

Prüfbericht-Nr.: <i>Test Report No.:</i>	17052612 001	Auftrags-Nr.: <i>Order No.:</i>	164044450	Seite 1 von 52 <i>Page 1 of 52</i>
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	434252	Auftragsdatum: <i>Order date.:</i>	07.09.2015	
Auftraggeber: <i>Client:</i>	Shenzhen Zowee Technology Co., Ltd. Block 5, Science & Technology Industrial Park of Privately Owned Enterprises, Pingshan, Xili, Nanshan District, Shenzhen, China			
Prüfgegenstand: <i>Test item:</i>	Tablet PC			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	NS-P89W6100			
Auftrags-Inhalt: <i>Order content:</i>	FCC/IC Certification			
Prüfgrundlage: <i>Test specification:</i>	CFR47 FCC Part 15: Subpart C Section 15.247 CFR47 FCC Part 15: Subpart C Section 15.207 CFR47 FCC Part 15: Subpart C Section 15.209 RSS-247 Issue 1 May 2015 RSS-Gen Issue 4 November 2014			
Wareneingangsdatum: <i>Date of receipt:</i>	08.09.2015			
Prüfmuster-Nr.: <i>Test sample No.:</i>	A000176511-001 to 002			
Prüfzeitraum: <i>Testing period:</i>	14.09.2015 - 22.09.2015			
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:		
<p>30.09.2015 Ryan Yang / Senior Project Engineer</p> 		<p>30.09.2015 Sam Lin / Technical Certifier</p> 		
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>
				Unterschrift <i>Signature</i>
Sonstiges / Other:				
Only evaluate the Wi-Fi function in this test report. FCC ID: 2AAP6ZM8021A1 IC: 8257A-NSP89W6100				
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
	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
	P(ass) = passed a.m. test specifications(s)	F(ail) = failed a.m. test specifications(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 auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines.				
<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>				

V04

Test Summary

5.1.1 ANTENNA REQUIREMENT*RESULT: Pass***5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER***RESULT: Pass***5.1.3 CONDUCTED POWER SPECTRAL DENSITY***RESULT: Pass***5.1.4 6dB BANDWIDTH***RESULT: Pass***5.1.5 99% BANDWIDTH***RESULT: Pass***5.1.6 CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHz BANDWIDTH***RESULT: Pass***5.1.7 RADIATED SPURIOUS EMISSION***RESULT: Pass***5.1.8 CONDUCTED EMISSIONS***RESULT: Pass*

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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 1: Test result

2 Test Sites

2.1 Test Facilities

Accurate Technology Co., Ltd.

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

FCC Registration No.: 752051

Test site Industry Canada No.: 5077A-2

The tests at the test sites 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
Accurate Technology Co., Ltd.

Radio Spectrum Test				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Spectrum Analyzer	R&S	ESPI3	100396/003	09.01.2016
Spectrum Analyzer	Agilent	E7405A	MY45115511	09.01.2016
Temp. & Humid. Chamber	Gongwen	HSD-500	0109	09.01.2016
Conducted Emissions				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Test Receiver	R&S	ESCS30	100307	09.01.2016
L.I.S.N.	Schwarzbeck	NLSK8126	8126431	09.01.2016
Pulse Limiter	R&S	ESH3-Z2	100815	09.01.2016
50_ Coaxial Switch	Anritsu Corp	MP59B	6200283933	09.01.2016
Radiated Emission & Spurious Emission				
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
Spectrum Analyzer	R&S	FSV40	101495	01.01.2016
Test Receiver	R&S	ESCS30	100307	01.01.2016
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	01.01.2016
Loop Antenna	Schwarzbeck	FMZB1516	1516131	01.01.2016
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	01.01.2016
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	01.01.2016
RF Switching Unit+PreAMP	Compliance Direction	RSU-M2	38322	01.01.2016
Pre-Amplifier	R&S	CBLU11835 40-01	3791	01.01.2016
50 Coaxial Switch	Anritsu Corp	MP59B	6200506474	01.01.2016
RF Coaxial Cable	SUHNER	N-3m	No.8	01.01.2016
RF Coaxial Cable	RESENBERGER	N-3.5m	No.9	01.01.2016
RF Coaxial Cable	SUHNER	N-6m	No.10	01.01.2016
RF Coaxial Cable	RESENBERGER	N-12m	No.11	01.01.2016
50_ Coaxial Switch	Anritsu Corp	MP59B	6200283933	09.01.2016

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, 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

Parameter	Uncertainty
Radio Spectrum	± 0.60 dB
All Emission, Radiated	± 4.42 dB
Conducted Emission	± 2.23 dB
Radiated Emission	± 4.42 dB
Ambient Temperature	25°C
Relative Humidity	56%
Atmospheric Pressure	101 kPa

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. Test facility located at F1, Bldg. A, Changyuan New Meterial 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 EUTs are tablet with Wi-Fi, Bluetooth and GPS function.

Refer to User Manual and Circuit Diagram for further details.

3.2 Ratings and System Details

Table 2: Technical Specification of EUT

Technical Specification	Value
Product Name	Tablet PC
Model Number	NS-P89W6100
Operating Frequency	802.11b/g/n(HT20): 2412 MHz to 2462 MHz 802.11n(HT40): 2422 MHz to 2452 MHz
Extreme Temperature Range	-20°C ~ +60°C
Operation Voltage	DC 3.3V via Internal rechargeable lithium battery AC 120V 60Hz via AC/DC adapter
Modulation	802.11b: DSSS(CCK/DQPSK/DBPSK) 802.11g: OFDM(BPSK/QPSK) 802.11n: OFDM(BPSK/QPSK/16QAM/64QAM)
Data Rate	802.11b :1/2/5.5/11 Mbps 802.11g :6/9/12/18/24/36/48/54 Mbps 802.11n(HT20): MCS0 ~ MCS7 Mbps 802.11n(HT40): MCS0 ~ MCS7 Mbps
Number of Channel	802.11b/g/n(HT20): 11 Channels 802.11n(HT40): 9 Channels
Channel Spacing	5 MHz
Antenna Type and Gain	PCB Antenna, 2.56 dBi

Table 3: RF Channel and Frequency of Wi-Fi

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437	/	/

Remark:

1. Test frequencies are lowest channel: 2412 MHz, middle channel: 2437 MHz and highest channel: 2462 MHz for 802.11b/g/n(HT20)
2. Test frequencies are lowest channel: 2422 MHz, middle channel: 2437 MHz and highest channel: 2452 MHz for 802.11n(HT40)

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Wi-Fi mode (2.4 GHz)
 1. Transmitting
 - a. Low Channel
 - b. Middle Channel
 - c. High Channel
 2. Receiving
- B. On, Wi-Fi connecting mode
- C. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- Block Diagram
- FCC/IC Label and Location
- Photo Document
- Bill of Material
- Circuit Diagram
- Operation Description
- User Manual

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum power 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. All testing were performed according to the procedures in ANSI C63.10: 2013

4.3 Special Accessories and Auxiliary Equipment

The EUT was tested together with the following accessories:

Description	Manufacturer	Part No.	Rating
AC/DC Adapter	GLOBAL YEOU DIANN ELECTRIC INDUSTRIAL CO., LTD.	AMS135- 0522000FU	Input: AC 100-240V, 50/60Hz, 0.5A Output: DC 5.2V, 2A

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

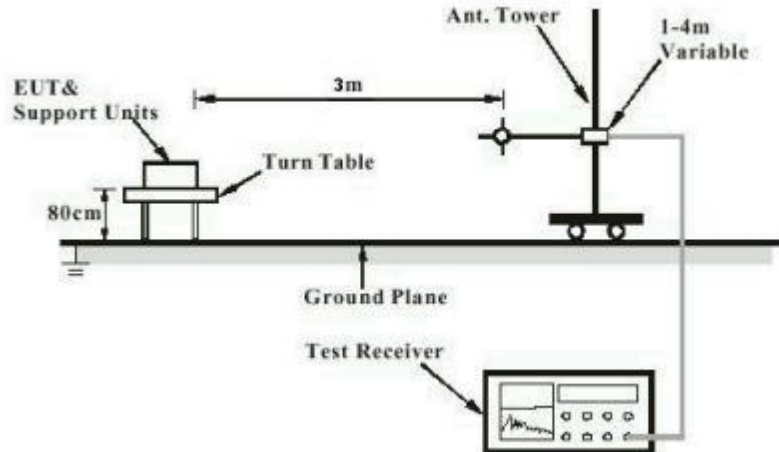


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

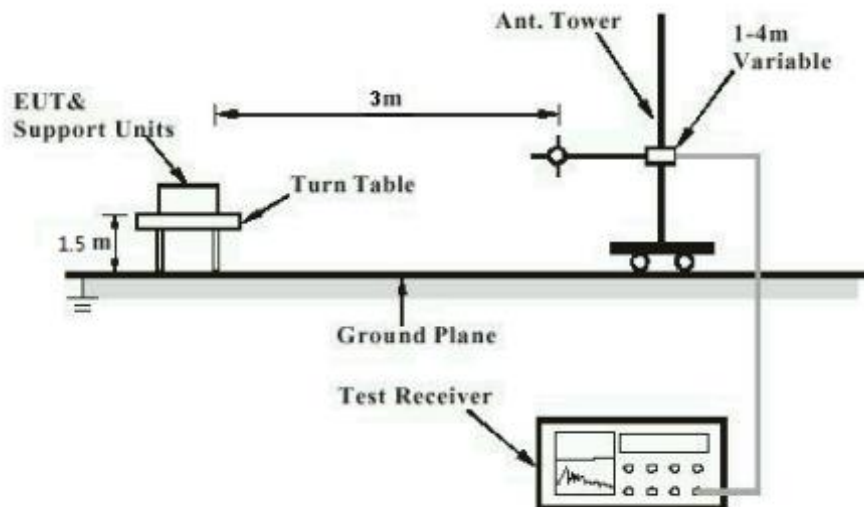
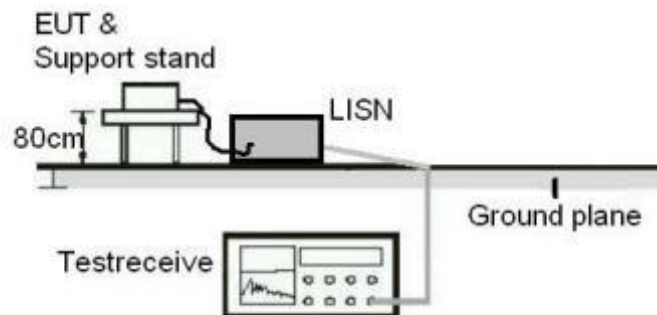
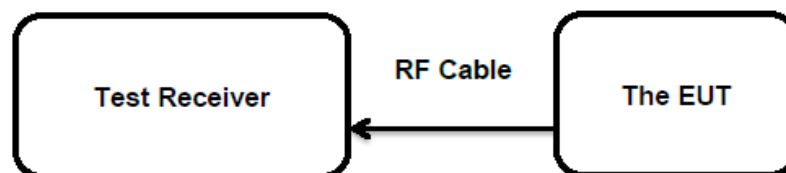


Diagram of Measurement Configuration for Mains Conduction Measurement

Diagram of Measurement Configuration for Conducted Transmitter Measurement


5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT: **Pass**

Test Specification

Test standard : FCC Part 15.247(b)(4) and Part 15.203
RSS-Gen Clause 8.3

Limits : the use of antennas with directional gains that do not
exceed 6dBi

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 2.56 dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement. Therefore the EUT is considered sufficient to comply with the provision.

Therefore the EUT is considered sufficient to comply with the provision.

