



## FCC TEST REPORT

**Application No:** HR/2019/40008  
**Applicant:** Huawei Technologies Co., Ltd.  
**Address of Applicant:** Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C  
**Manufacturer:** Huawei Technologies Co., Ltd.  
**Address of Manufacturer:** Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C  
**EUT Description:** Mobile Phone  
**Model No.:** YAL-L21  
**Trade Mark:::** Honor  
**FCC ID:** QISYAL-L21  
**Standards:** 47 CFR FCC Part 2, Subpart J  
 47 CFR FCC Part 15, Subpart C  
 47 CFR FCC Part 15, Subpart E  
 KDB 789033 D02 General UNII Test Procedures New Rules v02  
 FCC KDB 558074 D01 DTS Meas Guidance v05  
**Test Method:** KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02  
 KDB 905462 D03 Client Without DFS New Rules v01r02  
 ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices  
**Date of Receipt:** 2019/4/10  
**Date of Test:** 2019/4/10 to 2019/4/24  
**Date of Issue:** 2019/4/25

<b>Test Result:</b>	<b>PASS *</b>
---------------------	---------------

. \* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Derek Yang  
Wireless Laboratory Manager



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.  
 Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

# 1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2019/4/25		Original

<b>Authorized for issue by:</b>			
<b>Tested By</b>		 <hr/> (Mike Hu) /Project Engineer	2019/4/25 <hr/> <b>Date</b>
<b>Checked By</b>		 <hr/> (David Chen) /Reviewer	2019/4/25 <hr/> <b>Date</b>



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

## Contents

<b>1</b>	<b>VERSION.....</b>	<b>2</b>
<b>2</b>	<b>TEST SUMMARY.....</b>	<b>4</b>
<b>3</b>	<b>GENERAL INFORMATION.....</b>	<b>7</b>
3.1	CLIENT INFORMATION.....	7
3.2	TEST LOCATION.....	7
3.3	TEST FACILITY.....	7
3.4	GENERAL DESCRIPTION OF EUT.....	8
3.5	TEST ENVIRONMENT AND MODE.....	11
<b>4</b>	<b>TEST RESULTS AND MEASUREMENT DATA.....</b>	<b>12</b>
4.1	ANTENNA REQUIREMENT.....	12
4.2	CONDUCTED EMISSIONS.....	12
4.3	DUTY CYCLE.....	16
4.3.1	Test Results.....	16
4.3.1	Test Plots.....	16
4.4	CONDUCTED OUTPUT POWER.....	20
4.5	EMISSION BANDWIDTH AND 99% OCCUPIED BANDWIDTH.....	23
4.5.1	Measurement Data:.....	24
4.5.2	Plots for 26dB Emission Bandwidth & 99% Occupied Bandwidth.....	26
4.6	6dB EMISSION BANDWIDTH & 99% OCCUPIED BANDWIDTH.....	73
4.6.1	Plots for 6dB Emission Bandwidth & 99% Occupied Bandwidth.....	75
4.7	POWER SPECTRAL DENSITY.....	89
4.7.1	Test plots.....	92
4.8	RADIATED SPURIOUS EMISSIONS.....	123
4.8.1	Radiated emission below 1GHz.....	125
4.8.2	Transmitter emission above 1GHz.....	127
4.9	RESTRICTED BANDS AROUND FUNDAMENTAL FREQUENCY.....	249
4.9.1	Test plots.....	251
4.10	FREQUENCIES STABILITY.....	345
4.10.1	Frequency Error vs. Voltage:.....	345
4.10.2	Frequency Error vs. Temperature:.....	345
4.11	DYNAMIC FREQUENCY SELECTION.....	346
4.11.1	DFS Overview.....	346
4.11.2	DFS Detection Thresholds.....	347
4.11.3	Response Requirements.....	347
4.11.4	Test plots.....	348
4.11.5	Test Data:.....	349
<b>5</b>	<b>MEASUREMENT UNCERTAINTY (95% CONFIDENCE LEVELS, K=2).....</b>	<b>351</b>
<b>6</b>	<b>EQUIPMENT LIST.....</b>	<b>352</b>
<b>7</b>	<b>PHOTOGRAPHS - EUT TEST SETUP DETAILS.....</b>	<b>354</b>



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.  
Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

## 2 Test Summary

Test Item	Band	FCC Rule	Requirements	Test Result	Verdict
Emission Bandwidth	5150-5250	15.403(i) 15.407(a)(1)	No limit.	Clause 4.4 Clause 4.5	Pass
	5250-5350	15.403(i) 15.407(a)(2)			
	5470-5725	15.403(i) 15.407(a)(2)			
	5725-5850	15.403(i) 15.407(e)	≥ 500 kHz.		
Occupied Bandwidth	5150-5250	KDB 789033 D02§ D	No limit.		Pass
	5250-5350				
	5470-5725				
	5725-5850				
Duty Cycle	5150-5850	--	No limit.		
Maximum Conducted Output Power	5150-5250	15.407(a)(1) 15.407(a)(4)	FCC < 250mW (avg during transmission)	Clause 4.3	Pass
	5250-5350	15.407(a)(2) 15.407(a)(4)	<MIN{250mW,11dBm+10*Ig(EBW)} (avg during transmission)		
	5470-5725	15.407(a)(2) 15.407(a)(4)	<MIN{250mW,11dBm+10*Ig(EBW)} (avg during transmission)		
	5725-5850	15.407(a)(3)	< 1W (avg during transmission)		
maximum Power Spectral Density	5150-5250	15.407(a)(1) 15.407(a)(4)	<11dBm/MHz (avg during transmission)	Clause 4.6	
	5250-5350	15.407(a)(2) 15.407(a)(4)	<11dBm/MHz (avg during transmission)		
	5470-5725	15.407(a)(2) 15.407(a)(4)	<11dBm/MHz (avg during transmission)		
	5725-5850	15.407(a)(3) 15.407(a)(4)	<30dBm/500KHz (avg during transmission)		
Unwanted Emissions that fall Outside of the Restricted Bands(Radiated)	5150-5250	15.407(b)(1) 15.407(b)(6) 15.407(b)(7) 15.209	F<1GHz: §15.209/§7.2.5 limit (QP). F≥1GHz & out-restricted: <-27dBm/MHz PK e.i.r.p. (exl. 5.15-5.35 GHz). F≥1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).	Clause 4.7	Pass
	5250-5350	15.407(b)(2) 15.407(b)(6) 15.407(b)(7) 15.209	F<1GHz: §15.209/§7.2.5 limit (QP). F≥1GHz & out-restricted: <-27dBm/MHz PK e.i.r.p. (exl. 5.25-5.35 GHz). F≥1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).		



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

Test Item	Band	FCC Rule	Requirements	Test Result	Verdict
	5470-5750	15.407(b)(3) 15.407(b)(6) 15.407(b)(7) 15.209	F<1GHz: §15.209/§7.2.5 limit (QP). F≥1GHz & out-restricted: <-27dBm/MHz PK e.i.r.p. (exl. 5.47-5.725 GHz). F≥1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).		
	5725-5850	15.407(b)(4) 15.407(b)(6) 15.407(b)(7) 15.209	F<1GHz: §15.209/§7.2.5 limit (QP) F≥1GHz & out-restricted:(QP) a) 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges; b) 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges; c) 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and d) -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges. F≥1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).		
Unwanted Emissions in the Restricted Bands (Radiated)	5150-5250 5250-5350 5470-5725 5725-5850	15.209		Clause 4.8	Pass
AC Power Line Conducted Emissions	5150-5250 5250-5350 5470-5725 5725-5850	15.207		Clause 4.2	Pass
Frequency Stability	5150-5250 5250-5350 5470-5600 5650-5725 5725-5850	15.209	IC RSS-Gen, 6.11	Clause 4.9	Pass



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.  
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)



Test Item	Band	FCC Rule	Requirements	Test Result	Verdict
Dynamic Frequency Selection	5250-5350 5470-5725	47 CFR Part 15, Subpart E 15.407	Channel Move Time:10 Seconds	Clause 4.10	Pass
			Transmission Time: milliseconds + an aggregate of 60 milliseconds over remaining 10 second period.		
			Non-occupancy period: Minimum 30 minutes		



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

### 3 General Information

#### 3.1 Client Information

Applicant:	Huawei Technologies Co., Ltd.
Address of Applicant:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Manufacturer:	Huawei Technologies Co., Ltd.
Address of Manufacturer:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

#### 3.2 Test Location

Company:	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Address:	No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China
Post code:	518057
Telephone:	+86 (0) 755 2601 2053
Fax:	+86 (0) 755 2671 0594
E-mail:	ee.shenzhen@sgs.com

#### 3.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.  
Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

### 3.4 General Description of EUT

EUT Description::	Mobile Phone	
Model No.:	YAL-L21	
Trade Mark:	Honor	
Hardware Version:	HL2YALEM01	
Software Version:	9.1.0.101 ( SP1C900E101R1P2 )	
IEEE 802.11 WLAN Mode Supported	<input checked="" type="checkbox"/> 802.11a (20 MHz channel bandwidth) ; <input checked="" type="checkbox"/> 802.11n (20 MHz channel bandwidth); <input checked="" type="checkbox"/> 802.11n (40 MHz channel bandwidth); <input checked="" type="checkbox"/> 802.11ac (20 MHz channel bandwidth); <input checked="" type="checkbox"/> 802.11ac (40 MHz channel bandwidth); <input checked="" type="checkbox"/> 802.11ac (80 MHz channel bandwidth), <input checked="" type="checkbox"/> 802.11ac (160 MHz channel bandwidth),	
Operation Frequency:	All	$f_c = 5000 \text{ MHz} + N * 5 \text{ MHz}$ , where: -fc = "Operating Frequency" in MHz, -N = "Channel Number".
	5150-5250 MHz (U-NII)	N = 36 to 48 with step of 4 for the 20 MHz channel bandwidth. N = 38 to 46 with step of 8 for the 40 MHz channel bandwidth. N = 42 for the 80 MHz channel bandwidth.
	5250-5350 MHz (U-NII)	N = 52 to 64 with step of 4 for the 20 MHz channel bandwidth. N = 54 to 62 with step of 8 for the 40 MHz channel bandwidth. N = 58 for the 80 MHz channel bandwidth. N = 50 for the 160 MHz channel bandwidth.
	5470-5650 MHz (U-NII) (for FCC)	N = 100 to 128 with step of 4 for the 20 MHz channel bandwidth. N = 102 to 126 with step of 8 for the 40 MHz channel bandwidth. N = 106 to 122 with step of 16 for the 80 MHz channel bandwidth. N = 114 for the 160 MHz channel bandwidth.
	5650-5725 MHz (U-NII)	N = 132 to 144 with step of 4 for the 20 MHz channel bandwidth. N = 134 to 142 with step of 8 for the 40 MHz channel bandwidth. N = 138 for the 80 MHz channel bandwidth.
	5725-5850MHz(U-NII)	N = 149 to 165 with step of 4 for the 20 MHz channel bandwidth. N = 151 to 159 with step of 8 for the 40 MHz channel bandwidth. N = 155 for the 80 MHz channel bandwidth.
	* The 5580-5650MHz can not be used.	



