

Prüfbericht-Nr.: <i>Test Report No.:</i>	17045684 002	Auftrags-Nr.: <i>Order No.:</i>	164027473	Seite 1 von 29 Page 1 of 29
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	12.12.2014	
Auftraggeber: <i>Client:</i>	Lenovo (Beijing) Limited, No.6 Chuang Ye Road, Shangdi Information Industry, Haidian District, Beijing, China			
Prüfgegenstand: <i>Test item:</i>	ThinkPad Stack Wireless Router			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	R123			
Auftrags-Inhalt: <i>Order content:</i>	FCC approval			
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.407 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 CFR47 FCC Part 15: Subpart B Section 15.107 CFR47 FCC Part 15: Subpart B Section 15.109 FCC KDB publication 447498 D01 v05r02			
Wareneingangsdatum: <i>Date of receipt:</i>	10.03.2015	Refer to photo documents		
Prüfmuster-Nr.: <i>Test sample No.:</i>	A000152964-004, A000152964-005			
Prüfzeitraum: <i>Testing period:</i>	18.03.2015 - 06.05.2015			
Ort der Prüfung: <i>Place of testing:</i>	Accurate Technology Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von / tested by: 		kontrolliert von / reviewed by: 		
22.05.2015	Tom Wang / Project Manager	27.05.2015	Sam Lin / Technical Certifier	
Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>
Sonstiges / Other: This report is for NII equipment class.				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet				
Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT

RESULT: *Passed*

5.1.2 DUTY CYCLE

RESULT: *Passed*

5.1.3 MAXIMUM CONDUCTED OUTPUT POWER

RESULT: *Passed*

5.1.4 26dB BANDWIDTH, 6dB BANDWIDTH AND 99% BANDWIDTH

RESULT: *Passed*

5.1.5 POWER SPECTRAL DENSITY

RESULT: *Passed*

5.1.6 UNWANTED EMISSION

RESULT: *Passed*

5.1.7 RADIATED EMISSIONS

RESULT: *Passed*

5.1.8 CONDUCTED EMISSIONS

RESULT: *Passed*

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1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results of Maximum Conducted Output Power, Power Spectral Density and Bandwidth for U-NII-1 band and U-NII-3 band

Appendix B: Test Results of Unwanted Emissions for U-NII-1 band

Appendix C: Test Results of Unwanted Emissions for U-NII-3 band

Appendix D: Test Results of Radiated Emissions and Conducted Emissions

Appendix E: Test Results of RF Exposure

2. Test Sites

2.1 Test Facilities

Accurate Technology Co., Ltd.

(FCC Registration No.: 752051 & IC Registration Number: 5077A-2)

F1, Bldg A, Changyuan New Material Port, Keyuan Rd., Science & Industry Park,
Nanshan District, Shenzhen, 518057, P.R. China

The tests at the test site have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Type	S/N	Calibrated until
Radio Spectrum Test				
Spectrum Analyzer	Rohde&Schwarz	FSV40	101495	Jan.11, 2016
Test Receiver	Rohde& Schwarz	ESR	101817	Jul. 30, 2016
Spectrum Analyzer	Rohde&Schwarz	FSP30	100220	Jan.21, 2016
Power Meter and Sensor	Rohde & Schwarz	OSP120 + OSP-B157	101244 + 100866	Jan.10, 2015
Conducted emissions				
Test Receiver	Rohde & Schwarz	ESCS30	100307	Jan.11, 2016
L.I.S.N.	Schwarzbeck	NLSK8126	8126431	Jan.11, 2016
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100305	Jan.11, 2016
Radiated emissions				
Spectrum Analyzer	Rohde&Schwarz	FSV40	101495	Jan.11, 2016
Test Receiver	Rohde& Schwarz	ESR	101817	Jul. 30, 2016
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan.15, 2016
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan.15, 2016
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan.15, 2016
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan.15, 2016
RF Switching Unit+PreAMP	Compliance Direction	RSU-M2	38322	Jan.10, 2016
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan.10, 2016
Pre-Amplifier	Agilent	8447D	294A10619	Jan.11, 2016

2.3 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table,

Items		Extended Uncertainty
CE	Disturbance Voltage (dBuV)	U=1.94dB, k=2, σ =95%
RE (9kHz-30MHz)	Field strength (dBuV/m)	U=3.08dB, k=2, σ =95%
RE (30-1000MHz)	Field strength (dBuV/m)	U=4.42dB, k=2, σ =95%
RE (above 1000MHz)	Field strength (dBuV/m)	U=4.06dB, k=2, σ =95%

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix1 of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

2.7 Status of Facility Used for Testing

The Accurate Technology Co., Ltd. facility located at F1, Bldg A, Changyuan New Material Port, Keyuan Rd., Science & Industry Park, Nanshan District, Shenzhen, 518057, P.R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3. General Product Information

3.1 Product Function and Intended Use

The EUT is ThinkPad Stack Wireless Router. It supports 802.11 a/b/g/n/ac wireless technologies. The EUT supports the following functions:

- Wireless access in the 2.4GHz band or 5GHz band
- Internet access through an RJ-45 network cable
- Internet access through an external 3G or 4G network card (USB port)
- Remote access to the hard disk drive if it is stacked to the router
- Remote access to a USB storage device if it is connected to the router

For details refer to the User Manual, Technical Description and Circuit Diagram.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

Technical Specification	Value
Kind of Equipment:	ThinkPad Stack Wireless Router
Type Designation:	R123
FCC ID:	A5MR123
IC:	5903G-R123
Type of Equipment:	Class B digital equipment
Equipment Class:	NII
Wireless Technology:	Wi-Fi
Operating Frequency Range:	U-NII-1 Band: 5180-5240 MHz U-NII-3 Band: 5745-5825 MHz
Channel Number:	U-NII-1 Band: 4 channels for 20MHz bandwidth 2 channels for 40MHz bandwidth 1 channel for 80MHz bandwidth U-NII-3 Band: 5 channels for 20MHz bandwidth 2 channels for 40MHz bandwidth 1 channel for 80MHz bandwidth
Channel Separation:	20MHz, 40MHz
Type of Modulation:	OFDM for Wi-Fi 802.11a/n/ac
Operating Voltage:	DC 5.2V via marketed AC/DC adapter

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Operating Temperature Range:	-5°C to 40°C
Antenna Type:	PIFA Antenna for WiFi
Smart Antenna Systems:	Not Applicable
Number of Antenna:	1 for Wi-Fi
Antenna Gain:	Max. 1.35 dBi for Wi-Fi Antenna

Table 3: Marketed AC/DC adapter

Description	Manufacturer	Model	S/N	Rating
AC/DC adapter	Lite-On Technology Corporation	PA-110-17IN	45N0530	Input: AC 100-240V, 50/60Hz, 0.3A MAX. Output: DC 5.2V, 2A

Table 4: List of Radio Frequency Channel, Wi-Fi 802.11 a/n 20MHz bandwidth

U-NII-1 Band					
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
36	5180.00	40	5200.00	44	5220.00
48	5240.00	--	--	--	--
U-NII-3 Band					
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
149	5745.00	153	5765.00	157	5785.00
161	5805.00	165	5825.00	--	--

Table 5: List of Radio Frequency Channel, Wi-Fi 802.11 a/n 40MHz bandwidth

U-NII-1 Band					
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
38	5190.00	46	5230.00	--	--
U-NII-3 Band					
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
151	5755.00	159	5795.00	--	--

Table 6: List of Radio Frequency Channel, Wi-Fi 802.11 ac 80MHz bandwidth

U-NII-1 Band					
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
42	5210.00	--	--	--	--
U-NII-3 Band					
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
155	5775.00	--	--	--	--

3.3 Independent Operation Modes

The basic operation modes are:

- A. Transmitting
 - 1. Low Channel
 - 2. Mid Channel
 - 3. High Channel
- B. Receiving
 - 1. Low Channel
 - 2. Mid Channel
 - 3. High Channel
- C. Access to USB disk via Wi-Fi
- D. Access to HDD disk via Wi-Fi
- E. Standby
- F. Off

Table 7: List of Wi-Fi operation modes

Mode	Wi-Fi Operation		
Antenna	Single		
Bandwidth	20	40	80
802.11a	√	x	x
802.11n	√	√	x
802.11ac	x	x	√

Note:

1. The EUT support HT20 and HT40.
2. The EUT support VHT80.
3. 802.11n support MCS0 ~ MCS7 data rates.
4. 802.11ac support MCS0NSS1 ~ MCS9NSS1 data rates.

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- Bill of Material	- Circuit Diagram
- PCB Layout	- Instruction Manual
- Photo Document	- Rating Label

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5.

Test software 'MP Tool' provided by the applicant was used to control the operating channels as well as output power for Wi-Fi operation.

Table 8: List of Frequencies under Test, Wi-Fi operation

Operation Band	802.11a and 802.11n HT20		802.11n HT40		802.11ac VHT80	
	Channel number	Frequency (MHz)	Channel number	Frequency (MHz)	Channel number	Frequency (MHz)
U-NII-1	36	5180.00	38	5190.00	42	5210.00
	40	5200.00	46	5230.00	--	--
	44	5220.00	--	--	--	--
	48	5240.00	--	--	--	--
U-NII-3	149	5745.00	151	5755.00	155	5775.00
	157	5785.00	159	5795.00	--	--
	165	5825.00	--	--	--	--

Table 9: List of Operation mode under Test, Wi-Fi operation

Configuration	Data Rates	Transmit Chain
Transmit Chain - 1TX_Non-Beamforming		
802.11a	6Mbps	ANT 1
802.11n HT20	MCS0	ANT 1
802.11n HT40	MCS0	ANT 1
802.11ac VHT80	MCS0NSS1	ANT 1
Note: Preliminary tests were performed in different data rate and antenna chain to find the worst case. The data rate and antenna chain shown in the table is the worst case.		

Table 10: Power level setting of U-NII-1 band in test software

Power Level Setting in Test Software			
Configuration	802.11a	802.11n HT20	Not applicable
Transmit Chain	1TX	1TX	
Channel 36	48	48	
Channel 40	48	48	
Channel 44	47	47	
Channel 48	47	47	
Configuration	802.11n HT40	Not applicable	
Transmit Chain	1TX		
Channel 38	48		
Channel 46	47		
Configuration	802.11ac VHT80	Not applicable	
Transmit Chain	1TX		
Channel 42	48		

Table 11: Power level setting of U-NII-3 band in test software

Power Level Setting in Test Software			
Configuration	802.11a	802.11n HT20	Not applicable
Transmit Chain	1TX	1TX	
Channel 149	47	47	
Channel 157	48	48	
Channel 165	48	48	
Configuration	802.11n HT40	Not applicable	
Transmit Chain	1TX		
Channel 151	47		
Channel 159	48		
Configuration	802.11ac VHT80	Not applicable	
Transmit Chain	1TX		
Channel 155	48		

4.3 Special Accessories and Auxiliary Equipment

Table 12: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Laptop PC	Lenovo	X200	L3-ANW2G	--
Printer	HP	HP Laserjet 1015	CNFG030424	--
ThinkPad Stack 1TB USB3.0 Hard Drive	Lenovo	H123	SH20H34197	--

4.4 Countermeasures to achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test

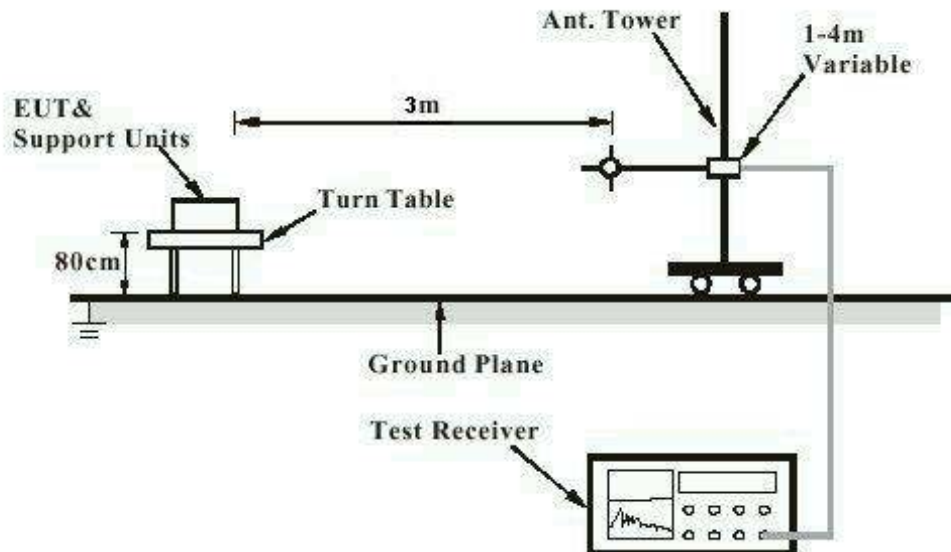


Diagram of Measurement Equipment Configuration for Conduction Measurement

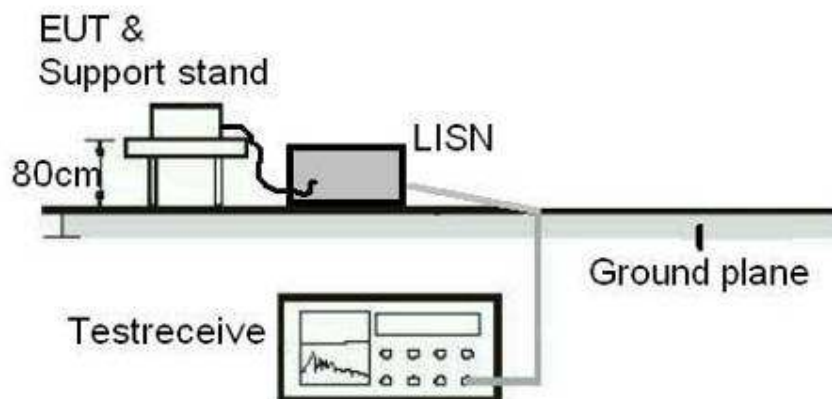
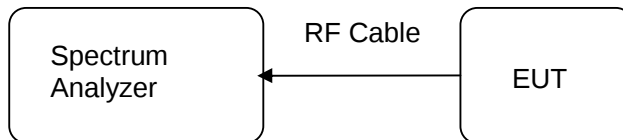


Diagram of Measurement Equipment Configuration for Transmitter Measurement



5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:**Passed**

Date of testing : 2015-03-18 to 2015-05-06
Test standard : KDB 662911 D01 v02r01

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 1.35dBi for WiFi antenna, and the antenna connector is designed with permanent attachment and no consideration of replacement.

Refer to EUT photo for details.

5.1.2 Duty Cycle

RESULT:**Passed**

Date of testing : 2015-03-18 to 2015-05-06
Test standard : FCC Part 15.407
Basic standard : ANSI C63.4: 2009
KDB 789033 D02 v01
Kind of test site : Shielded room

Test setup

Test Channel : One channel for all data rates
Operation Mode : A
Ambient temperature : 22°C
Relative humidity : 51%
Atmospheric pressure : 101.0 kPa

Table 13: Test result of Duty Cycle

Mode	Data rate Mbps	T _{on} (ms)	T _{Total} (ms)	Duty Cycle	Duty Cycle Factor
802.11a	6	1.40	1.58	0.89	0.05
802.11n HT20	MCS0	1.40	1.58	0.89	0.05
802.11n HT40	MCS0	1.40	1.59	0.88	0.06
802.11ac VHT80	MCS0NSS1	1.40	1.58	0.89	0.05

5.1.3 Maximum Conducted Output Power

RESULT:**Passed**

Date of testing : 2015-03-18 to 2015-05-06
Test standard : FCC Part 15.407(a)
Basic standard : ANSI C63.4: 2009
KDB 789033 D02 v01
Limit : 1Watt (30dBm) for AP
250mW (24dBm) for mobile and portable client device
Kind of test site : Shielded room

Test setup

Test Channel : CH36, CH40, CH44, CH48, CH149, CH157, CH165 for 20MHz
CH38, CH46, CH151, CH159 for 40MHz
CH42, CH155 for 80MHz
Operation Mode : A
Ambient temperature : 22°C
Relative humidity : 51%
Atmospheric pressure : 101.0 kPa

Refer to attached Appendix A for details of test results.

Channel	Channel Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)	Result
802.11a				
36	5180	21.187	16.628	Pass
40	5200	21.100	16.585	Pass
44	5220	21.100	16.585	Pass
48	5240	21.143	16.628	Pass
802.11n HT20				
36	5180	21.664	17.800	Pass
40	5200	21.664	17.757	Pass
44	5220	21.795	17.757	Pass
48	5240	21.881	17.800	Pass
802.11n HT40				
38	5190	44.544	37.395	Pass
46	5230	44.631	37.395	Pass
802.11ac VHT80				
42	5210	84.950	76.585	Pass

Table 15: Test result of 6dB Bandwidth and 99% Bandwidth for U-NII-3 band

Channel	Channel Frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Result
802.11a				
149	5745	16.628	16.628	Pass
157	5785	16.628	16.628	Pass
165	5825	16.628	16.628	Pass
802.11n HT20				
149	5745	17.757	17.757	Pass
157	5785	17.575	17.757	Pass
165	5825	17.757	17.757	Pass
802.11n HT40				
151	5755	36.643	37.424	Pass
159	5795	36.643	37.424	Pass
802.11ac VHT80				
155	5775	76.700	76.411	Pass

Refer to attached Appendix A for details of test results.

1TX	Measured PSD (dBm/MHz)				Limit (dBm/MHz)	Conclusion
Channel	Ch 36	Ch 40	Ch 44	Ch 48		
802.11a_6Mbps	7.02	7.22	7.66	8.10	17.00	PASS
802.11n_HT20_MCS0_	6.22	6.55	7.02	7.60	17.00	PASS
Channel	Ch 38	Ch 46	--	--	Limit (dBm/MHz)	Conclusion
802.11n_HT40_MCS0	2.63	3.64	--	--	17.00	PASS
Channel	Ch 42	--	--	--	Limit (dBm/MHz)	Conclusion
802.11ac_VHT80_MCS0NSS1	1.47	--	--	--	17.00	PASS

Table 17: Test Results for Power Spectral Density for U-NII-3 band

1TX	Measured PSD (dBm/500kHz)			Limit	Conclusion
Channel	Ch 149	Ch 157	Ch 165	(dBm/500kHz)	
802.11a_6Mbps	0.65	-0.13	-1.05	30.00	PASS
802.11n_HT20_MCS0	0.61	-0.26	-1.17	30.00	PASS
Channel	Ch151	Ch 159	--	Limit	Conclusion
				(dBm/500kHz)	
802.11n_HT40_MCS0	-3.50	-4.36	--	30.00	PASS
Channel	Ch 155	--	--	Limit	Conclusion
				(dBm/500kHz)	
802.11ac_VHT80_MCS0NSS1	-6.02	--	--	30.00	PASS

Refer to attached Appendix A for details of test results.

5.1.6 Unwanted Emission

RESULT:**Passed**

Date of testing : 2015-03-18 to 2015-05-06
Test standard : FCC part 15.407(b)
FCC part 15.209
Basic standard : ANSI C63.4: 2009
KDB 789033 D02 v01
Limits : -27dBm/MHz outside 5150-5250MHz
-17dBm/MHz within 5715-5725MHz and 5850-5860MHz
-27dBm/MHz outside 5715-5860MHz
All emissions in the restricted bands must comply with FCC
15.209(a)
Kind of test site : 3m Semi-Anechoic Chamber

Test setup

Test Channel : CH36, CH40, CH44, CH48, CH149, CH157, CH165 for 20MHz
CH38, CH46, CH151, CH159 for 40MHz
CH42, CH155 for 80MHz
Operation mode : A.1
Ambient temperature : 23°C
Relative humidity : 48%
Atmospheric pressure : 101.0 kPa

Radiated measurement were performed, EIRP is converted to field strength as follow:

$$\text{EIRP(dBm)} = \text{E(dBuV/m)} - 95.2$$

For U-NII-1 band

$$\text{Outside 5150-5250MHz, } E_{\text{Limit}} = -27 + 95.2 = 68.2 \text{ dBuV/m}$$

For U-NII-3 band

$$\text{Within 5715-5725MHz and 5850-5860MHz, } E_{\text{Limit}} = -17 + 95.2 = 78.2 \text{ dBuV/m}$$

$$\text{Outside 5715-5860MHz: } E_{\text{Limit}} = -27 + 95.2 = 68.2 \text{ dBuV/m}$$

The general field strength limits set forth in FCC 15.209 is more strict than the specified in FCC 15.407(b), therefore the device can fulfill the FCC 15.209 requirements is not required to satisfy the -27dBm/MHz or -17dBm/MHz maximum emission limit.

Refer to attached Appendix B and Appendix C for details.

5.1.7 Radiated Emissions

RESULT:**Passed**

Date of testing	:	2015-03-18 to 2015-05-06
Test standard	:	FCC Part 15.109
Basic standard	:	ANSI C63.4: 2009
Frequency range	:	30 – 6000MHz
Limits	:	FCC Part 15.109(a)
Kind of test site	:	3m Semi-Anechoic Chamber

Test Setup

Input Voltage	:	DC 5.2V (via AC/DC adapter)
Operation Mode	:	A+B+C, A+B+D
Ambient temperature	:	23°C
Relative humidity	:	48%
Atmospheric pressure	:	101.0 kPa

Refer to attached Appendix D for details of test results.

5.1.8 Conducted Emissions

RESULT:**Passed**

Date of testing : 2015-03-18 to 2015-05-06
Test standard : FCC Part 15.207
FCC Part 15.107
Basic standard : ANSI C63.4: 2009
Frequency range : 0.15MHz – 30MHz
Limits : FCC Part 15.207(a)
FCC Part 15.107(a)
Kind of test site : Shield Room

Test Setup

Input Voltage : DC 5.2V (via AC/DC adapter)
Operation Mode : A+B+C, A+B+D
Ambient temperature : 23°C
Relative humidity : 50%
Atmospheric pressure : 101.0 kPa

Refer to attached Appendix D for details.

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Appendix A

Test Results of Maximum Conducted Output Power, Power Spectral Density and Bandwidth for U-NII-1 band and U-NII-3 band

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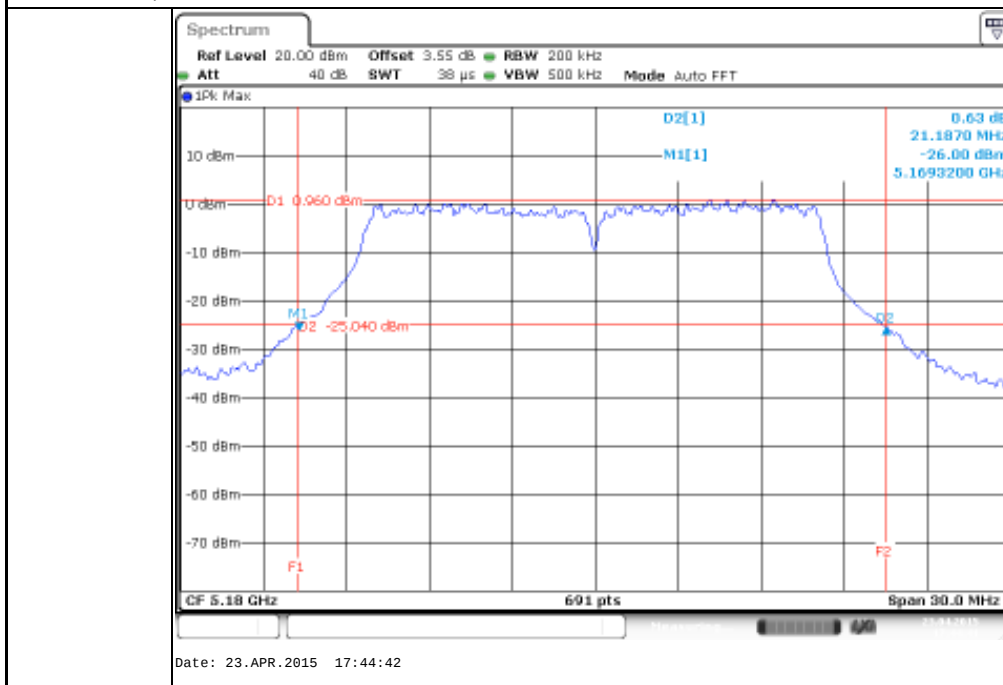
Appendix A.1: Maximum Conducted Output Power, U-NII-1 Band

1TX	Measured Power (dBm)				Total Power (dBm)				Limit (dBm)	Conclusion
Channel	Ch 36	Ch 40	Ch 44	Ch 48	Ch 36	Ch 40	Ch 44	Ch 48		
802.11a_6Mbps	15.50	15.80	16.10	15.90	15.50	15.80	16.10	15.90	30.00	PASS
802.11n_HT20_MCS0	15.60	15.20	15.10	15.50	15.60	15.20	15.10	15.50	30.00	PASS
Channel	Ch 38	Ch 46	--	--	Ch 38	Ch 46	--	--	Limit (dBm)	Conclusion
802.11n_HT40_MCS0	14.70	15.30	--	--	14.70	15.30	--	--	30.00	PASS
Channel	Ch 42	--	--	--	Ch 42	--	--	--	Limit (dBm)	Conclusion
802.11ac_VHT80_MCS0NSS1	14.70	--	--	--	14.70	--	--	--	30.00	PASS