5.1.2 Maximum Peak Conducted Output Power

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(b)(3)
 RSS-247 Clause 5.4(4)

Basic standard : ANSI C63.10: 2013

Limits : ≤ 1 Watt

Kind of test site : Shielded Room

Test Setup

Date of testing : 14.09.2015

Input voltage : DC 3.3V via Internal rechargeable lithium battery

Operation mode : A.1

Test channel : Low / Middle/ High

Ambient temperature : 25°C

Relative humidity : 56%

Atmospheric pressure : 101 kPa

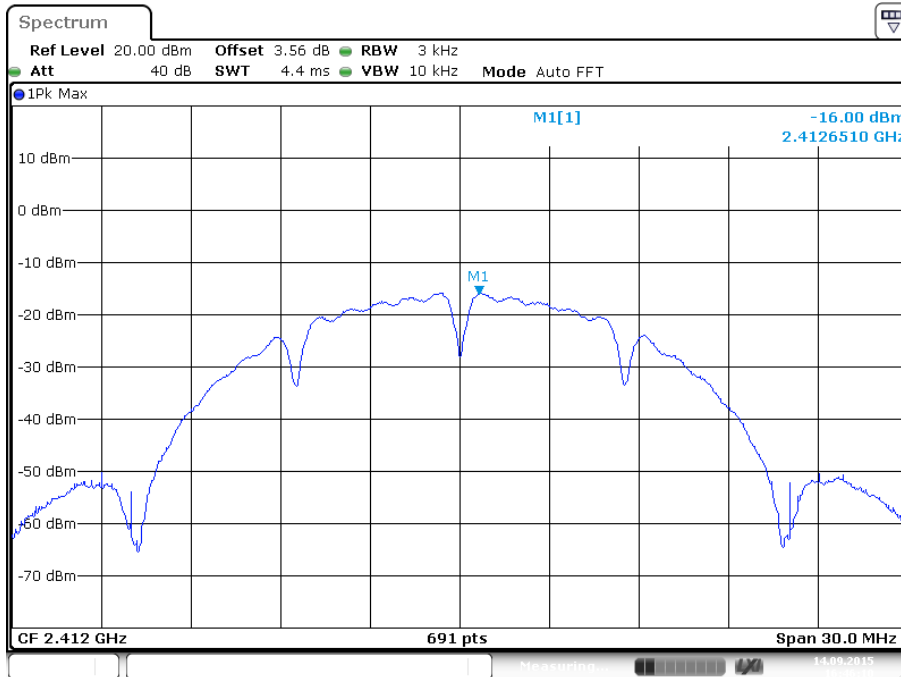
Table 4: Test Result of Maximum Peak Conducted Output Power

Mode	Data Rate	Frequency (MHz)	Measured Power		Limit
			dBm	W	
802.11b	11 Mbps	2412	15.66	0.03681	≤ 1W(30dBm)
		2437	15.67	0.03690	
		2462	15.67	0.03690	
802.11g	54 Mbps	2412	14.57	0.02864	
		2437	15.61	0.03639	
		2462	14.95	0.03126	
802.11n (HT20)	MCS7 Mbps	2412	13.56	0.02270	
		2437	15.61	0.03639	
		2462	13.66	0.02323	
802.11n (HT40)	MCS7 Mbps	2422	12.16	0.01644	
		2437	14.86	0.03062	
		2452	12.36	0.01722	
Maximum Measured Value			15.67	0.03690	

For the measurement records, refer to following test plot:

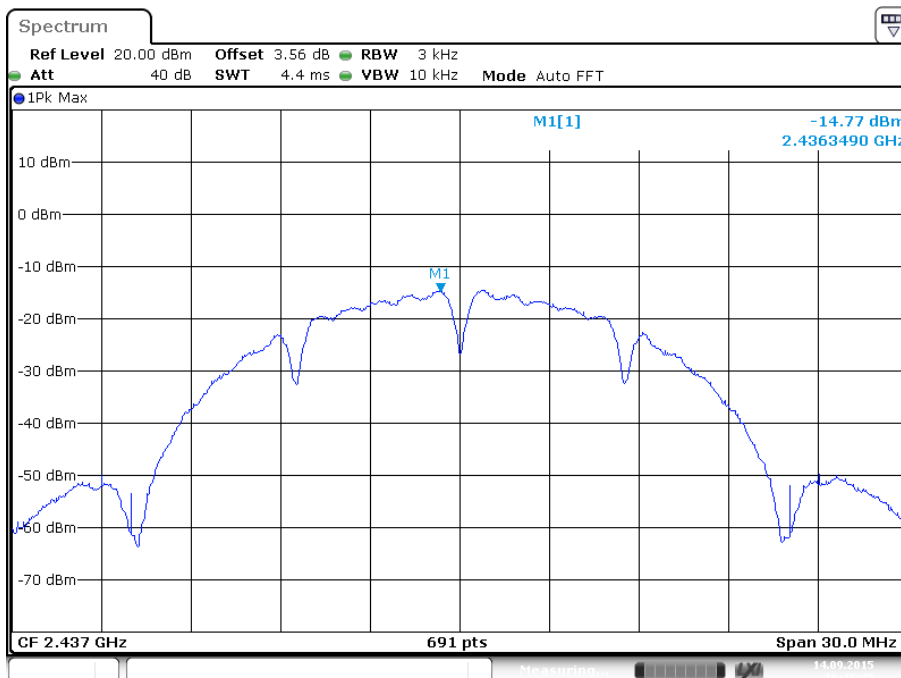
Test Plot of Power Spectral Density, 802.11b

Low channel:



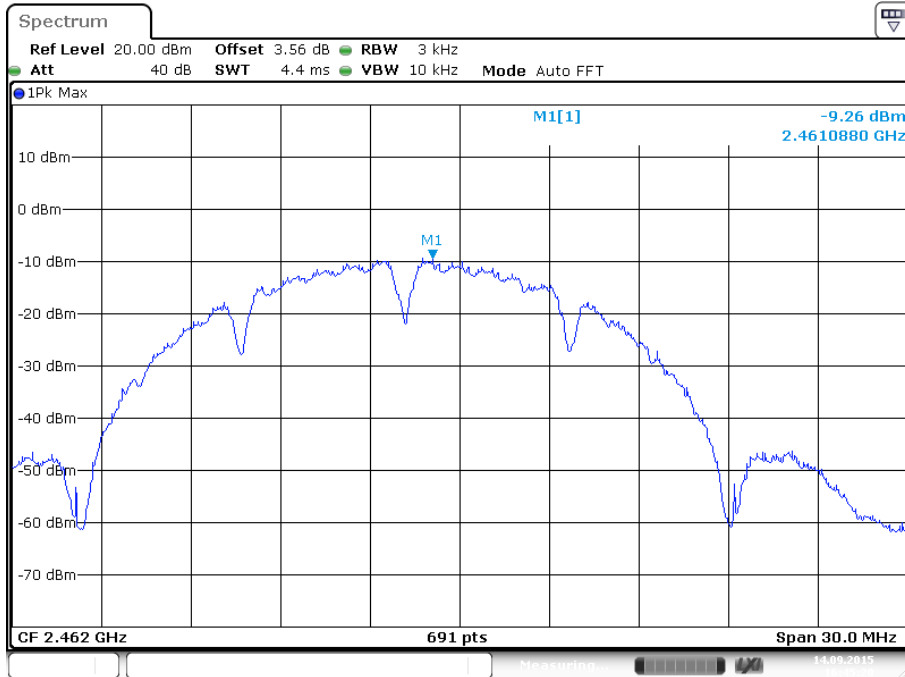
Date: 14.SEP.2015 16:46:10

Middle channel:

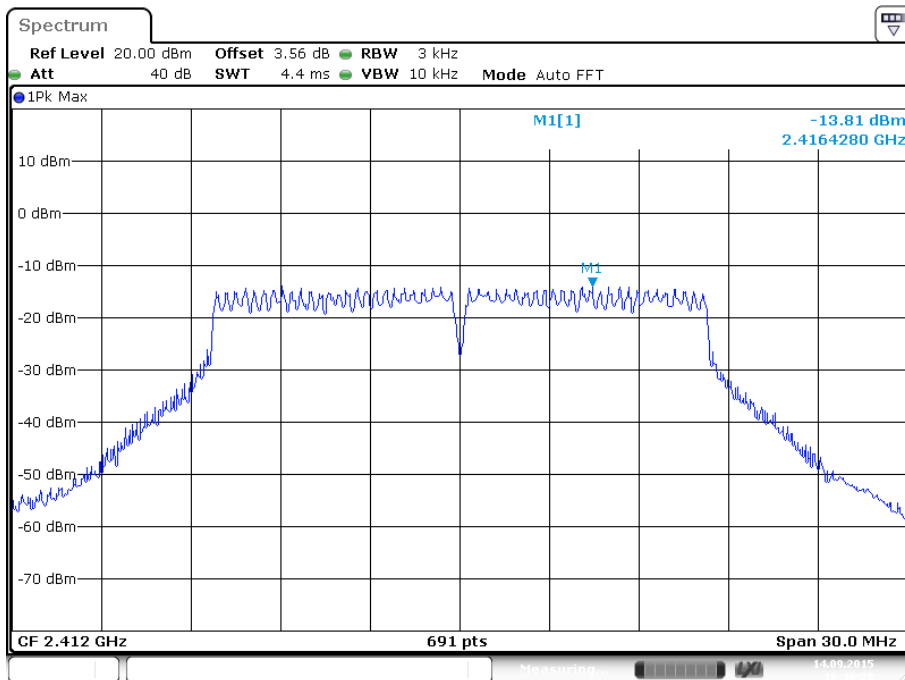


Date: 14.SEP.2015 16:45:46

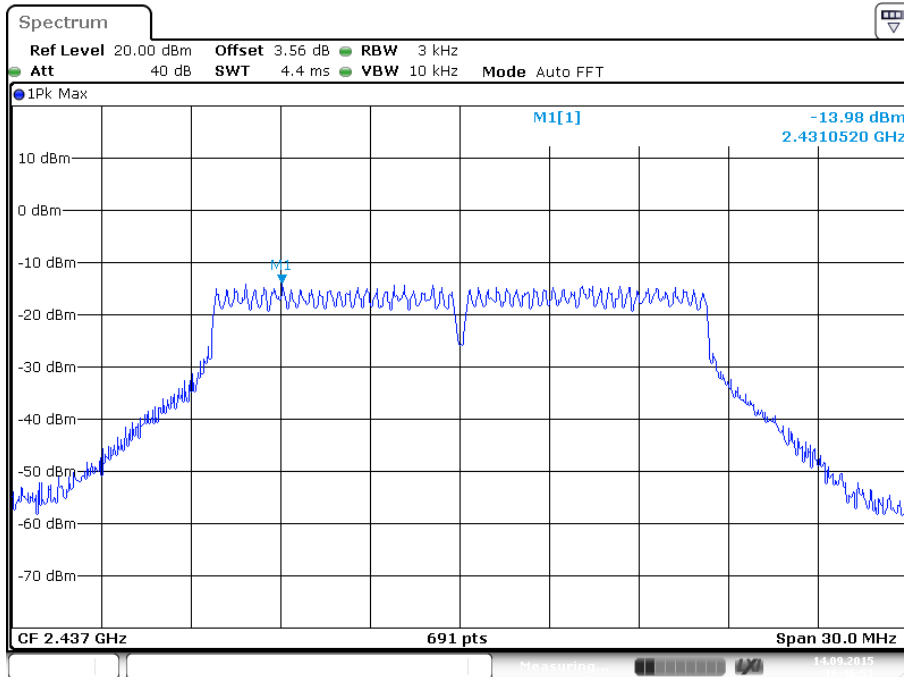
High channel:


Test Plot of Power Spectral Density, 802.11g

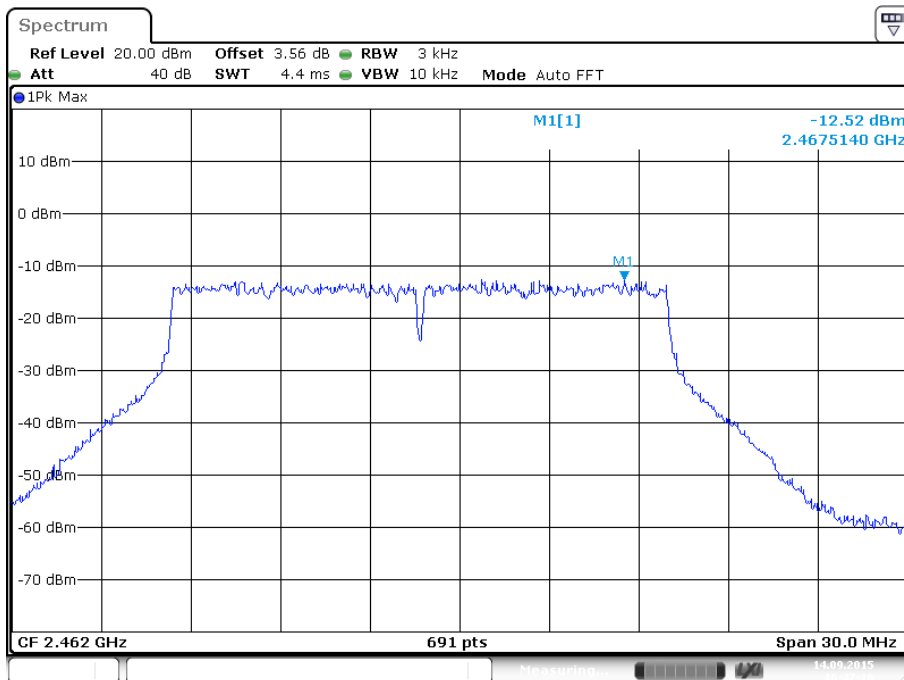
Low channel:



Middle channel:

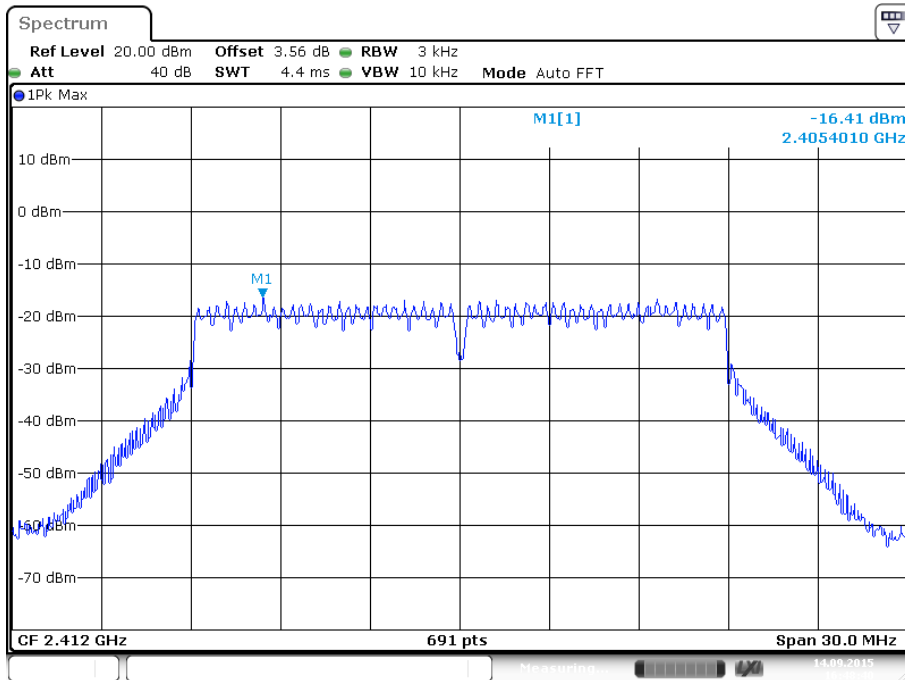


High channel:

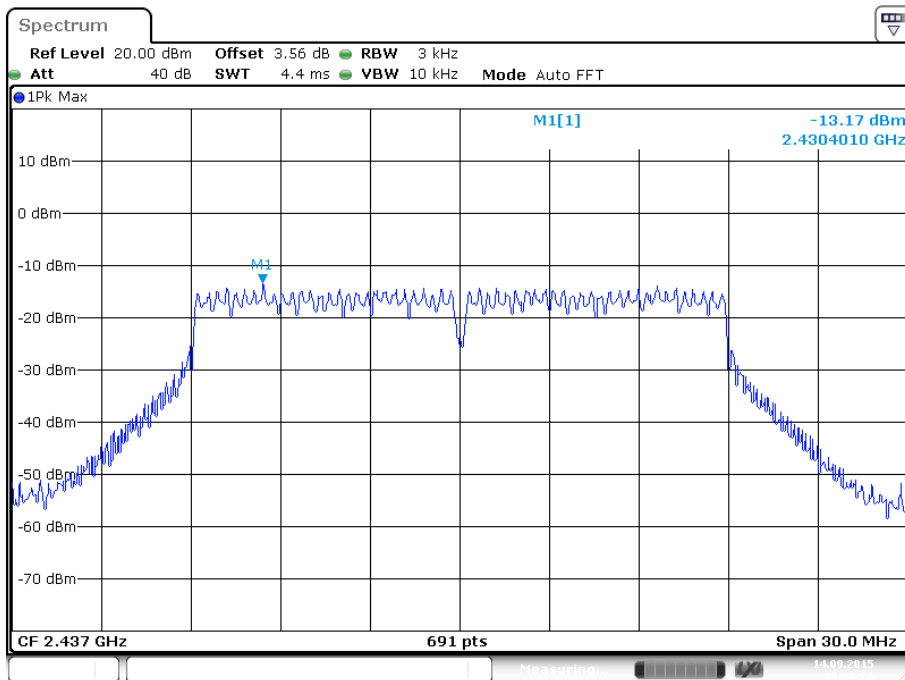


Test Plot of Power Spectral Density, 802.11n(HT20)

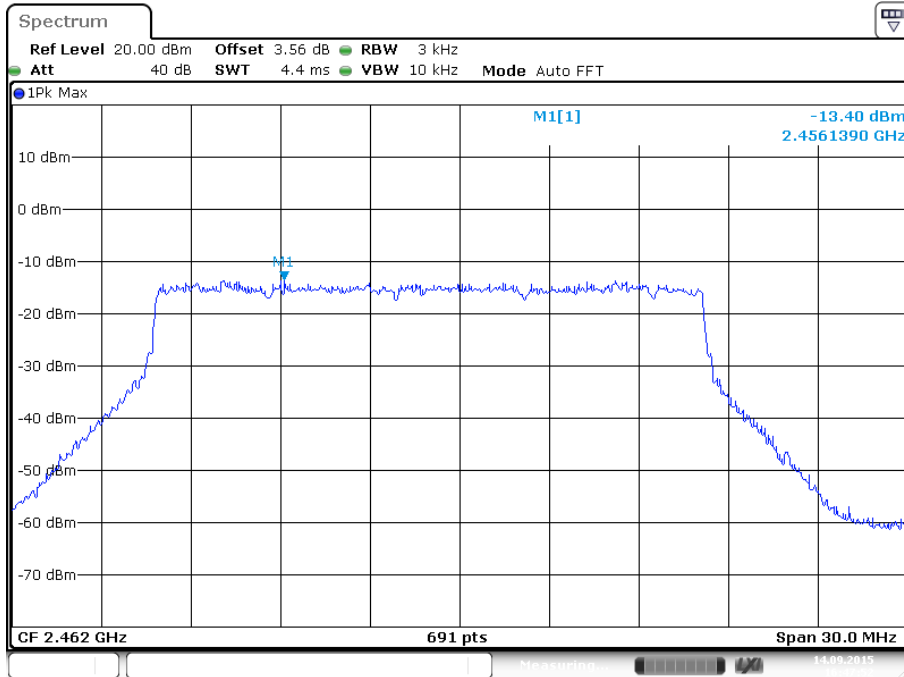
Low channel:



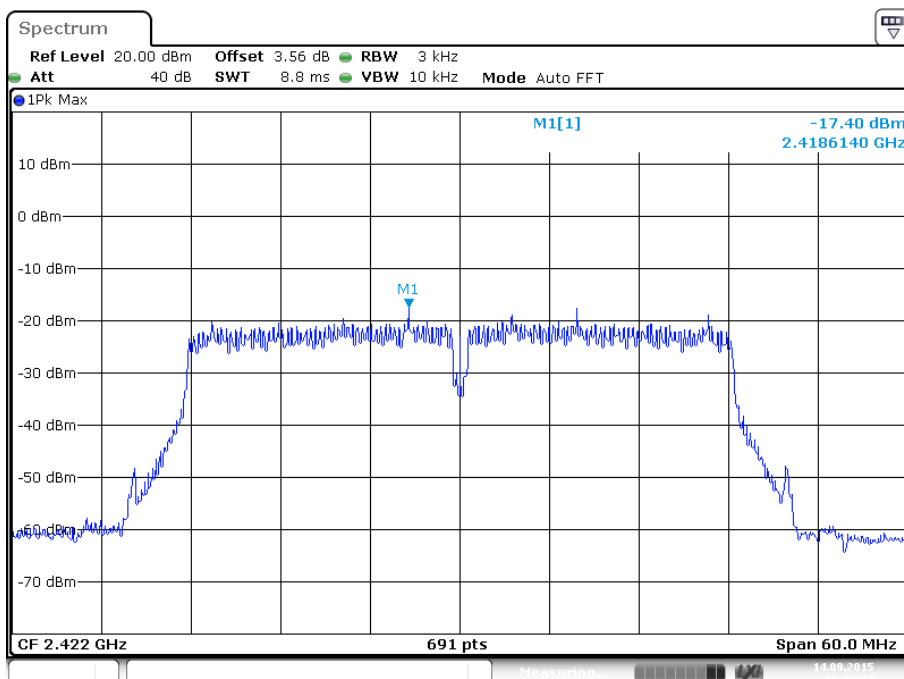
Middle channel:



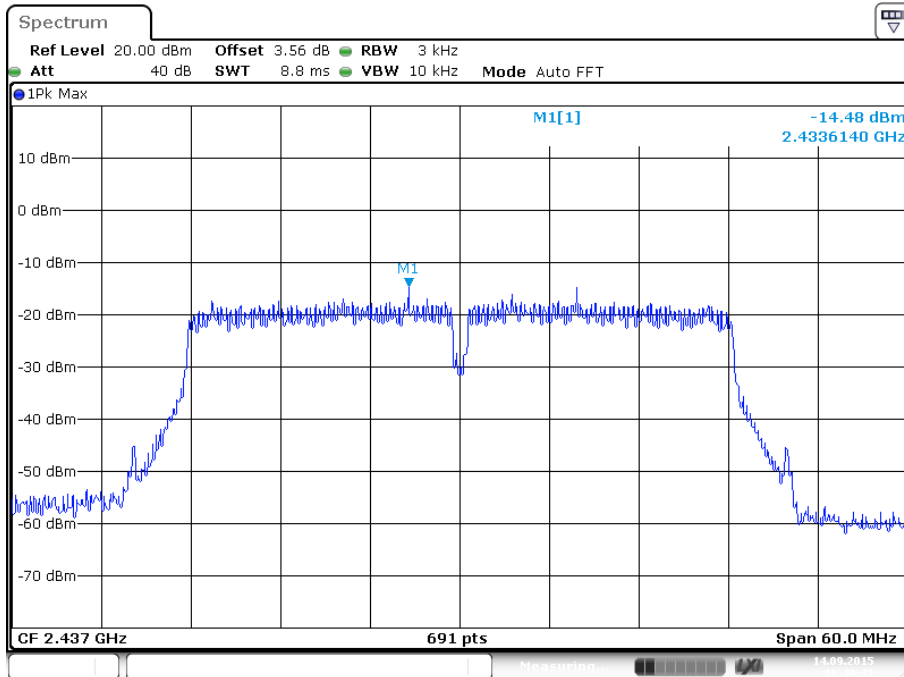
High channel:


Test Plot of Power Spectral Density, 802.11n(HT40)