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.  
 Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)



Type of Modulation:	OFDM
DFS mode:	<input type="checkbox"/> Master <input type="checkbox"/> Slave with radar detection <input checked="" type="checkbox"/> Slave without radar detection
Sample Type:	<input checked="" type="checkbox"/> Portable Device, <input type="checkbox"/> Module
Antenna Type:	<input type="checkbox"/> External, <input checked="" type="checkbox"/> Integrated
Antenna Ports	<input checked="" type="checkbox"/> Ant 1, <input type="checkbox"/> Ant 2, <input type="checkbox"/> Ant 3
Smart System	<input checked="" type="checkbox"/> SISO (for 802.11a/n/ac), <input type="checkbox"/> MIMO (for 802.11n/ac), <input type="checkbox"/> Diversity (for 802.11a) : Tx & Rx
Antenna Gain:	1.0dBi,
Power Supply	<input checked="" type="checkbox"/> AC/DC Adapter; <input type="checkbox"/> PoE;; <input type="checkbox"/> Other:
Accessories	<p>Model: HW-050450E01 Manufacturer: Huawei Technologies Co.,Ltd. Input Voltage: 100-240V ~50/60Hz 0.75A Output Voltage: 5V <input checked="" type="checkbox"/> 2A OR 4.5V <input checked="" type="checkbox"/> 5A OR 5V <input checked="" type="checkbox"/> 4.5A</p> <p>Model: HW-050450A01 Manufacturer: Huawei Technologies Co.,Ltd. Input Voltage: 100-240V ~50/60Hz 0.75A Output Voltage: 5V <input checked="" type="checkbox"/> 2A OR 4.5V <input checked="" type="checkbox"/> 5A OR 5V <input checked="" type="checkbox"/> 4.5A</p> <p>Model: HW-050450E00 Manufacturer: Huawei Technologies Co.,Ltd. Input Voltage: 100-240V ~50/60Hz 0.75A Output Voltage: 5V <input checked="" type="checkbox"/> 2A OR 4.5V <input checked="" type="checkbox"/> 5A OR 5V <input checked="" type="checkbox"/> 4.5A</p> <p>Model: HW-050450A00 Manufacturer: Huawei Technologies Co.,Ltd. Input Voltage: 100-240V ~50/60Hz 0.75A Output Voltage: 5V <input checked="" type="checkbox"/> 2A OR 4.5V <input checked="" type="checkbox"/> 5A OR 5V <input checked="" type="checkbox"/> 4.5A</p> <p>Model: HW-050450B00 Manufacturer: Huawei Technologies Co.,Ltd. Input Voltage: 100-240V ~50/60Hz 0.75A Output Voltage: 5V <input checked="" type="checkbox"/> 2A OR 4.5V <input checked="" type="checkbox"/> 5A OR 5V <input checked="" type="checkbox"/> 4.5A</p> <p>Model: HW-050450U00 Manufacturer: Huawei Technologies Co.,Ltd. Input Voltage: 100-240V ~50/60Hz 0.75A Output Voltage: 5V <input checked="" type="checkbox"/> 2A OR 4.5V <input checked="" type="checkbox"/> 5A OR 5V <input checked="" type="checkbox"/> 4.5A</p>

**Remark:**

In FCC 15.31, for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table, and the selected channel to perform the test as below:



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.  
Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn  
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

Frequency Range of Operation Operating Frequency Range (in each Band)	Number of Measurement Frequencies Required	Location of Measurement Frequency in Band of Operation
1 MHz or less	1	centre
1 MHz to 10 MHz	2	1 near high end, 1 near low end
Greater than 10 MHz	3	1 near high end, 1 near centre

For UNII Band I:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5180
	The Middle channel	5220
	The Highest channel	5240
IEEE 802.11n/ac 40MHz	The Lowest channel	5190
	The Highest channel	5230
IEEE 802.11ac 80MHz	The Middle channel	5210

For UNII Band II-A:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5260
	The Middle channel	5300
	The Highest channel	5320
IEEE 802.11n/ac 40MHz	The Lowest channel	5270
	The Highest channel	5310
IEEE 802.11ac 80MHz	The Middle channel	5290
IEEE 802.11ac 160MHz	The Middle channel	5250

For UNII Band II-C:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5500
	The Middle channel	5580
	The Highest channel	5700
IEEE 802.11n/ac 40MHz	The Lowest channel	5510
	The Middle channel	5500
	The Highest channel	5670
IEEE 802.11ac 80MHz	The Lowest channel	5500
	The Highest channel	5580



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

IEEE 802.11ac 160MHz	The Middle channel	5570
----------------------	--------------------	------

For UNII Band III:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5745
	The Middle channel	5785
	The Highest channel	5825
IEEE 802.11n/ac 40MHz	The Lowest channel	5755
	The Highest channel	5795
IEEE 802.11ac 80MHz	The Middle channel	5775

### 3.5 Test Environment and Mode

<b>Operating Environment:</b>	
Temperature:	25.0 °C
Humidity:	55 % RH
Atmospheric Pressure:	101.32 KPa
<b>Test mode:</b>	
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.  
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

## 4 Test results and Measurement Data

### 4.1 Antenna Requirement

<b>Test Requirement:</b>	47 CFR Part 15 Section 15.203
The antenna is integrated antenna and no consideration of replacement. The best case gain of the antenna is 1.0dBi.	

### 4.2 Conducted Emissions

<b>Test Requirement:</b>	47 CFR Part 15 Section 15.407(b)		
<b>Test Method:</b>	ANSI C63.10: 2013		
<b>Test Frequency Range:</b>	150kHz to 30MHz		
<b>Limit:</b>	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1) The mains terminal disturbance voltage test was conducted in a shielded room.</li> <li>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.</li> <li>3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,</li> <li>4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.</li> <li>5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.</li> </ol>		



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.  
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

<p>Test Setup:</p>	
<p>Exploratory Test Mode:</p>	<p>Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.</p>
<p>Final Test Mode:</p>	<p>Through Pre-scan, find the 6Mbps of rate of 802.11a at lowest channel is the worst case. Only the worst case is recorded in the report.</p>
<p>Instruments Used:</p>	<p>Refer to section 5.10 for details</p>
<p>Test Results:</p>	<p>Pass</p>

**Measurement Data**

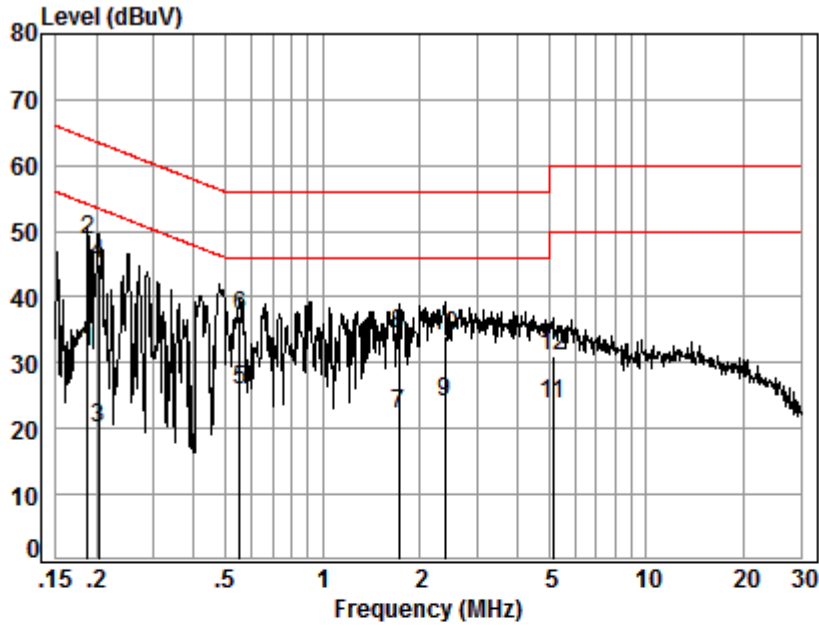
An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.  
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

Live Line:



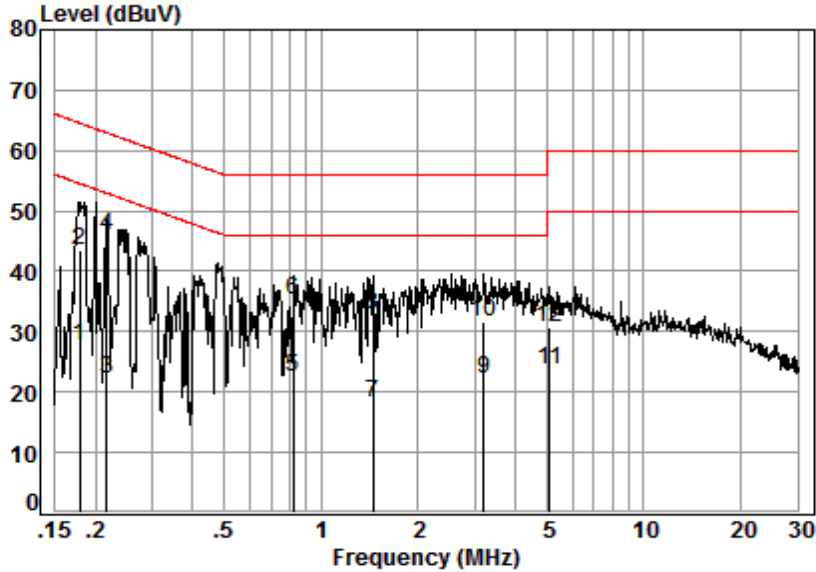
Site : Shielding Room  
Condition: Line  
Job No. : 12626CR  
Test mode: f

	Freq	Cable Loss	LISN Factor	Read Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dB	
1	0.19	0.02	9.66	22.09	54.11	-22.34	Average
2	0.19	0.02	9.66	38.96	64.11	-15.47	QP
3	0.20	0.02	9.66	10.30	53.49	-33.51	Average
4	0.20	0.02	9.66	35.34	63.49	-18.47	QP
5	0.56	0.06	9.67	16.06	46.00	-20.21	Average
6	0.56	0.06	9.67	27.32	56.00	-18.95	QP
7	1.72	0.14	9.73	12.20	46.00	-23.93	Average
8	1.72	0.14	9.73	24.57	56.00	-21.56	QP
9	2.38	0.16	9.71	14.03	46.00	-22.10	Average
10	2.38	0.16	9.71	24.07	56.00	-22.06	QP
11	5.14	0.17	9.74	13.72	50.00	-26.37	Average
12	5.14	0.17	9.74	21.13	60.00	-28.96	QP



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.  
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)  
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn  
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

Neutral Line:



Site : Shielding Room  
Condition: Neutral  
Job No. : 12626CR  
Test mode: f

	Freq	Cable Loss	LISN Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.18	0.02	9.64	17.93	27.59	54.55	-26.96	Average
2	0.18	0.02	9.64	33.99	43.65	64.55	-20.90	QP
3	0.22	0.03	9.64	12.43	22.10	52.92	-30.82	Average
4	0.22	0.03	9.64	36.15	45.82	62.92	-17.10	QP
5	0.82	0.08	9.71	12.59	22.38	46.00	-23.62	Average
6	0.82	0.08	9.71	25.39	35.18	56.00	-20.82	QP
7	1.45	0.13	9.70	8.37	18.20	46.00	-27.80	Average
8	1.45	0.13	9.70	23.11	32.94	56.00	-23.06	QP
9	3.19	0.16	9.68	12.49	22.33	46.00	-23.67	Average
10	3.19	0.16	9.68	21.75	31.59	56.00	-24.41	QP
11	5.11	0.17	9.71	13.78	23.66	50.00	-26.34	Average
12	5.11	0.17	9.71	20.99	30.87	60.00	-29.13	QP

Remarks:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.  
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