Appendix A.2: 26dB Bandwidth and 99% Bandwidth, U-NII-1 Band

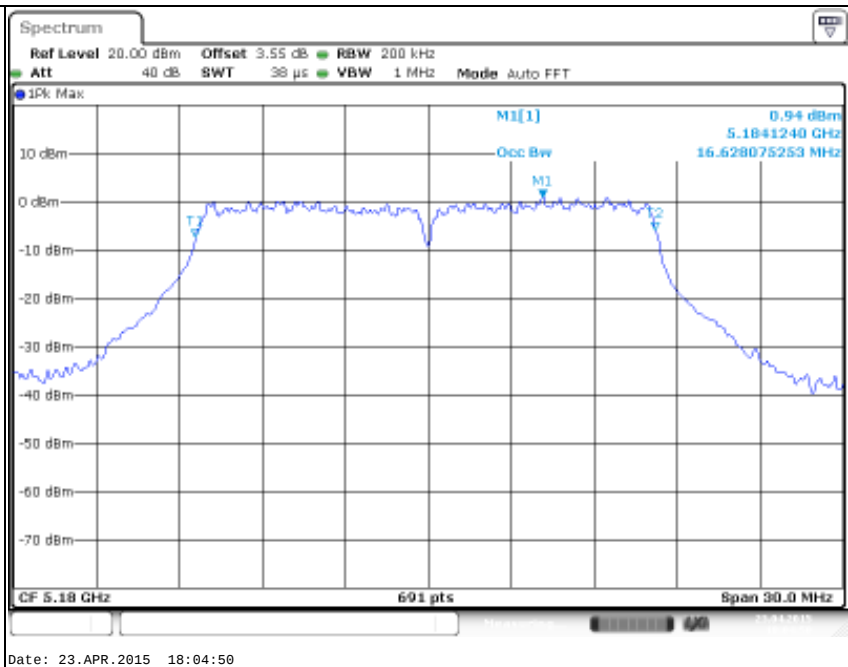
802.11a

Channel 36, 26dB Bandwidth

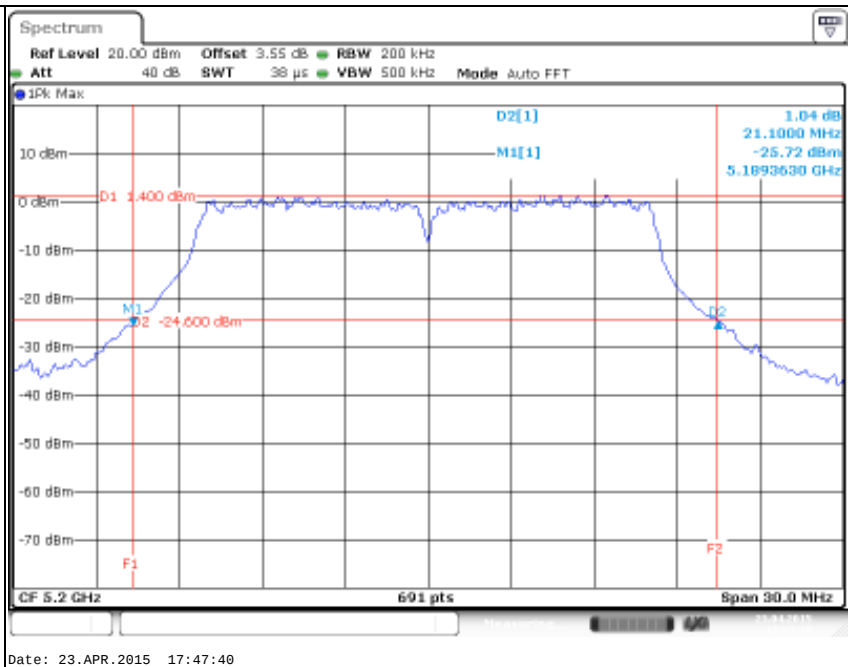


Channel 36, 99% Bandwidth

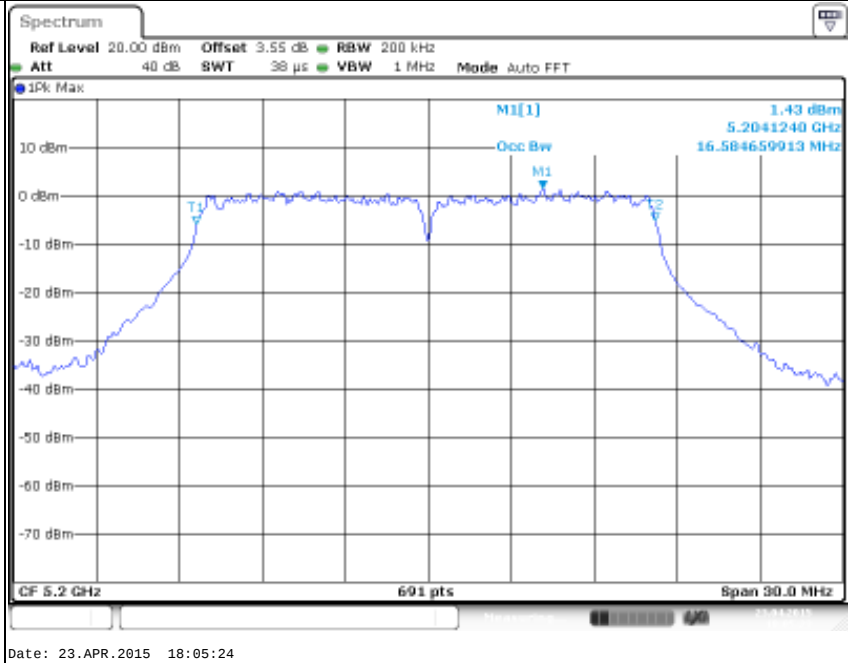
Produkte
Products



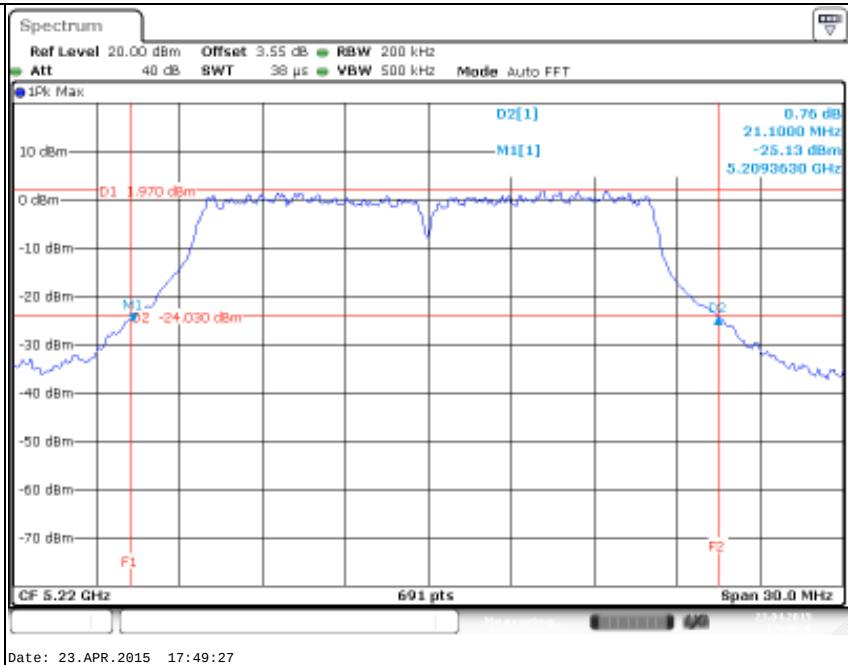
Channel 40, 26dB Bandwidth



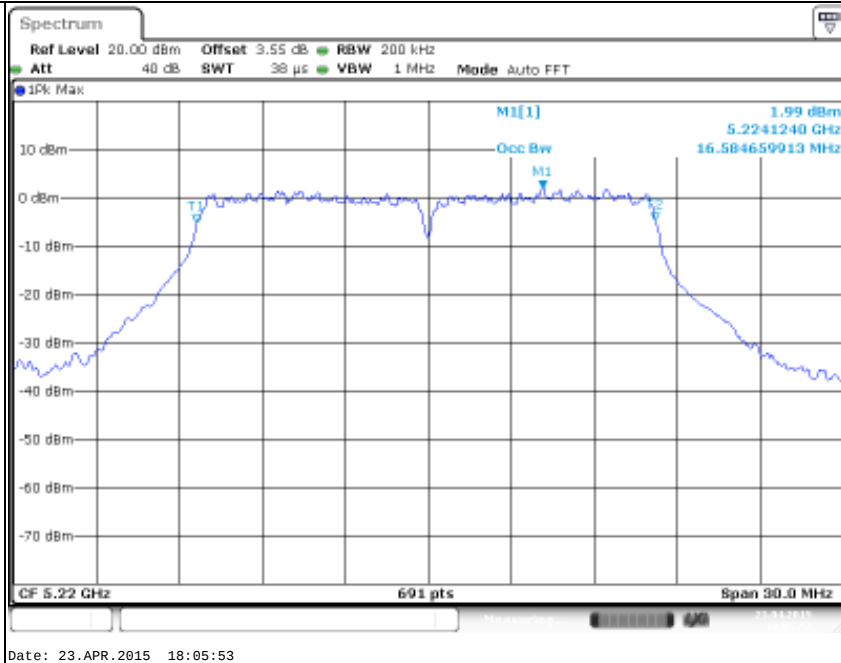
Channel 40, 99% Bandwidth



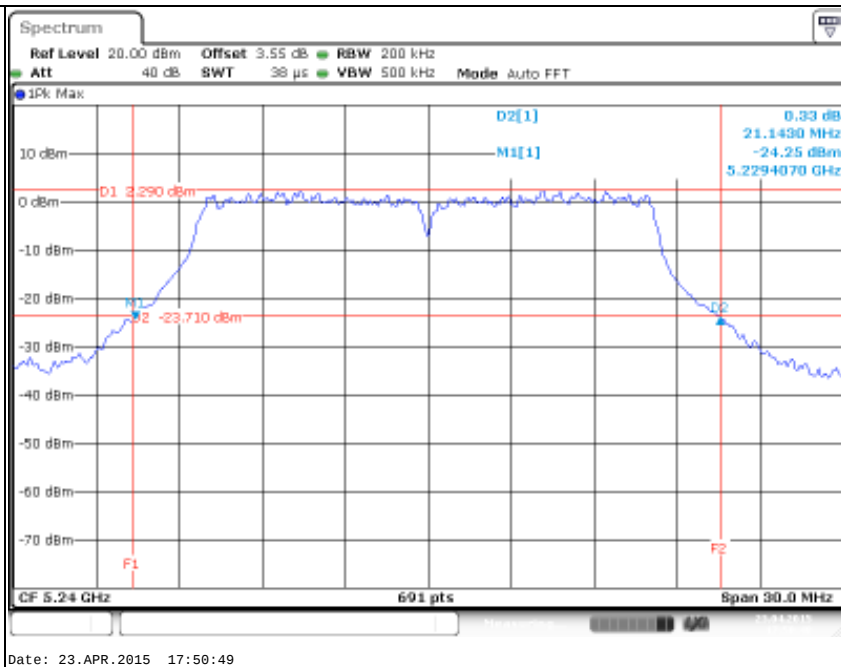
Channel 44, 26dB Bandwidth



Channel 44, 99% Bandwidth

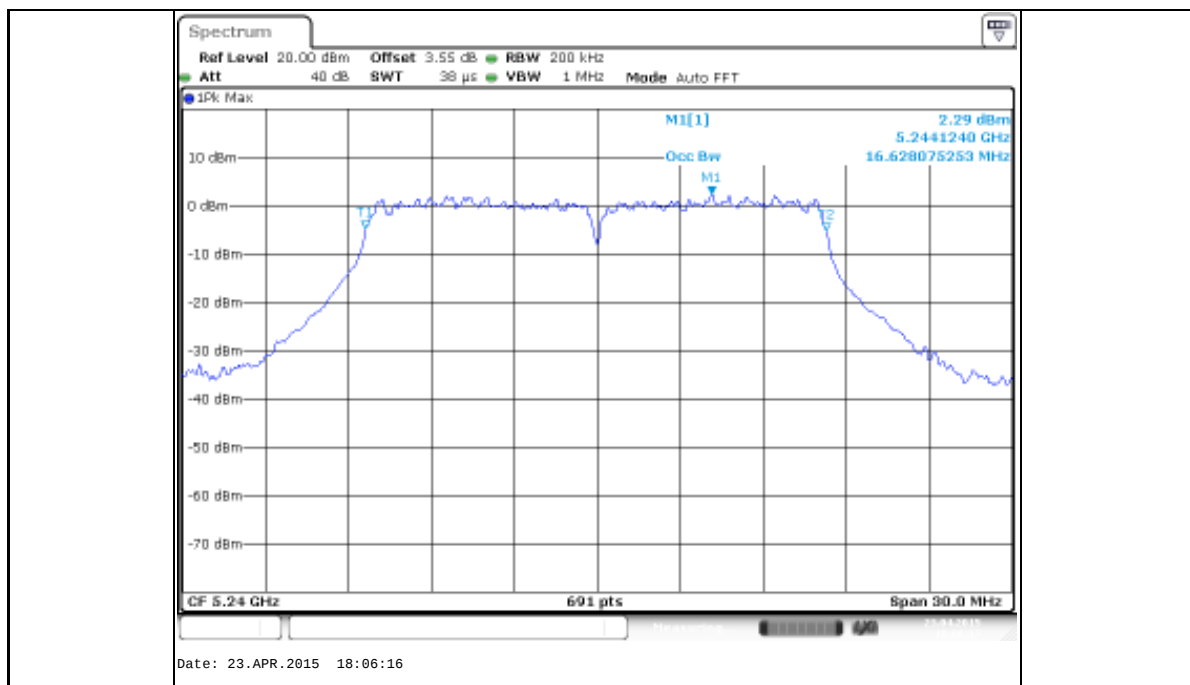


Channel 48, 26dB Bandwidth



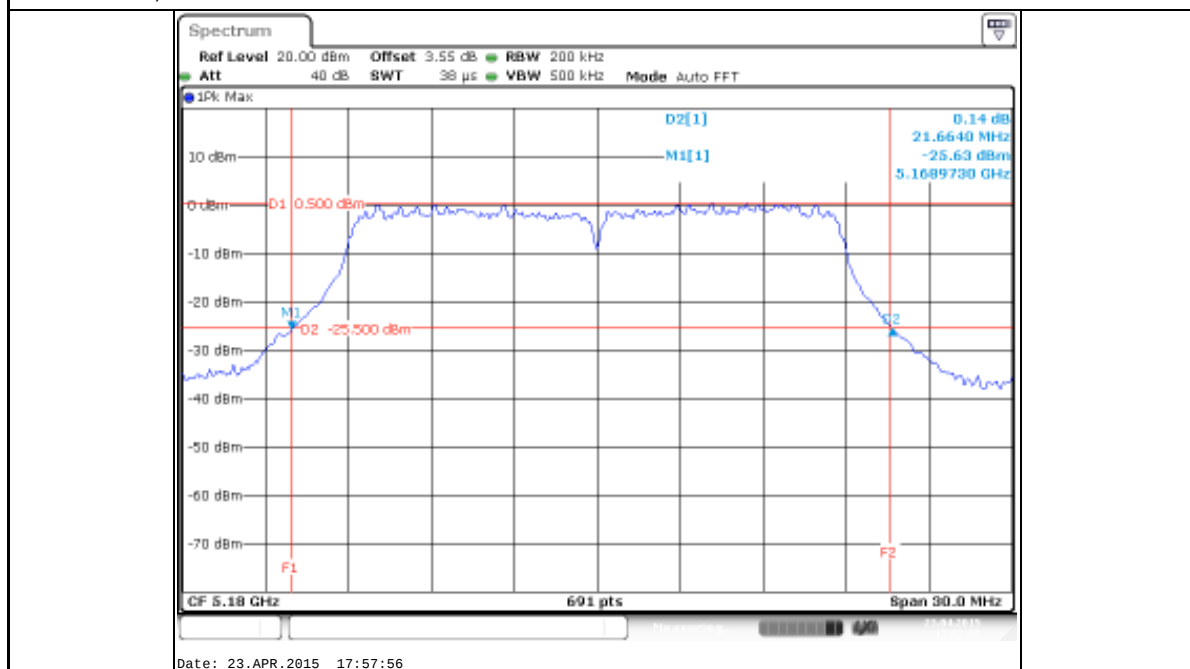
Channel 48, 99% Bandwidth

Produkte
Products

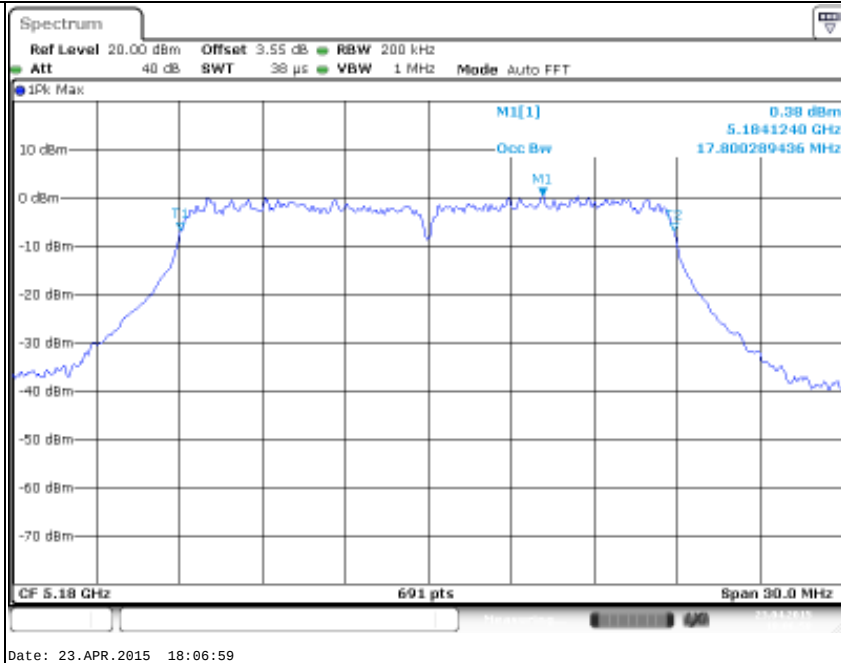


802.11n HT20

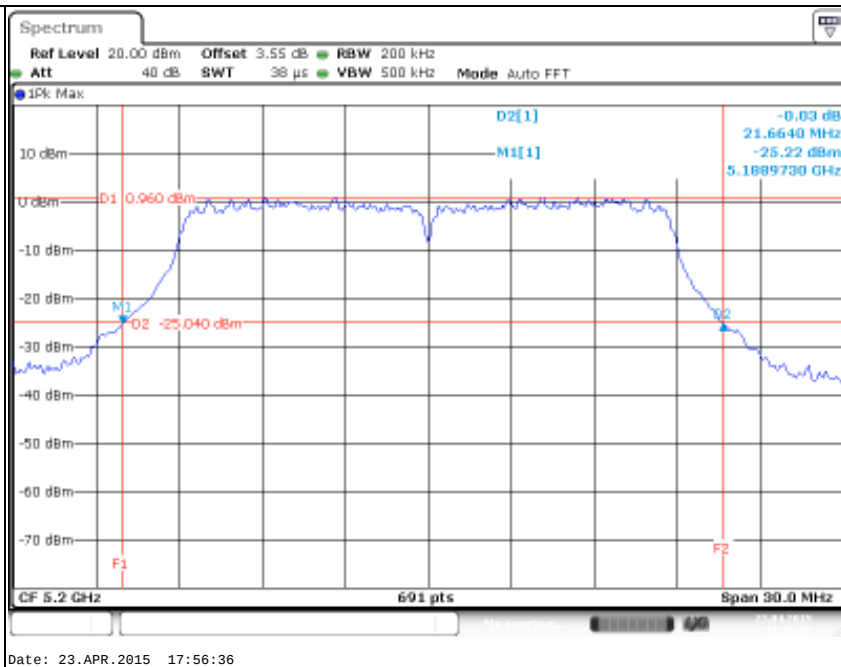
Channel 36, 26dB Bandwidth



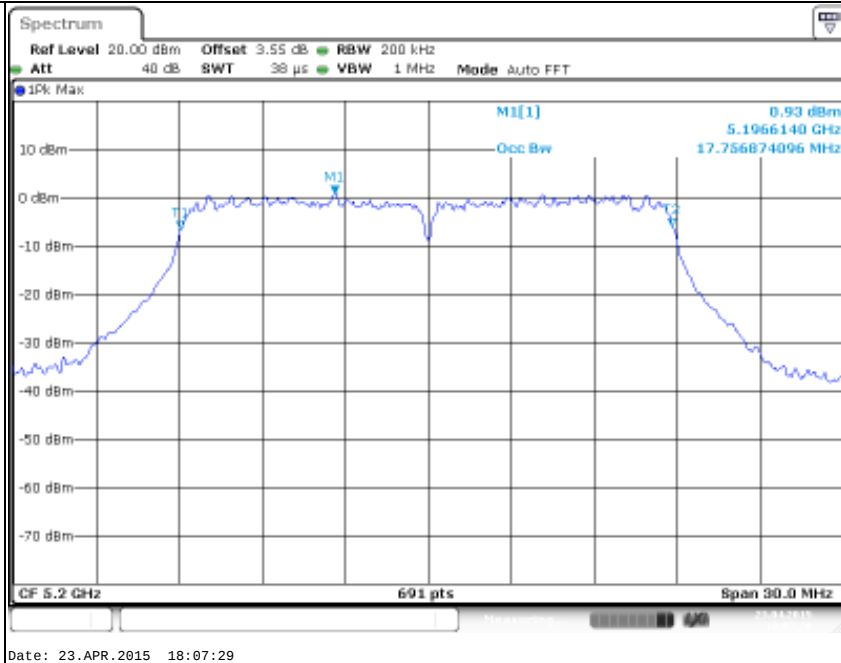
Channel 36, 99% Bandwidth



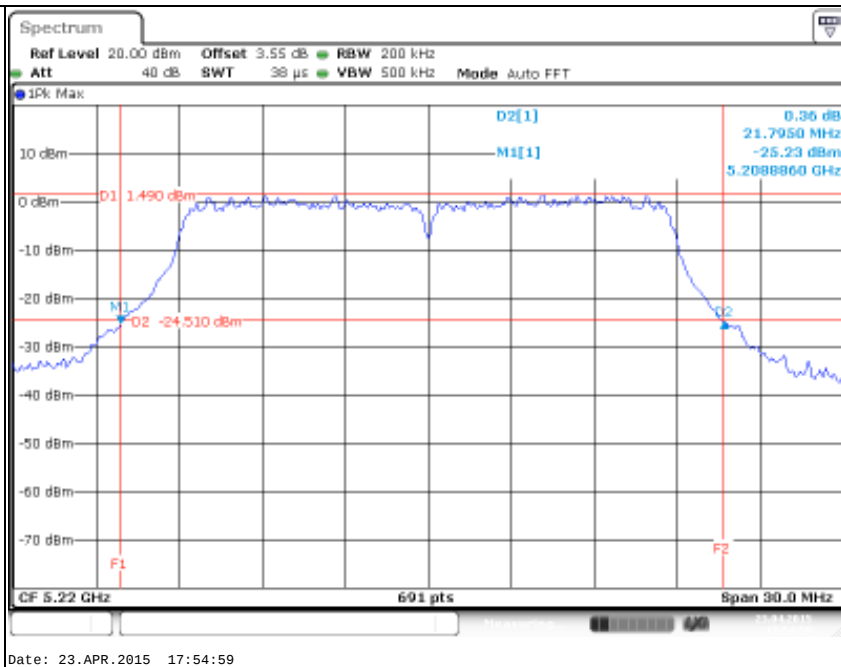
Channel 40, 26dB Bandwidth



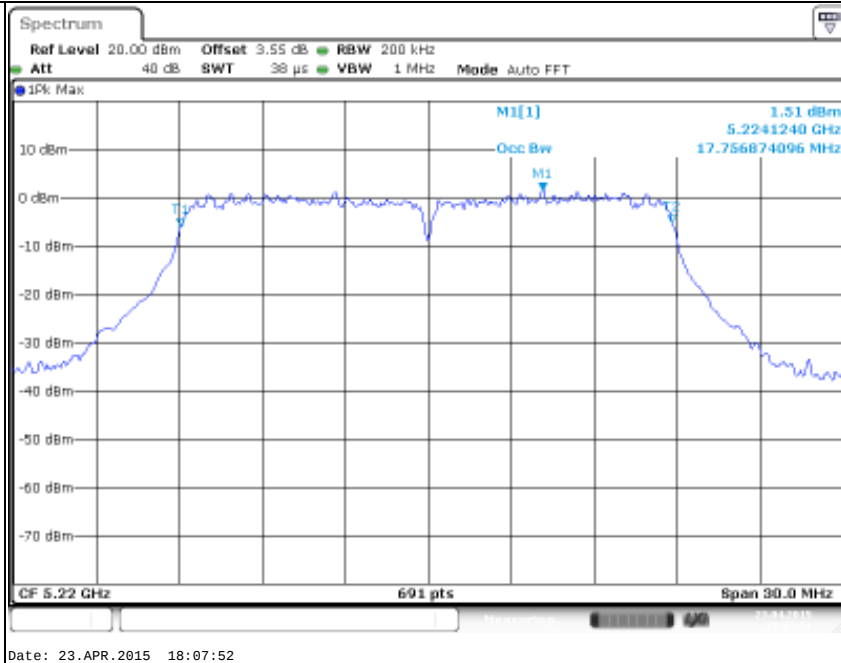
Channel 40, 99% Bandwidth