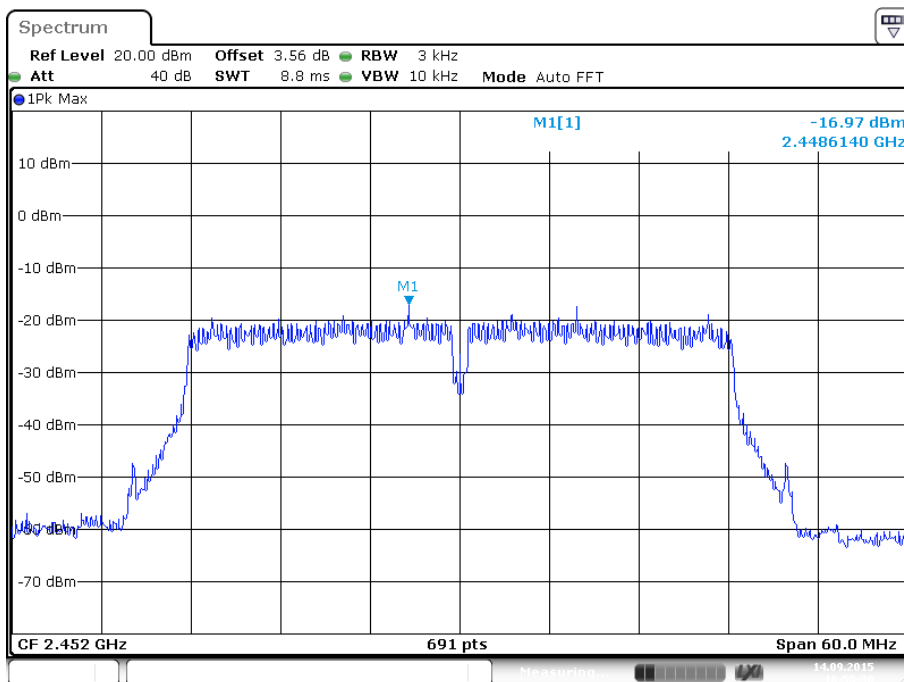
Low channel:



Middle channel:



High channel:



5.1.4 6dB Bandwidth

RESULT:
Pass
Test Specification

Test standard : FCC Part 15.247(a)(2)
 RSS-247 Clause 5.2(1)

Basic standard : ANSI C63.10: 2013

Limits : ≥ 500 KHz

Kind of test site : Shielded Room

Test Setup

Date of testing : 14.09.2015

Input voltage : DC 3.3V via Internal rechargeable lithium battery

Operation mode : A.1

Test channel : Low / Middle/ High

Ambient temperature : 25°C

Relative humidity : 56%

Atmospheric pressure : 101 kPa

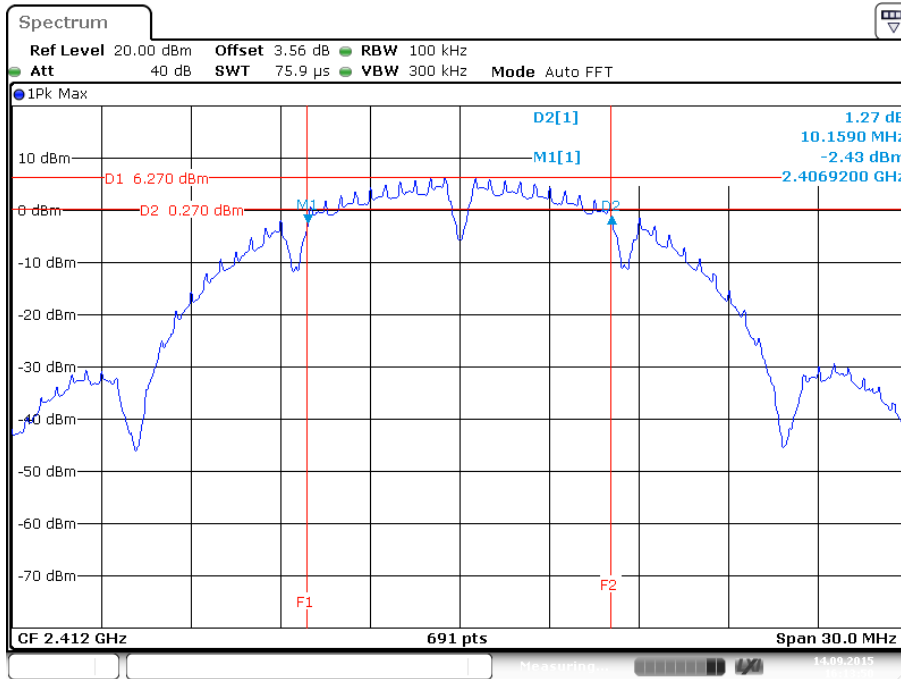
Table 6: Test Result of 6dB Bandwidth

Mode	Data Rate	Frequency (MHz)	-6dB Bandwidth (MHz)	Limit (kHz)
802.11b	11 Mbps	2412	10.16	≥ 500
		2437	10.07	
		2462	10.42	
802.11g	54 Mbps	2412	16.67	
		2437	16.67	
		2462	16.93	
802.11n (HT20)	MCS7 Mbps	2412	17.89	
		2437	17.89	
		2462	18.23	
802.11n (HT40)	MCS7 Mbps	2422	36.56	
		2437	36.56	
		2452	36.64	
Minimum Measured Value			10.07	

For the measurement records, refer to following test plot:

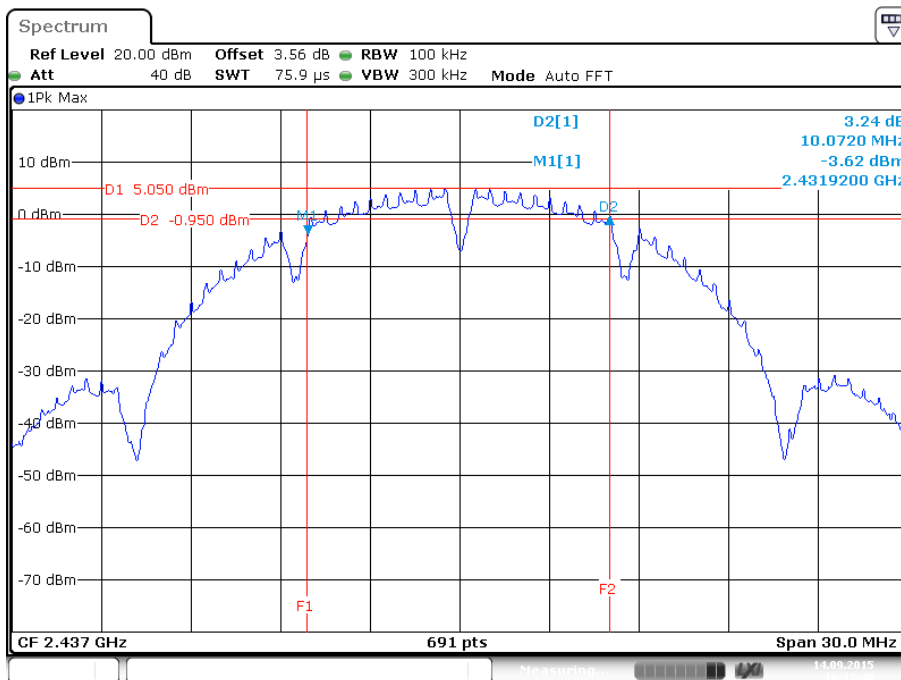
Test Plot of 6dB Bandwidth, 802.11b

Low channel:



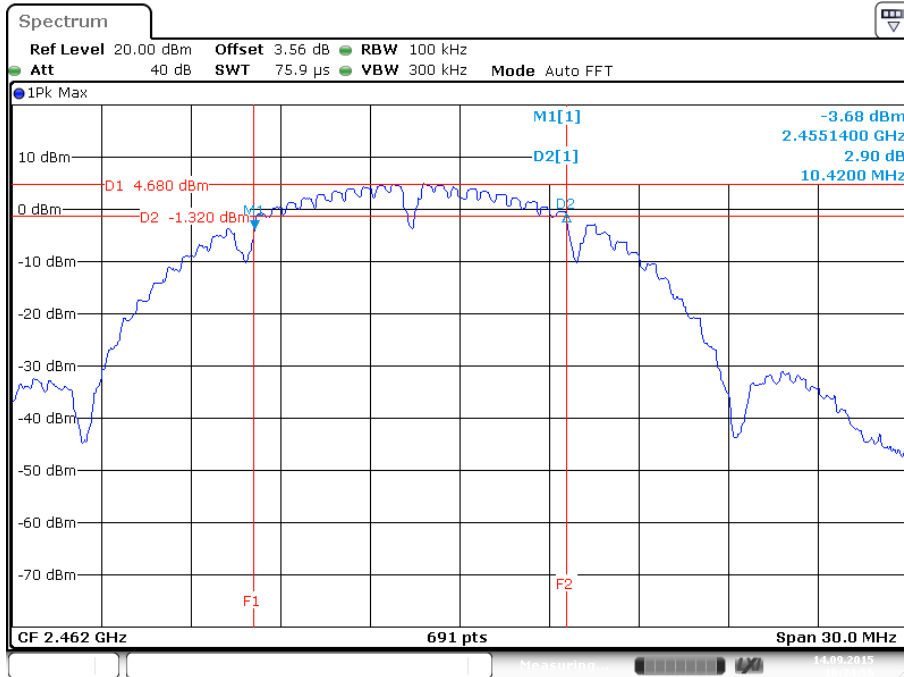
Date: 14.SEP.2015 16:13:50

Middle channel:

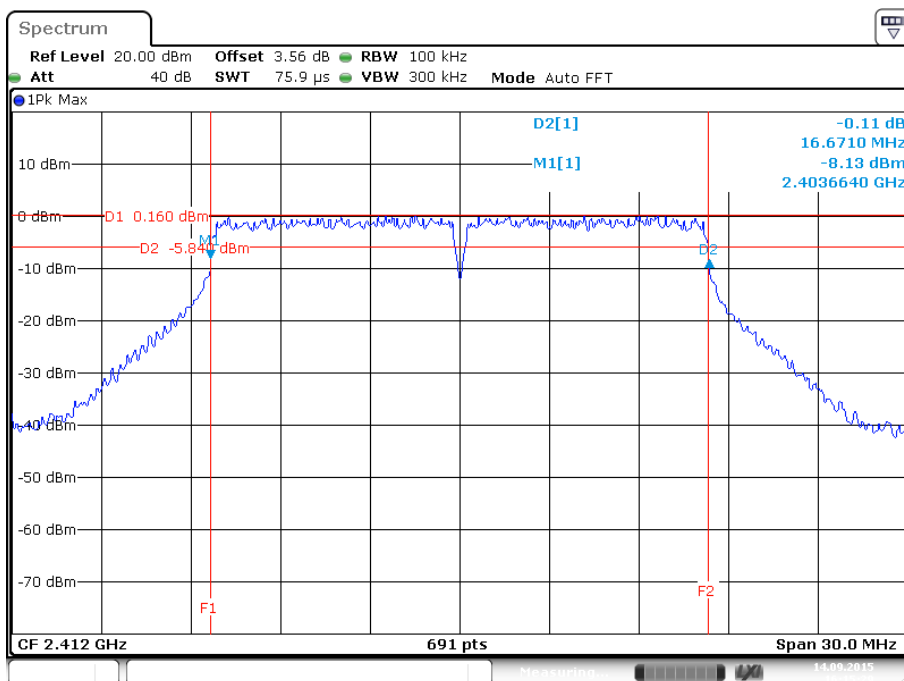


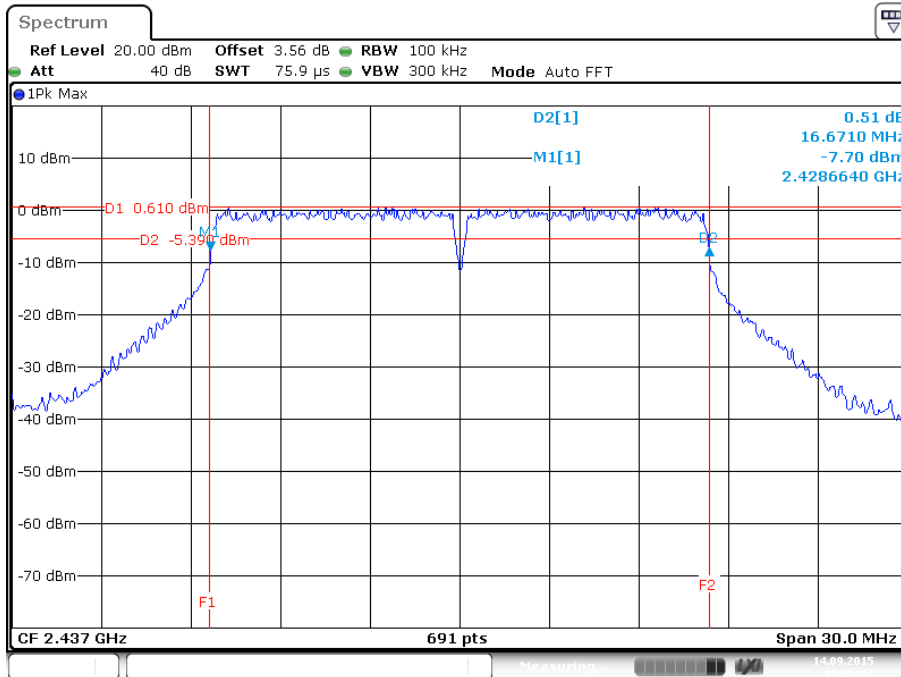
Date: 14.SEP.2015 16:33:40

High channel:

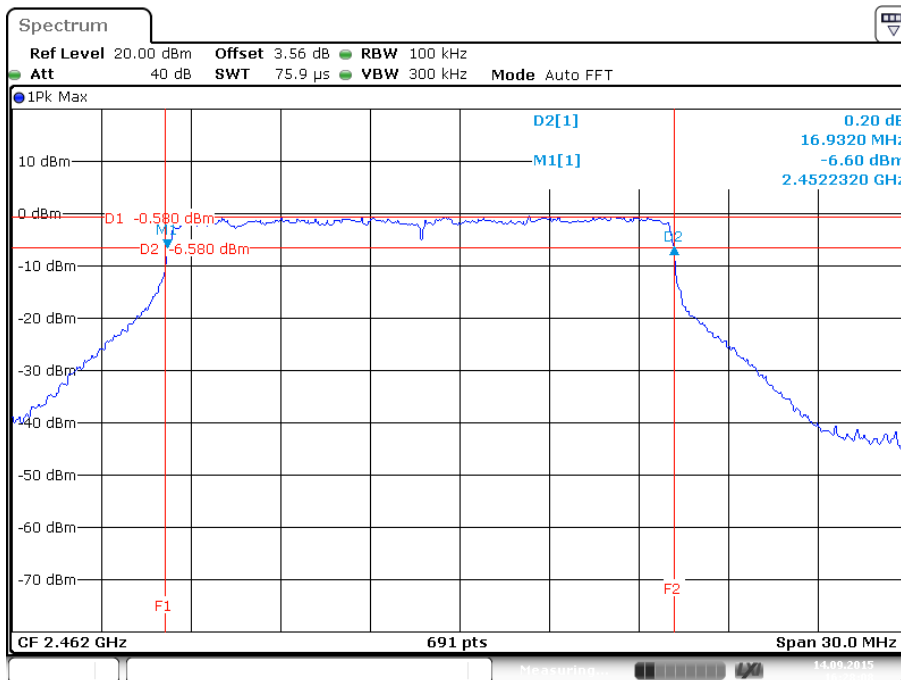

Test Plot of 6dB Bandwidth, 802.11g

Low channel:



Middle channel:


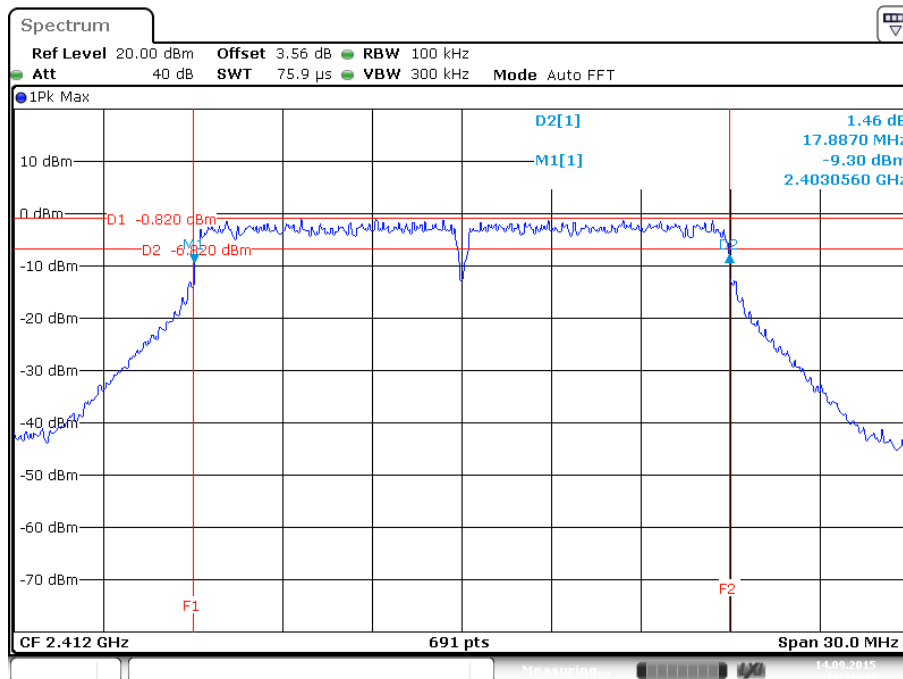
Date: 14.SEP.2015 16:26:07

High channel:


Date: 14.SEP.2015 16:28:08

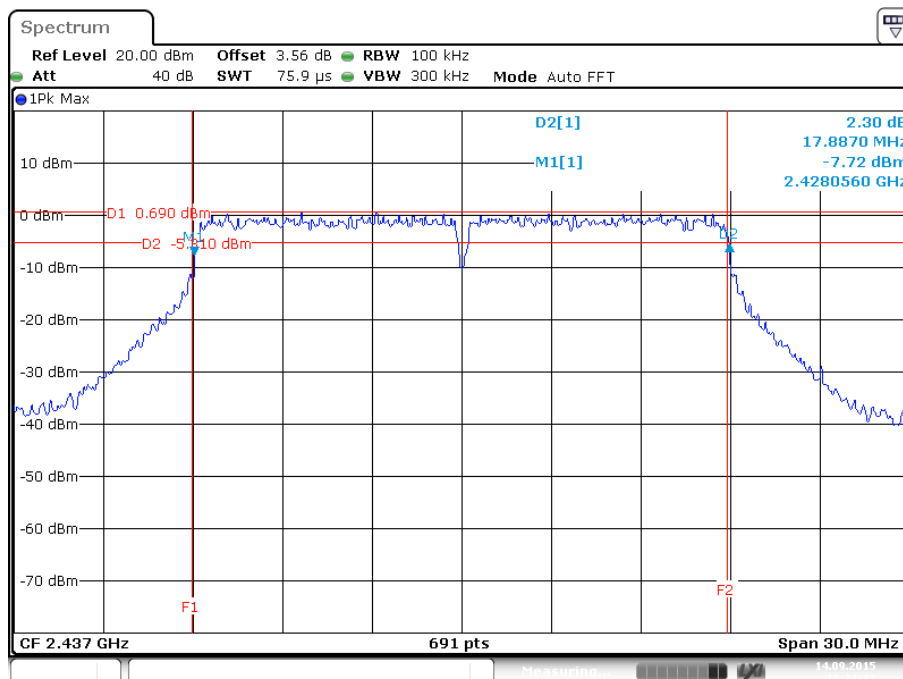
Test Plot of 6dB Bandwidth, 802.11n(HT20)

Low channel:

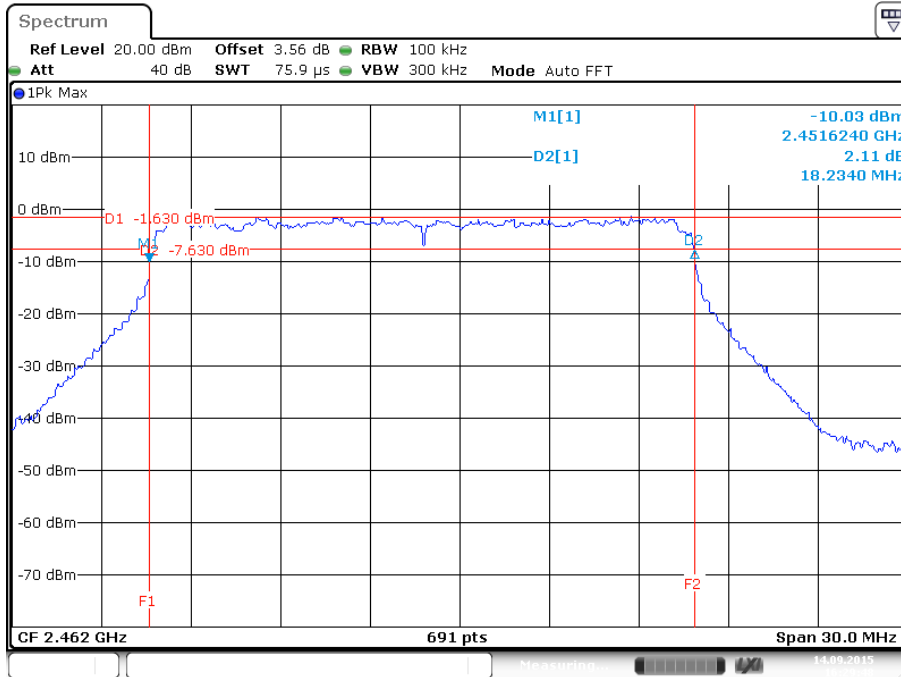
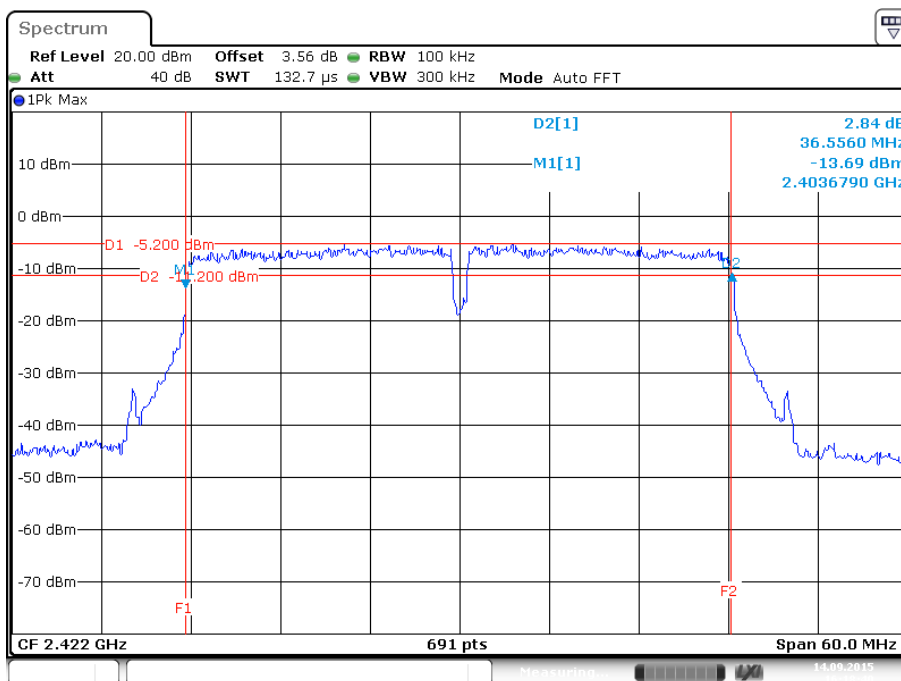