### 4.3 Duty Cycle

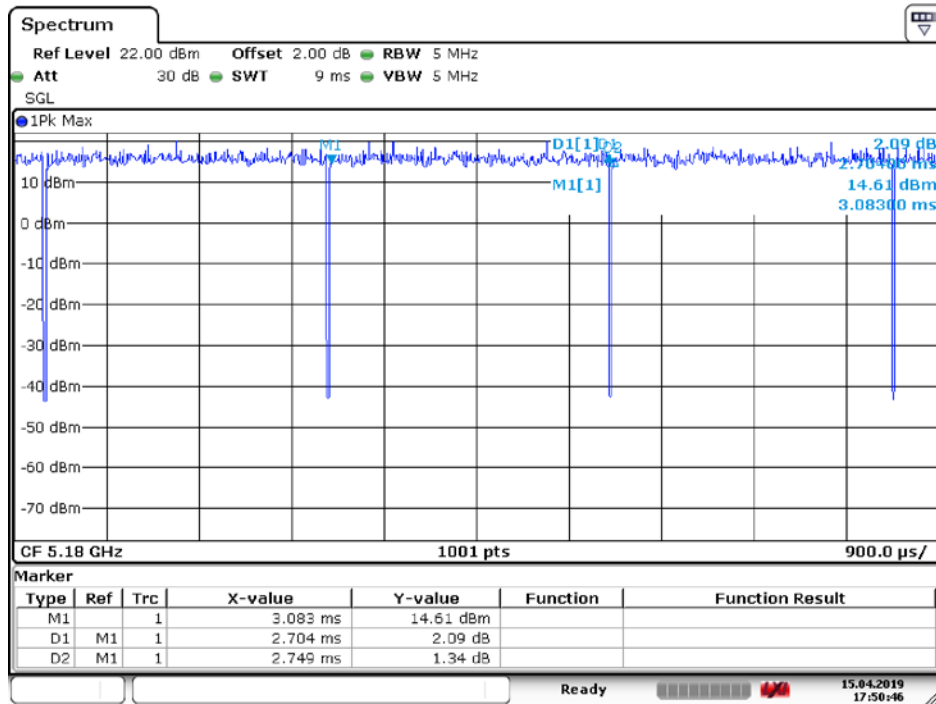
#### 4.3.1 Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
11A	Ant 1: CH36	98.36
11N20	Ant 1: CH36	98.95
11N40	Ant 1: CH38	97.18
11AC20	Ant 1: CH36	98.95
11AC40	Ant 1: CH38	94.91
11AC80	Ant 1: CH42	92.38
11AC160	Ant 1: CH50	94.66

#### 4.3.1 Test Plots

##### 4.3.1.1 ANT1

##### 4.3.1.1.1 11A



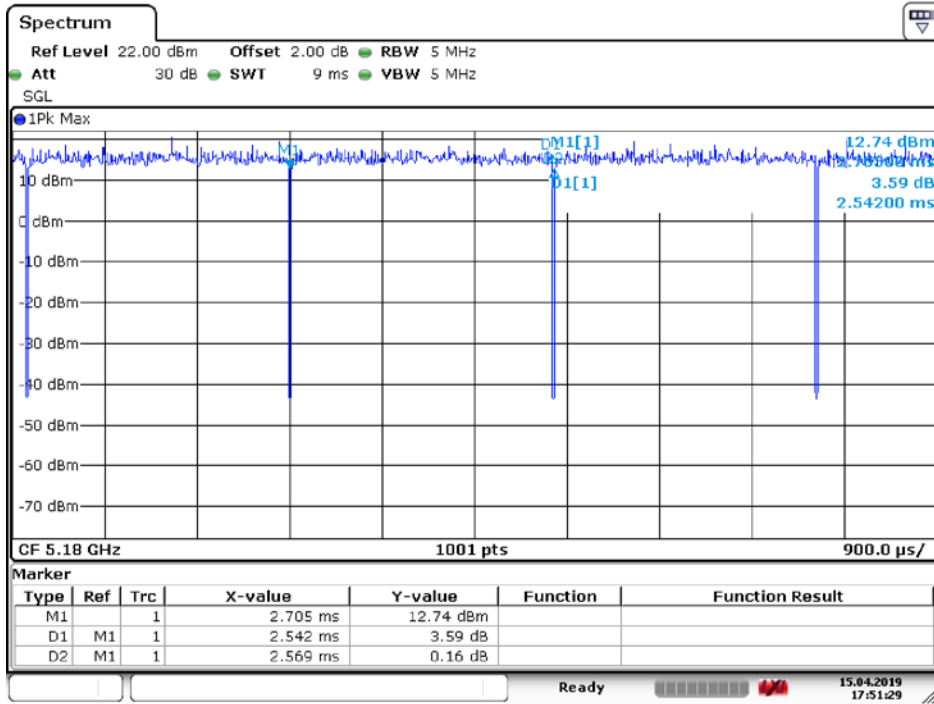
Date: 15.APR.2019 17:50:47



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

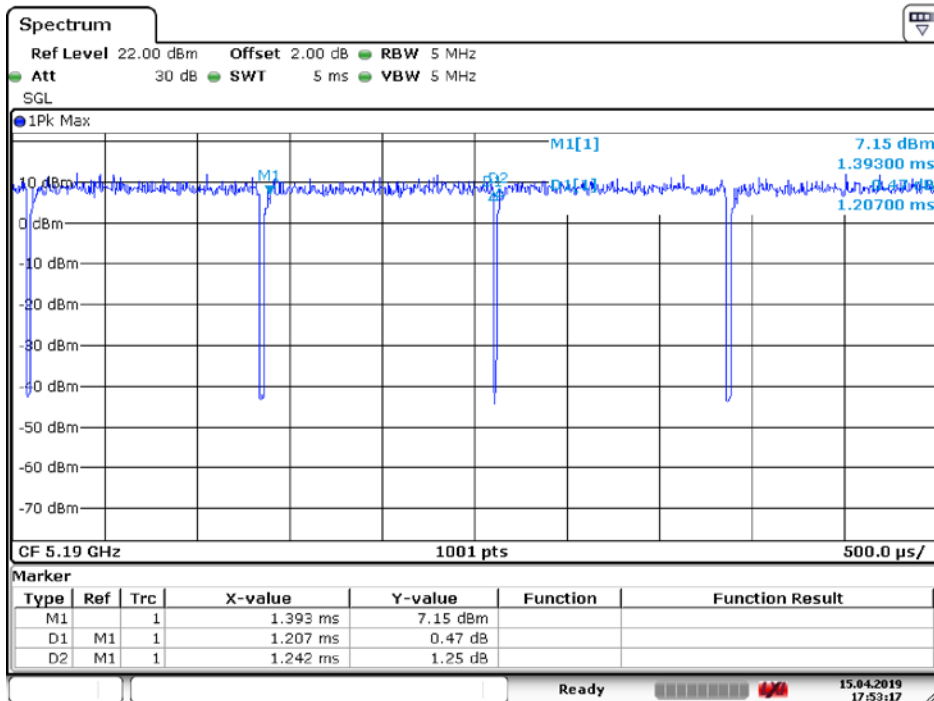


4.3.1.1.2 11N20



Date: 15.APR 2019 17:51:29

4.3.1.1.3 11N40

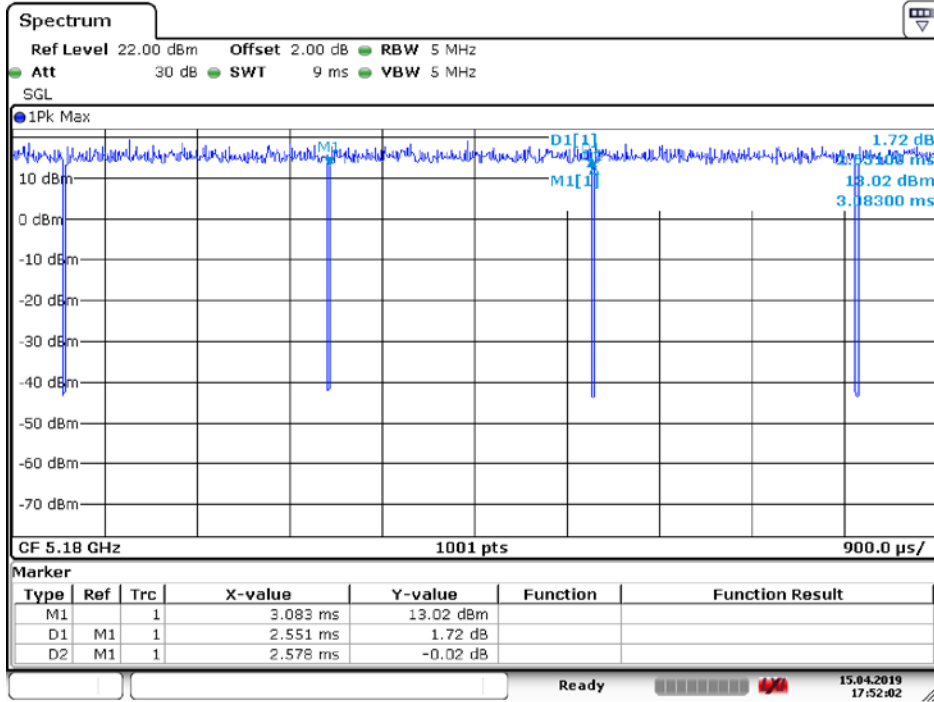


Date: 15.APR 2019 17:53:18



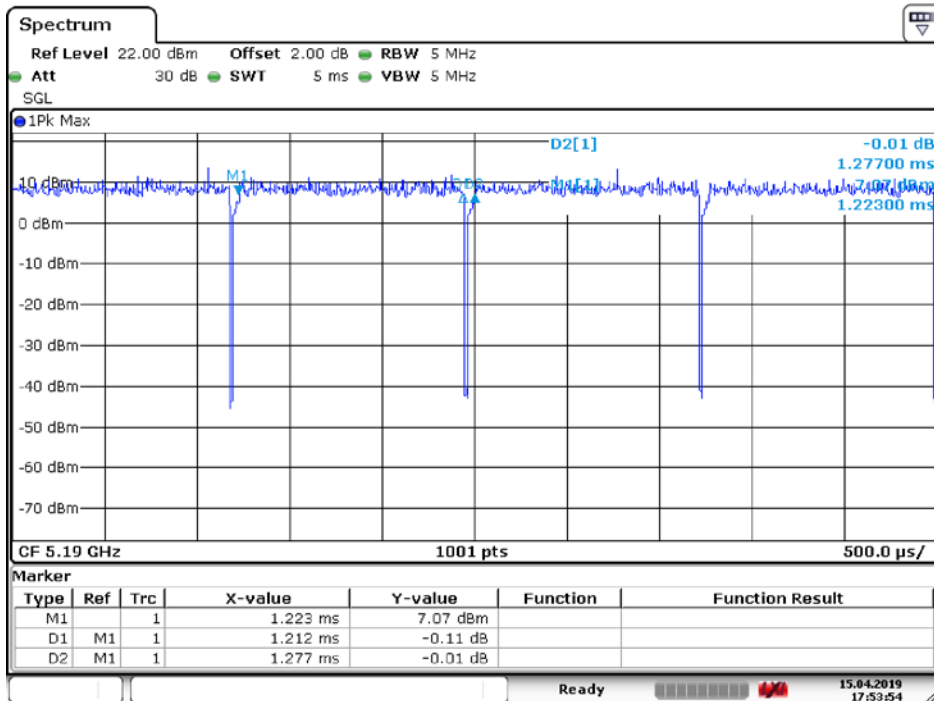
Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