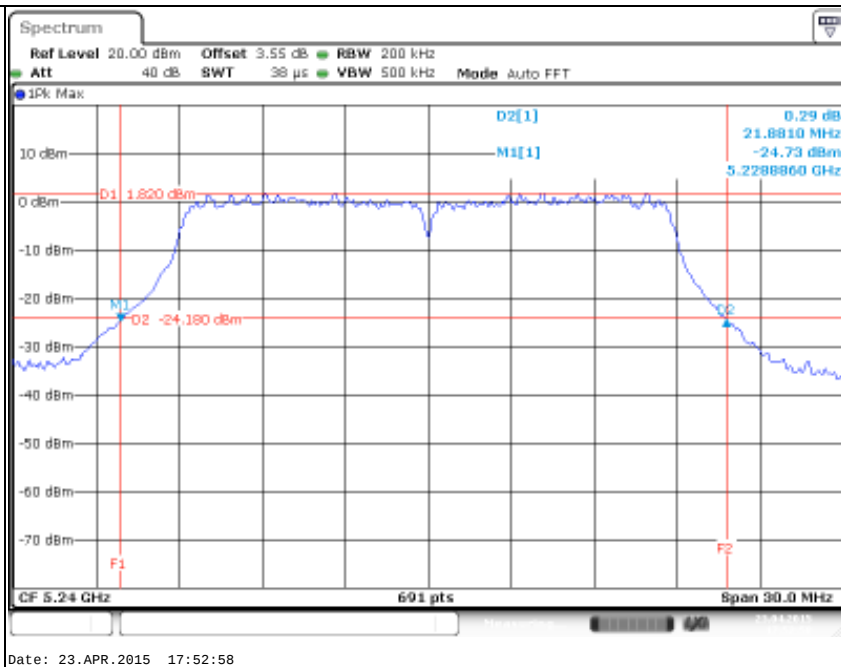
Channel 44, 26dB Bandwidth



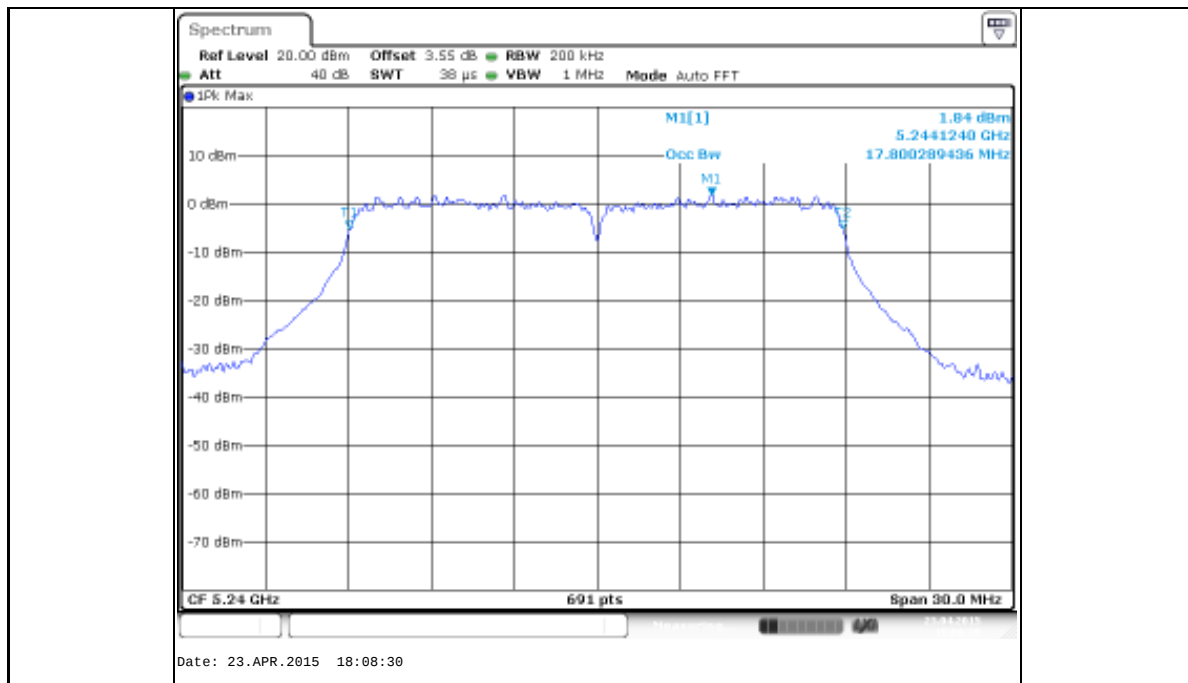
Channel 44, 99% Bandwidth



Channel 48, 26dB Bandwidth

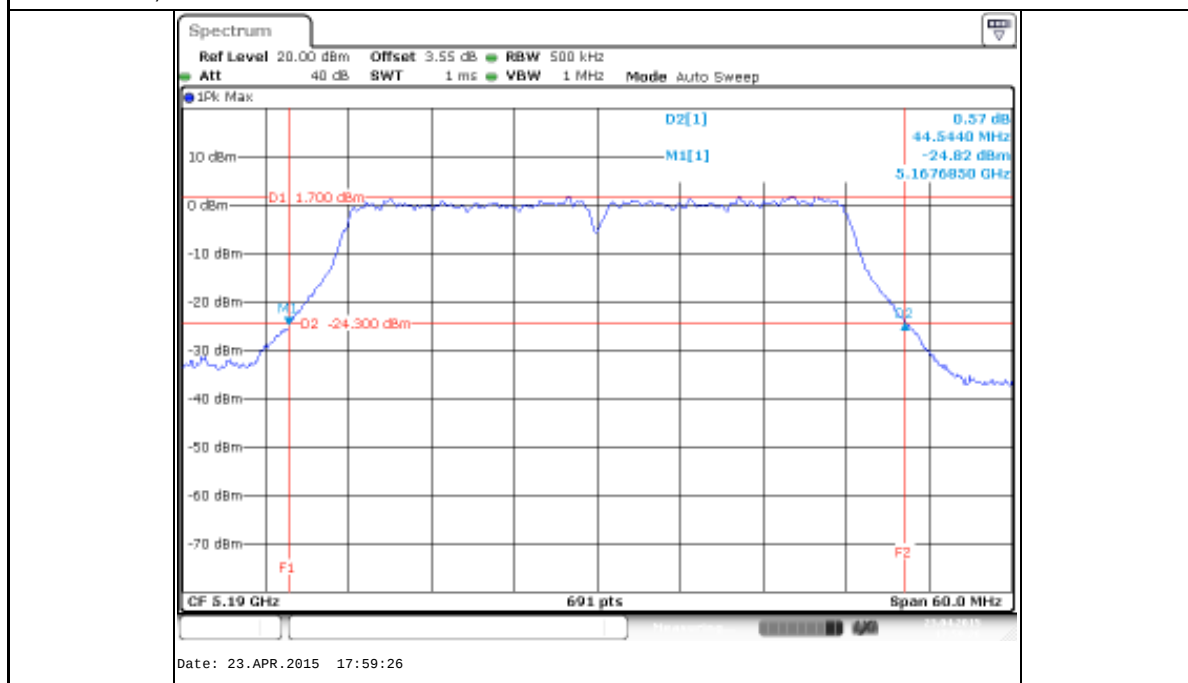


Channel 48, 99% Bandwidth

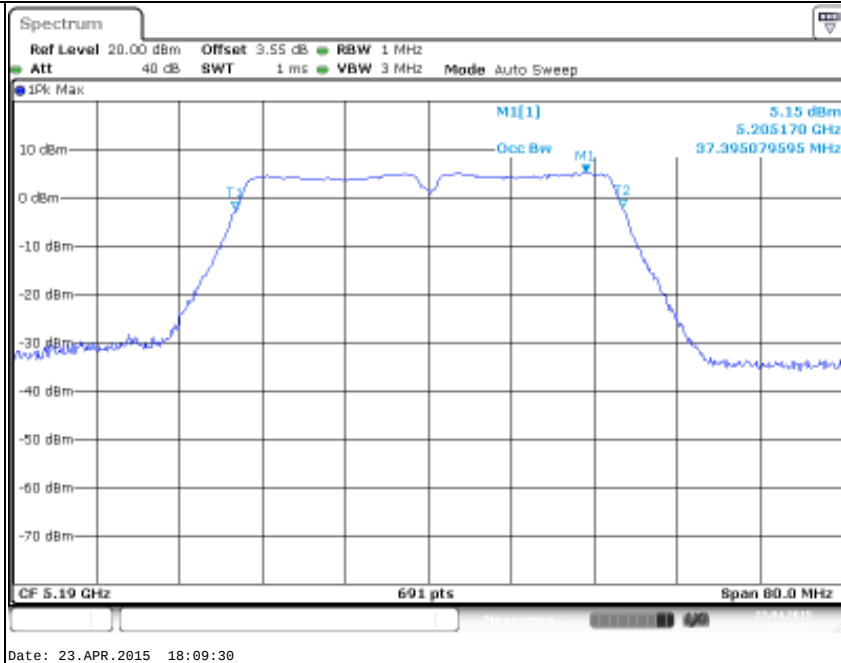


802.11n HT40

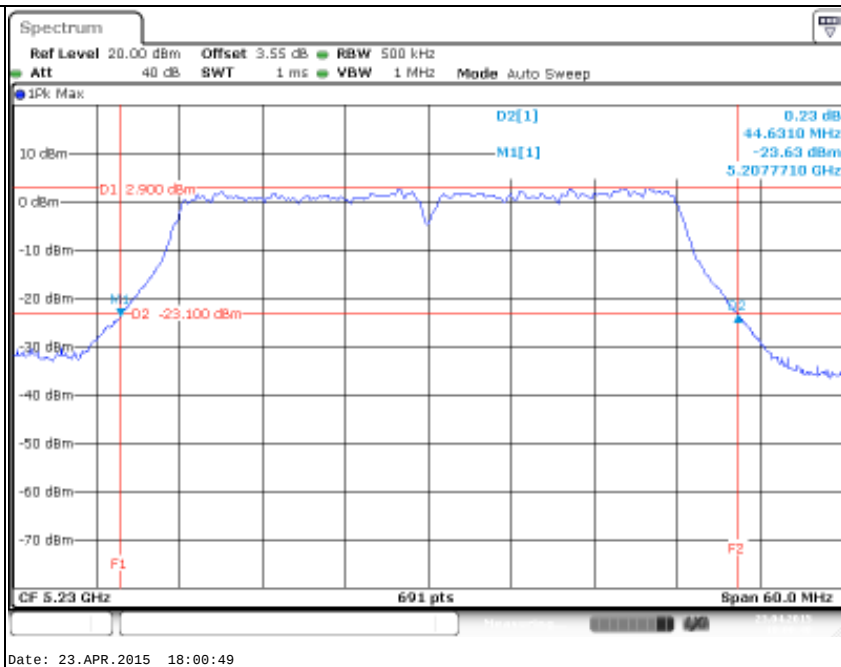
Channel 38, 26dB Bandwidth



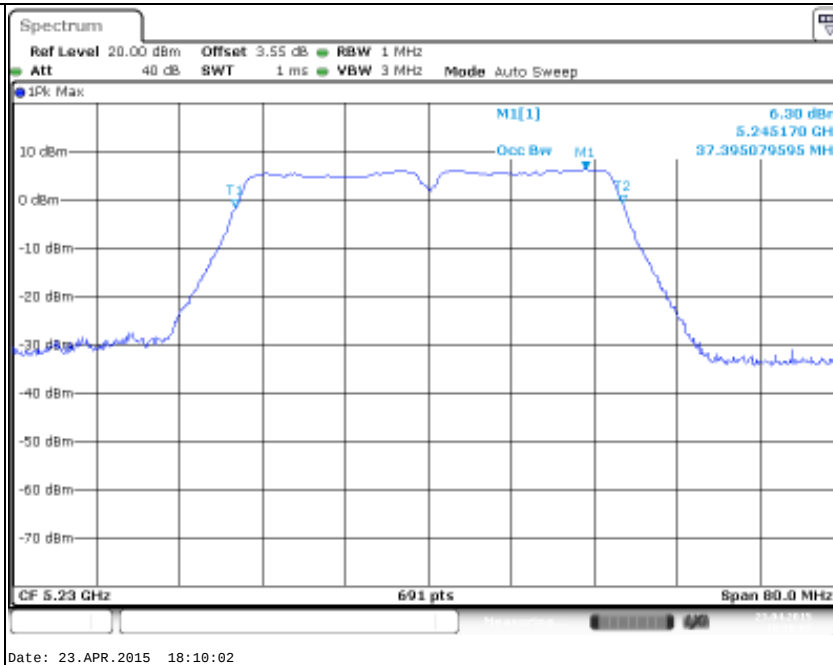
Channel 38, 99% Bandwidth



Channel 46, 26dB Bandwidth

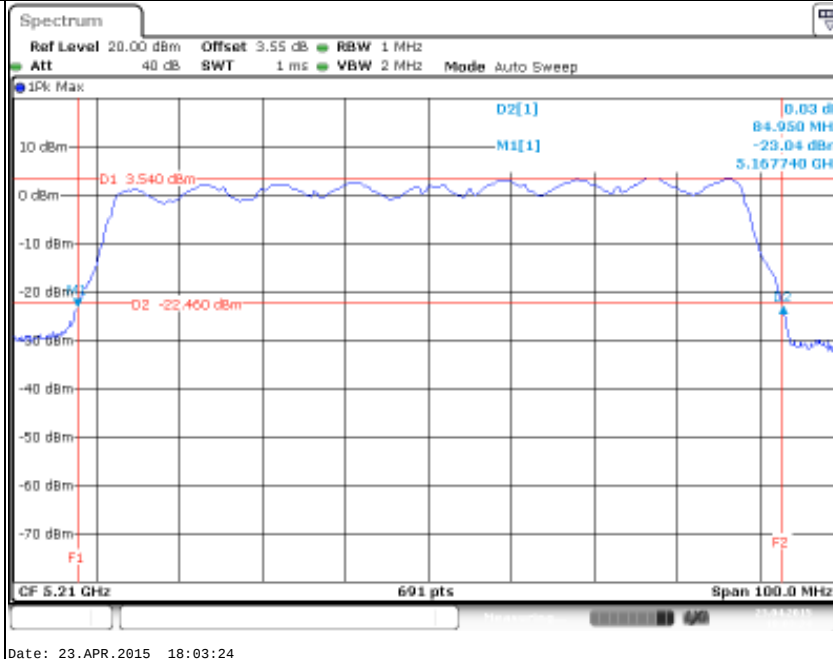


Channel 46, 99% Bandwidth

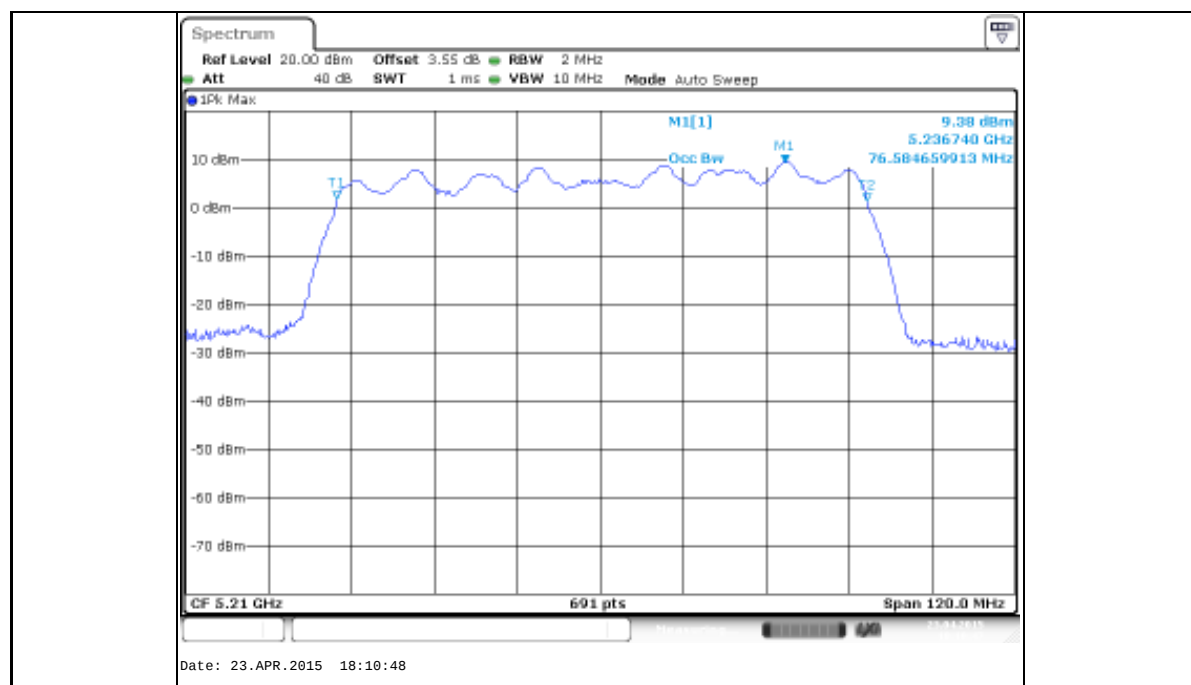


802.11ac VHT80

Channel 42, 26dB Bandwidth

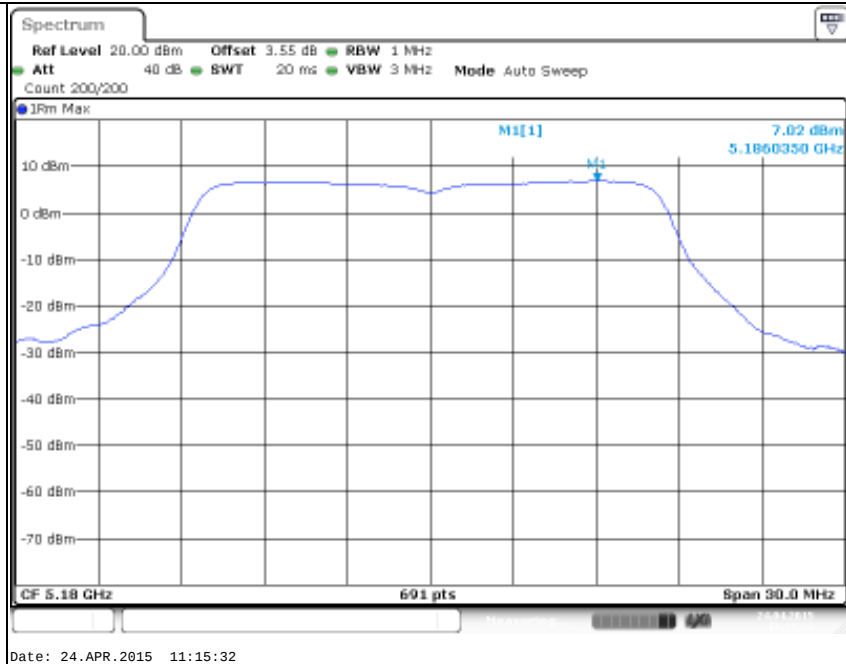


Channel 42, 99% Bandwidth

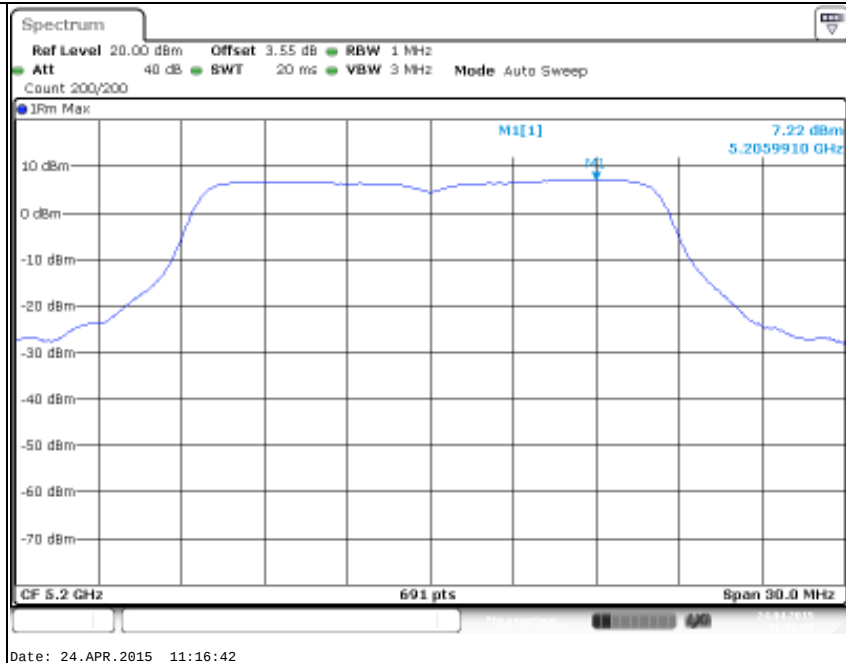


Appendix A.3: Power Spectral Density, U-NII-1 Band 802.11a

Channel 36

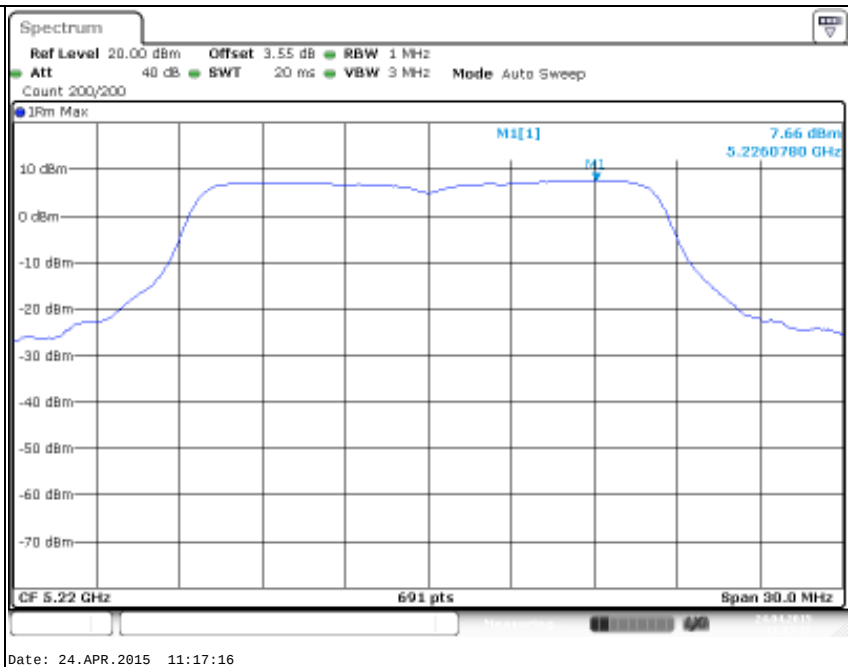


Channel 40

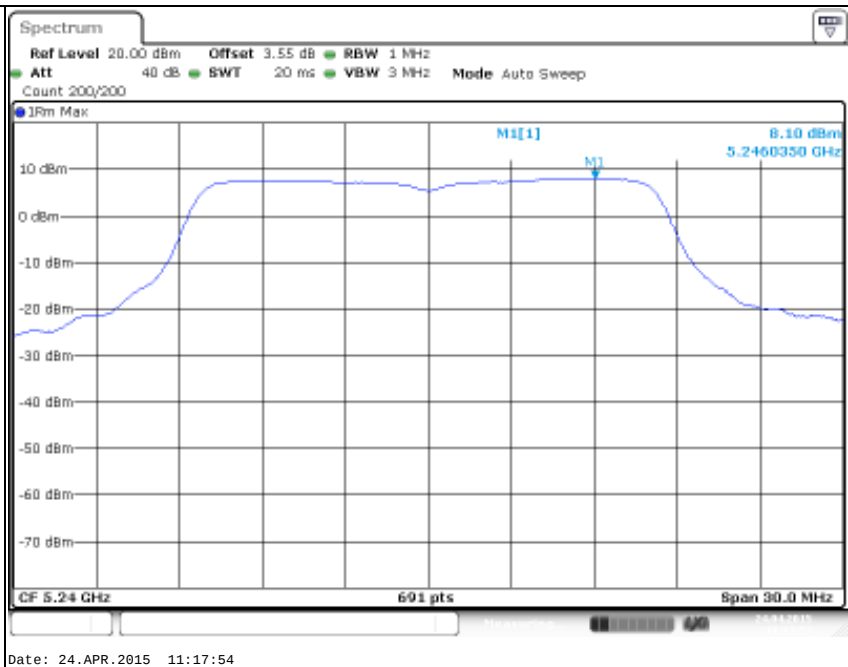


Channel 44

Produkte
Products

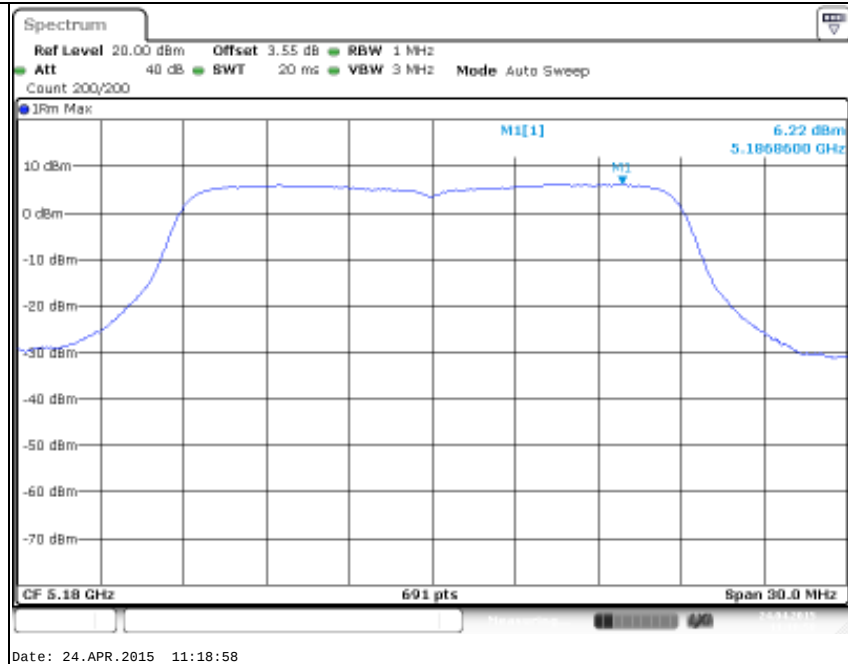


Channel 48

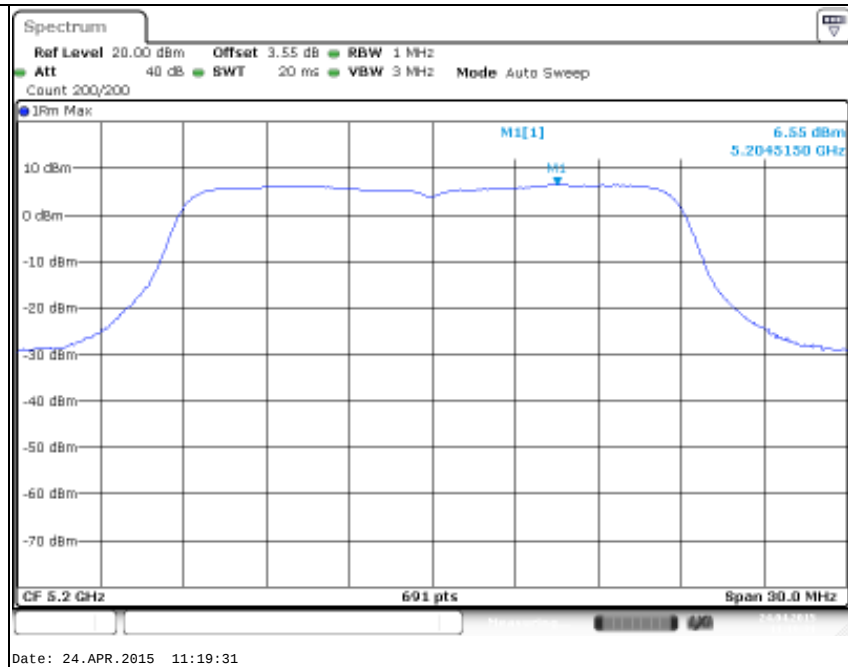


802.11n HT20

