Maximum conducted Power: 1 W (30 dBm)
If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the output power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi, except for fixed point-to-point devices.

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

Note (FCC &IC):
The maximum antenna gain exceeds 6 dBi by 0.7 dB and therefore the limit will be reduced accordingly.

4.4.3 TEST PROTOCOL

Ambient temperature: 22 °C
Air Pressure: 1013 hPa
Humidity: 41 %

WLAN a-Mode; 20 MHz					FCC		IC				
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	11.0	17.7	29.3	18.3	N/A		22.4	4.7	1)
	44	5220	11.1	17.8	29.3	18.2	N/A		22.4	4.6	1)
	48	5240	10.9	17.6	29.3	18.4	N/A		22.4	4.7	1)
3	149	5745	10.1	16.8	29.3	19.2	29.3	19.2	N/A		
	157	5785	9.8	16.5	29.3	19.5	29.3	19.5	N/A		
	165	5825	9.4	16.1	29.3	19.9	29.3	19.9	N/A		

WLAN n-Mode; 20 MHz					FCC		IC				
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	10.2	16.9	29.3	19.1	N/A		22.5	5.6	1)
	44	5220	9.9	16.6	29.3	19.4	N/A		22.5	5.9	1)
	48	5240	9.7	16.4	29.3	19.6	N/A		22.6	6.2	1)
3	149	5745	8.9	15.6	29.3	20.4	29.3	20.4	N/A		
	157	5785	8.7	15.4	29.3	20.6	29.3	20.6	N/A		
	165	5825	8.6	15.3	29.3	20.7	29.3	20.7	N/A		

WLAN n-Mode; 40 MHz					FCC		IC				
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	10.2	16.9	29.3	19.1	N/A		23.0	6.1	1)
	46	5230	9.8	16.5	29.3	19.5	N/A		23.0	6.5	1)
3	151	5755	8.9	15.6	29.3	20.4	29.3	20.4	N/A		
	159	5795	8.9	15.6	29.3	20.4	29.3	20.4	N/A		

WLAN ac-Mode; 20 MHz					FCC		IC				
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	5.4	12.1	29.3	23.9	N/A		22.6	10.5	1)
	44	5220	5.3	12.0	29.3	24.0	N/A		22.5	10.5	1)
	48	5240	5.6	12.3	29.3	23.7	N/A		22.5	10.2	1)
3	149	5745	5.1	11.8	29.3	24.2	29.3	24.2	N/A		
	157	5785	4.8	11.5	29.3	24.5	29.3	24.5	N/A		
	165	5825	5.2	11.9	29.3	24.1	29.3	24.1	N/A		

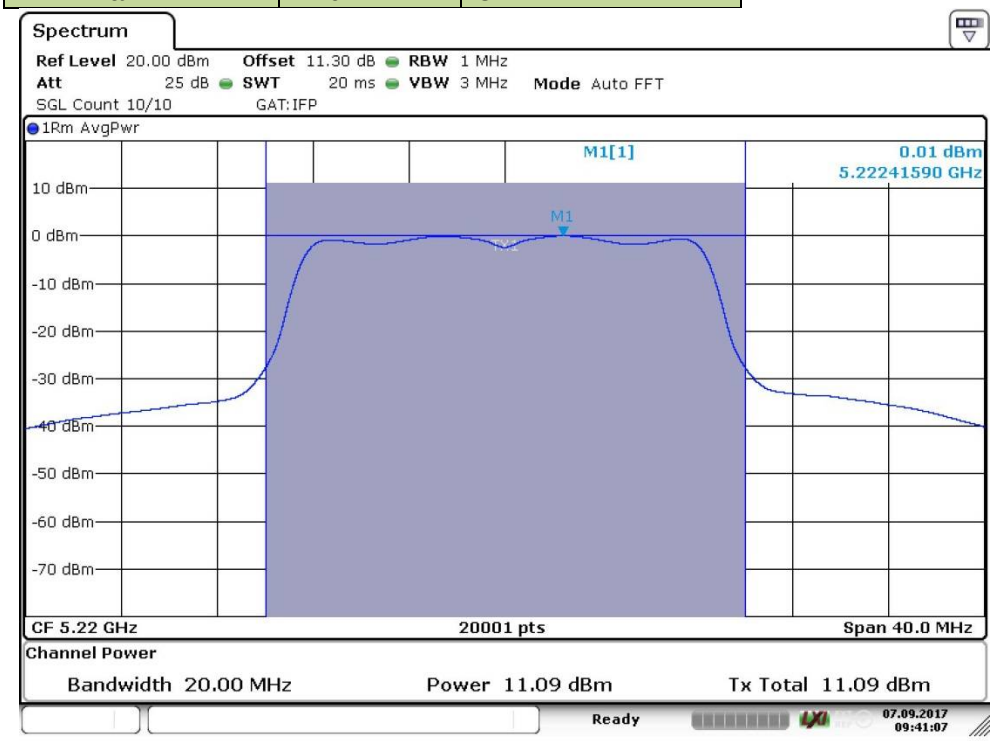
WLAN ac-Mode; 40 MHz					FCC		IC				
U-NII-Subband	Ch. No.	Freq. [MHz]	Cond. Power [dBm]	EIRP [dBm]	Cond. Limit [dBm]	Margin [dB]	Cond. Limit [dBm]	Margin [dB]	EIRP Limit [dBm]	Margin [dB]	
1	38	5190	5.7	12.4	29.3	23.6	N/A		23.0	10.6	1)
	46	5230	5.6	12.3	29.3	23.7	N/A		23.0	10.7	1)
3	151	5755	5.3	12.0	29.3	24.0	29.3	24.0	N/A		
	159	5795	5.0	11.7	29.3	24.3	29.3	24.3	N/A		