4.3.1.1.4 11AC20



Date: 15.APR 2019 17:52:02

4.3.1.1.5 11AC40



Date: 15.APR 2019 17:53:54

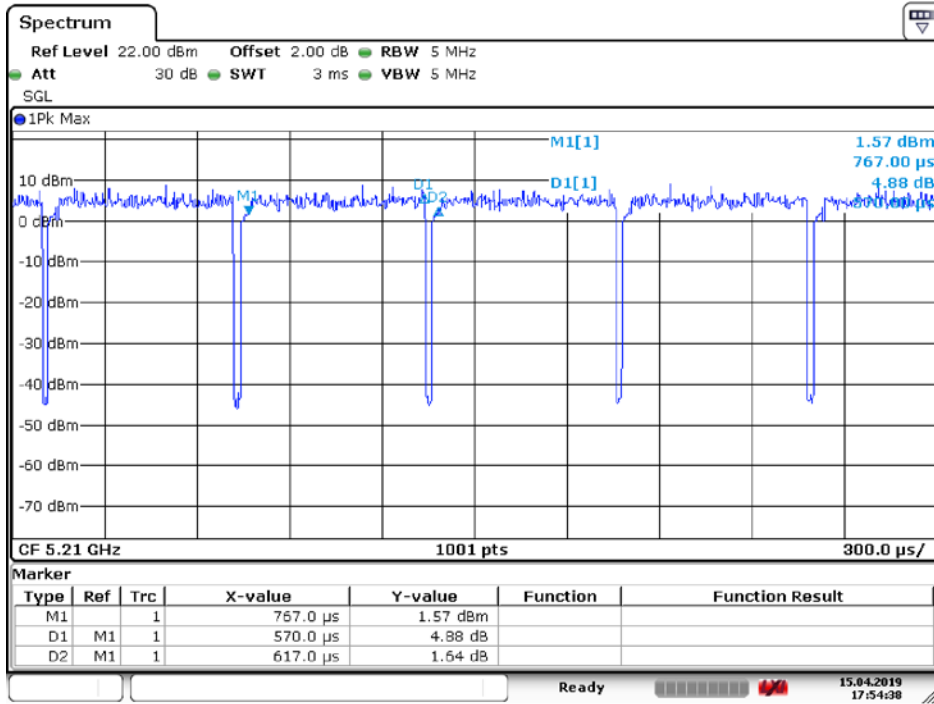


Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

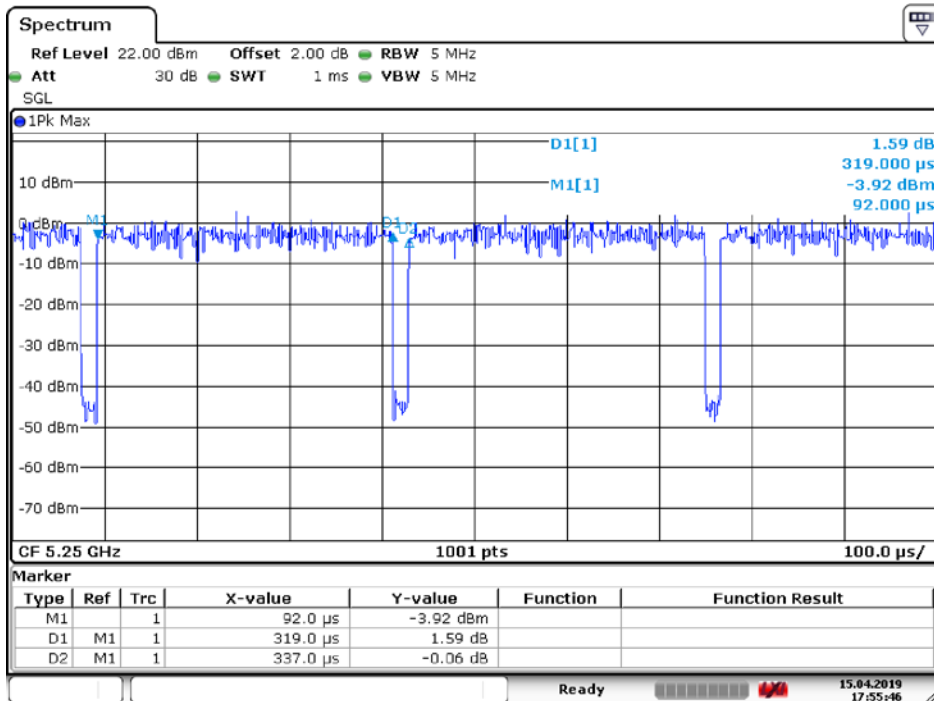
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn  
 中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

4.3.1.1.6 11AC80



Date: 15.APR 2019 17:54:38

4.3.1.1.7 11AC160



Date: 15.APR 2019 17:55:47



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.  
Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)  
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn  
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

### 4.4 Conducted Output Power

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10: 2013	
Test Setup:		
Test Instruments:	Refer to section 5.10 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	<p>Through Pre-scan, find that</p> <ul style="list-style-type: none"> <li>6Mbps of rate is the worst case of 802.11a;</li> <li>MCS0 of rate is the worst case of 802.11n(HT20);</li> <li>MCS0 of rate is the worst case of 802.11n(HT40);</li> <li>MCSAC0 of rate is the worst case of 802.11ac(HT20);</li> <li>MCSAC0 of rate is the worst case of 802.11ac(HT40);</li> <li>MCSAC0 of rate is the worst case of 802.11ac(HT80);</li> <li>MCSAC0 of rate is the worst case of 802.11ac(HT160);</li> </ul> <p>Only the worst case is recorded in the report.</p>	
Limit:	Frequency Band	Limit
	5150-5250MHz	Not exceed 250mW(24dBm)
	5250-5350MHz	The lesser of 250mW(24dBm) or 11+ 10logB
	5470-5725MHz	The lesser of 250mW(24dBm) or 11+ 10logB
	5725-5850MHz	Not exceed 1W(30dBm)
	*Where B is the 26dB emission bandwidth in MHz	
Test Results:	Pass	



Measurement Data:

Test Mode	Test Channel	Frequency [MHz]	Antenna Port	Meas. Level (Cond.) [dBm]	Meas. Level (EIRP) [dBm]	Verdict
11A20	36	5180	ANT 1	10.83	11.83	PASS
	44	5220	ANT 1	16.48	17.48	PASS
	48	5240	ANT 1	16.59	17.59	PASS
	52	5260	ANT 1	16.64	17.64	PASS
	60	5300	ANT 1	16.67	17.67	PASS
	64	5320	ANT 1	11.76	12.76	PASS
	100	5500	ANT 1	11.62	12.62	PASS
	116	5580	ANT 1	16.33	17.33	PASS
	140	5700	ANT 1	11.08	12.08	PASS
	149	5745	ANT 1	11.25	12.25	PASS
	157	5785	ANT 1	16.02	17.02	PASS
	165	5825	ANT 1	11.08	12.08	PASS
11N20	36	5180	ANT 1	10.73	11.73	PASS
	44	5220	ANT 1	15.58	16.58	PASS
	48	5240	ANT 1	15.65	16.65	PASS
	52	5260	ANT 1	11.53	12.53	PASS
	60	5300	ANT 1	15.74	16.74	PASS
	64	5320	ANT 1	11.67	12.67	PASS
	100	5500	ANT 1	11.53	12.53	PASS
	116	5580	ANT 1	15.41	16.41	PASS
	140	5700	ANT 1	10.93	11.93	PASS
	149	5745	ANT 1	11.43	12.43	PASS
	157	5785	ANT 1	15.08	16.08	PASS
	165	5825	ANT 1	10.97	11.97	PASS
11N40	38	5190	ANT 1	11.11	12.11	PASS
	46	5230	ANT 1	15.44	16.44	PASS
	54	5270	ANT 1	15.52	16.52	PASS
	62	5310	ANT 1	11.43	12.43	PASS
	102	5510	ANT 1	11.69	12.69	PASS
	110	5550	ANT 1	15.53	16.53	PASS
	134	5670	ANT 1	10.64	11.64	PASS
	151	5755	ANT 1	11.03	12.03	PASS
159	5795	ANT 1	11.12	12.12	PASS	



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.



11AC20	36	5180	ANT 1	10.57	11.57	PASS
	44	5220	ANT 1	15.58	16.58	PASS
	48	5240	ANT 1	15.65	16.65	PASS
	52	5260	ANT 1	15.70	16.7	PASS
	60	5300	ANT 1	15.74	16.74	PASS
	64	5320	ANT 1	11.15	12.15	PASS
	100	5500	ANT 1	11.42	12.42	PASS
	116	5580	ANT 1	15.41	16.41	PASS
	140	5700	ANT 1	10.83	11.83	PASS
	149	5745	ANT 1	11.03	12.03	PASS
	157	5785	ANT 1	15.08	16.08	PASS
	165	5825	ANT 1	10.74	11.74	PASS
11AC40	38	5190	ANT 1	11.09	12.09	PASS
	46	5230	ANT 1	15.43	16.43	PASS
	54	5270	ANT 1	15.51	16.51	PASS
	62	5310	ANT 1	11.42	12.42	PASS
	102	5510	ANT 1	11.76	12.76	PASS
	110	5550	ANT 1	15.64	16.64	PASS
	134	5670	ANT 1	10.62	11.62	PASS
	151	5755	ANT 1	11.02	12.02	PASS
	159	5795	ANT 1	11.13	12.13	PASS
11AC80	42	5210	ANT 1	11.15	12.15	PASS
	58	5290	ANT 1	11.43	12.43	PASS
	106	5530	ANT 1	11.56	12.56	PASS
	122	5610	ANT 1	10.71	11.71	PASS
	155	5775	ANT 1	11.02	12.02	PASS
11AC160	50	5250	ANT 1	10.33	11.33	PASS
	114	5570	ANT 1	10.21	11.21	PASS



### 4.5 Emission Bandwidth and 99% Occupied Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(a)
Test Method:	ANSI C63.10: 2013
Test Setup:	
Instruments Used:	Refer to section 5.10 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	<p>Through Pre-scan, find the</p> <ul style="list-style-type: none"> <li>6Mbps of rate is the worst case of 802.11a;</li> <li>MCS0 of rate is the worst case of 802.11n(HT20);</li> <li>MCS0 of rate is the worst case of 802.11n(HT40);</li> <li>MCSAC0 of rate is the worst case of 802.11ac(HT20);</li> <li>MCSAC0 of rate is the worst case of 802.11ac(HT40);</li> <li>MCSAC0 of rate is the worst case of 802.11ac(HT80);</li> <li>MCSAC0 of rate is the worst case of 802.11ac(HT160).</li> </ul> <p>Only the worst case is recorded in the report.</p>
Limit:	No restriction limits
Test Results:	Pass



**4.5.1 Measurement Data:**

Test Mode	Test Channel	Frequency [MHz]	Antenna Port	26dB Emission Bandwidth [MHz]	Occupied Bandwidth [MHz]	Verdict
11A20	36	5180	ANT 1	20.98	16.82	PASS
	44	5220	ANT 1	20.70	16.86	PASS
	48	5240	ANT 1	20.98	16.86	PASS
	52	5260	ANT 1	20.74	16.86	PASS
	60	5300	ANT 1	20.98	16.86	PASS
	64	5320	ANT 1	20.70	16.82	PASS
	100	5500	ANT 1	20.70	16.90	PASS
	116	5580	ANT 1	20.94	16.94	PASS
	140	5700	ANT 1	20.58	16.82	PASS
11N20	36	5180	ANT 1	21.14	17.78	PASS
	44	5220	ANT 1	21.22	17.74	PASS
	48	5240	ANT 1	21.22	17.78	PASS
	52	5260	ANT 1	21.14	17.78	PASS
	60	5300	ANT 1	21.22	17.78	PASS
	64	5320	ANT 1	21.02	17.74	PASS
	100	5500	ANT 1	21.26	17.74	PASS
	116	5580	ANT 1	21.10	17.74	PASS
	140	5700	ANT 1	21.10	17.74	PASS
11N40	38	5190	ANT 1	42.36	36.20	PASS
	46	5230	ANT 1	41.80	36.36	PASS
	54	5270	ANT 1	42.04	36.44	PASS
	62	5310	ANT 1	42.28	36.28	PASS
	102	5510	ANT 1	42.20	36.28	PASS
	110	5550	ANT 1	41.88	36.36	PASS
	134	5670	ANT 1	42.04	36.28	PASS
11AC20	36	5180	ANT 1	21.18	17.74	PASS
	44	5220	ANT 1	21.06	17.78	PASS
	48	5240	ANT 1	21.26	17.78	PASS
	52	5260	ANT 1	21.22	17.86	PASS
	60	5300	ANT 1	21.18	17.86	PASS
	64	5320	ANT 1	21.26	17.74	PASS
	100	5500	ANT 1	21.14	17.78	PASS
	116	5580	ANT 1	21.02	17.78	PASS
11AC40	38	5190	ANT 1	41.96	36.20	PASS