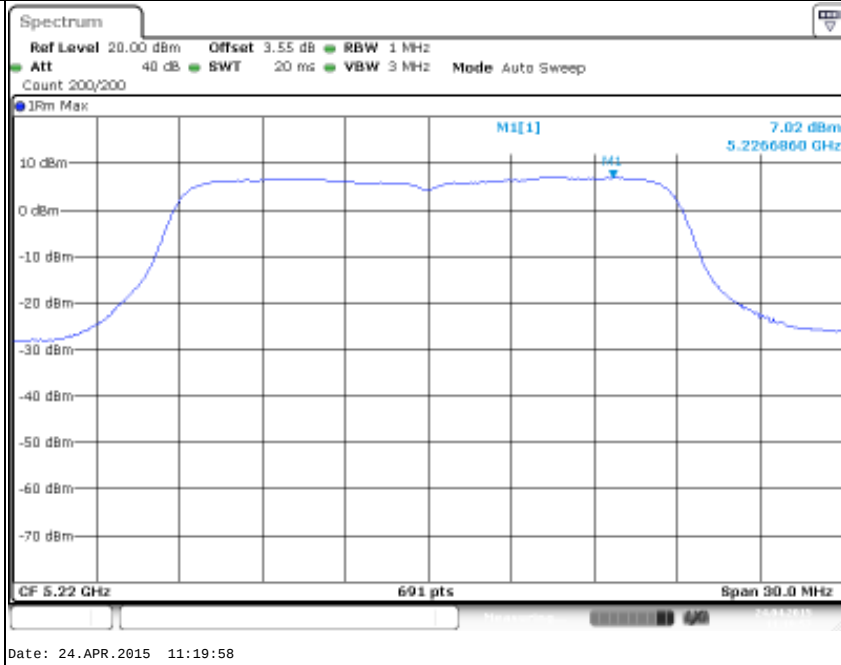
Channel 36



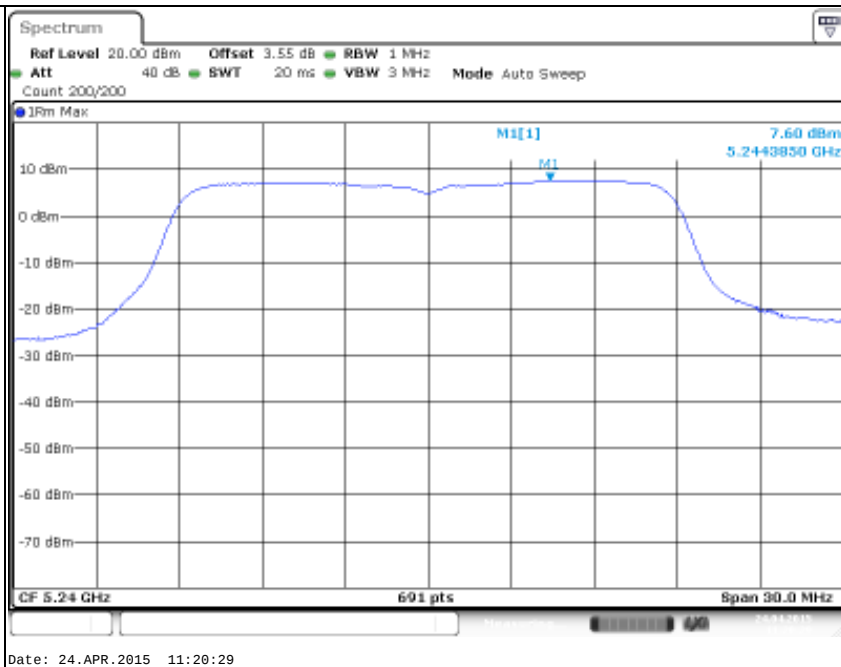
Channel 40



Channel 44

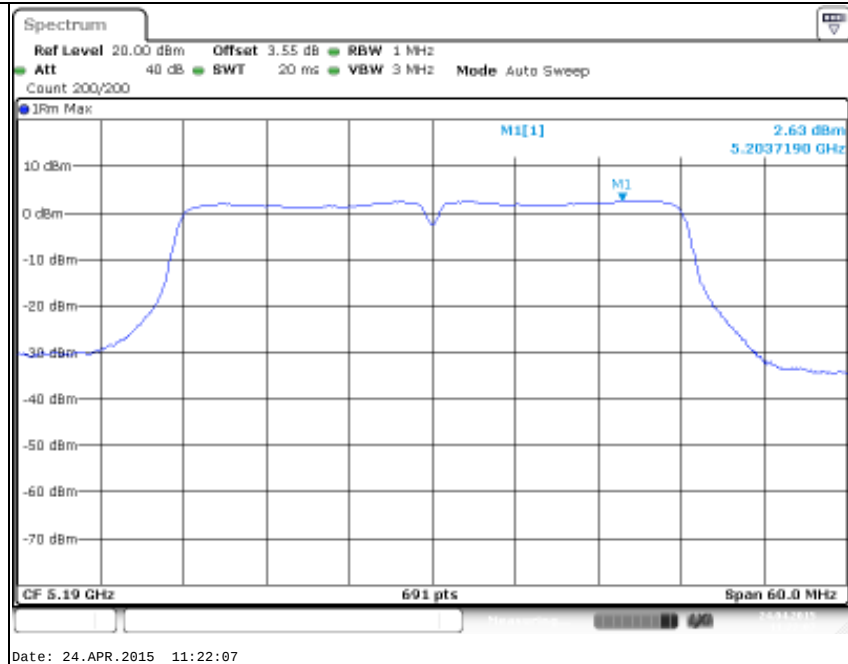


Channel 48

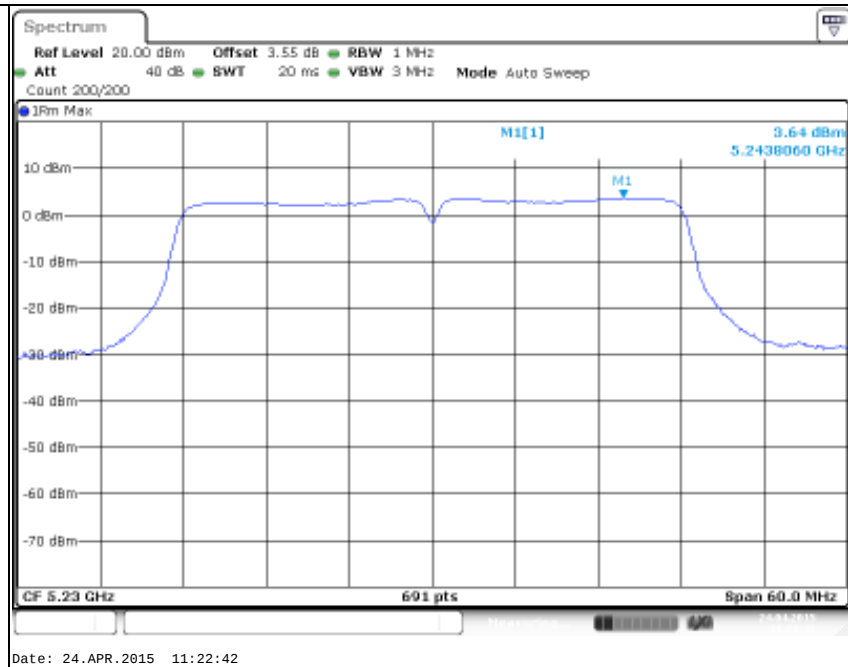


802.11n HT40

Channel 38

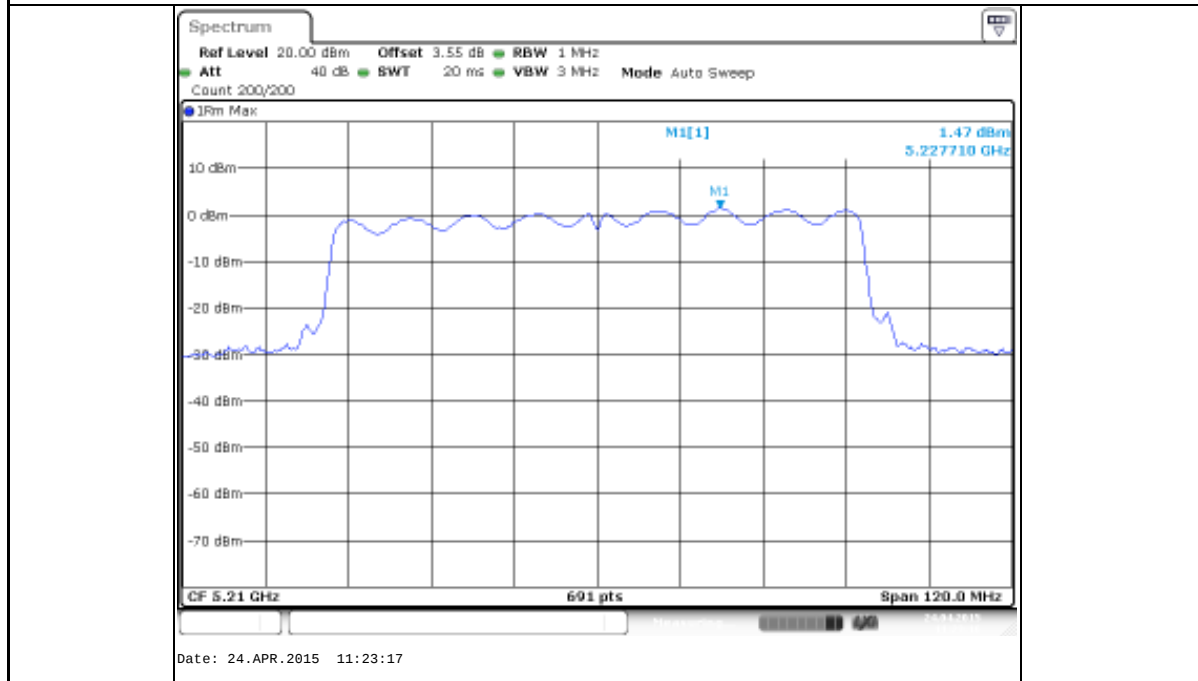


Channel 46



802.11ac VHT80

Channel 42



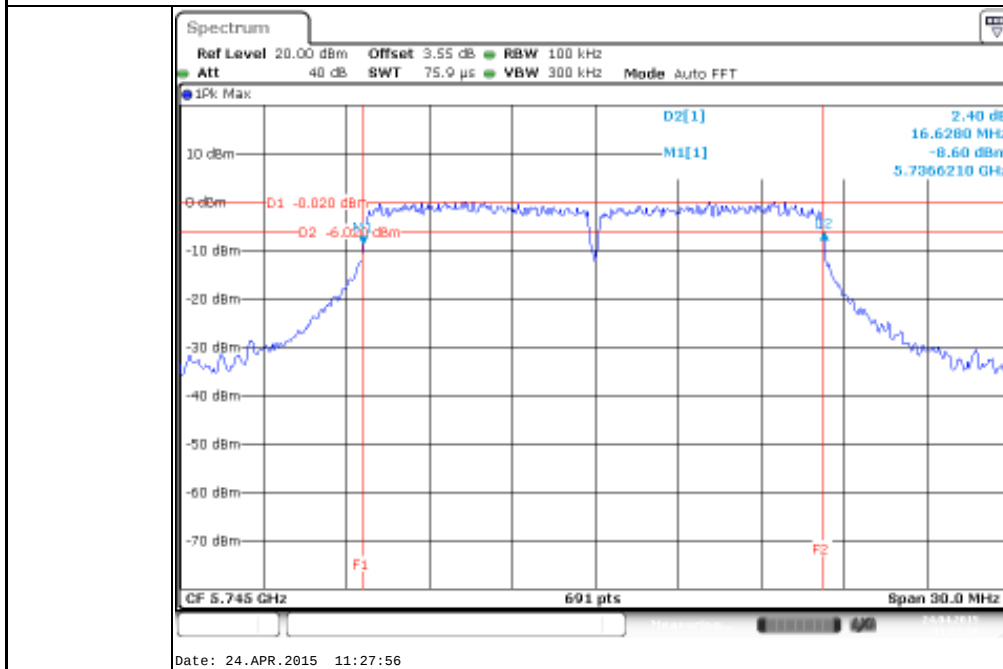
Appendix A.4: Maximum Conducted Output Power, U-NII-3 Band

1TX	Measured Power (dBm)			Total Power (dBm)			Limit (dBm)	Conclusion
Channel	Ch 149	Ch 157	Ch 165	Ch 149	Ch 157	Ch 165		
802.11a_6Mbps	17.53	17.18	16.28	17.53	17.18	16.28	30.00	PASS
802.11n_HT20_MCS0	17.32	16.50	16.07	17.32	16.50	16.07	30.00	PASS
Channel	Ch151	Ch 159	--	Ch151	Ch 159	--	Limit (dBm)	Conclusion
802.11n_HT40_MCS0	15.59	15.08	--	15.59	15.08	--	30.00	PASS
Channel	Ch 155	--	--	Ch 155	--	--	Limit (dBm)	Conclusion
802.11ac_VHT80_MCS0NSS1	15.30	--	--	15.30	--	--	30.00	PASS

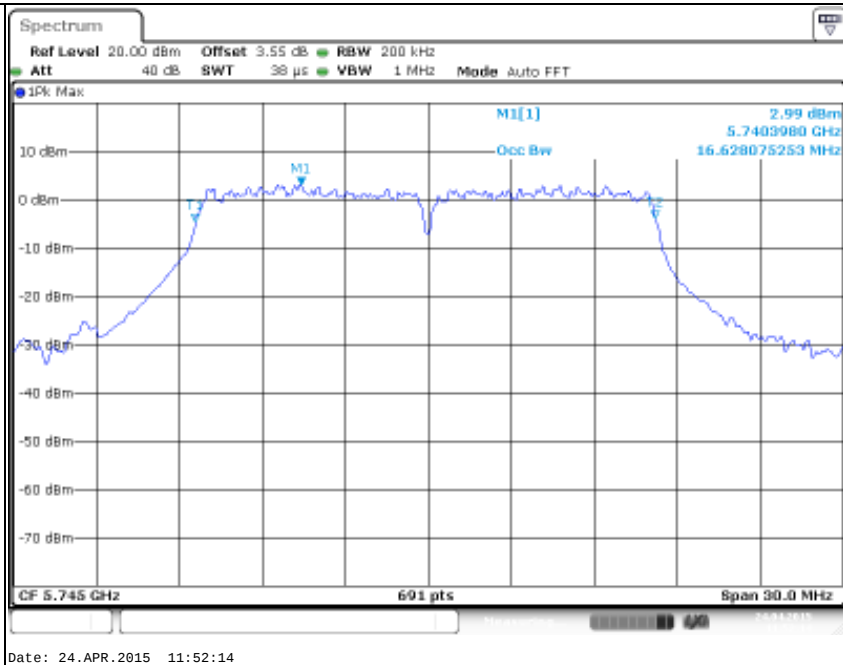
Appendix A.5: 6dB Bandwidth and 99% Bandwidth, U-NII-3 Band