WLAN ac-Mode; 80 MHz					FCC		IC				
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	6.0	12.7	29.3	23.4	N/A		23.0	10.4	1)
3	155	5775	5.4	12.1	29.3	23.9	29.3	23.9	N/A		

1) = no additional limit applies related to the elevation.

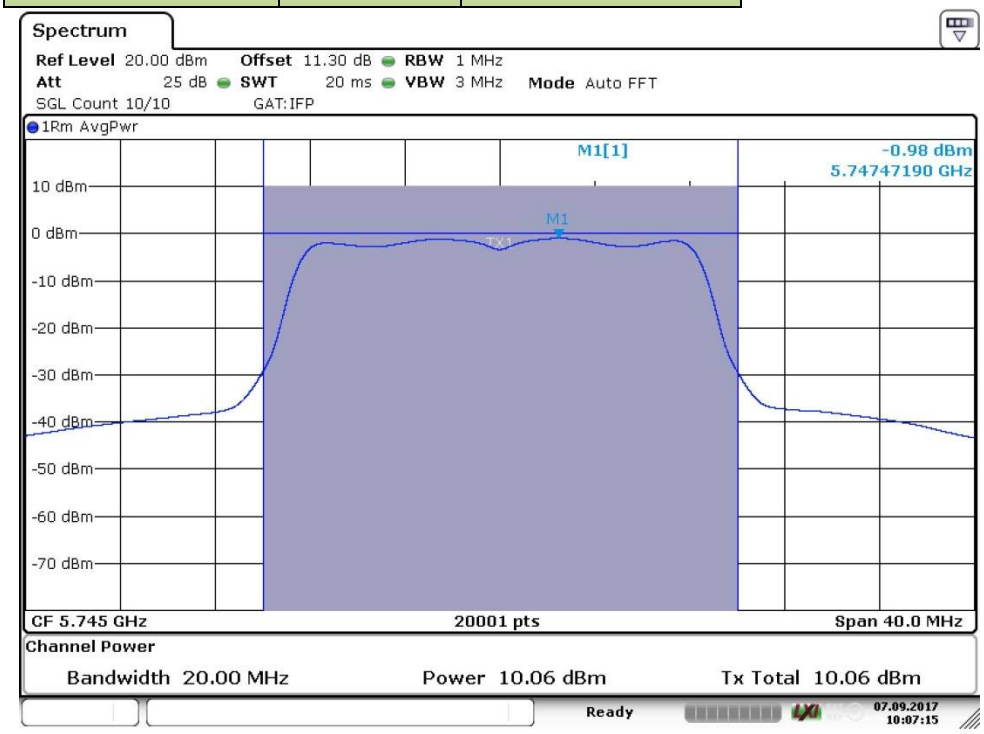
4.4.4 MEASUREMENT PLOT (SHOWING THE HIGHEST VALUE, “WORST CASE”)

WLAN a	mid	U-NII-1



Date: 7.SEP.2017 09:41:08

WLAN a	low	U-NII-3



Date: 7.SEP.2017 10:07:15

WLAN n 20 MHz	low	U-NII-1