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

**Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com**





	46	5230	ANT 1	42.12	36.44	PASS
	54	5270	ANT 1	41.88	36.44	PASS
	62	5310	ANT 1	42.20	36.36	PASS
	102	5510	ANT 1	41.88	36.28	PASS
	110	5550	ANT 1	42.36	36.44	PASS
	134	5670	ANT 1	42.04	36.36	PASS
11AC80	42	5210	ANT 1	84.88	75.28	PASS
	58	5290	ANT 1	84.72	75.44	PASS
	106	5530	ANT 1	84.88	75.28	PASS
	122	5610	ANT 1	84.72	75.44	PASS
11AC160	50	5250	ANT 1	173.27	154.40	PASS
	114	5570	ANT 1	173.91	154.72	PASS



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

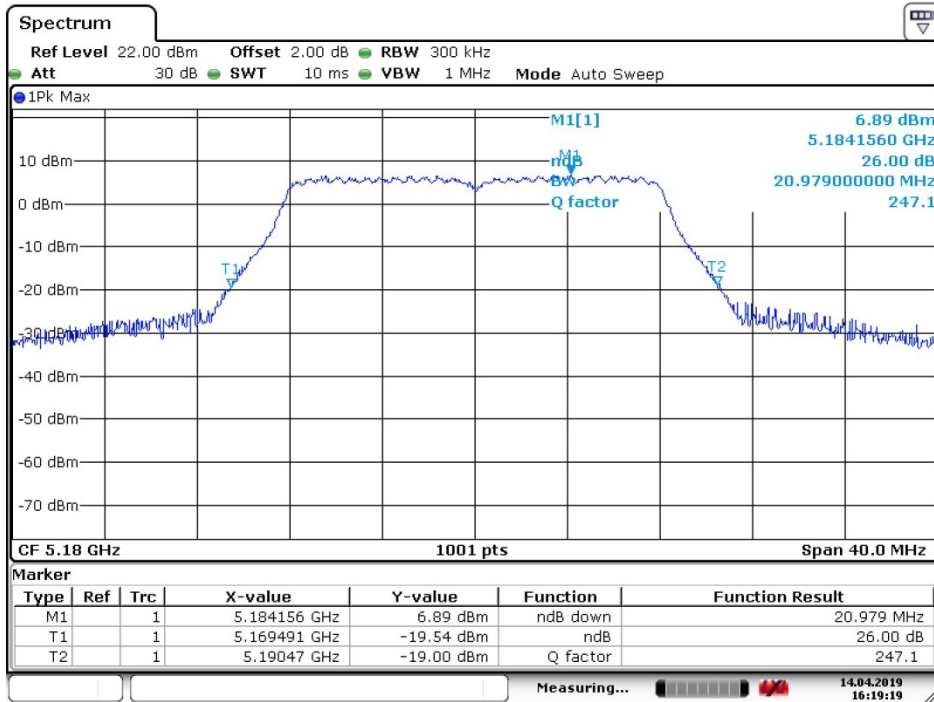
Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

4.5.2

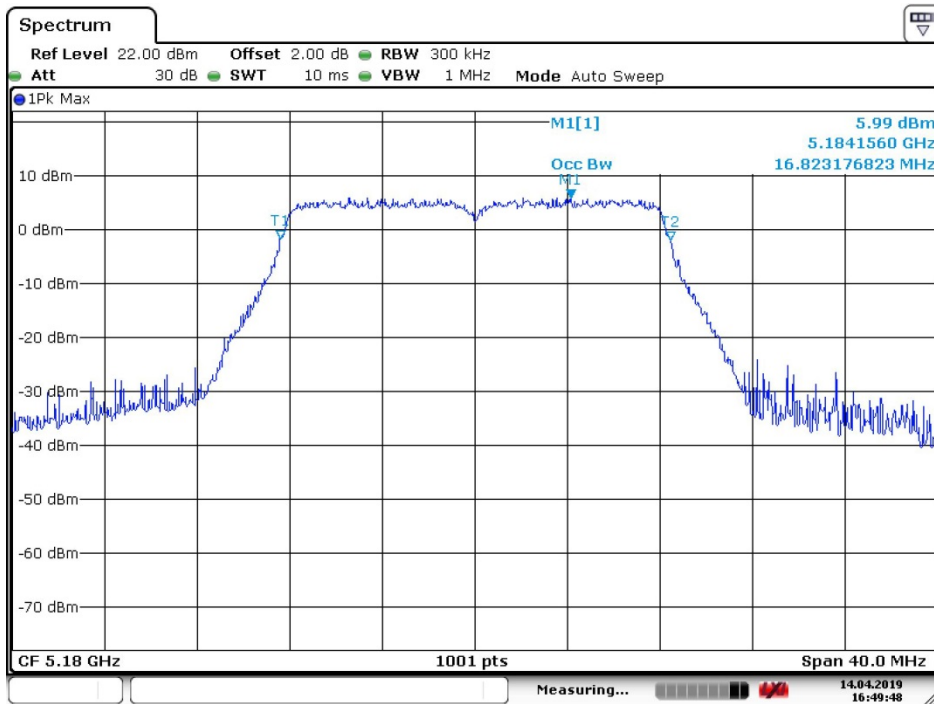
Plots for 26dB Emission Bandwidth & 99% Occupied Bandwidth

4.5.2.1

11A20\_36 ANT 1



Date: 14.APR.2019 16:19:19



Date: 14.APR.2019 16:49:48

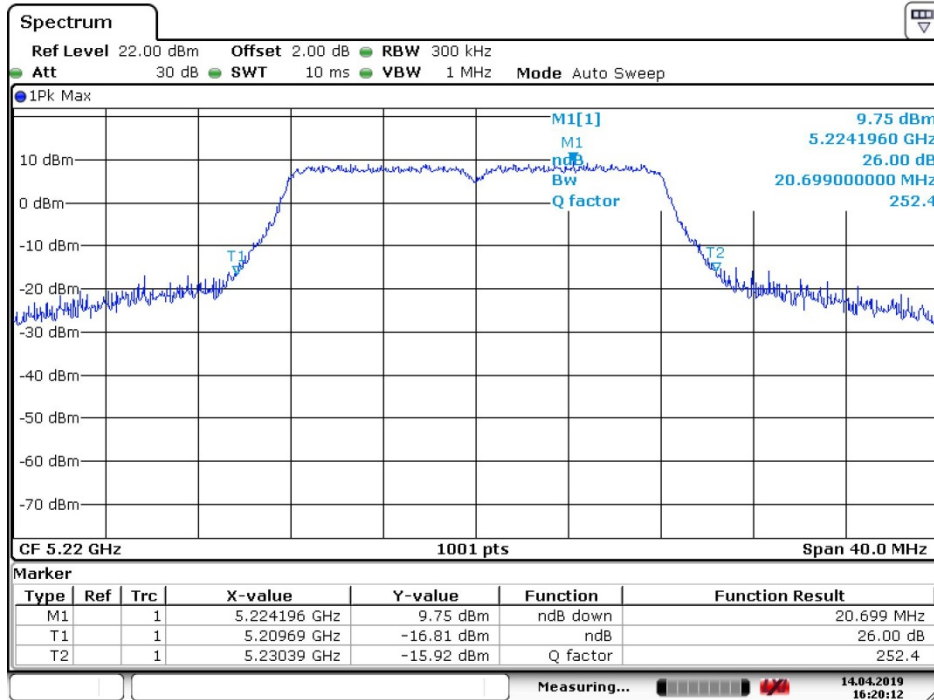


Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

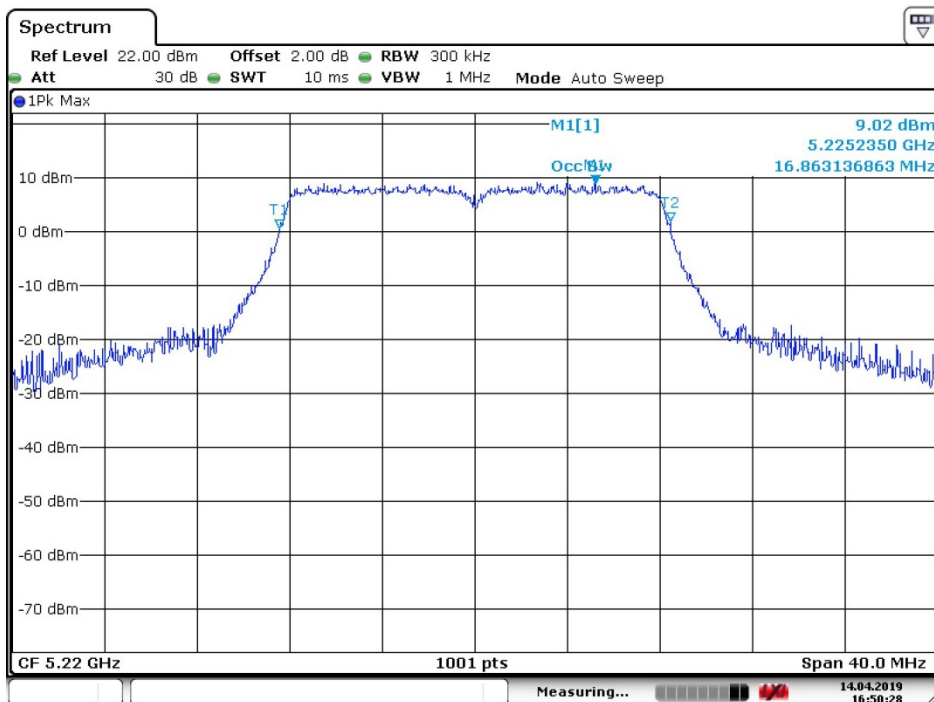
Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