802.11a

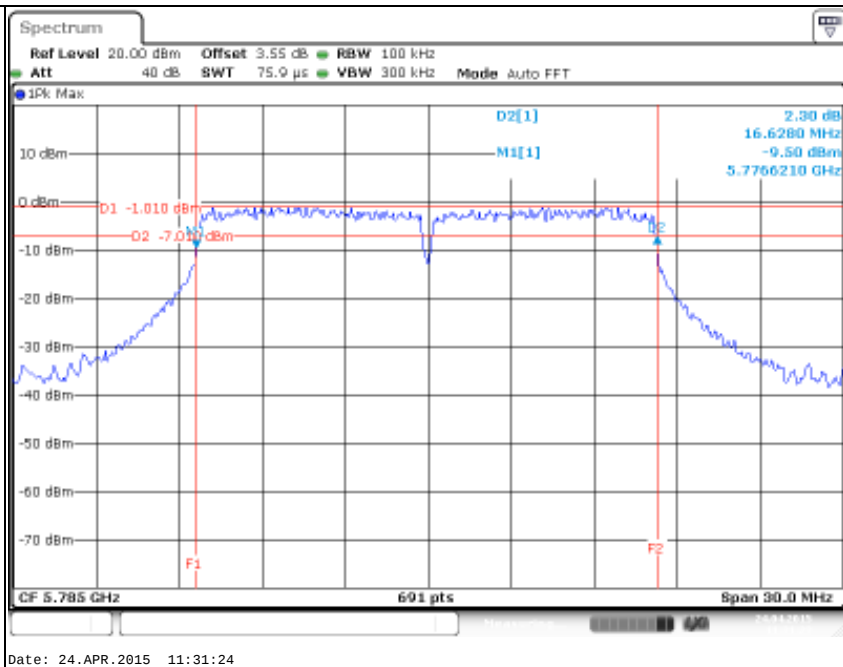
Channel 149, 6dB Bandwidth



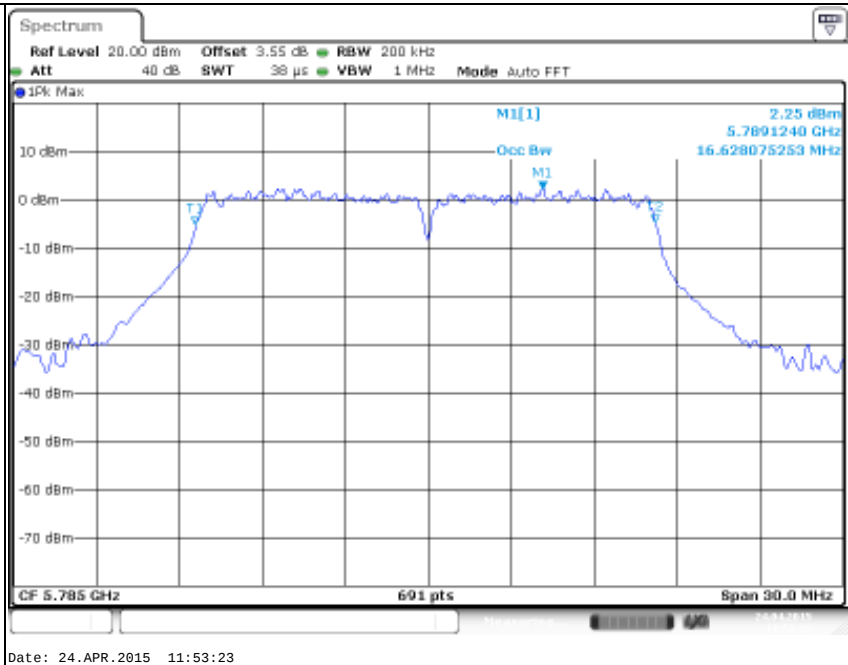
Channel 149, 99% Bandwidth



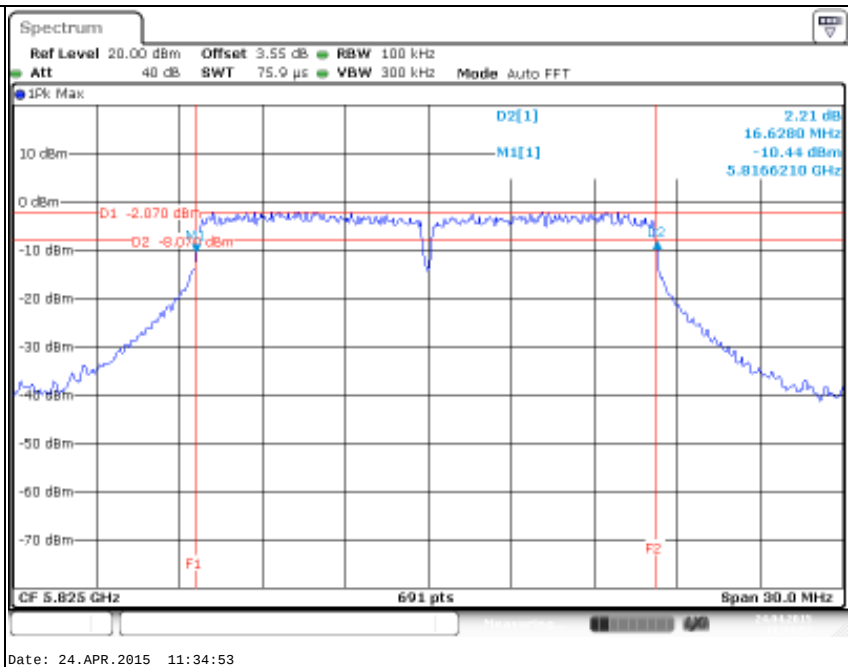
Channel 157, 6dB Bandwidth



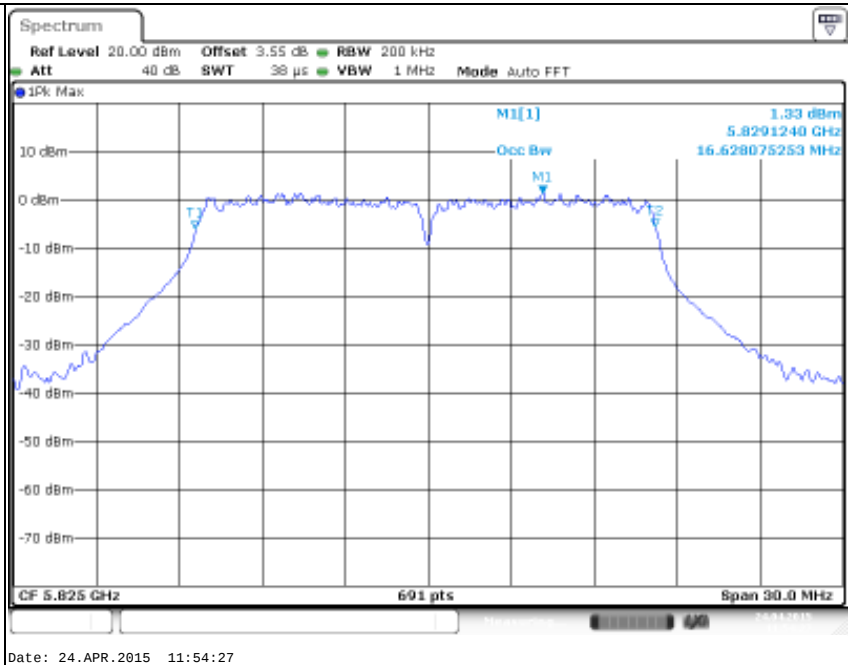
Channel 157, 99% Bandwidth



Channel 165, 6dB Bandwidth

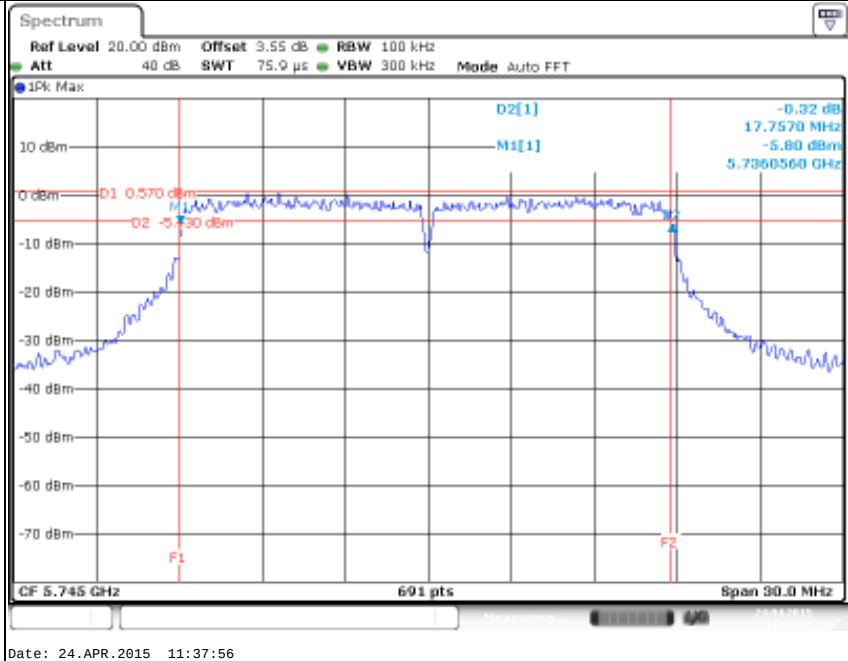


Channel 165, 99% Bandwidth

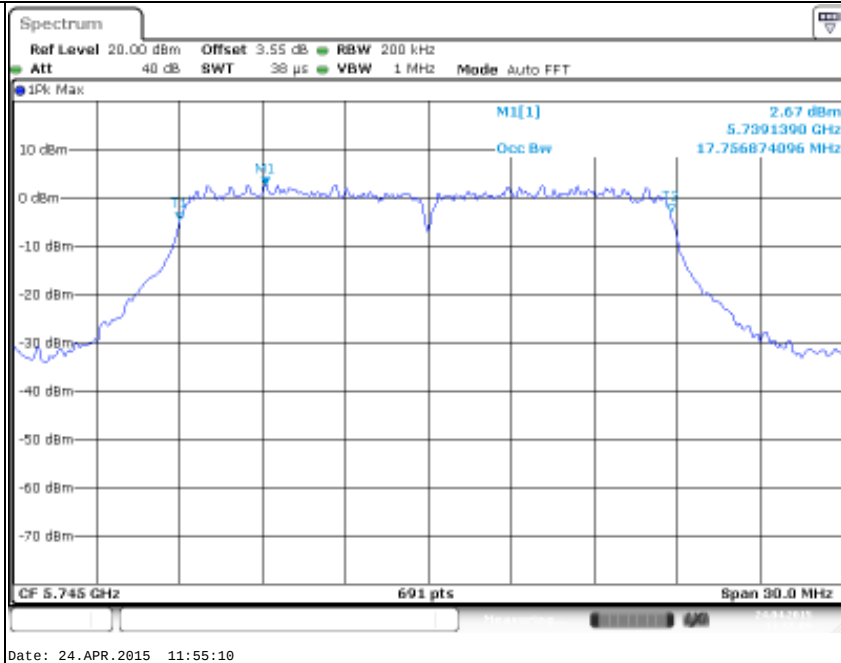


802.11n HT20

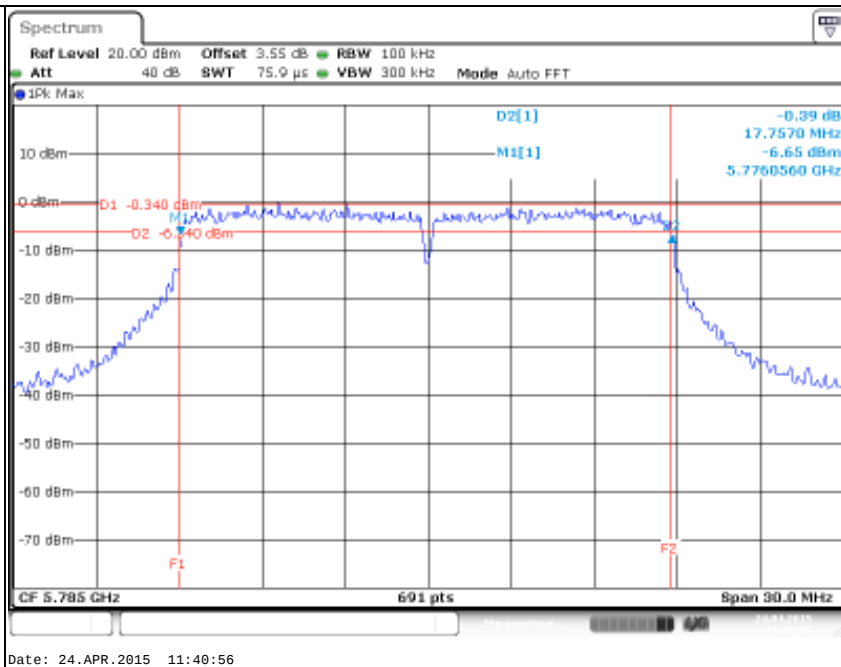
Channel 149, 6dB Bandwidth



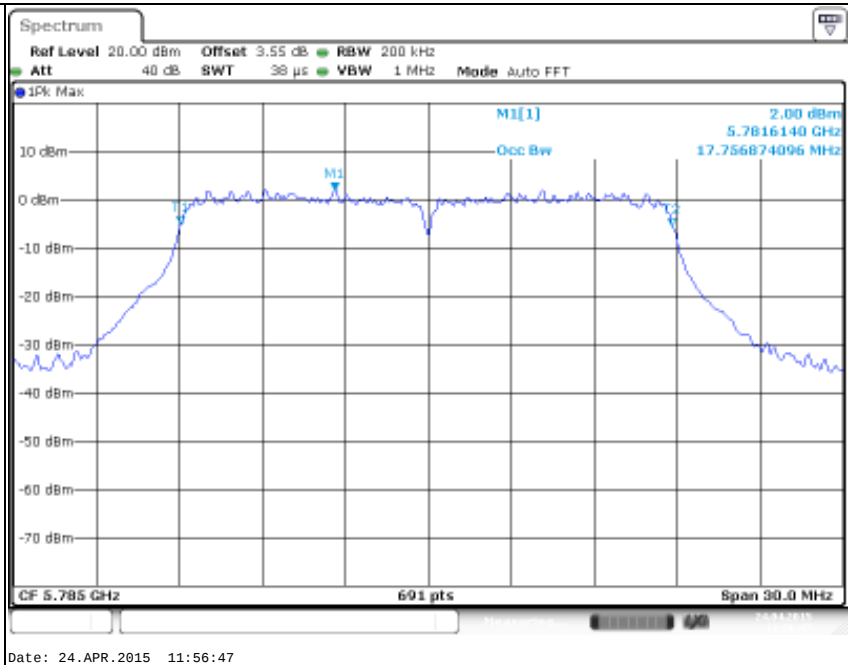
Channel 149, 99% Bandwidth



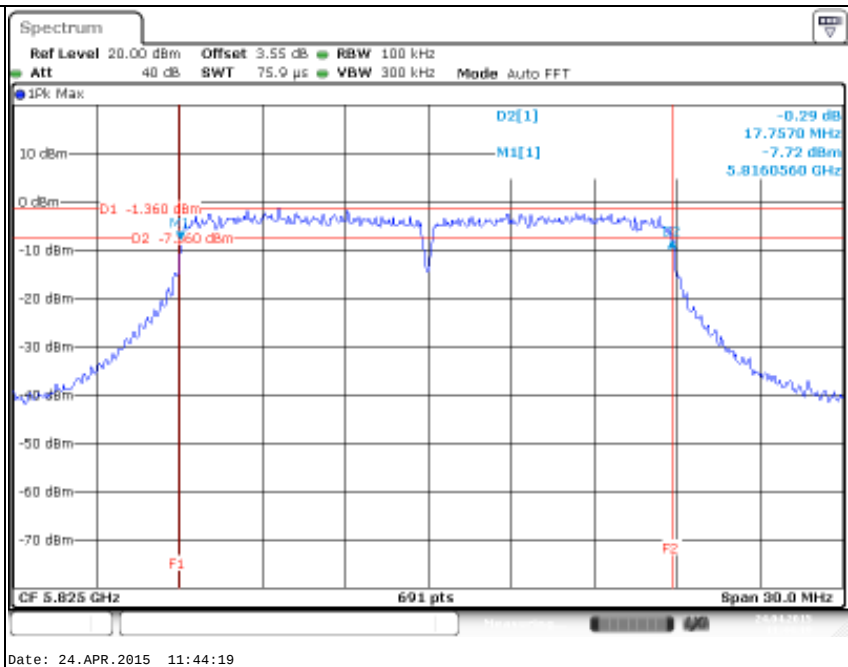
Channel 157, 6dB Bandwidth



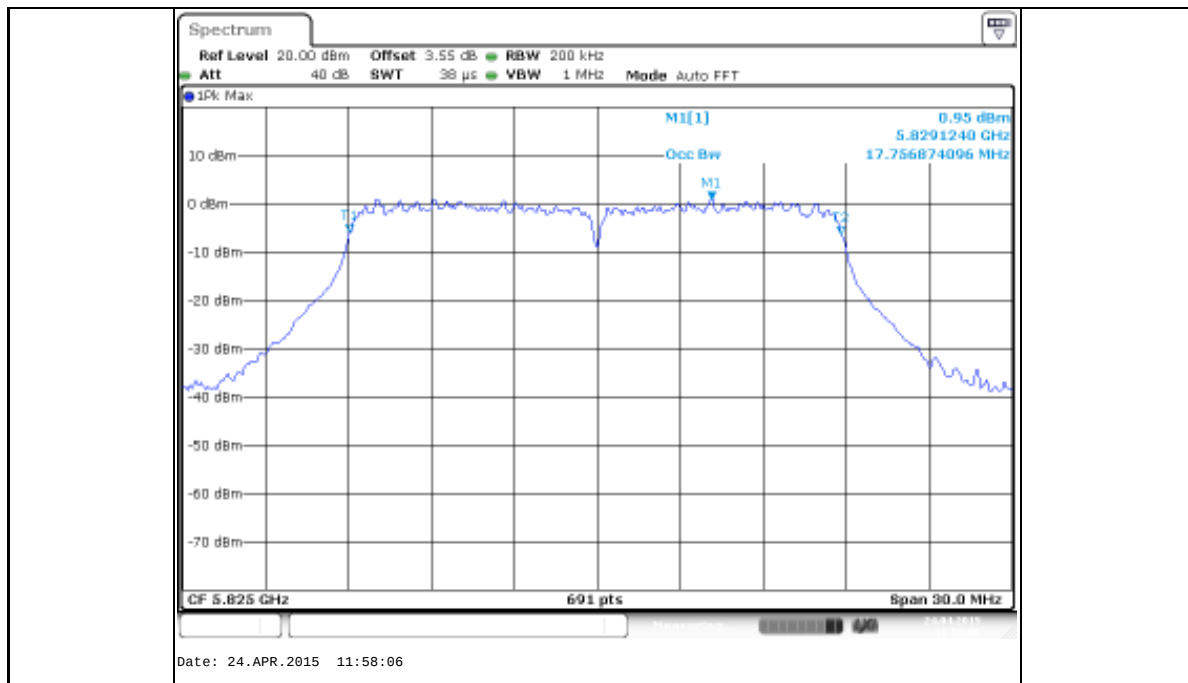
Channel 157, 99% Bandwidth



Channel 165, 6dB Bandwidth

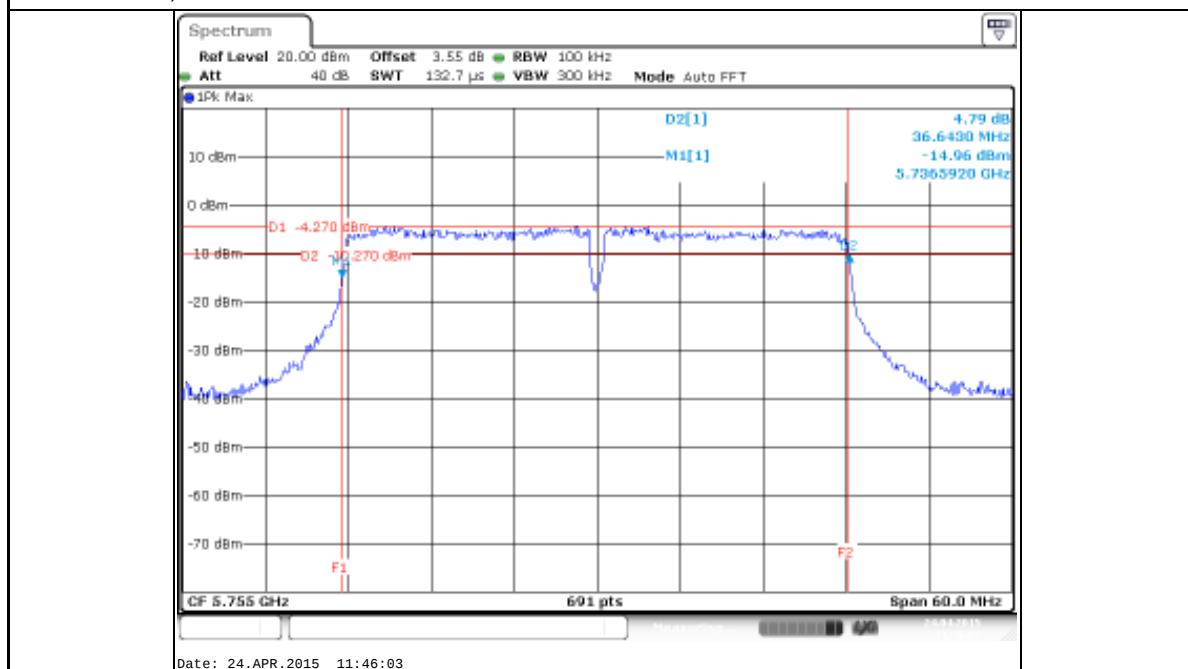


Channel 165, 99% Bandwidth

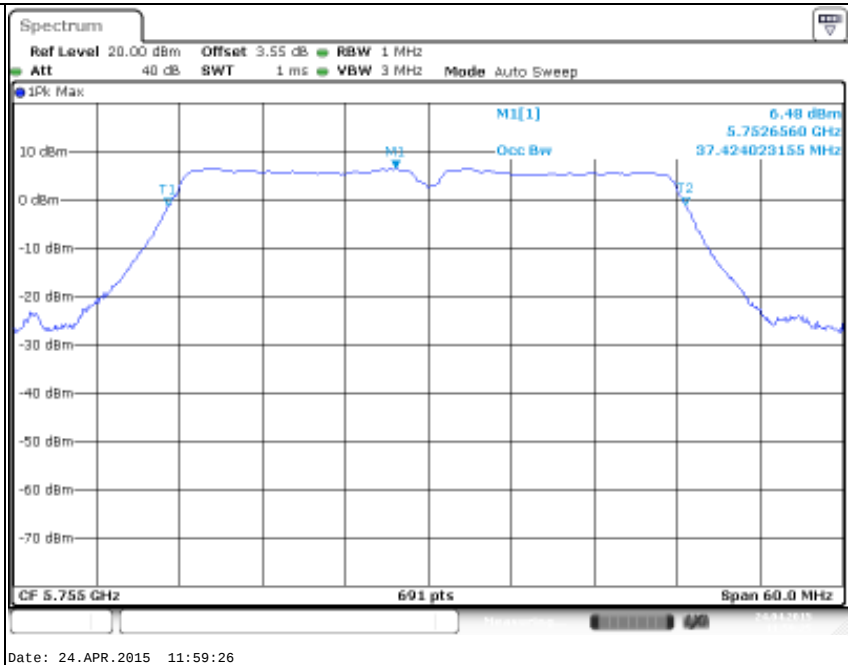


802.11n HT40

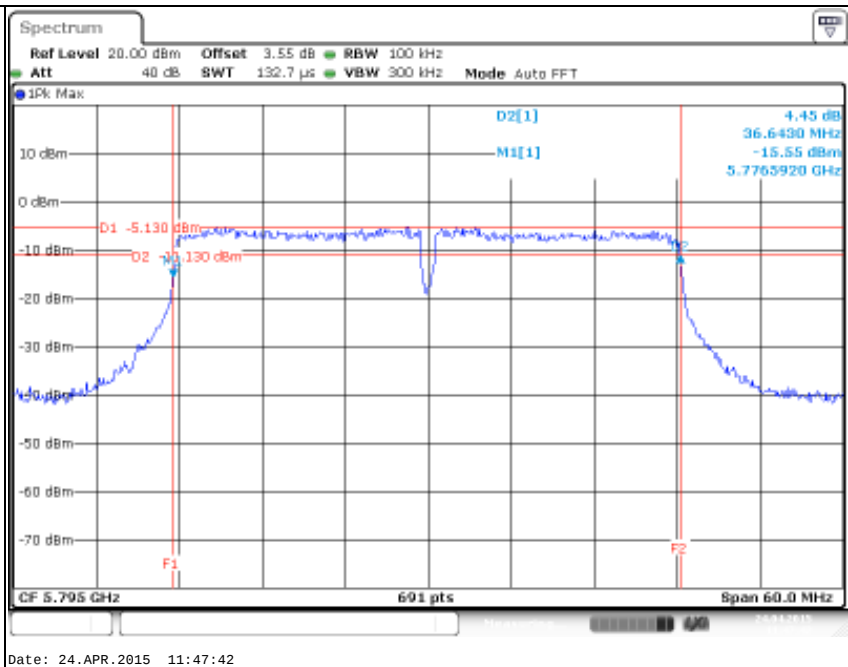
Channel 151, 6dB Bandwidth



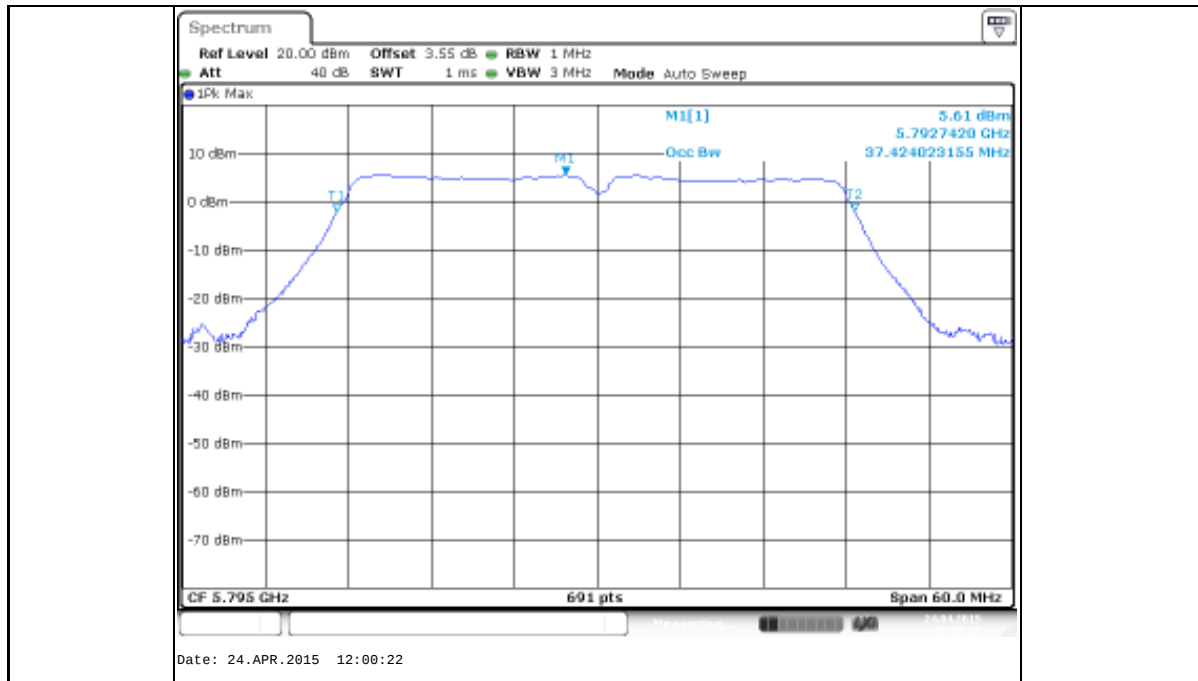
Channel 151, 99% Bandwidth



Channel 159, 6dB Bandwidth

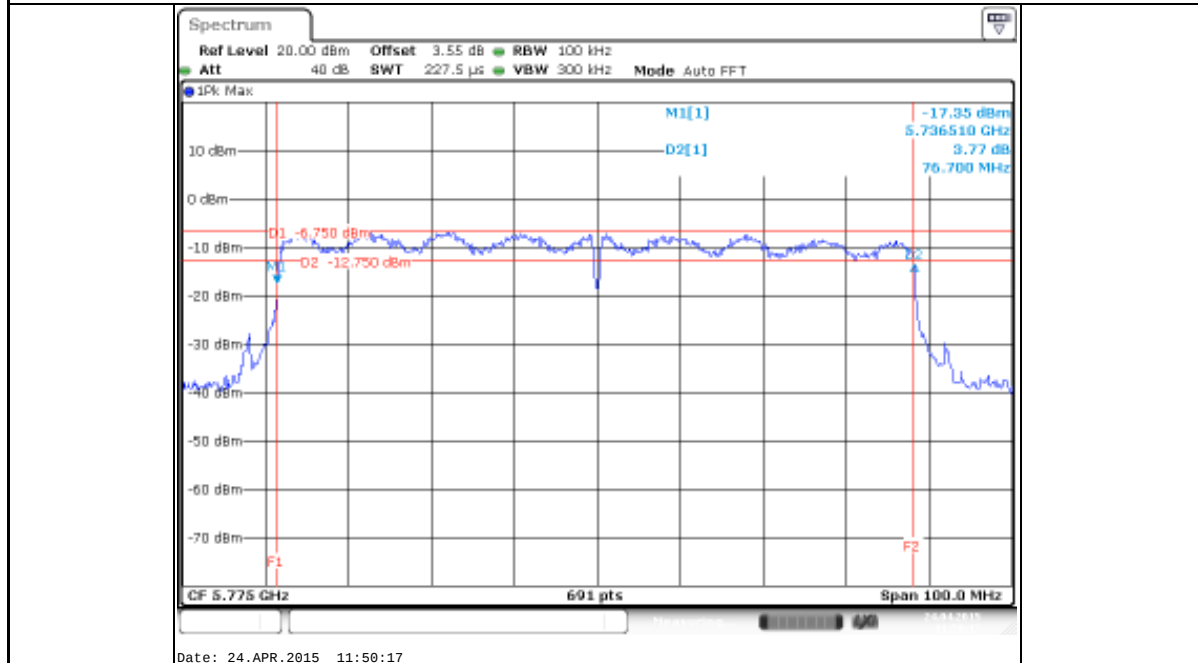


Channel 159, 99% Bandwidth



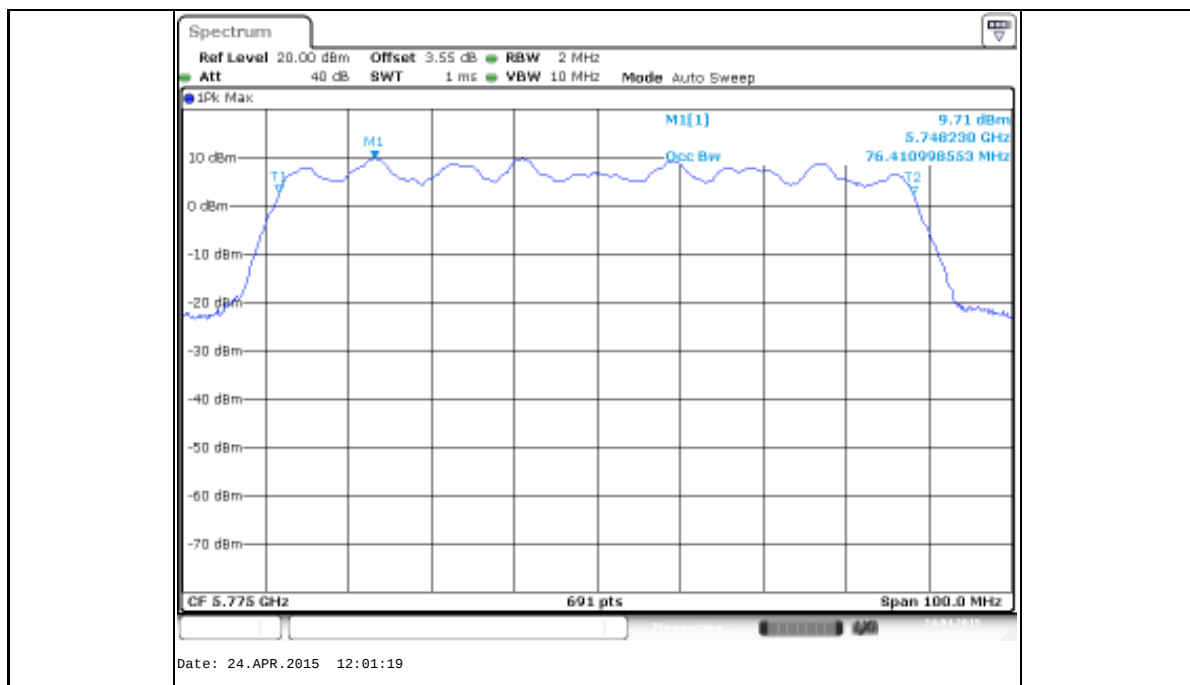
802.11ac VHT80

Channel 155, 6dB Bandwidth



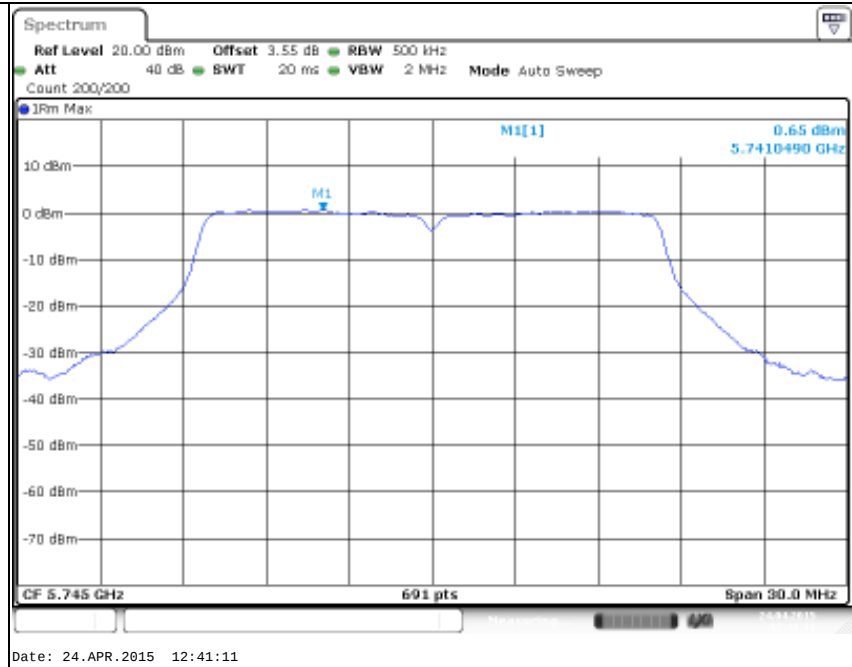
Channel 155, 99% Bandwidth

Produkte
Products

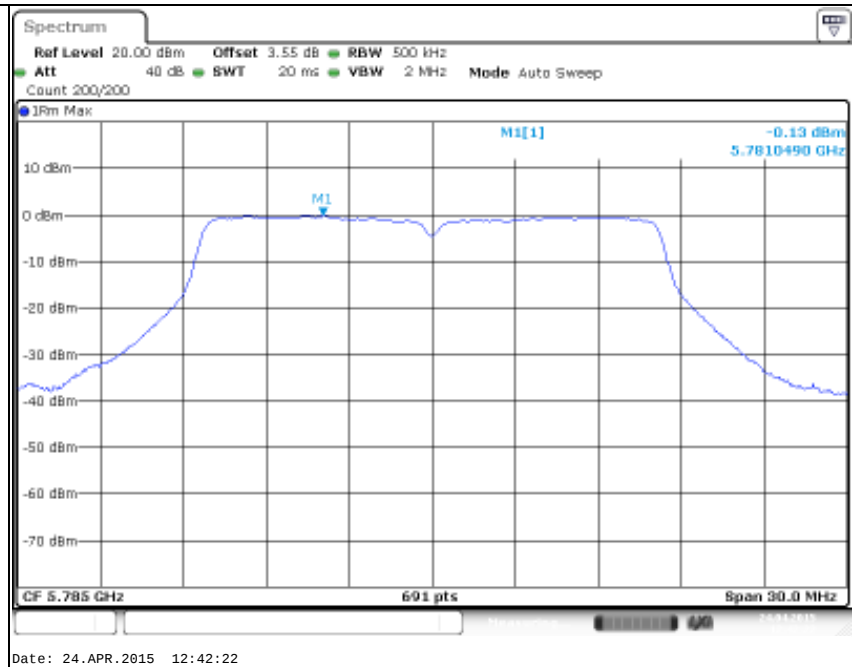


Appendix A.6: Power Spectral Density, U-NII-3 Band
802.11a

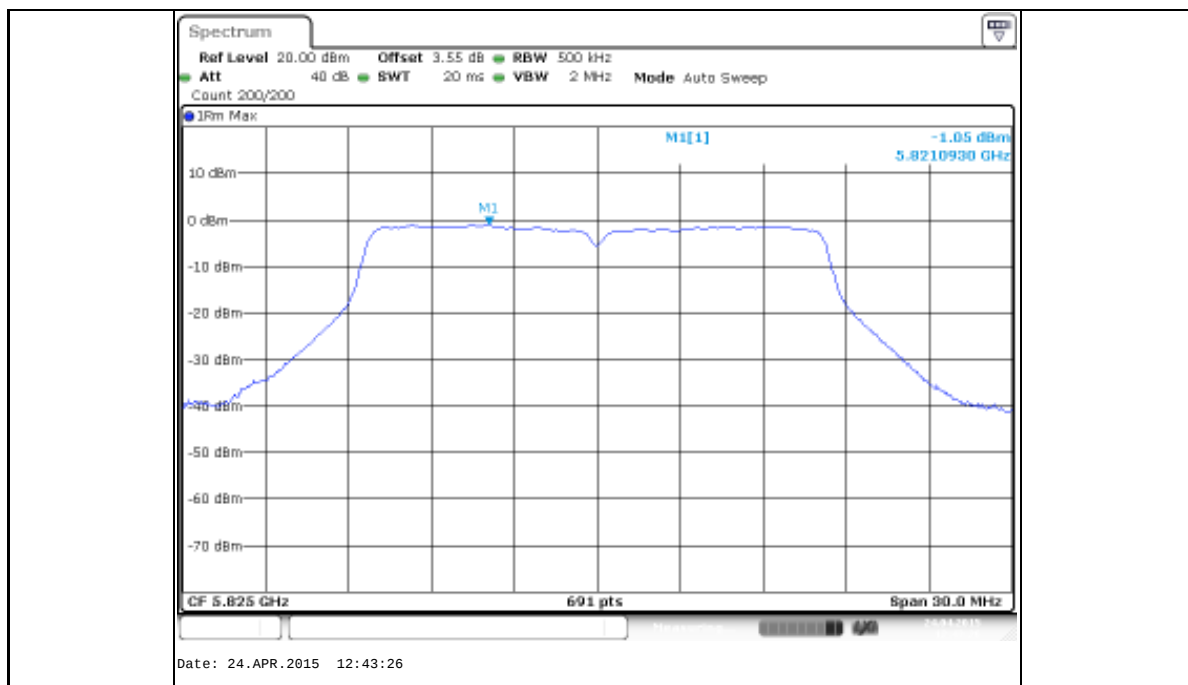
Channel 149



Channel 157

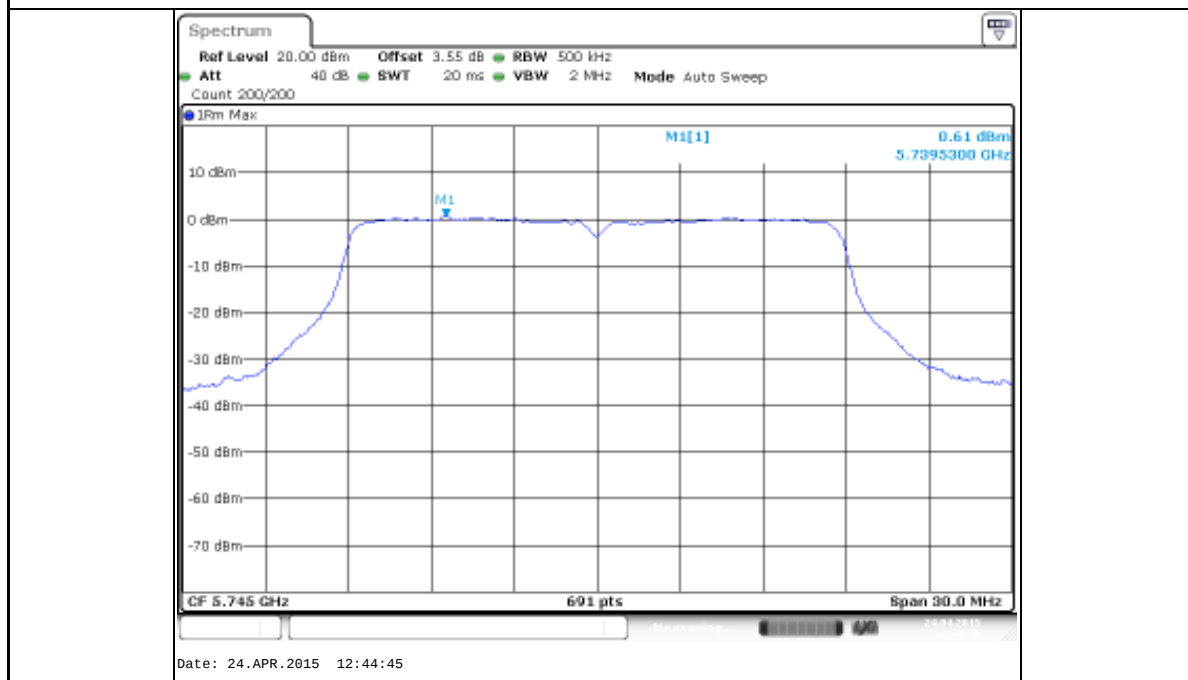


Channel 165

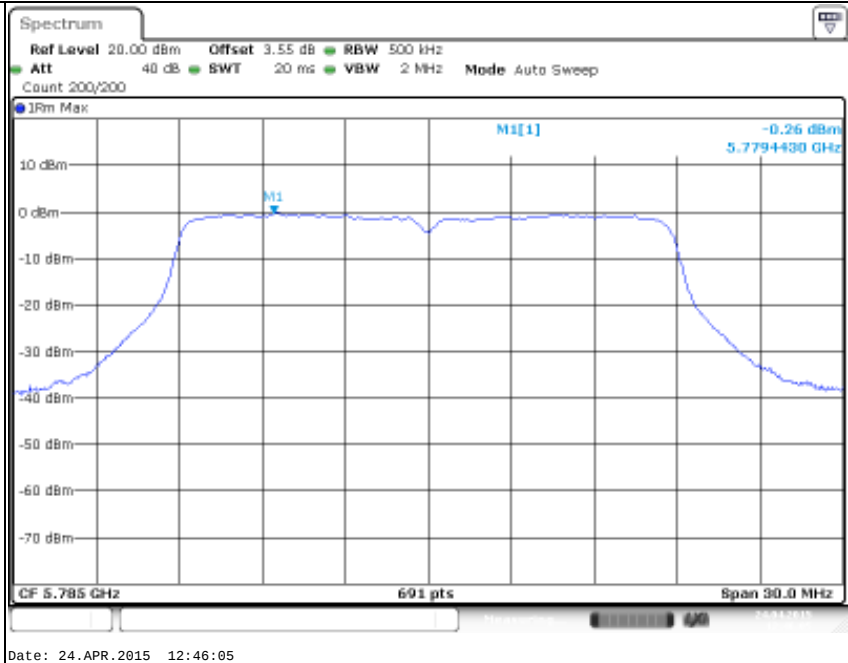


802.11n HT20

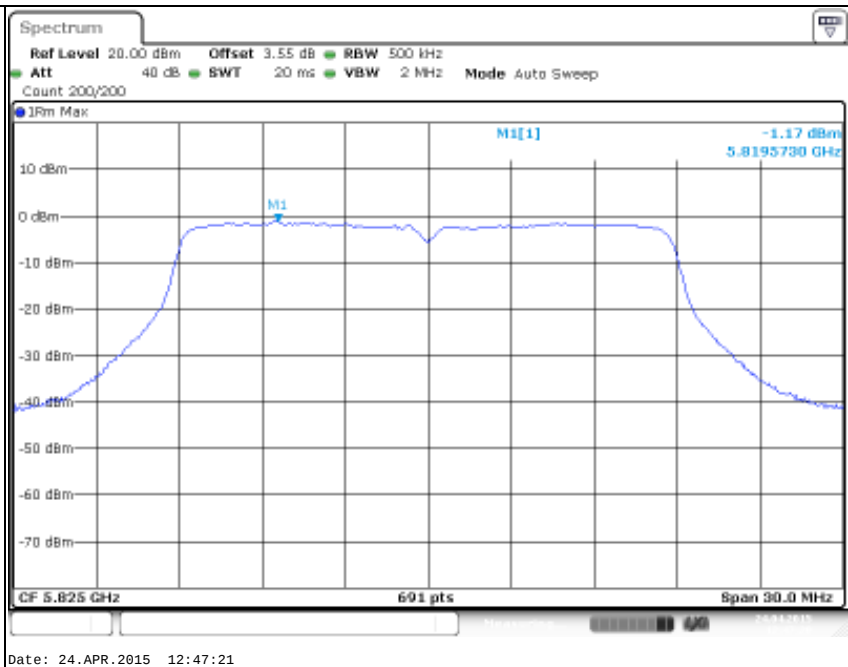
Channel 149



Channel 157

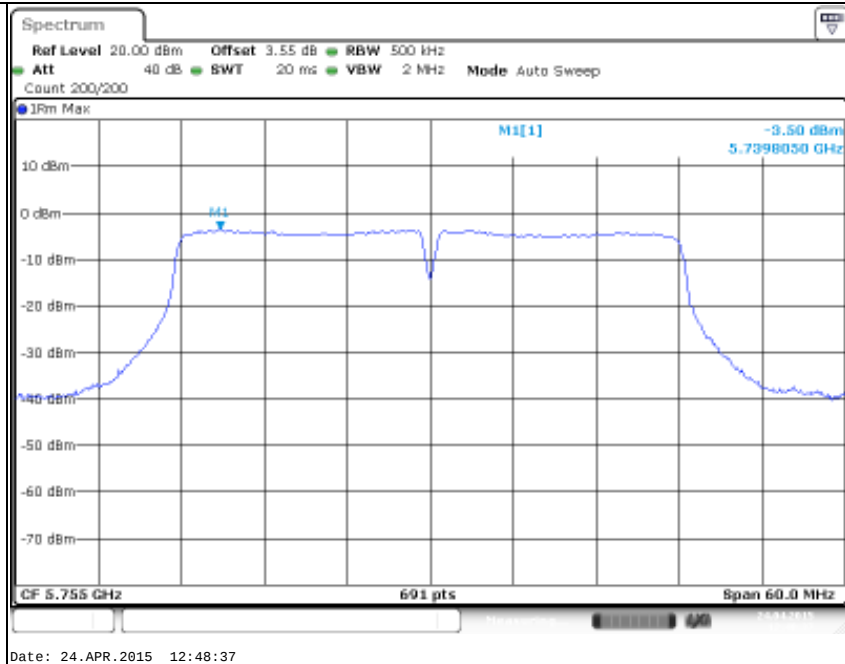


Channel 165

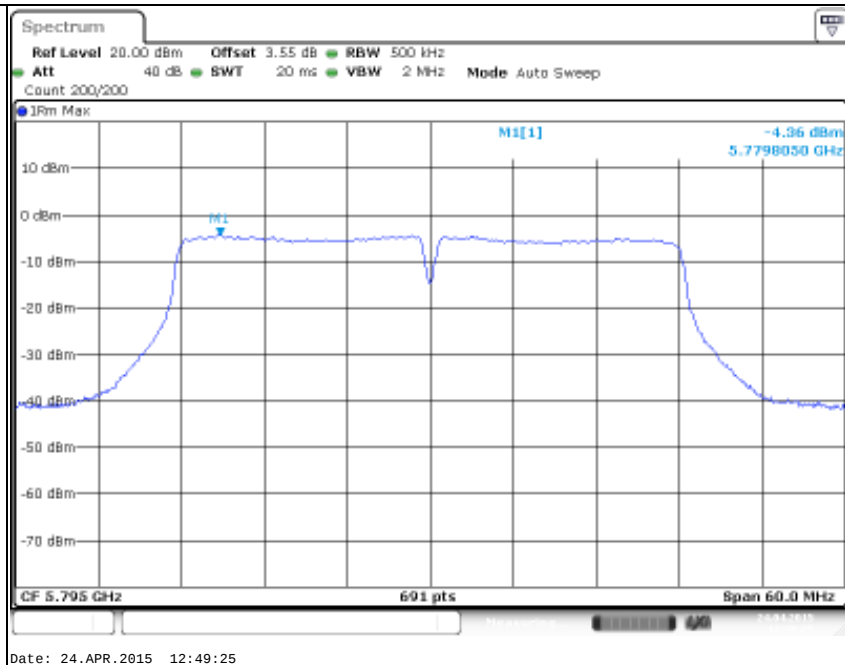


802.11n HT40

Channel 151



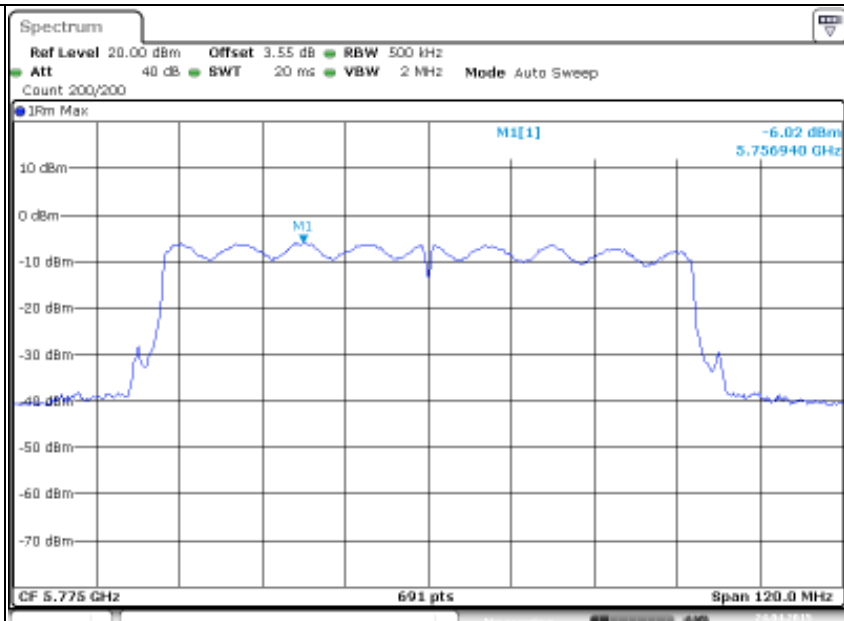
Channel 159



Produkte
Products

802.11ac VHT80

Channel 155



Date: 24.APR.2015 12:50:46

Appendix B

Test Results of Unwanted Emissions for U-NII-1 band

APPENDIX B.1: UNWANTED EMISSIONS - OUTSIDE OF THE RESTRICTED BANDS.....	2
802.11A_1TX	2
CH36.....	2
CH40.....	13
CH44.....	24
CH48.....	35
802.11N HT20	46
CH36.....	46
CH40.....	57
CH44.....	68
CH48.....	79
802.11N HT40	90
CH38.....	90
CH46.....	101
802.11AC VHT80	112
CH42.....	112
APPENDIX B.2: UNWANTED EMISSIONS - IN THE RESTRICTED BANDS.....	123
802.11A	123
CH36.....	123
CH48.....	124
802.11N HT20	127
CH36.....	127
CH48.....	128
802.11N HT40	131
CH38.....	131
CH46.....	132
802.11AC VHT80	135
CH42.....	135

Appendix B.1: Unwanted Emissions - Outside of the Restricted Bands

802.11a_1TX
CH36

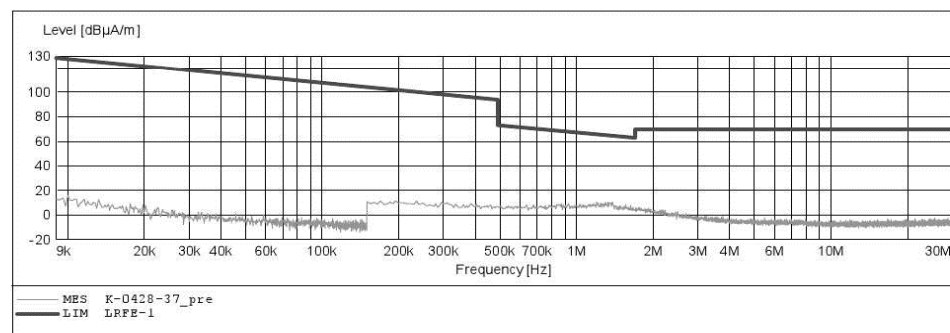
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: ThinkPad Stack Wireless Access Point M/N:R123
 Manufacturer: Lenovo
 Operating Condition: TX 5180MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: X
 Start of Test: 2015-5-4 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70				
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M	
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M	



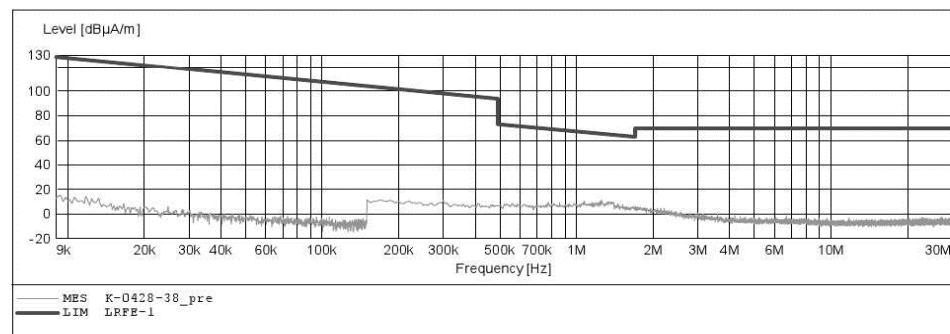
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: ThinkPad Stack Wireless Access Point M/N:R123
 Manufacturer: Lenovo
 Operating Condition: TX 5180MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: Y
 Start of Test: 2015-5-4 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70				
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M	
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M	



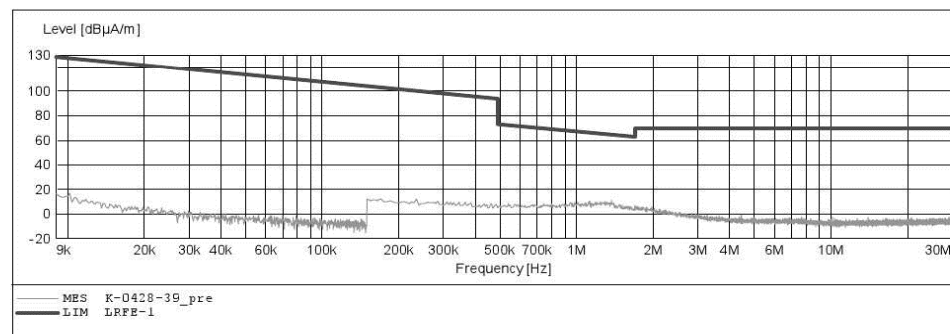
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: ThinkPad Stack Wireless Access Point M/N:R123
 Manufacturer: Lenovo
 Operating Condition: TX 5180MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: Z
 Start of Test: 2015-5-4 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70				
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M	
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M	



Produkte
Products



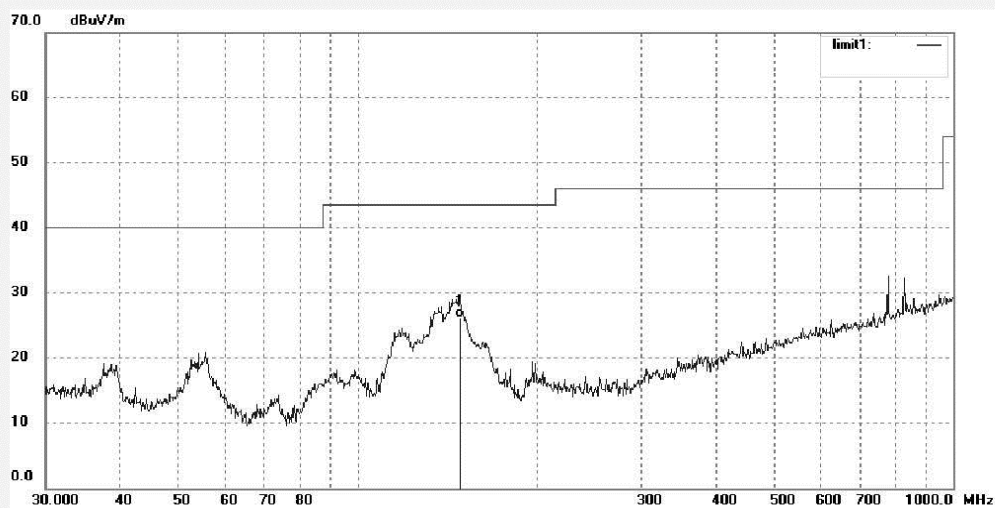
ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #771	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/21/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Wireless Access Point	Engineer Signature:
Mode: TX 5180MHz	Distance: 3m
Model: R123	
Manufacturer: Lenovo	

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	148.4410	41.31	-15.18	26.13	43.50	-17.37	QP			

Produkte
Products



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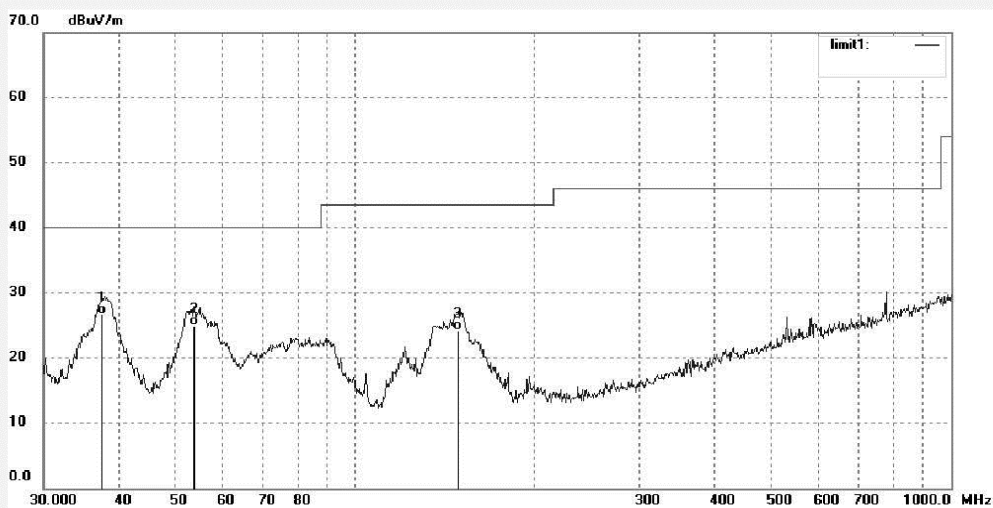
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #772
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: ThinkPad Stack Wireless Access Point
Mode: TX 5180MHz
Model: R123
Manufacturer: Lenovo

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 15/04/21/
Time:
Engineer Signature:
Distance: 3m

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	37.6798	37.71	-11.02	26.69	40.00	-13.31	QP			
2	53.6931	37.74	-12.88	24.86	40.00	-15.14	QP			
3	148.9625	39.43	-15.17	24.26	43.50	-19.24	QP			

Produkte
Products



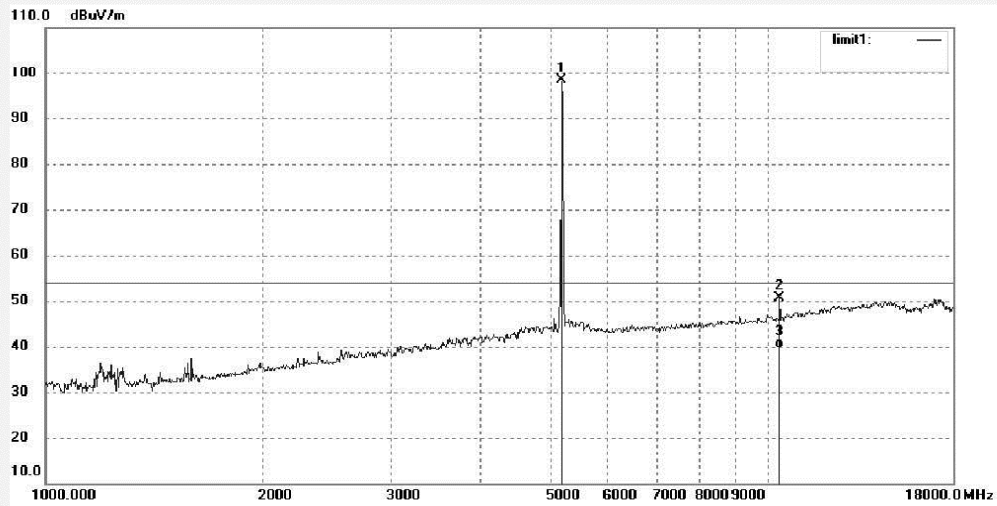
ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #280	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 2015/02/08
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Wireless Access Point	Engineer Signature:
Mode: TX 5180MHz	Distance: 3m
Model: R123	
Manufacturer: Lenovo	

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5180.000	97.79	0.61	98.40	/	/	peak			
2	10360.255	41.60	8.97	50.57	74.00	-23.43	peak			
3	10360.255	30.73	8.97	39.70	54.00	-14.30	AVG			

Produkte
Products



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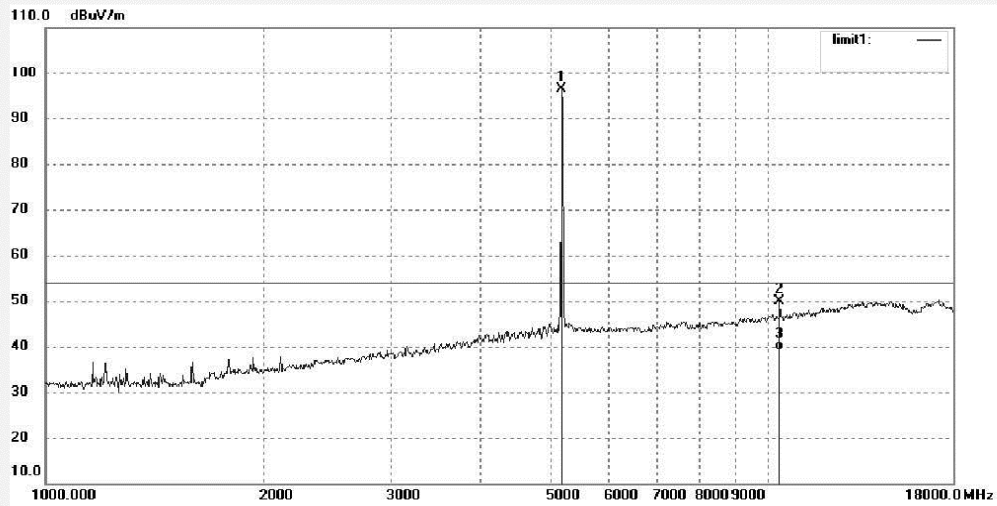
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #281
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: ThinkPad Stack Wireless Access Point
Mode: TX 5180MHz
Model: R123
Manufacturer: Lenovo

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/02/08
Time:
Engineer Signature:
Distance: 3m

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5180.000	95.69	0.61	96.30	/	/	peak			
2	10360.317	41.02	8.97	49.99	74.00	-24.01	peak			
3	10360.317	30.04	8.97	39.01	54.00	-14.99	AVG			

Produkte
Products



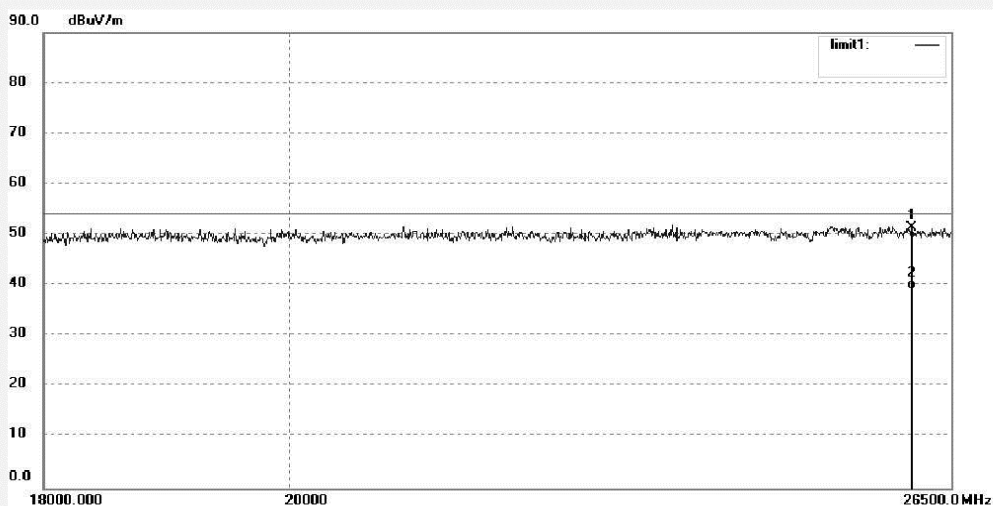
ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #1125	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/28/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Wireless Access Point	Engineer Signature:
Mode: TX 5180MHz	Distance: 3m
Model: R123	
Manufacturer: Lenovo	

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26062.048	34.93	16.50	51.43	74.00	-22.57	peak			
2	26062.048	22.82	16.50	39.32	54.00	-14.68	AVG			

Produkte
Products



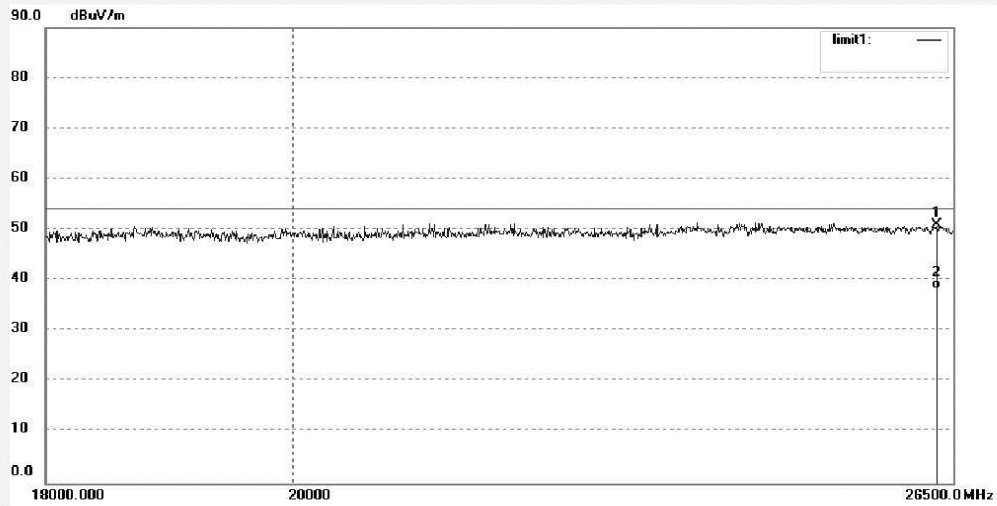
ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #1126	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/28/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Wireless Access Point	Engineer Signature:
Mode: TX 5180MHz	Distance: 3m
Model: R123	
Manufacturer: Lenovo	

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26315.783	33.83	17.02	50.85	74.00	-23.15	peak			
2	26315.783	21.45	17.02	38.47	54.00	-15.53	AVG			

EMI Sweep(1)