4.5.2.2

11A20\_44 ANT 1



Date: 14.APR.2019 16:20:12

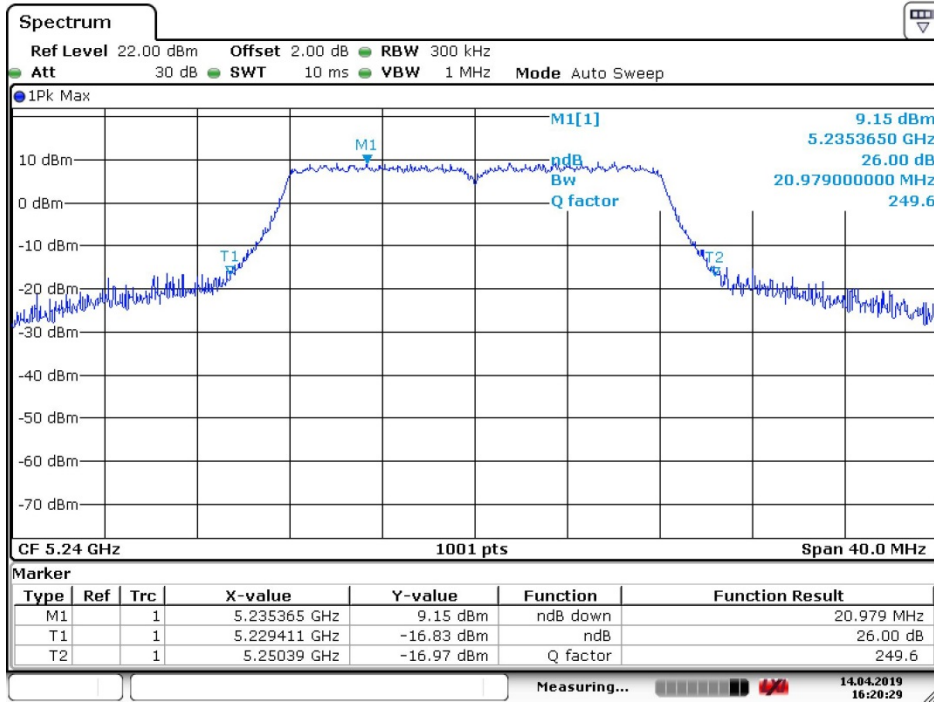


Date: 14.APR.2019 16:20:28

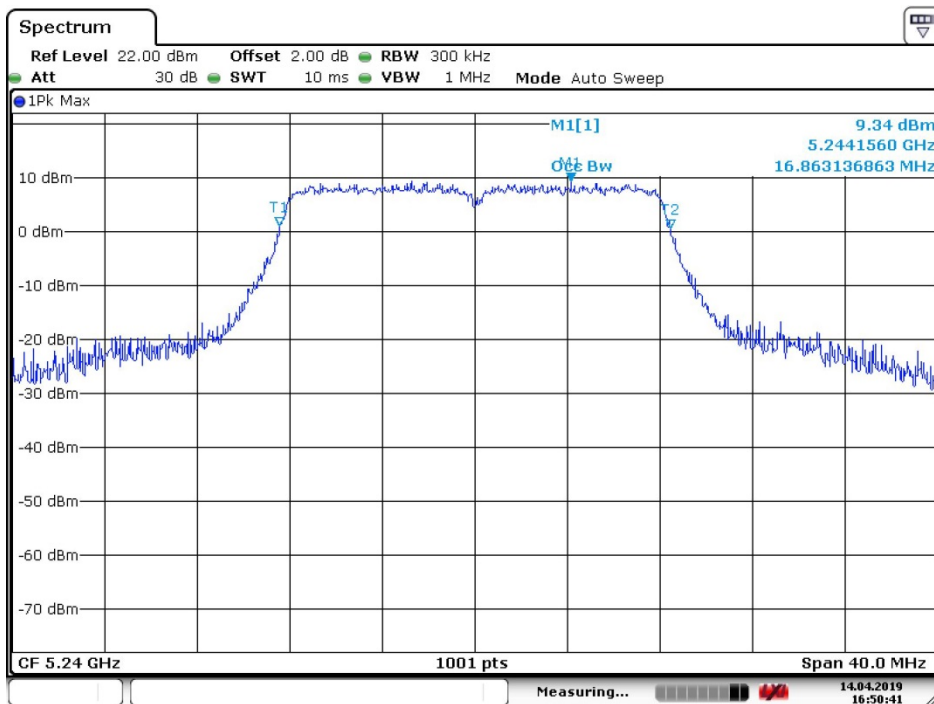


4.5.2.3

11A20\_48 ANT 1



Date: 14.APR.2019 16:20:30

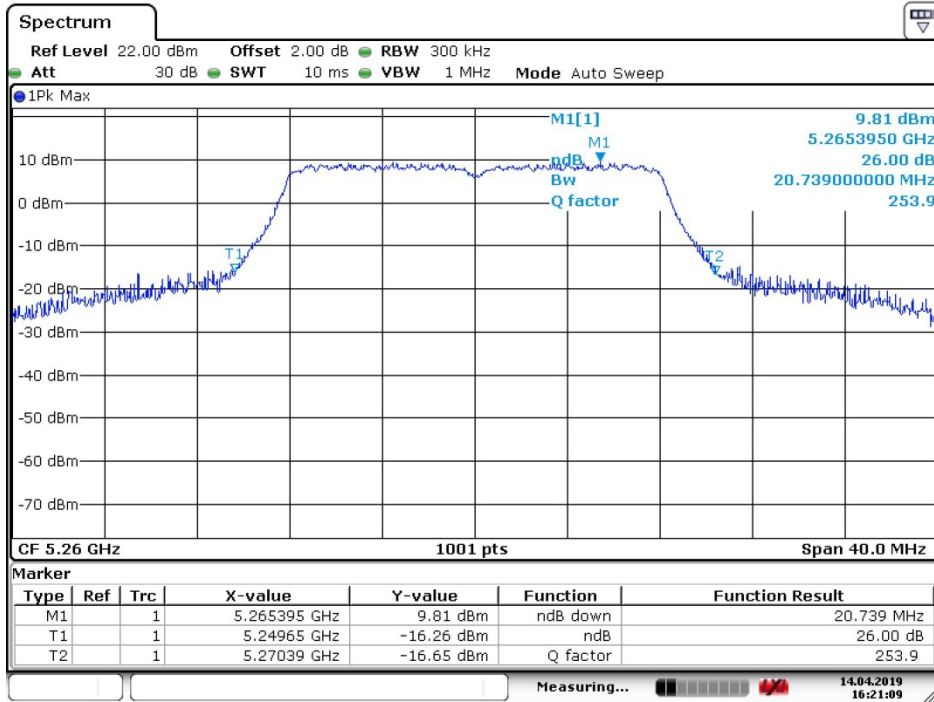


Date: 14.APR.2019 16:50:42

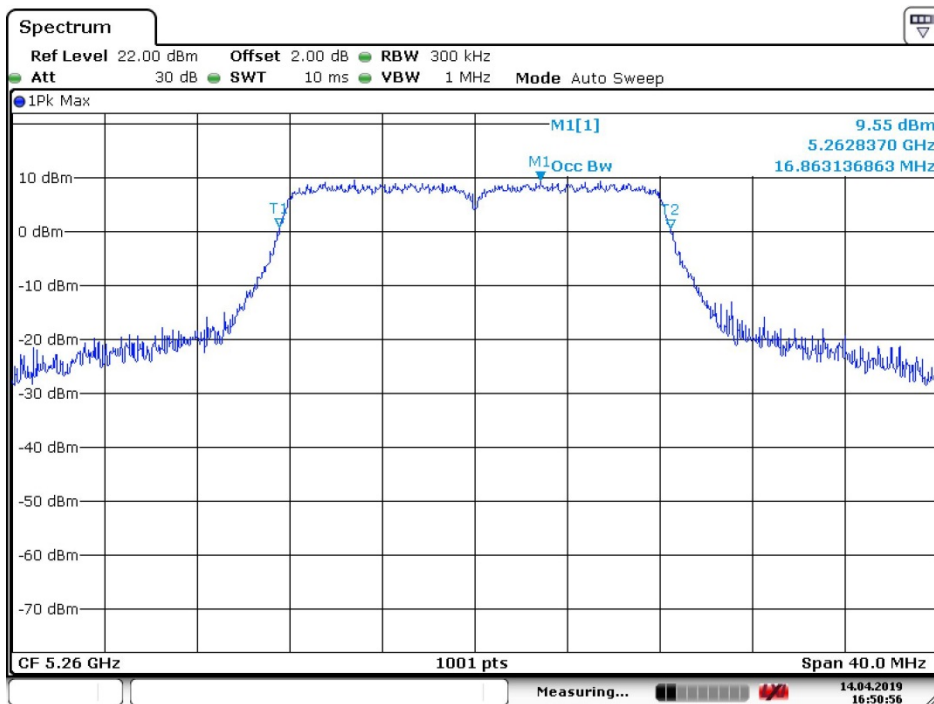


4.5.2.4

11A20\_52 ANT 1



Date: 14.APR.2019 16:21:09

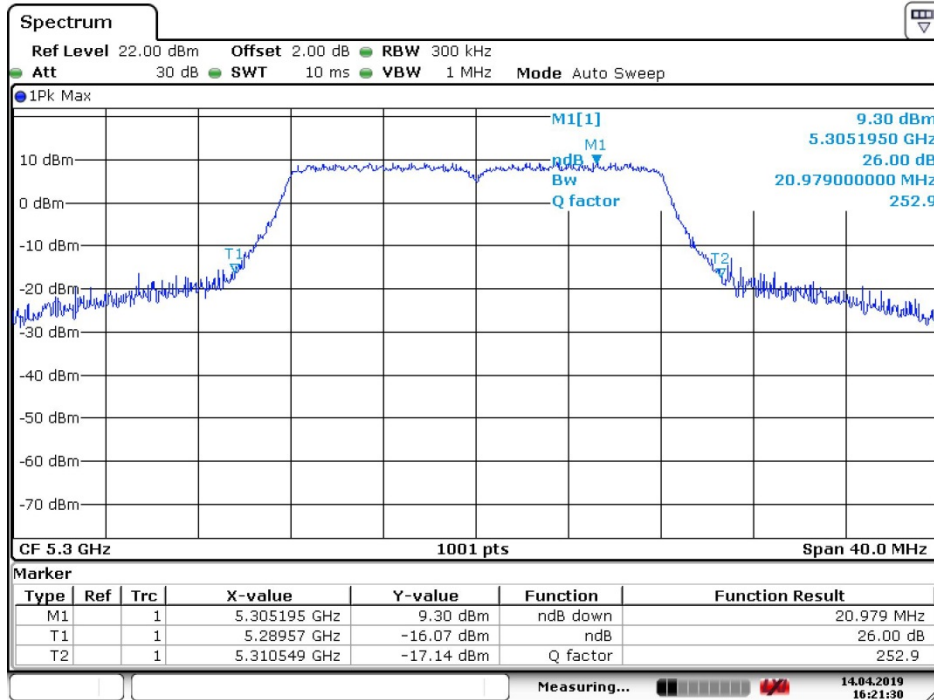


Date: 14.APR.2019 16:50:57