1 / 1

Radiated Emission

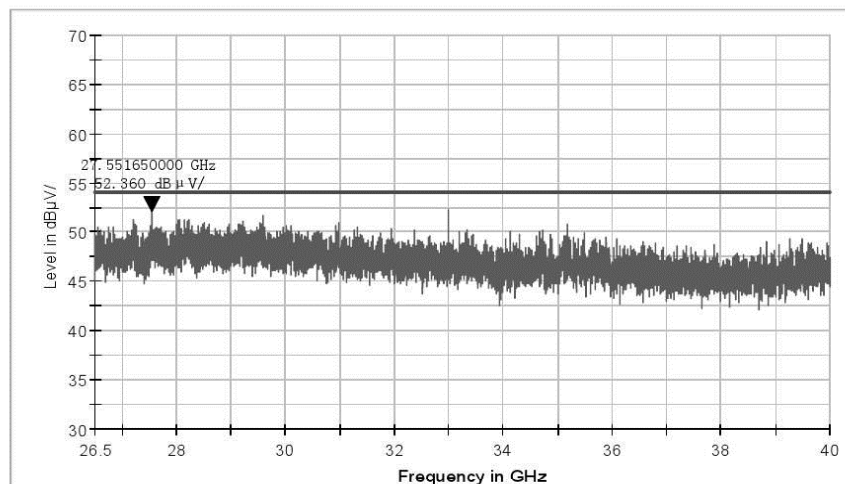
EUT Information

EUT Model Name:	ThinkPad Stack Wireless Access Point M/N:R123
Operation mode:	TX 5180MHz
Test Voltage:	AC 120V/60Hz
Comment:	802.11a

Common Information

Test Site:	SMQ EMC Lab.
Environment Conditions:	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

Copy of FCC Electric Field Strength 26.5-40GHz



EMI Sweep(1)

1 / 1

Radiated Emission

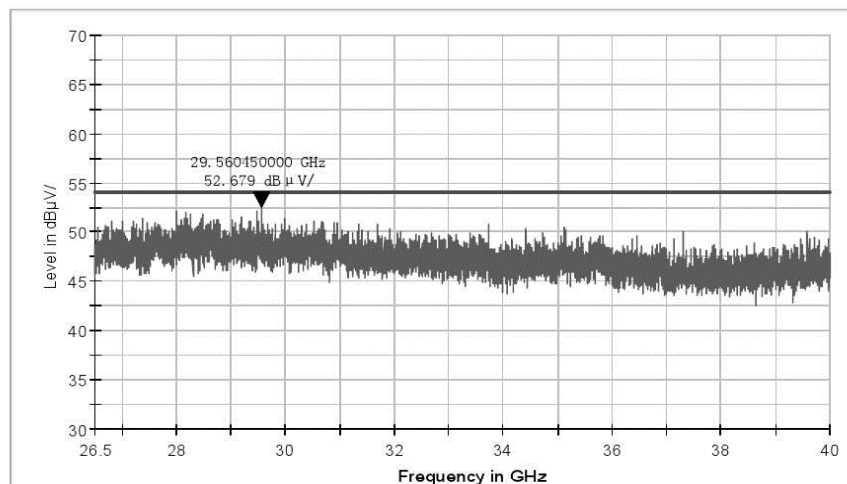
EUT Information

EUT Model Name:	ThinkPad Stack Wireless Access Point M/N:R123
Operation mode:	TX 5180MHz
Test Voltage:	AC 120V/60Hz
Comment:	802.11a

Common Information

Test Site:	SMQ EMC Lab.
Environment Conditions:	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

Copy of FCC Electric Field Strength 26.5-40GHz



CH40

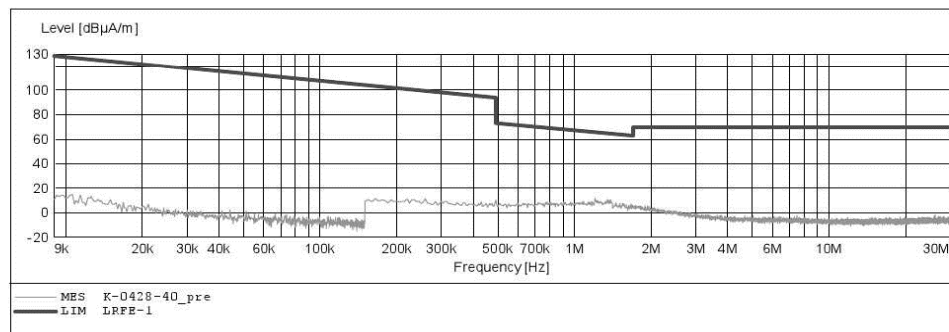
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: ThinkPad Stack Wireless Access Point M/N:R123
 Manufacturer: Lenovo
 Operating Condition: TX 5200MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: X
 Start of Test: 2015-5-4 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



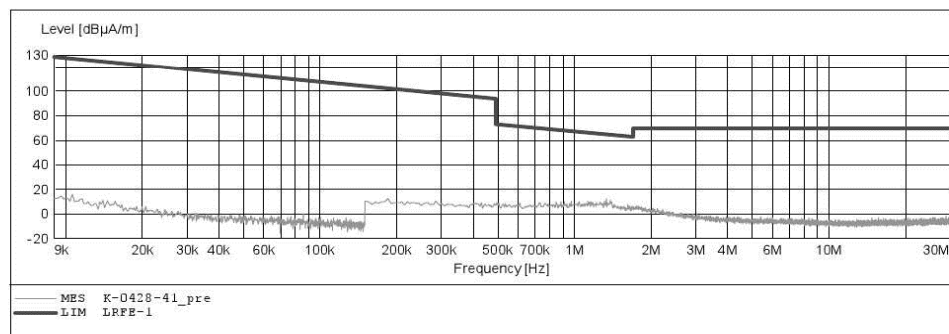
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: ThinkPad Stack Wireless Access Point M/N:R123
 Manufacturer: Lenovo
 Operating Condition: TX 5200MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: Y
 Start of Test: 2015-5-4 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



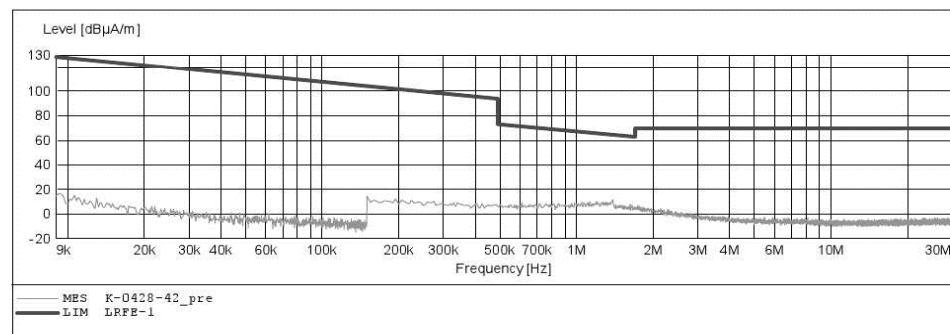
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: ThinkPad Stack Wireless Access Point M/N:R123
 Manufacturer: Lenovo
 Operating Condition: TX 5200MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: Z
 Start of Test: 2015-5-4 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70				
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer	
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M	
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M	



Produkte
Products



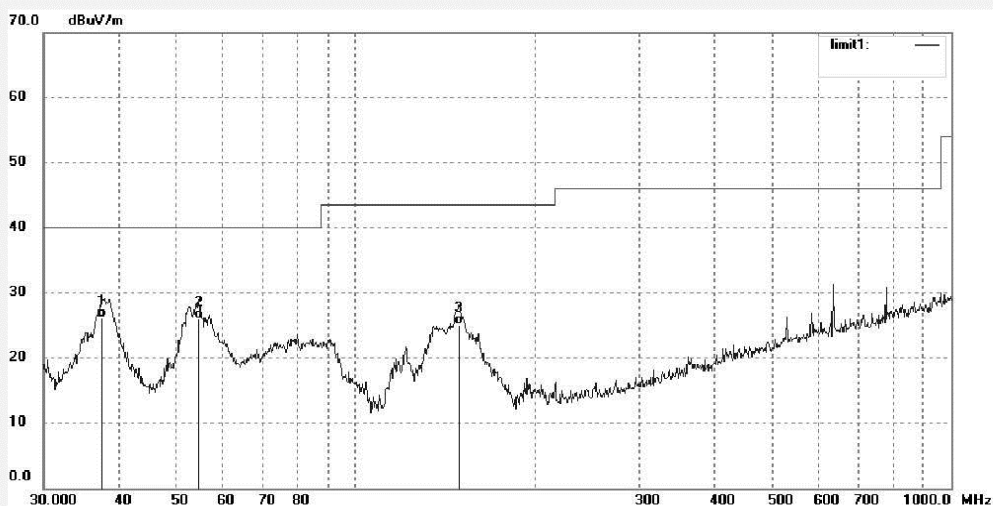
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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #773	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/21/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Wireless Access Point	Engineer Signature:
Mode: TX 5200MHz	Distance: 3m
Model: R123	
Manufacturer: Lenovo	

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	37.6798	37.24	-11.02	26.22	40.00	-13.78	QP			
2	54.6428	38.96	-12.95	26.01	40.00	-13.99	QP			
3	149.4857	40.27	-15.17	25.10	43.50	-18.40	QP			

Produkte
Products



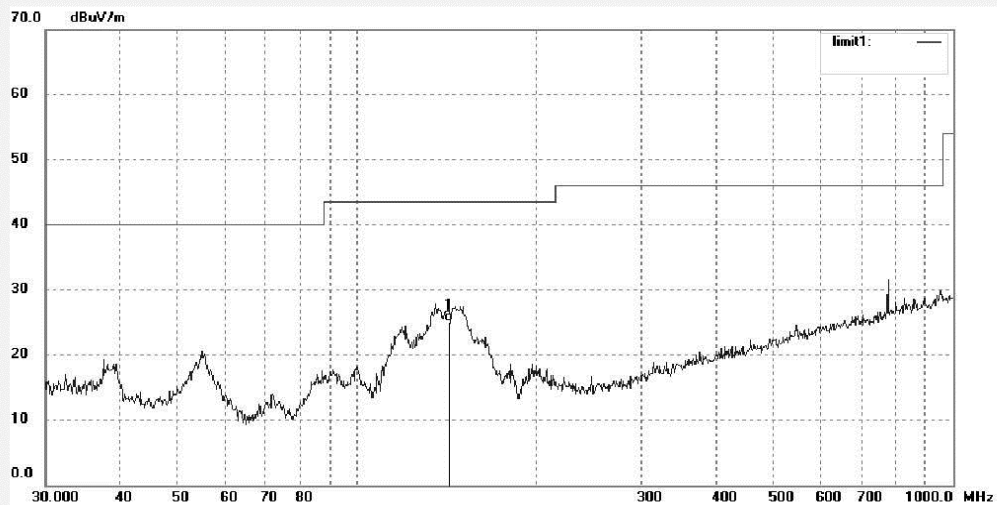
ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #774	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/21/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Wireless Access Point	Engineer Signature:
Mode: TX 5200MHz	Distance: 3m
Model: R123	
Manufacturer: Lenovo	

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	142.8242	40.33	-15.23	25.10	43.50	-18.40	QP			

Produkte
Products



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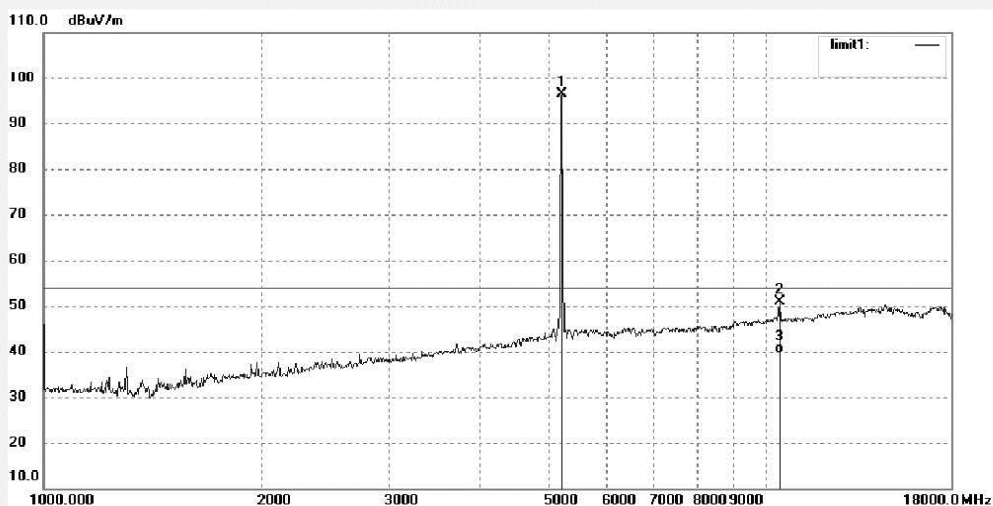
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #282
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: ThinkPad Stack Wireless Access Point
Mode: TX 5200MHz
Model: R123
Manufacturer: Lenovo

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/02/08
Time:
Engineer Signature:
Distance: 3m

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5200.000	95.66	0.68	96.34	/	/	peak			
2	10400.309	42.02	8.88	50.90	74.00	-23.10	peak			
3	10400.309	30.79	8.88	39.67	54.00	-14.33	AVG			

Produkte
Products



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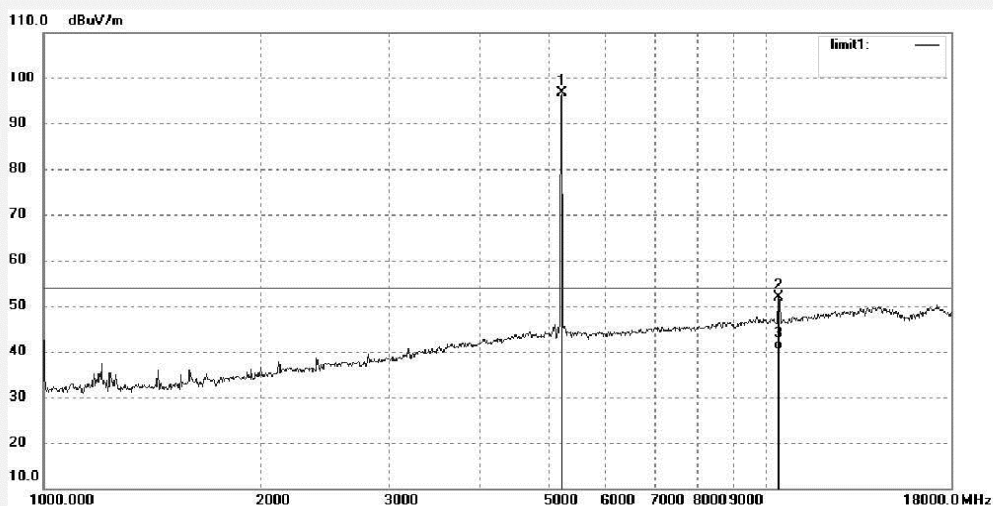
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #283
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: ThinkPad Stack Wireless Access Point
Mode: TX 5200MHz
Model: R123
Manufacturer: Lenovo

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2015/02/08
Time:
Engineer Signature:
Distance: 3m

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5200.000	95.90	0.68	96.58	/	/	peak			
2	10400.265	42.91	8.88	51.79	74.00	-22.21	peak			
3	10400.265	31.52	8.88	40.40	54.00	-13.60	AVG			

Produkte
Products



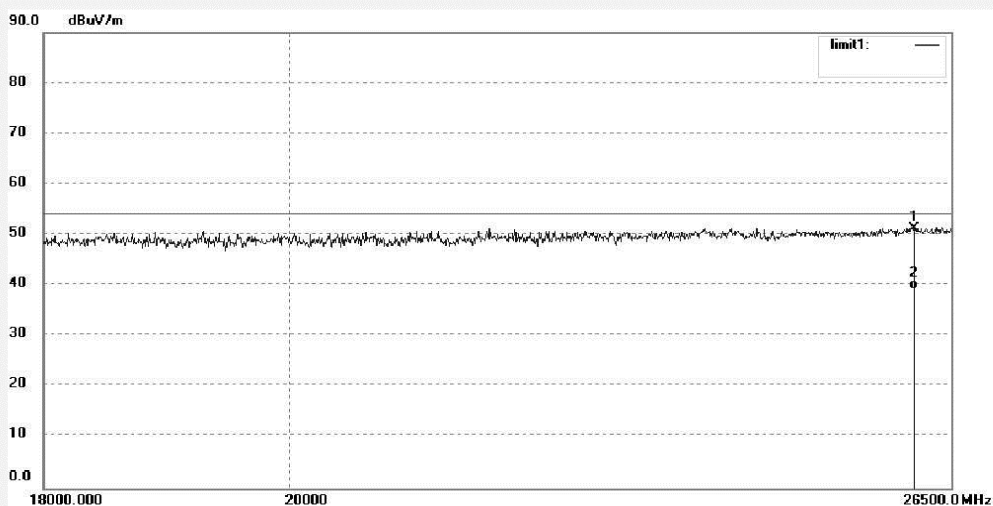
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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #1127	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/28/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Wireless Access Point	Engineer Signature:
Mode: TX 5200MHz	Distance: 3m
Model: R123	
Manufacturer: Lenovo	

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26092.367	34.11	17.17	51.28	74.00	-22.72	peak			
2	26092.367	22.08	17.17	39.25	54.00	-14.75	AVG			

Produkte
Products



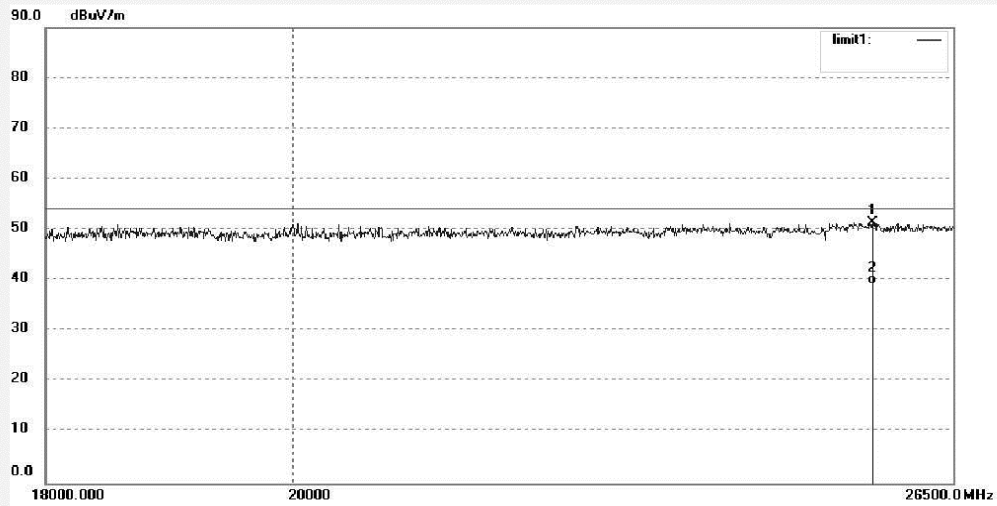
ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #1128	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/28/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Wireless Access Point	Engineer Signature:
Mode: TX 5200MHz	Distance: 3m
Model: R123	
Manufacturer: Lenovo	

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	25601.552	34.90	16.50	51.40	74.00	-22.60	peak			
2	25601.552	22.75	16.50	39.25	54.00	-14.75	AVG			

EMI Sweep(1)

1 / 1

Radiated Emission

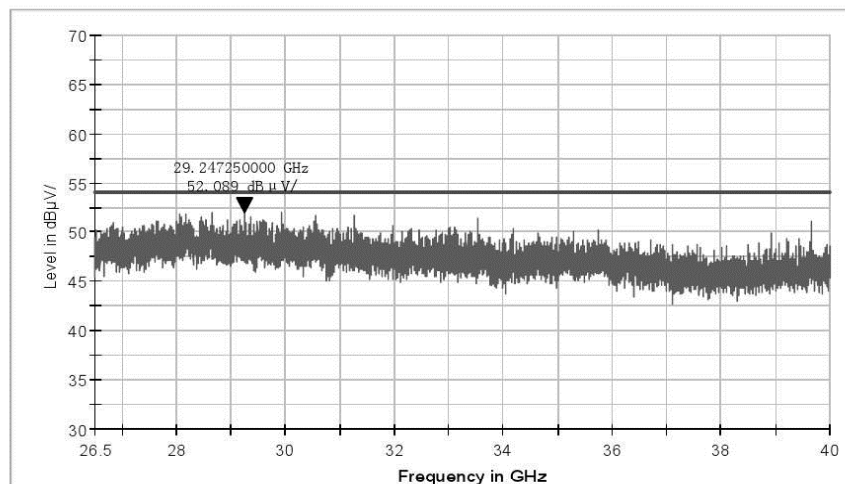
EUT Information

EUT Model Name:	ThinkPad Stack Wireless Access Point M/N:R123
Operation mode:	TX 5200MHz
Test Voltage:	AC 120V/60Hz
Comment:	802.11a

Common Information

Test Site:	SMQ EMC Lab.
Environment Conditions:	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

Copy of FCC Electric Field Strength 26.5-40GHz



EMI Sweep(1)

1 / 1

Radiated Emission

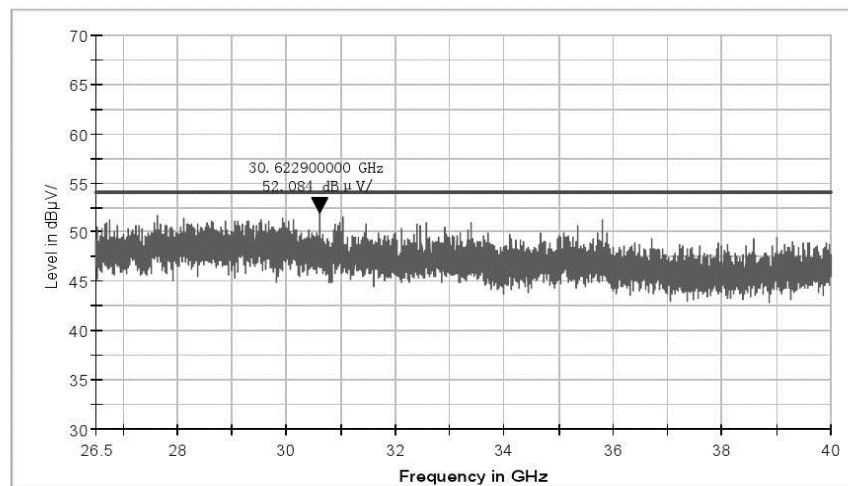
EUT Information

EUT Model Name:	ThinkPad Stack Wireless Access Point M/N:R123
Operation mode:	TX 5200MHz
Test Voltage:	AC 120V/60Hz
Comment:	802.11a

Common Information

Test Site:	SMQ EMC Lab.
Environment Conditions:	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

Copy of FCC Electric Field Strength 26.5-40GHz



CH44

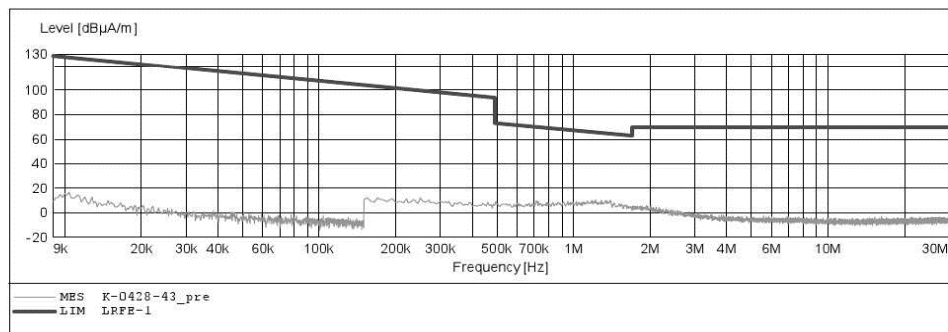
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: ThinkPad Stack Wireless Access Point M/N:R123
 Manufacturer: Lenovo
 Operating Condition: TX 5220MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: X
 Start of Test: 2015-5-4 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



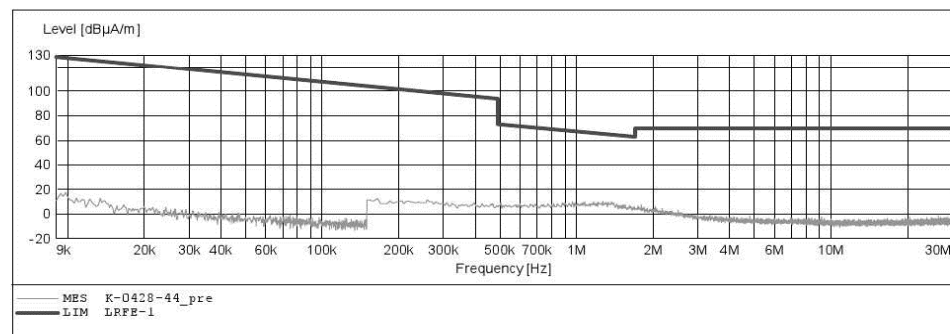
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: ThinkPad Stack Wireless Access Point M/N:R123
 Manufacturer: Lenovo
 Operating Condition: TX 5220MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: Y
 Start of Test: 2015-5-4 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



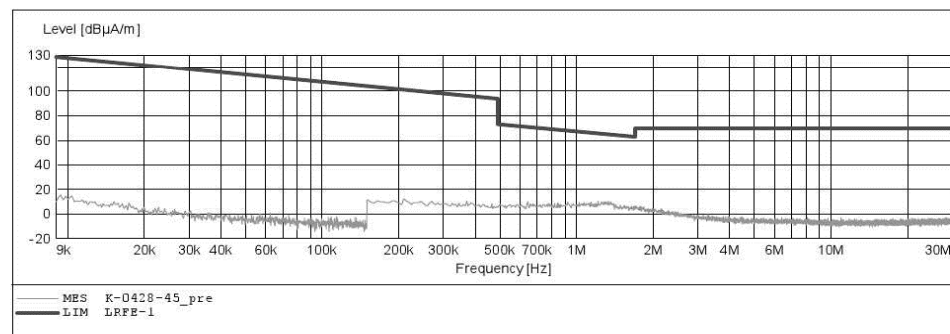
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: ThinkPad Stack Wireless Access Point M/N:R123
 Manufacturer: Lenovo
 Operating Condition: TX 5220MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: Z
 Start of Test: 2015-5-4 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



Produkte
Products



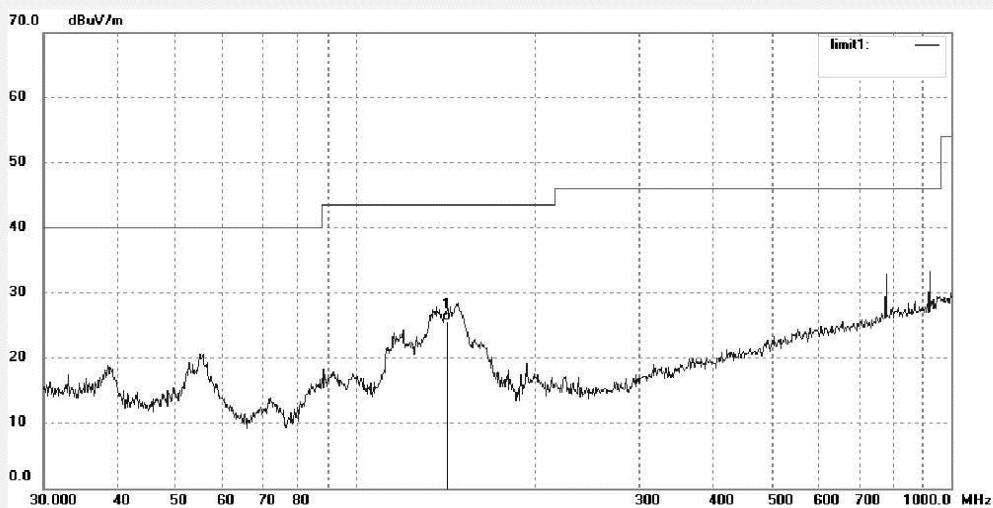
ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #775	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/21/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Wireless Access Point	Engineer Signature:
Mode: TX 5220MHz	Distance: 3m
Model: R123	
Manufacturer: Lenovo	

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	142.8242	40.93	-15.23	25.70	43.50	-17.80	QP			

Produkte
Products



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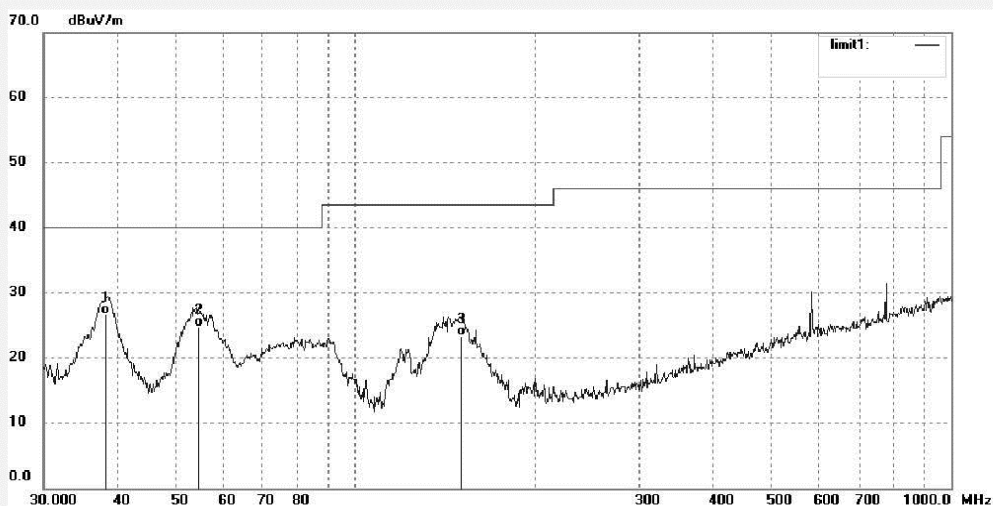
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #776
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: ThinkPad Stack Wireless Access Point
Mode: TX 5220MHz
Model: R123
Manufacturer: Lenovo

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 15/04/21/
Time:
Engineer Signature:
Distance: 3m

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	38.2120	37.75	-11.14	26.61	40.00	-13.39	QP			
2	54.6428	37.77	-12.95	24.82	40.00	-15.18	QP			
3	151.0664	38.56	-15.14	23.42	43.50	-20.08	QP			

Produkte
Products



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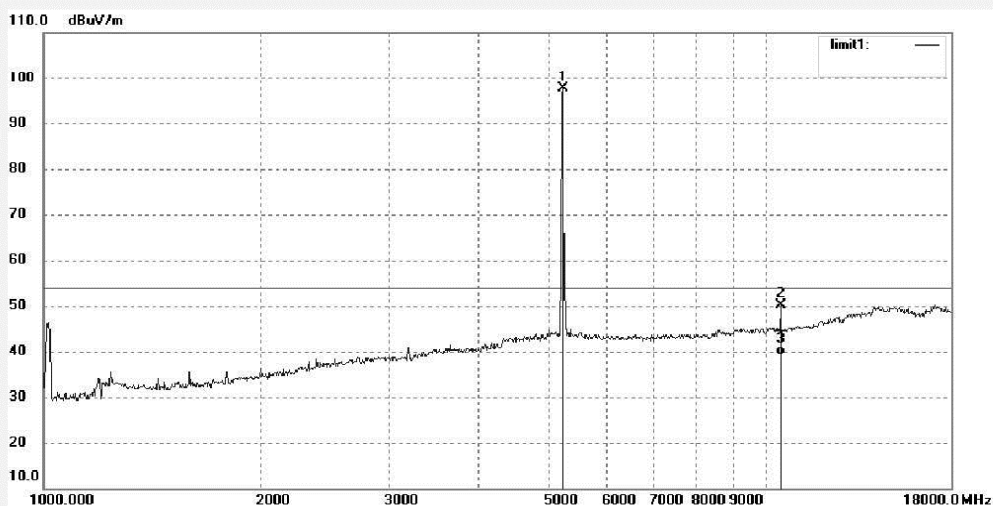
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #284
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: ThinkPad Stack Wireless Access Point
Mode: TX 5220MHz
Model: R123
Manufacturer: Lenovo

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2015/02/08
Time:
Engineer Signature:
Distance: 3m

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5220.000	96.95	0.75	97.70	/	/	peak			
2	10440.321	41.33	8.75	50.08	74.00	-23.92	peak			
3	10440.321	30.28	8.75	39.03	54.00	-14.97	AVG			

Produkte
Products



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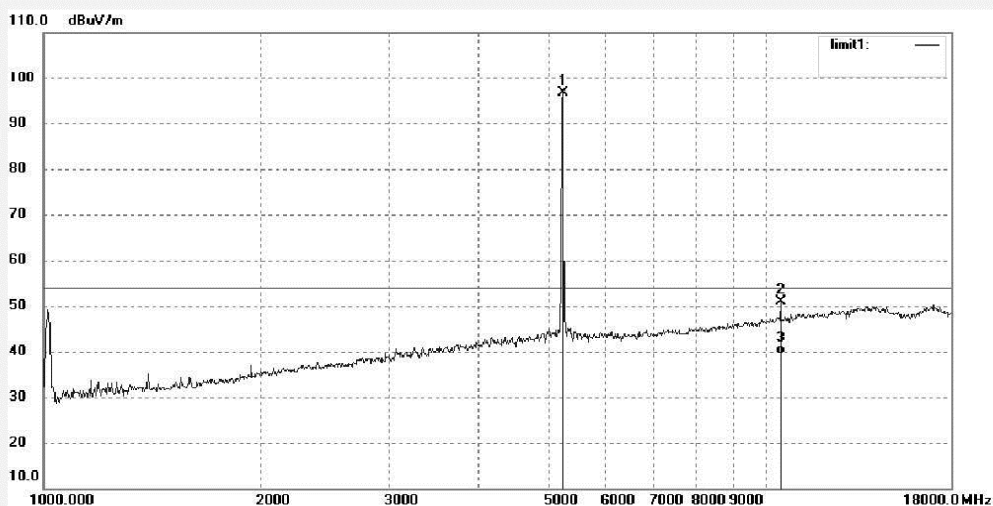
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #285
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: ThinkPad Stack Wireless Access Point
Mode: TX 5220MHz
Model: R123
Manufacturer: Lenovo

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/02/08
Time:
Engineer Signature:
Distance: 3m

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5220.000	95.83	0.75	96.58	/	/	peak			
2	10440.254	42.12	8.75	50.87	74.00	-23.13	peak			
3	10440.254	30.59	8.75	39.34	54.00	-14.66	AVG			

Produkte
Products



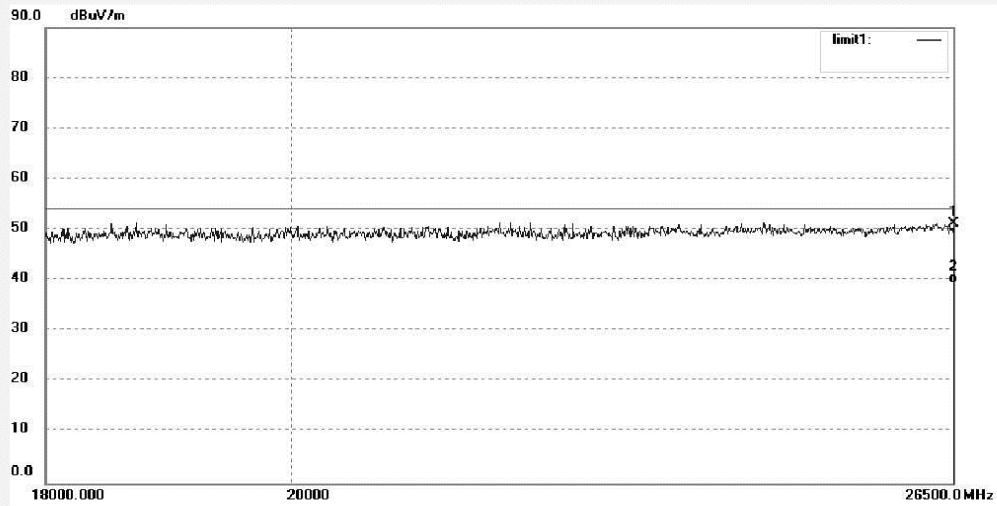
ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #1129	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/28/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Wireless Access Point	Engineer Signature:
Mode: TX 5220MHz	Distance: 3m
Model: R123	
Manufacturer: Lenovo	

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26500.000	34.74	16.50	51.24	74.00	-22.76	peak			
2	26500.000	23.08	16.50	39.58	54.00	-14.42	AVG			

Produkte
Products



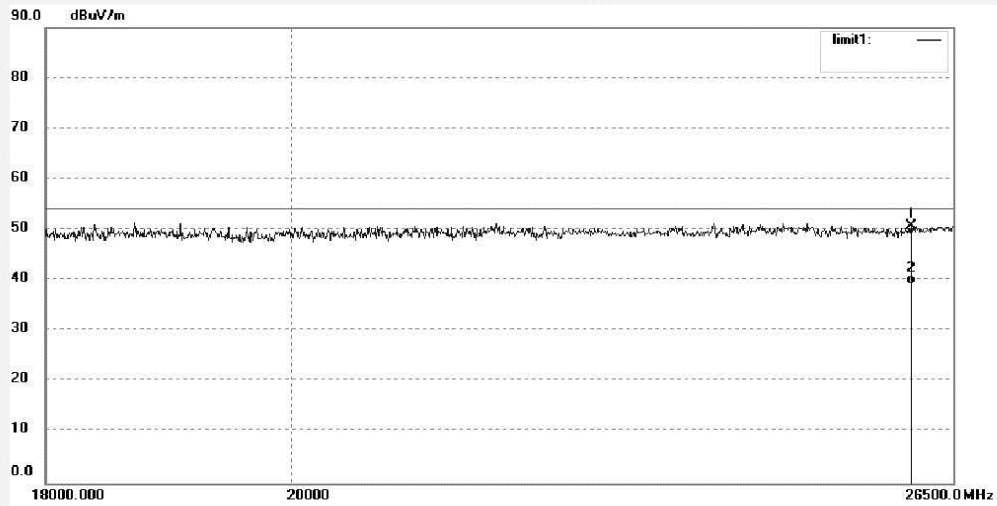
ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #1130	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/28/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Wireless Access Point	Engineer Signature:
Mode: TX 5220MHz	Distance: 3m
Model: R123	
Manufacturer: Lenovo	

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	26031.765	33.49	17.21	50.70	74.00	-23.30	peak			
2	26031.765	21.99	17.21	39.20	54.00	-14.80	AVG			

EMI Sweep(1)

1 / 1

Radiated Emission

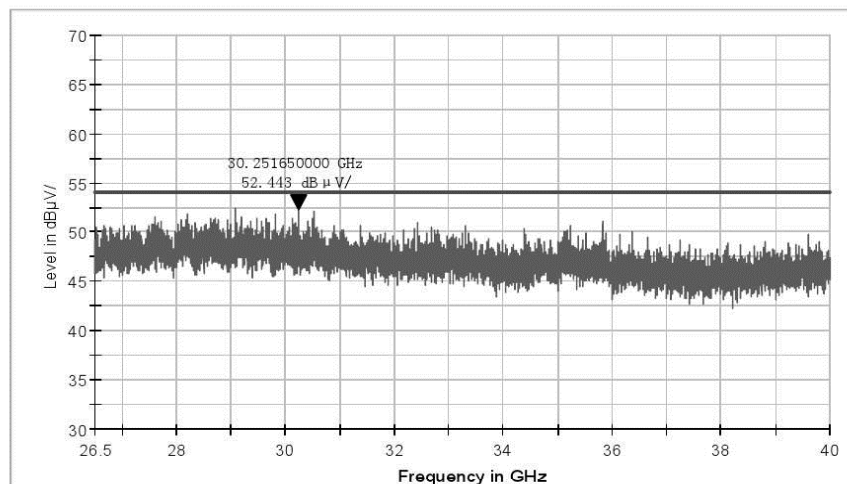
EUT Information

EUT Model Name:	ThinkPad Stack Wireless Access Point M/N:R123
Operation mode:	TX 5220MHz
Test Voltage:	AC 120V/60Hz
Comment:	802.11a

Common Information

Test Site:	SMQ EMC Lab.
Environment Conditions:	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

Copy of FCC Electric Field Strength 26.5-40GHz



EMI Sweep(1)

1 / 1

Radiated Emission

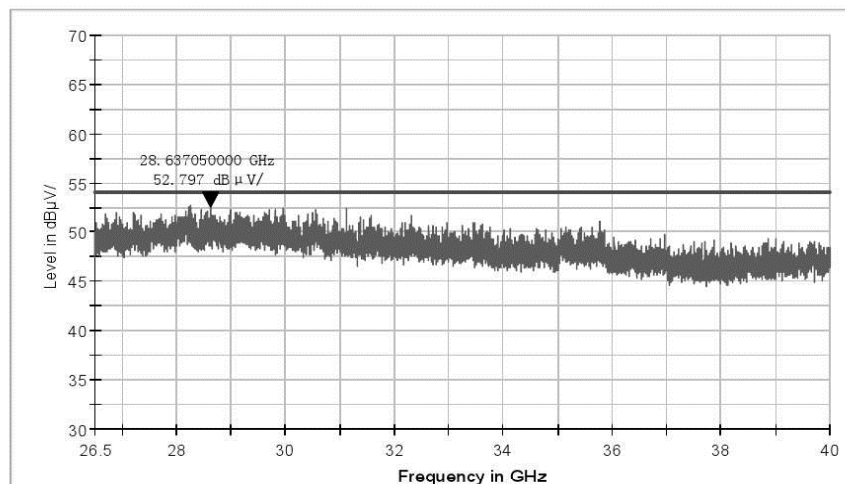
EUT Information

EUT Model Name:	ThinkPad Stack Wireless Access Point M/N:R123
Operation mode:	TX 5220MHz
Test Voltage:	AC 120V/60Hz
Comment:	802.11a

Common Information

Test Site:	SMQ EMC Lab.
Environment Conditions:	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

Copy of FCC Electric Field Strength 26.5-40GHz



CH48

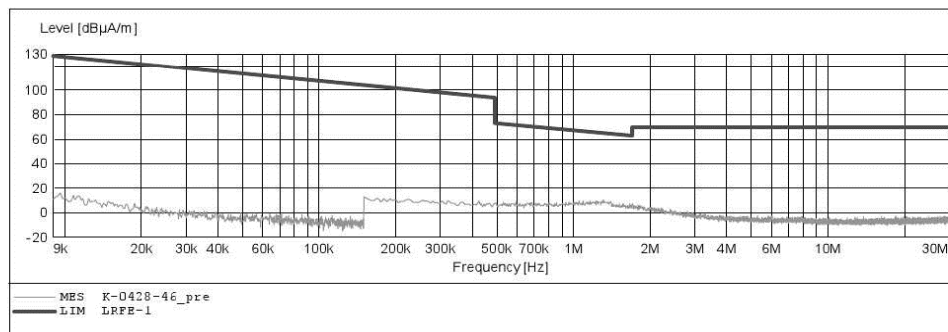
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FCC Class B 3M Radiated

EUT: ThinkPad Stack Wireless Access Point M/N:R123
 Manufacturer: Lenovo
 Operating Condition: TX 5240MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: X
 Start of Test: 2015-5-4 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



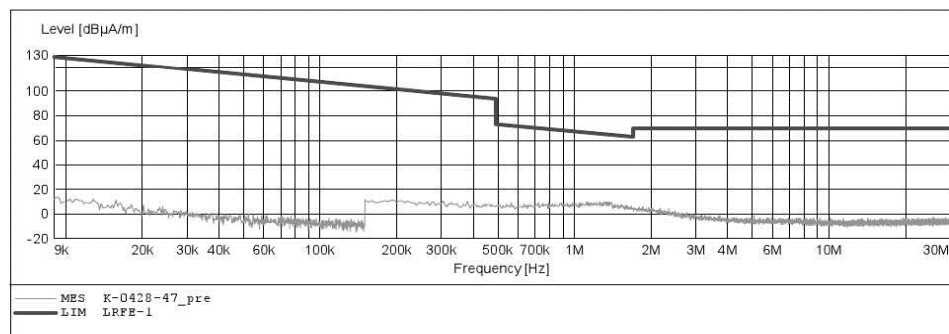
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: ThinkPad Stack Wireless Access Point M/N:R123
 Manufacturer: Lenovo
 Operating Condition: TX 5240MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: Y
 Start of Test: 2015-5-4 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



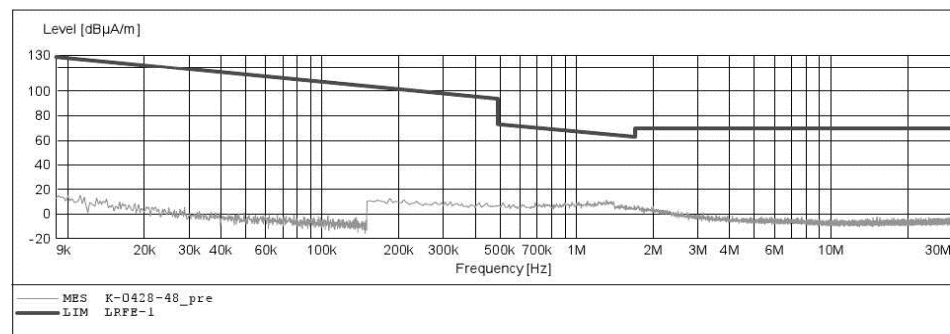
ACCURATE TECHNOLOGY CO.,LTD

FCC Class B 3M Radiated

EUT: ThinkPad Stack Wireless Access Point M/N:R123
 Manufacturer: Lenovo
 Operating Condition: TX 5240MHz
 Test Site: 2# Chamber
 Operator: LAN
 Test Specification: AC 120V/60Hz
 Comment: Z
 Start of Test: 2015-5-4 /

SCAN TABLE: "LFRE Fin"

Short Description:			_SUB_STD_VTERM2 1.70			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
9.0 kHz	150.0 kHz	100.0 Hz	QuasiPeak	1.0 s	200 Hz	1516M
150.0 kHz	30.0 MHz	5.0 kHz	QuasiPeak	1.0 s	9 kHz	1516M



Produkte
Products



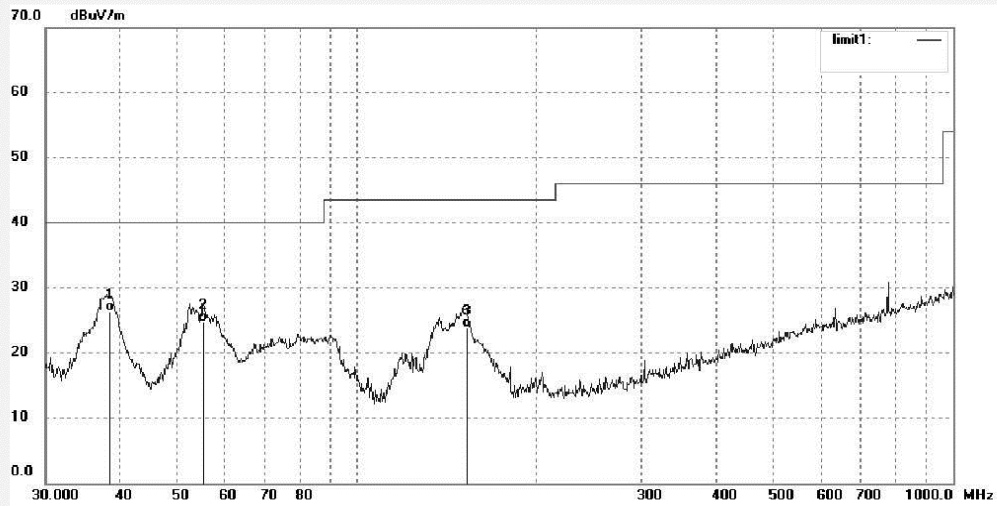
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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #777	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/21/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Wireless Access Point	Engineer Signature:
Mode: TX 5240MHz	Distance: 3m
Model: R123	
Manufacturer: Lenovo	

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	38.4808	37.51	-11.21	26.30	40.00	-13.70	QP			
2	55.2207	37.75	-13.02	24.73	40.00	-15.27	QP			
3	152.6639	39.07	-15.13	23.94	43.50	-19.56	QP			

Produkte
Products



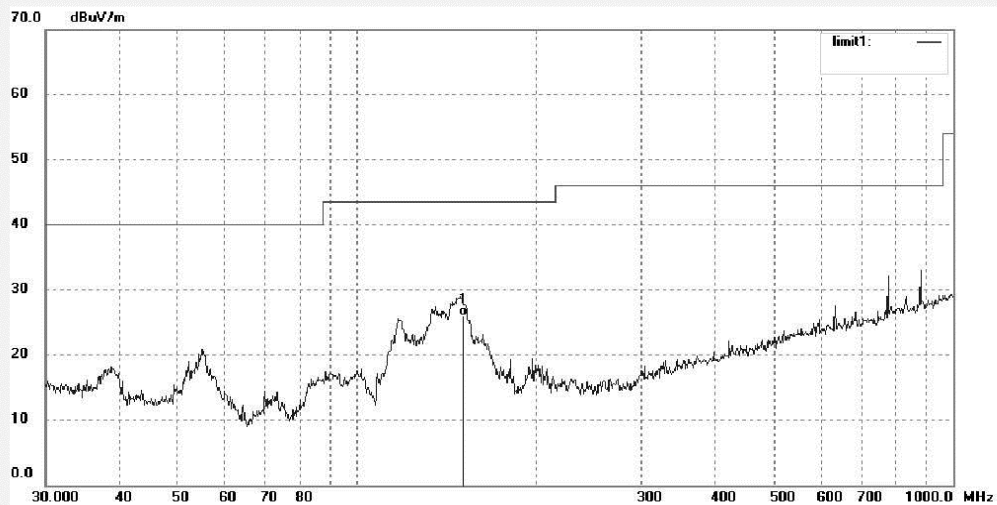
ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #778	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 15/04/21/
Temp.(C)/Hum.(%) 23 C / 48 %	Time:
EUT: ThinkPad Stack Wireless Access Point	Engineer Signature:
Mode: TX 5240MHz	Distance: 3m
Model: R123	
Manufacturer: Lenovo	

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	150.5378	41.15	-15.15	26.00	43.50	-17.50	QP			

Produkte
Products



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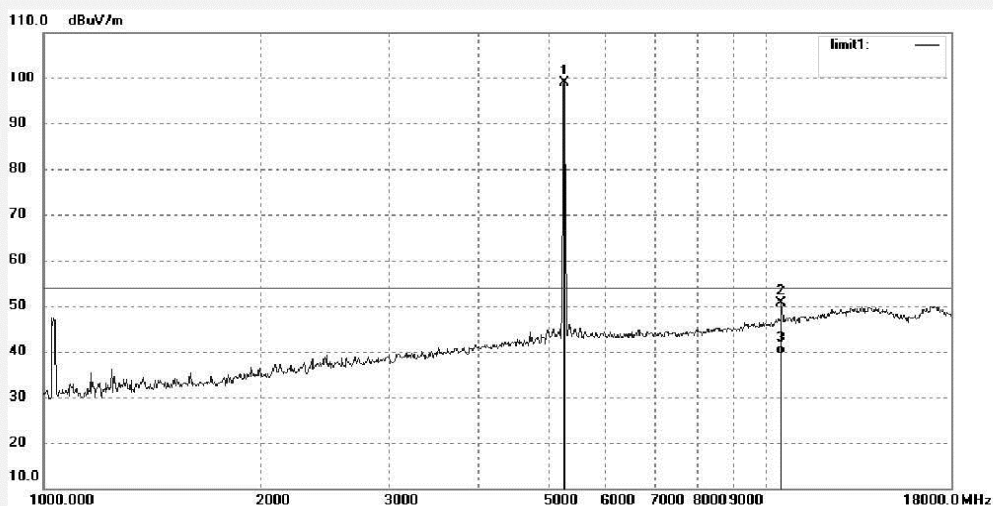
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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #286
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: ThinkPad Stack Wireless Access Point
Mode: TX 5240MHz
Model: R123
Manufacturer: Lenovo

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 2015/02/08
Time:
Engineer Signature:
Distance: 3m

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5240.000	98.07	0.82	98.89	/	/	peak			
2	10480.323	42.05	8.62	50.67	74.00	-23.33	peak			
3	10480.323	30.79	8.62	39.41	54.00	-14.59	AVG			

Produkte
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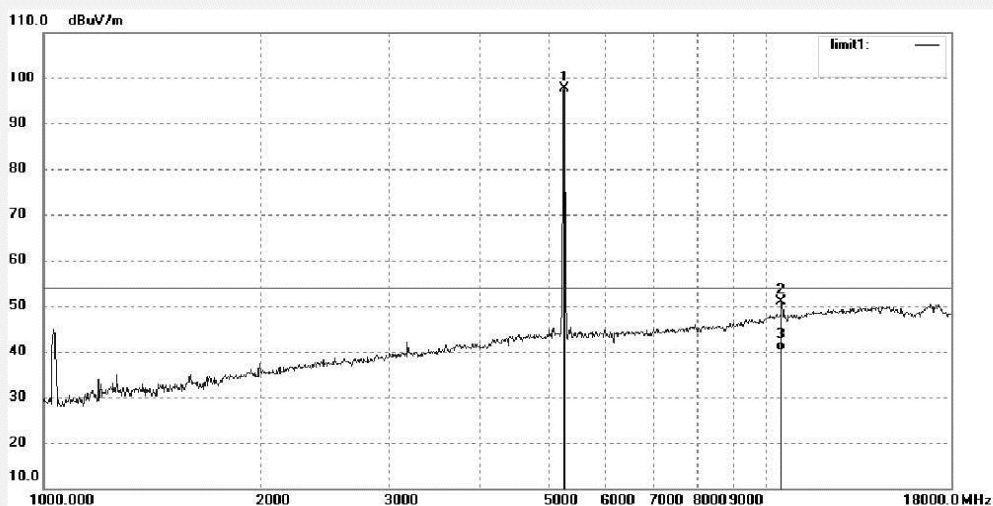
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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 2# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: lenovo #287
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 23 C / 48 %
EUT: ThinkPad Stack Wireless Access Point
Mode: TX 5240MHz
Model: R123
Manufacturer: Lenovo

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 2015/02/08
Time:
Engineer Signature:
Distance: 3m

Note: 802.11a



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	5240.000	96.83	0.82	97.65	/	/	peak			
2	10480.233	42.37	8.62	50.99	74.00	-23.01	peak			
3	10480.233	31.45	8.62	40.07	54.00	-13.93	AVG			