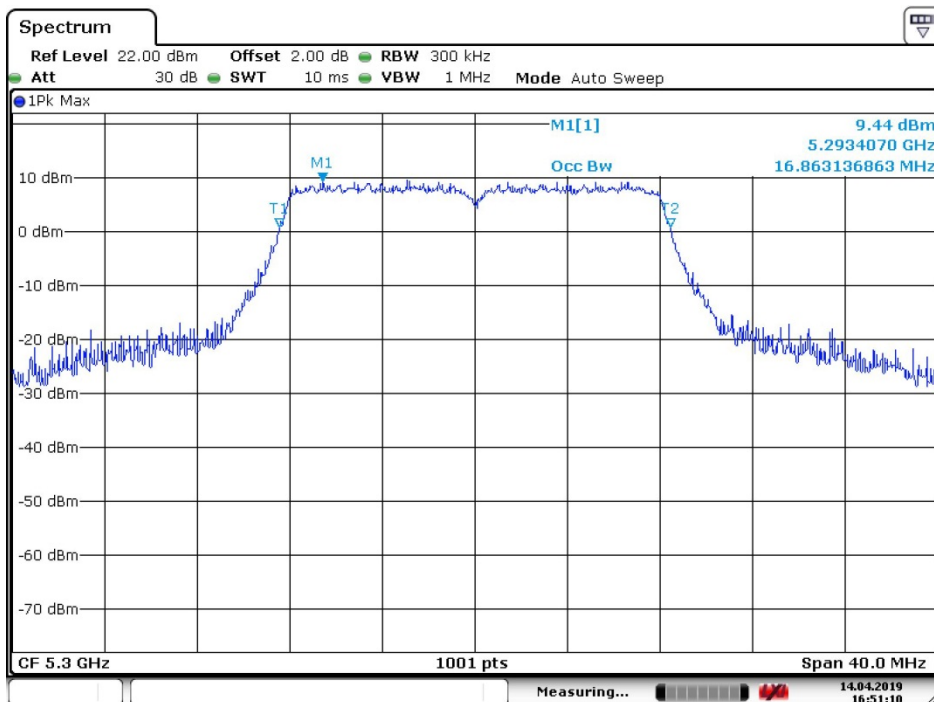


4.5.2.5

11A20\_60 ANT 1



Date: 14.APR.2019 16:21:30

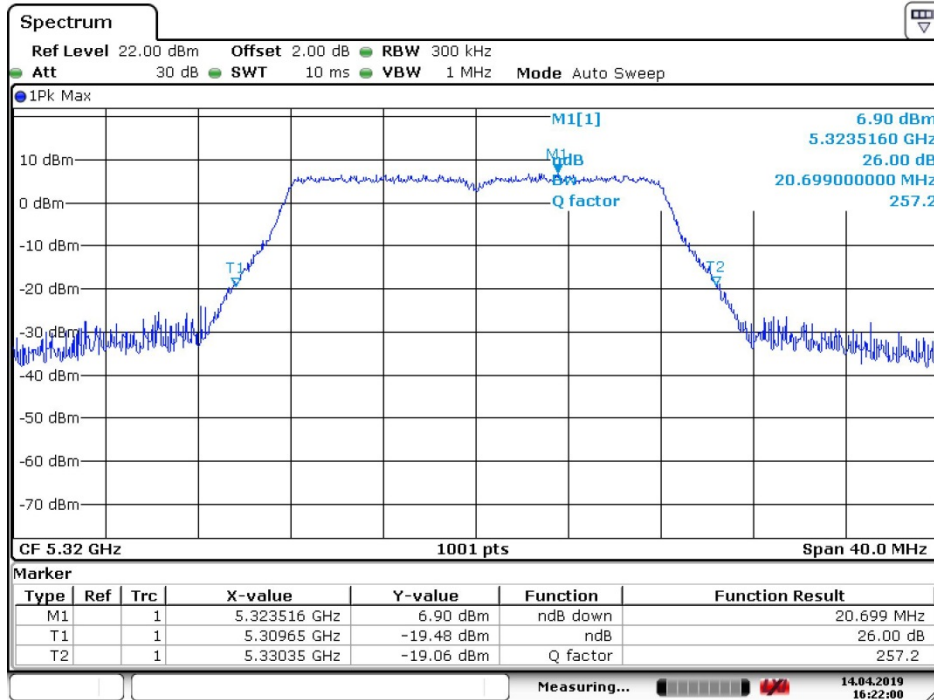


Date: 14.APR.2019 16:51:11

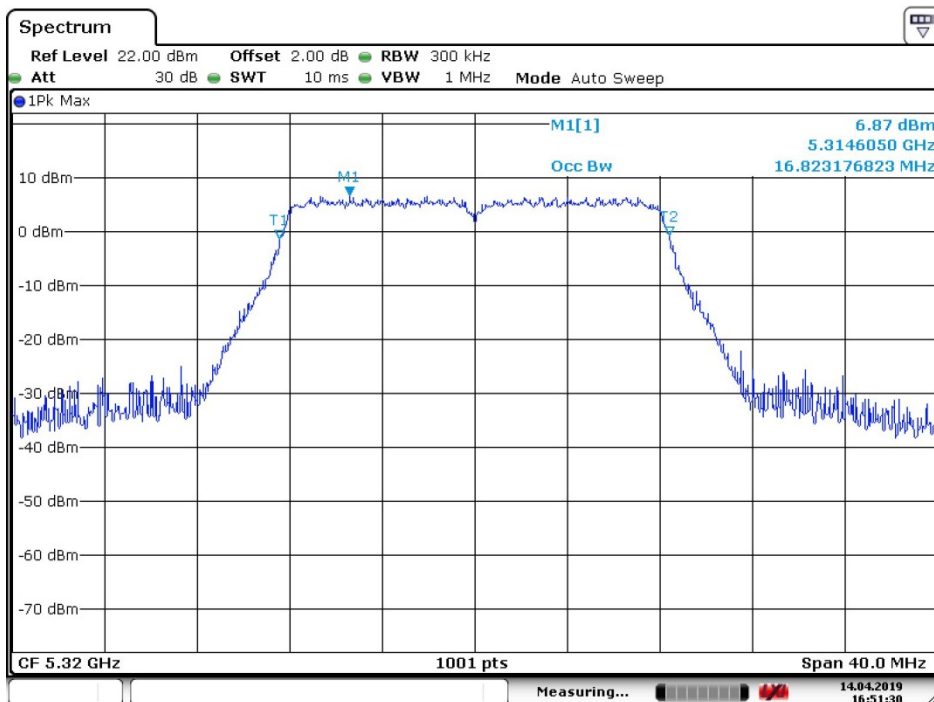


4.5.2.6

11A20\_64 ANT 1



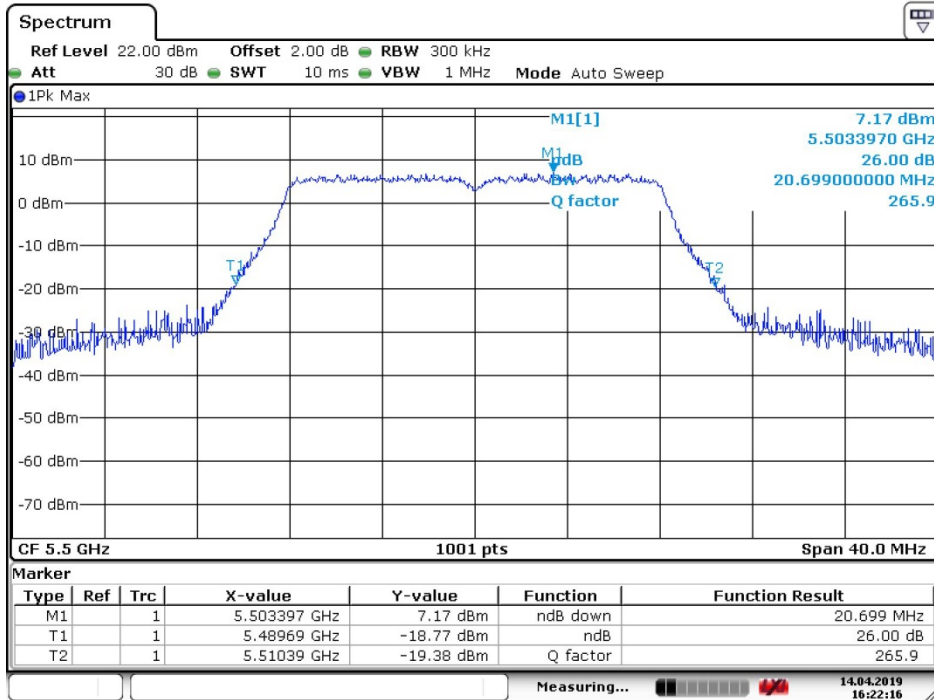
Date: 14.APR.2019 16:22:00



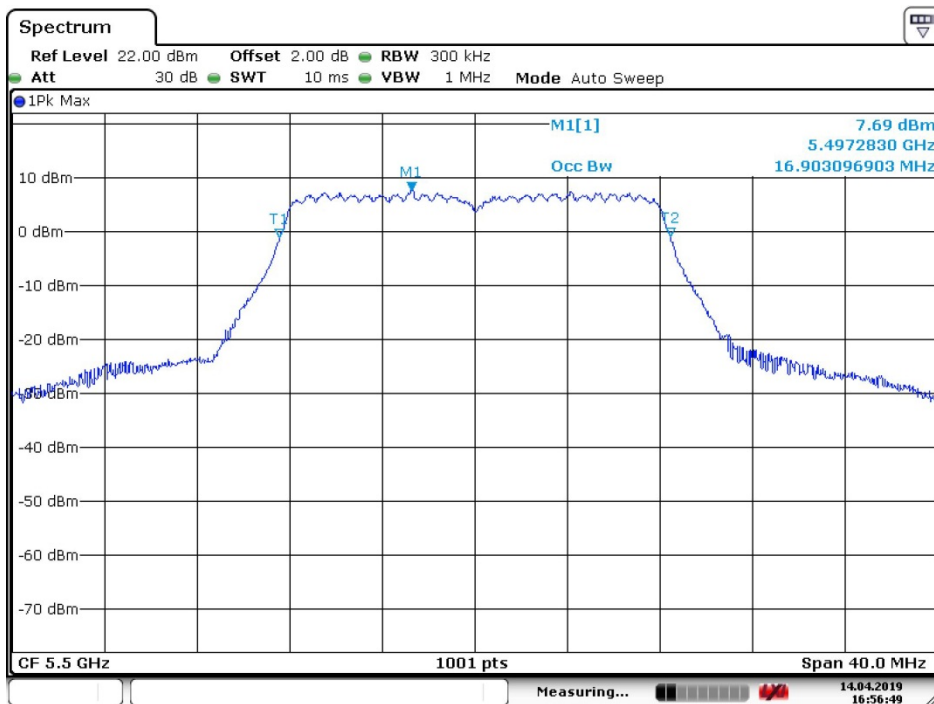
Date: 14.APR.2019 16:51:30



4.5.2.7 11A20\_100 ANT 1



Date: 14.APR.2019 16:22:17



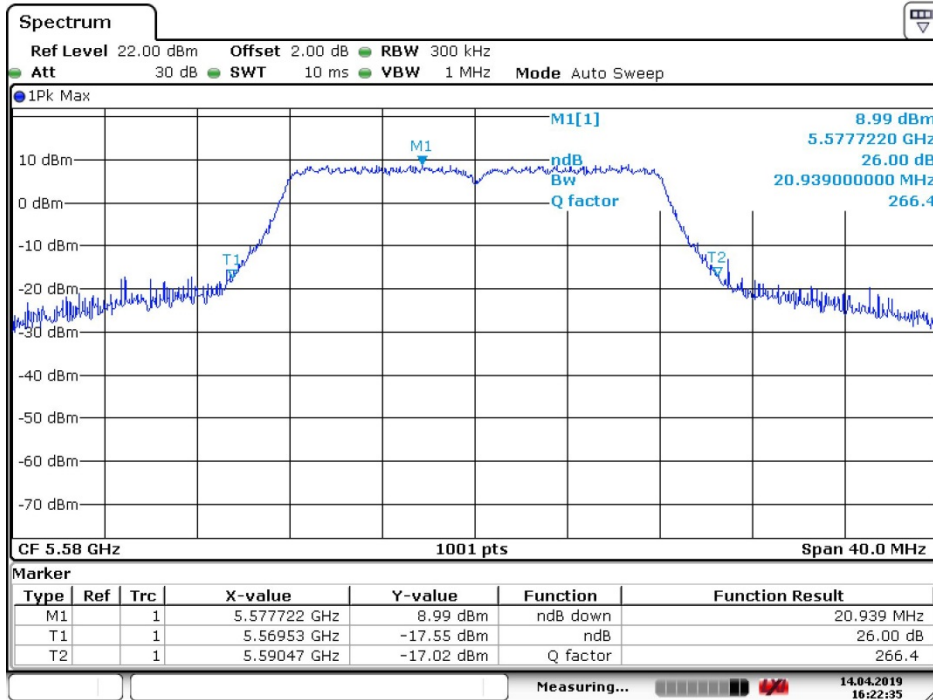
Date: 14.APR.2019 16:56:50



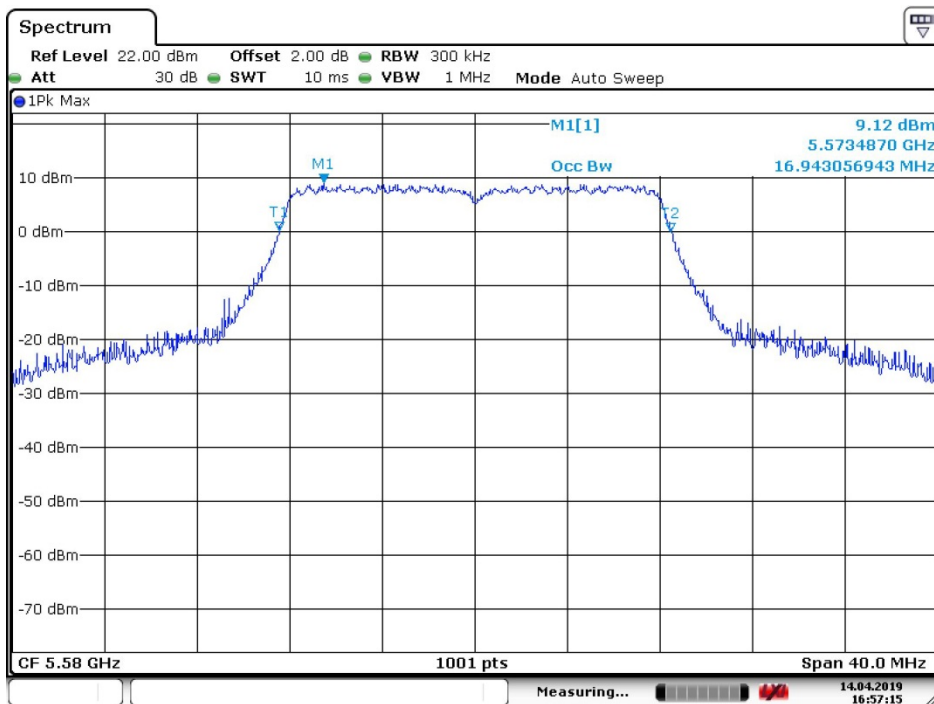


4.5.2.8

11A20\_116 ANT 1



Date: 14.APR.2019 16:22:35

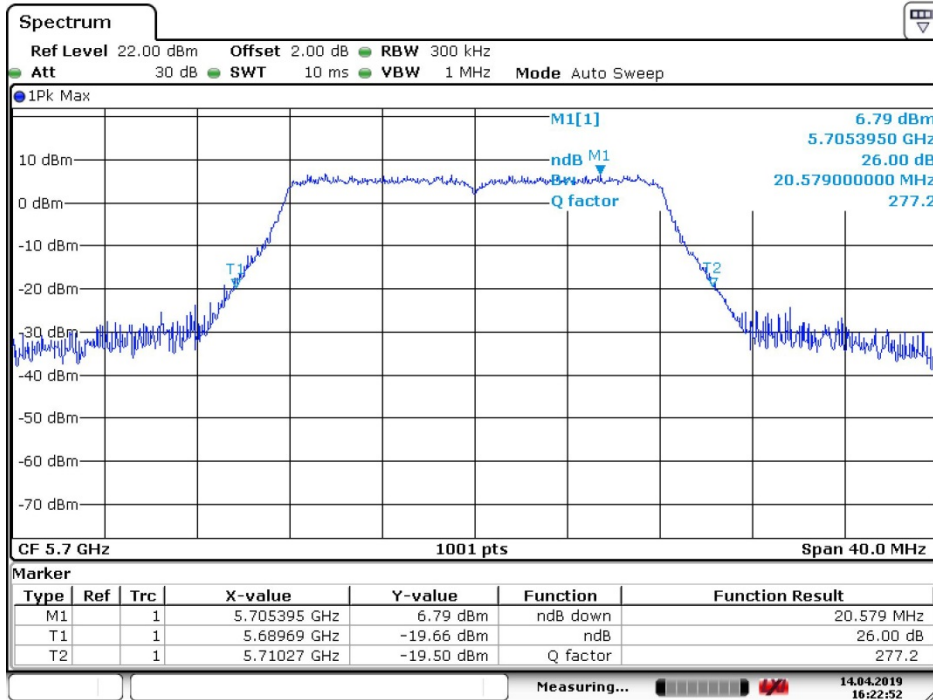


Date: 14.APR.2019 16:57:15

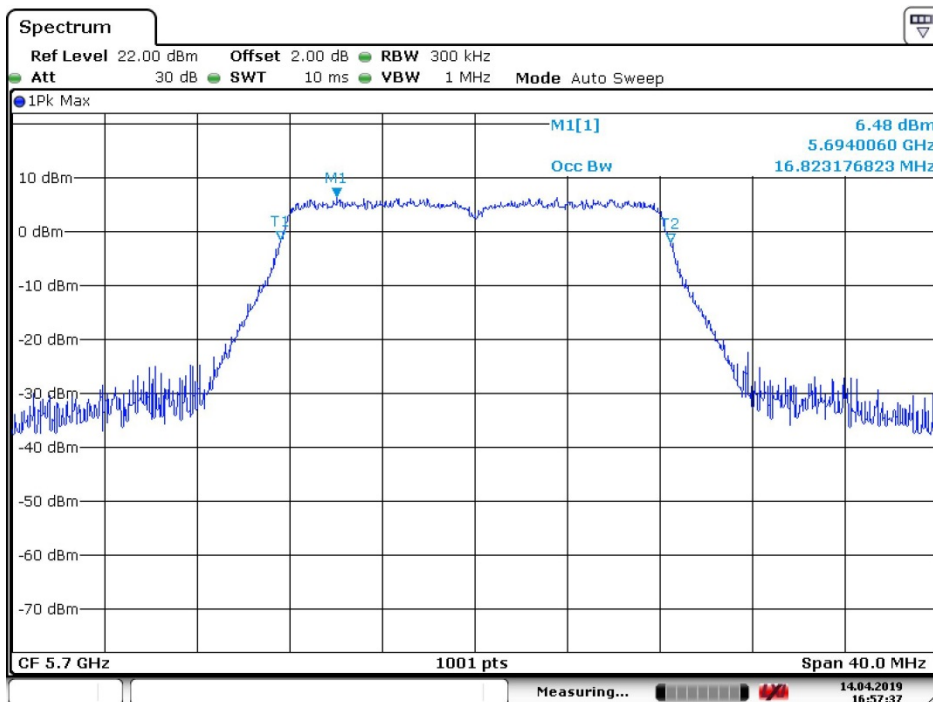


4.5.2.9

11A20\_140 ANT 1



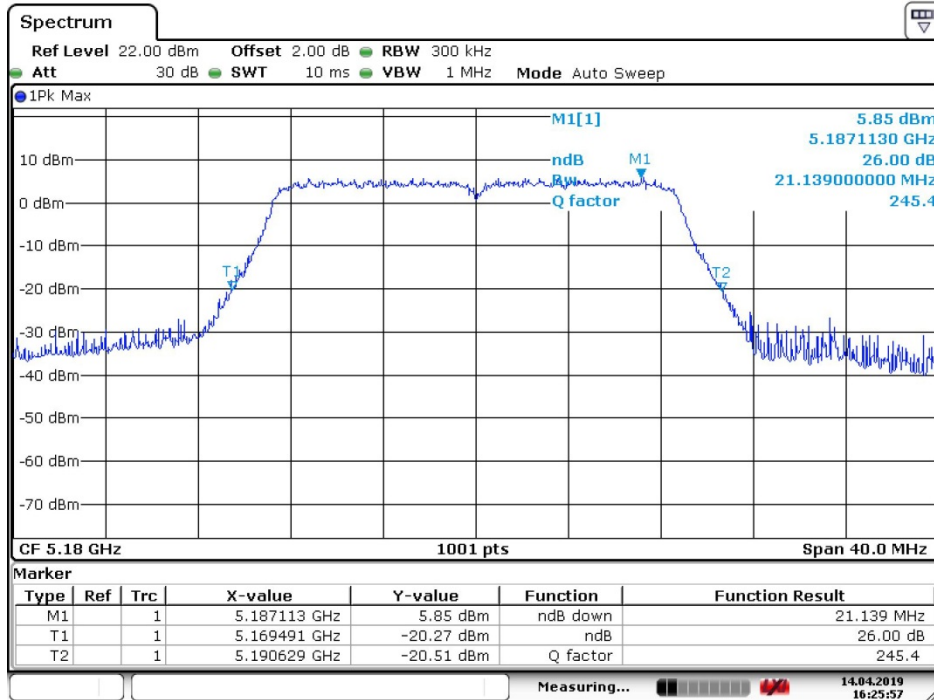
Date: 14.APR.2019 16:22:53



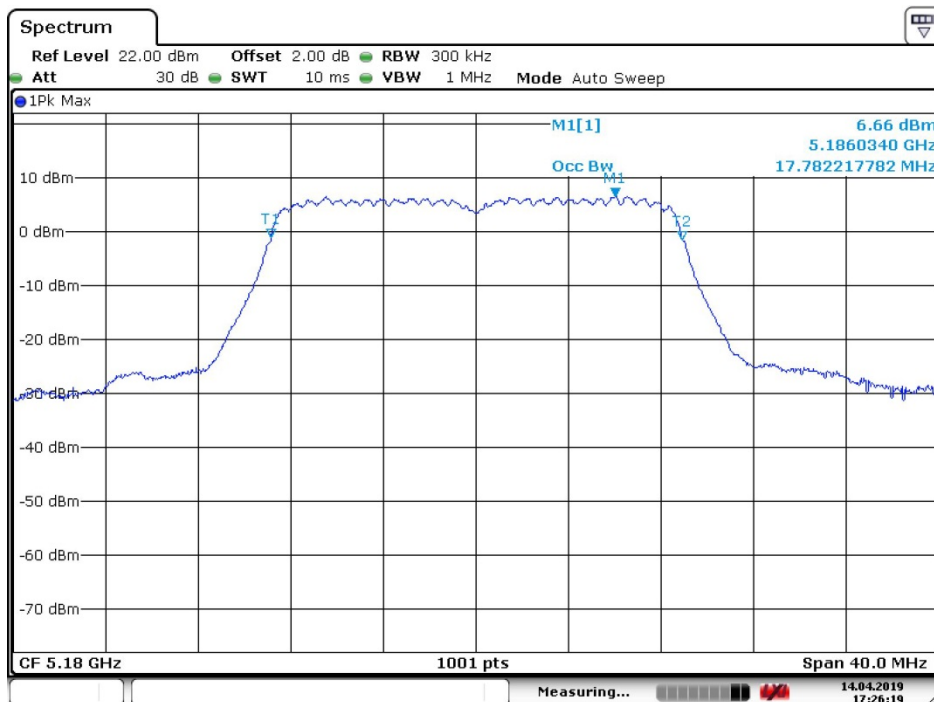
Date: 14.APR.2019 16:57:37



4.5.2.10 11N20\_36 ANT 1



Date: 14.APR.2019 16:25:57



Date: 14.APR.2019 17:26:19