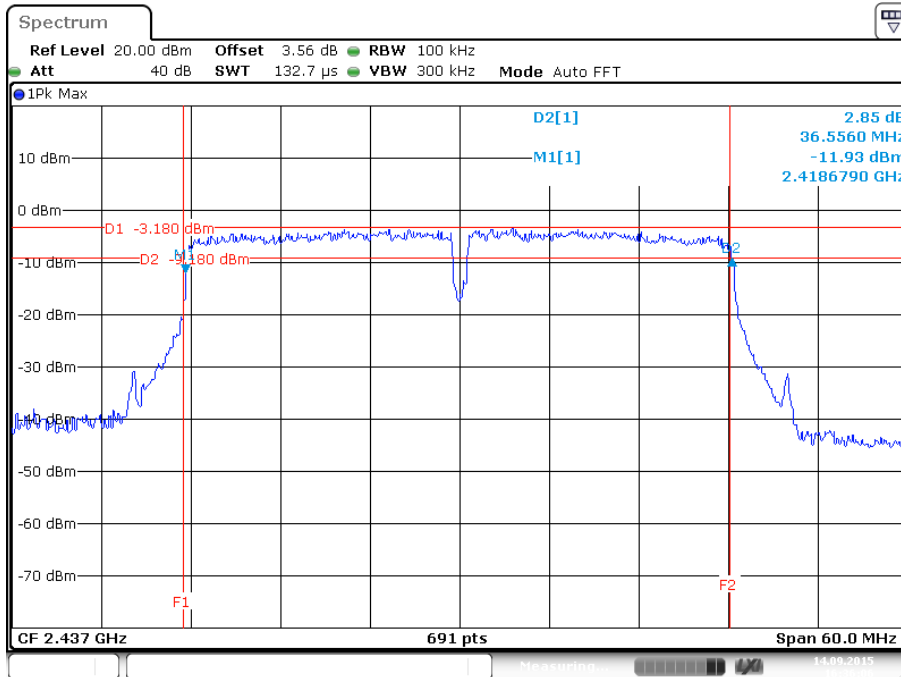
Date: 14.SEP.2015 16:16:43

Middle channel:

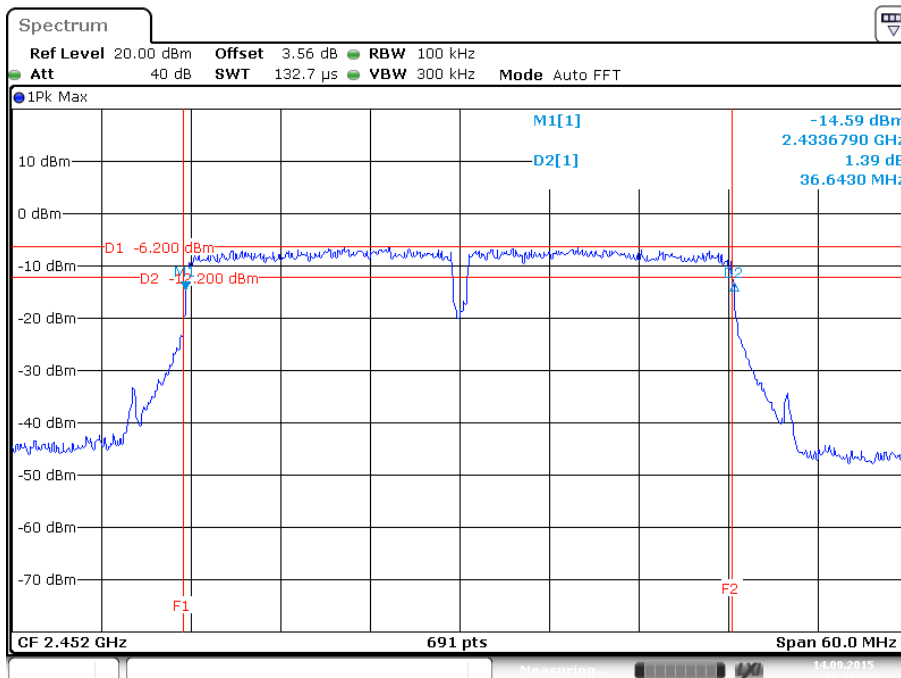


Date: 14.SEP.2015 16:31:11

High channel:

Test Plot of 6dB Bandwidth, 802.11n(HT40)
Low channel:


Middle channel:


Date: 14.SEP.2015 16:36:06

High channel:


Date: 14.SEP.2015 16:37:28

5.1.5 99% Bandwidth

RESULT:
Pass
Test Specification

Test standard : RSS-Gen Clause 6.6
 Basic standard : ANSI C63.10: 2013
 Kind of test site : Shielded Room

Test Setup

Date of testing : 14.09.2015
 Input voltage : DC 3.3V via Internal rechargeable lithium battery
 Operation mode : A.1
 Test channel : Low / Middle/ High
 Ambient temperature : 25°C
 Relative humidity : 56%
 Atmospheric pressure : 101 kPa

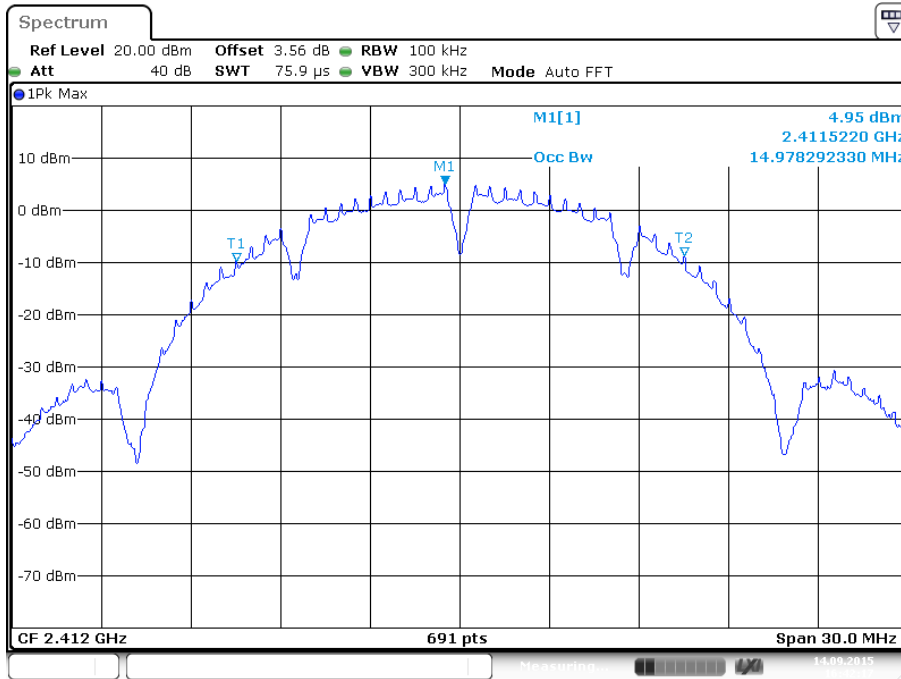
Table 7: Test Result of 99% Bandwidth

Mode	Data Rate	Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)
802.11b	11 Mbps	2412	1497.83	/
		2437	1497.83	
		2462	1506.51	
802.11g	54 Mbps	2412	1654.12	
		2437	1654.12	
		2462	1693.20	
802.11n (HT20)	MCS7 Mbps	2412	1775.69	
		2437	1775.69	
		2462	1780.03	
802.11n (HT40)	MCS7 Mbps	2422	3612.16	
		2437	3612.16	
		2452	3612.16	
Maximum Measured Value			3612.16	

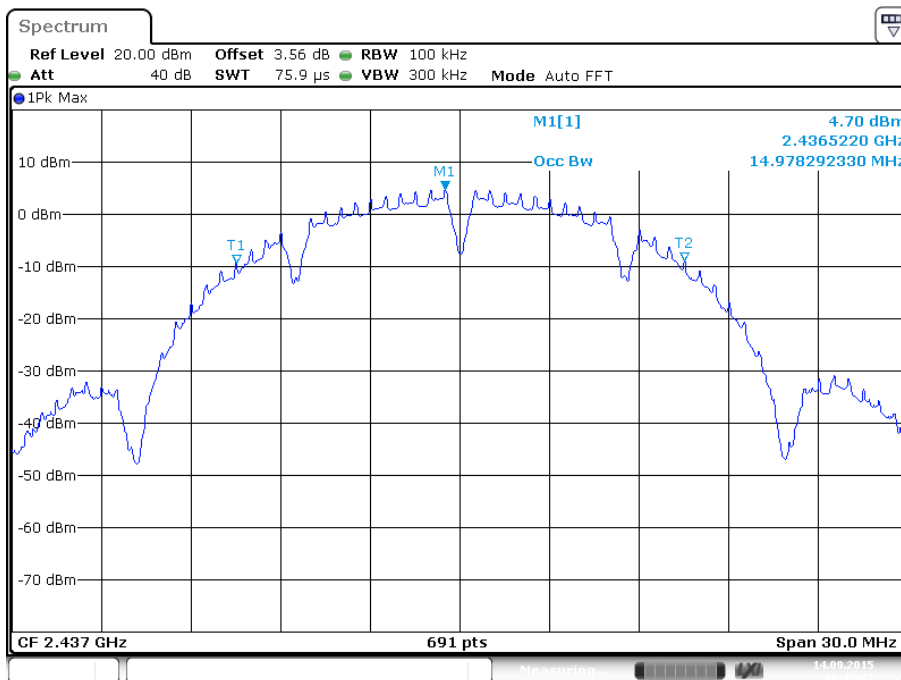
For the measurement records, refer to following test plot:

Test Plot of 99% Bandwidth, 802.11b

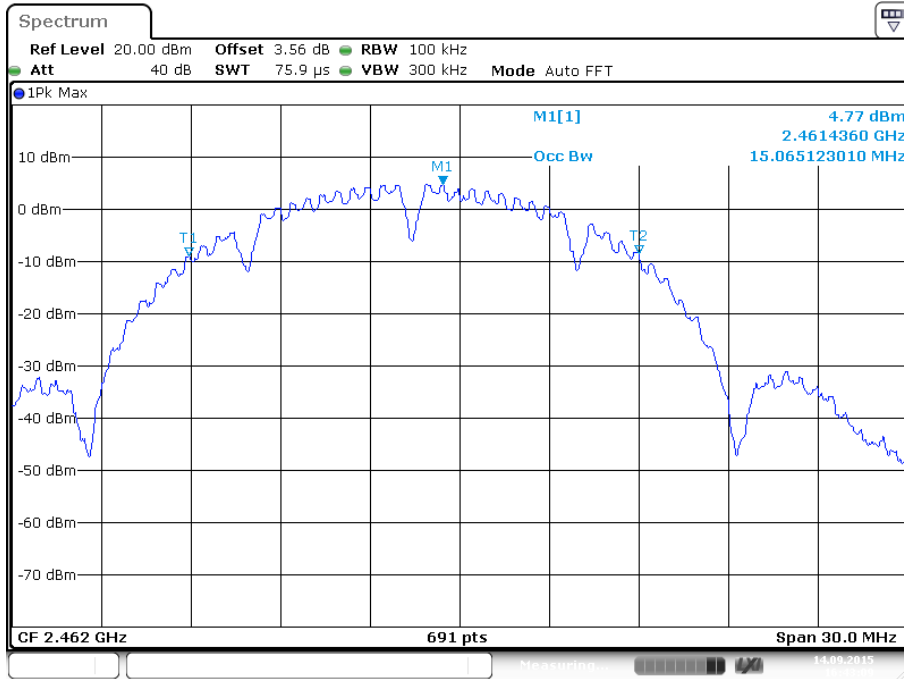
Low channel:



Middle channel:



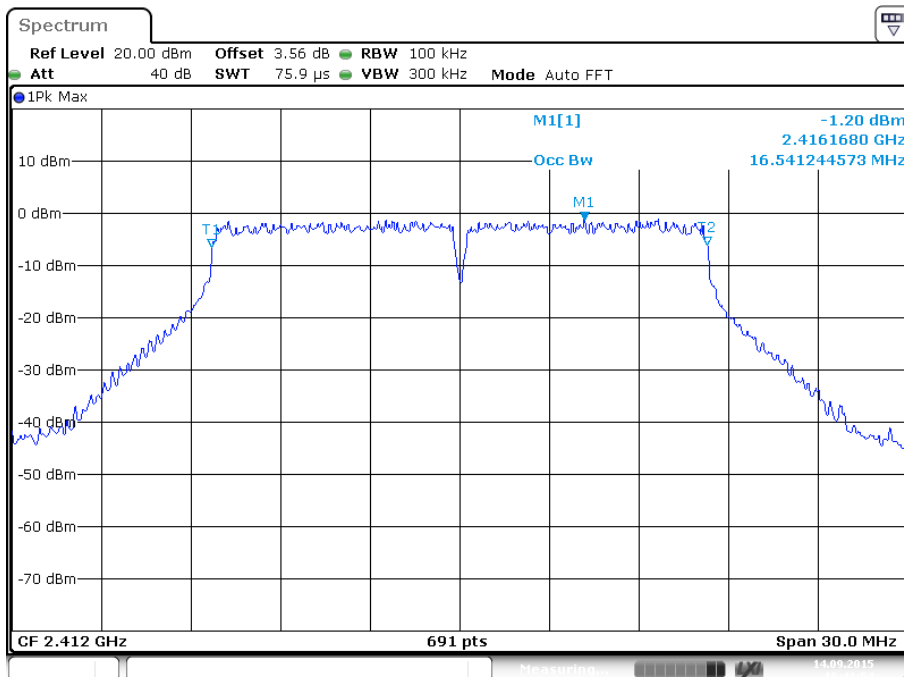
High channel:



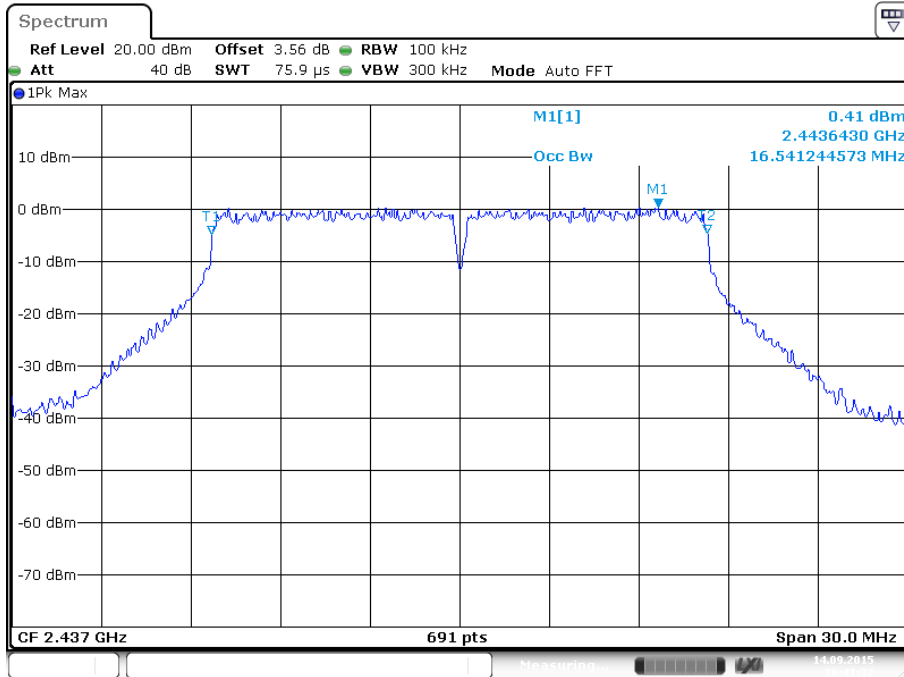
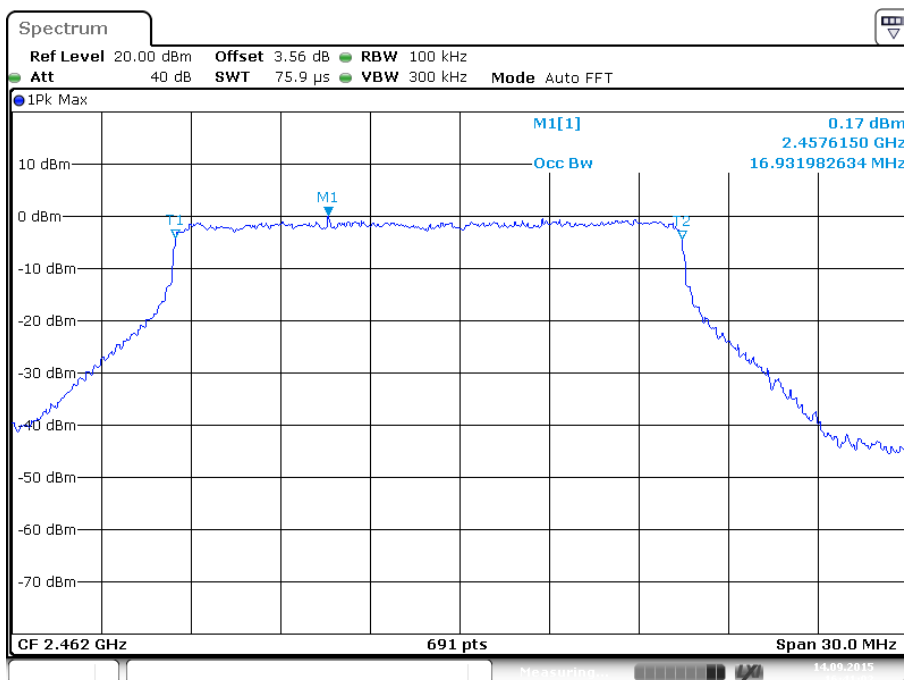
Date: 14.SEP.2015 16:43:09

Test Plot of 99% Bandwidth, 802.11g

Low channel:

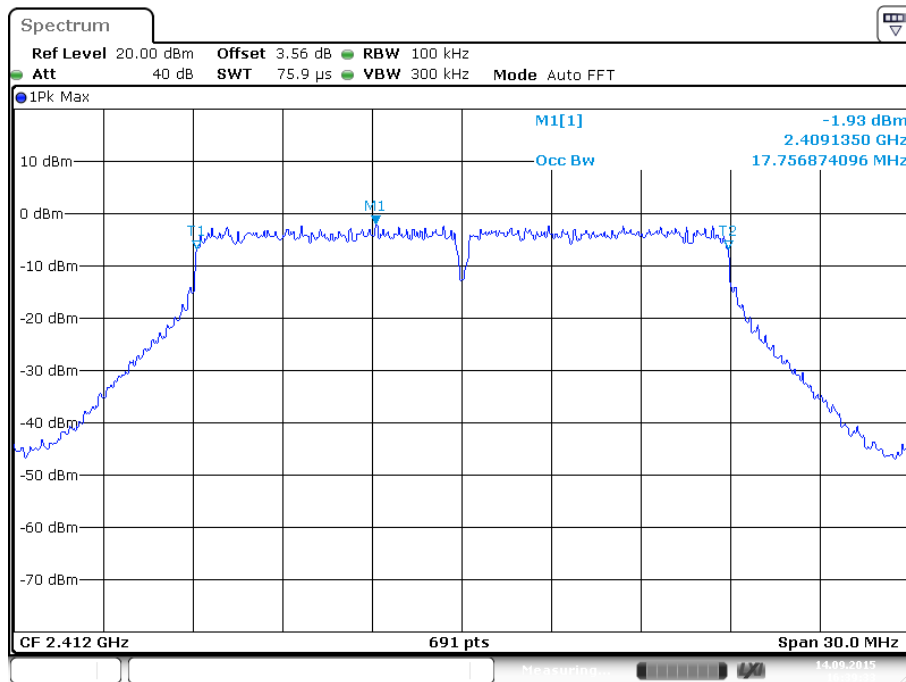


Date: 14.SEP.2015 16:41:54

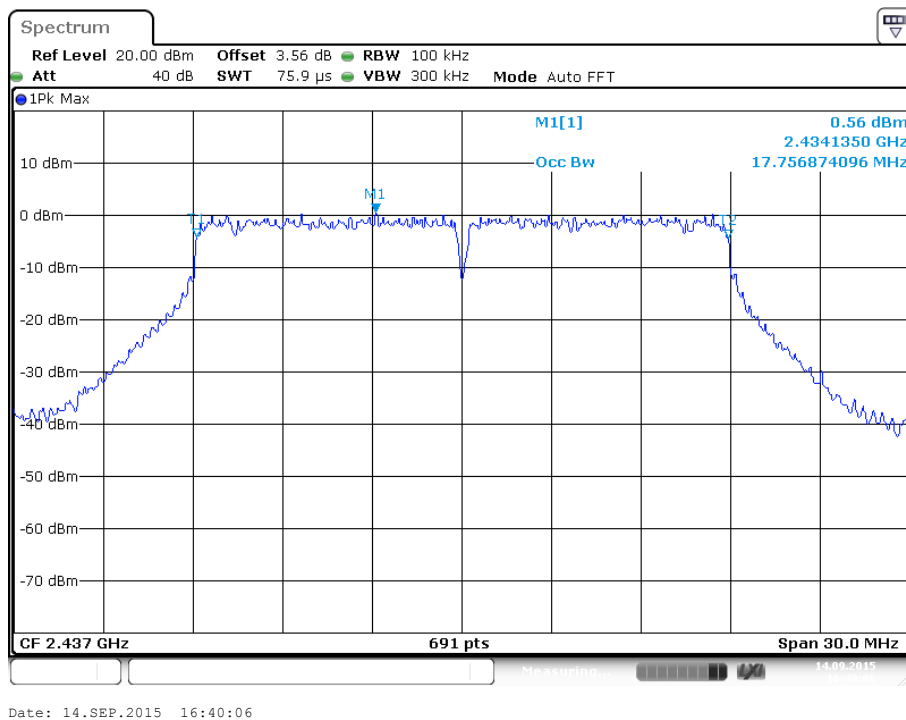
Middle channel:

High channel:


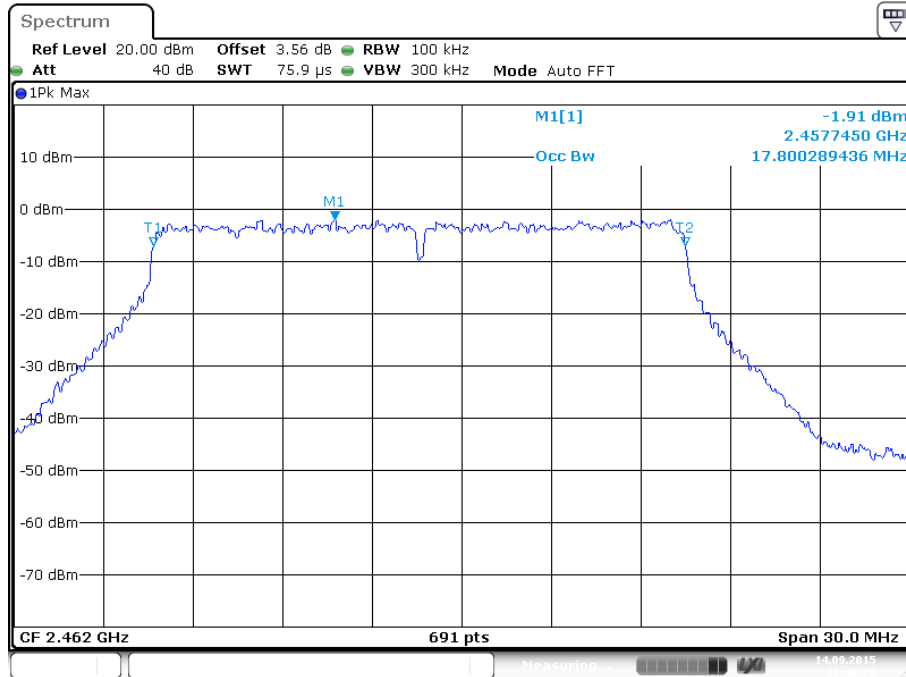
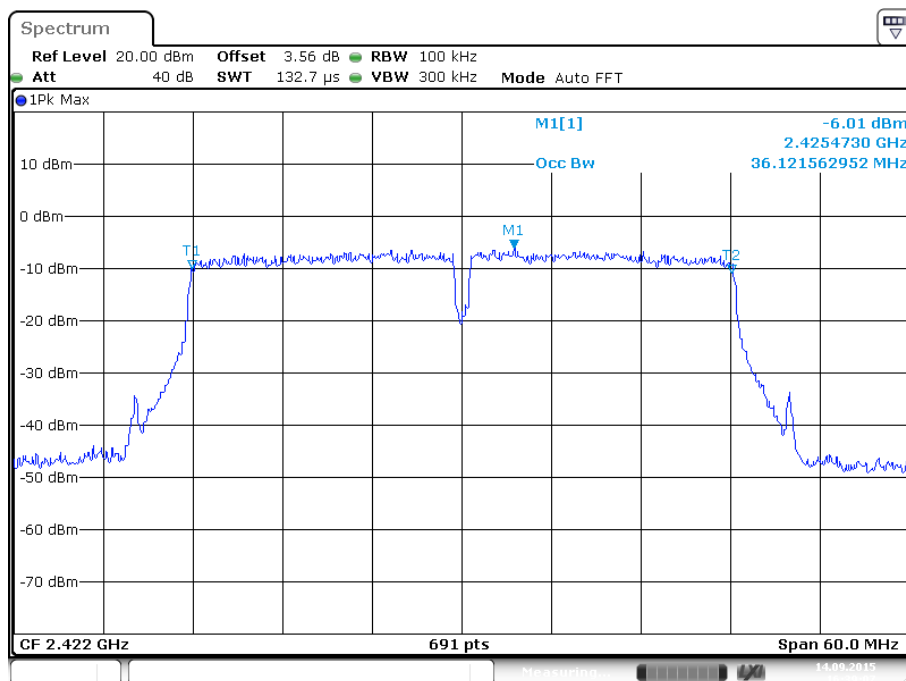
Test Plot of 99% Bandwidth, 802.11n(HT20)

Low channel:

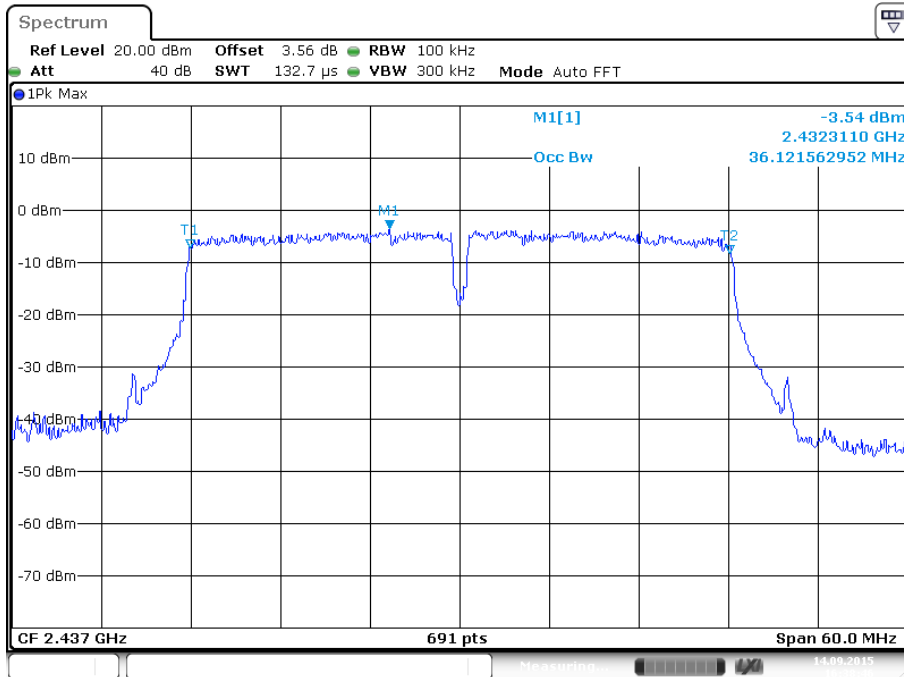


Middle channel:



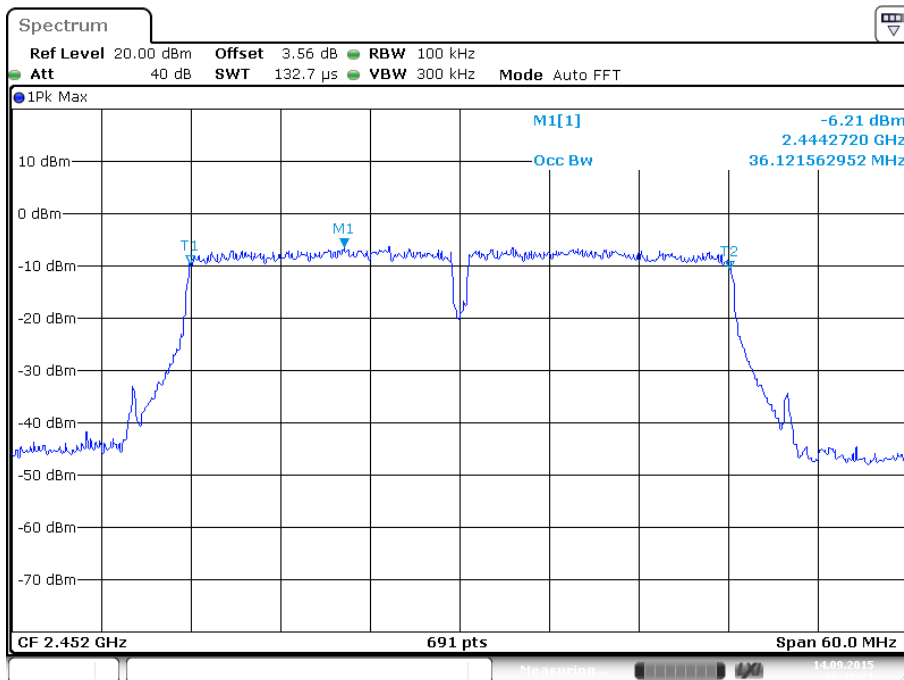
High channel:

Test Plot of 99% Bandwidth, 802.11n(HT40)
Low channel:


Middle channel:



Date: 14.SEP.2015 16:38:46

High channel:



Date: 14.SEP.2015 16:38:21

5.1.6 Conducted Spurious Emissions Measured in 100 kHz Bandwidth

RESULT: **Pass**

Test Specification

Test standard	: FCC Part 15.247(d) RSS-247 Clause 5.5
Basic standard	: ANSI C63.10: 2013
Limits	: 20dB (below that in the 100kHz bandwidth within the band that contains the highest level of the desired power); In addition, radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits specified in 15.209(a)
Kind of test site	: Shielded Room

Test Setup

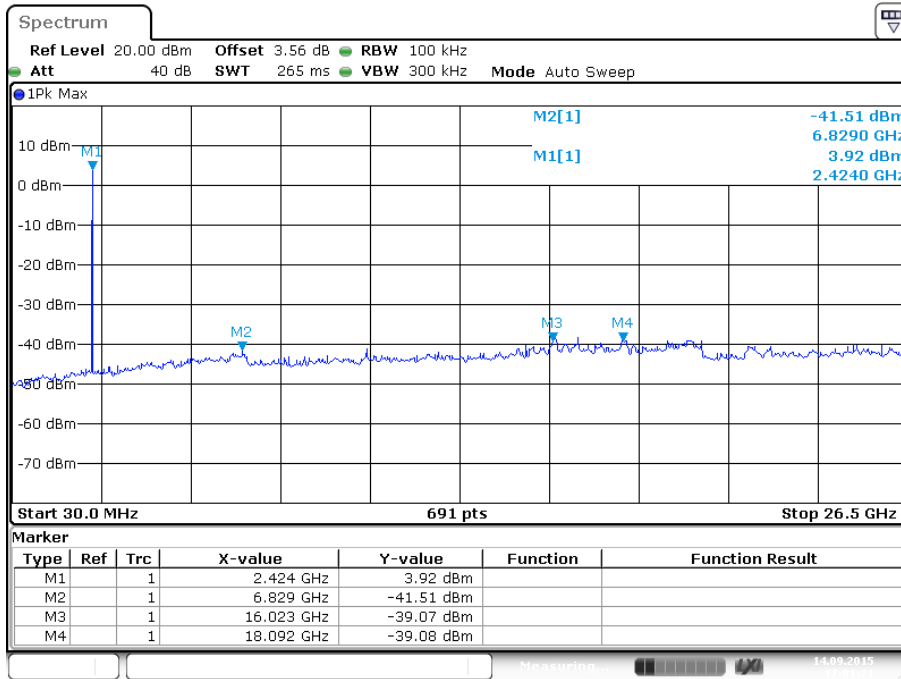
Date of testing	: 15.09.2015
Input voltage	: DC 3.3V via Internal rechargeable lithium battery
Operation mode	: A.1
Test channel	: Low / Middle/ High
Ambient temperature	: 25°C
Relative humidity	: 56%
Atmospheric pressure	: 101 kPa

All emissions are more than 20dB below fundamental, compliance is achieved as well.

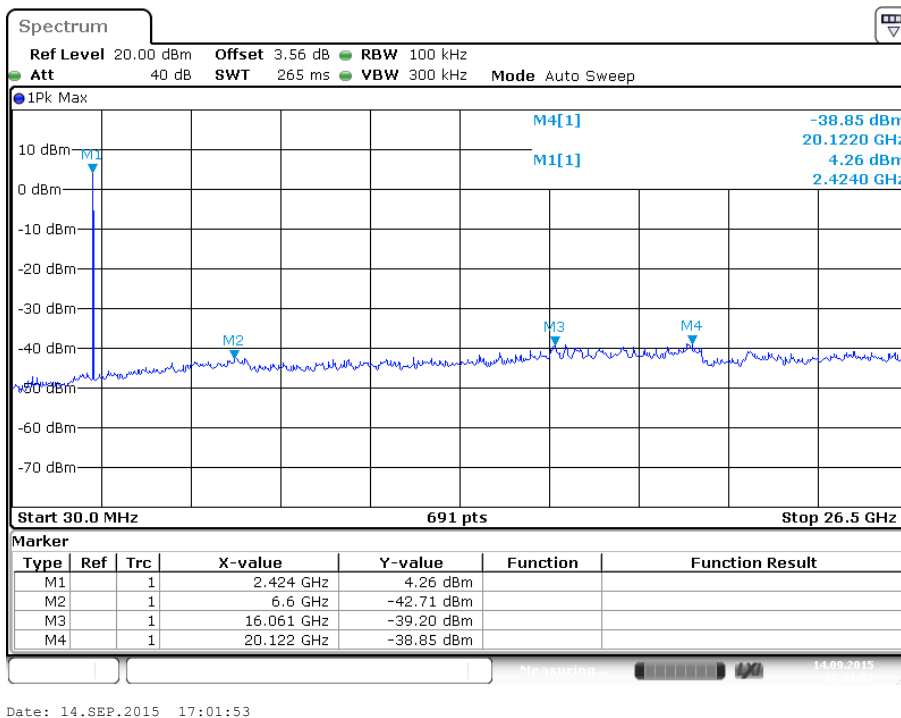
For the measurement records, refer to following test plot:

Test Plot of Conducted Spurious Emissions Measured in 100kHz Bandwidth, 802.11b

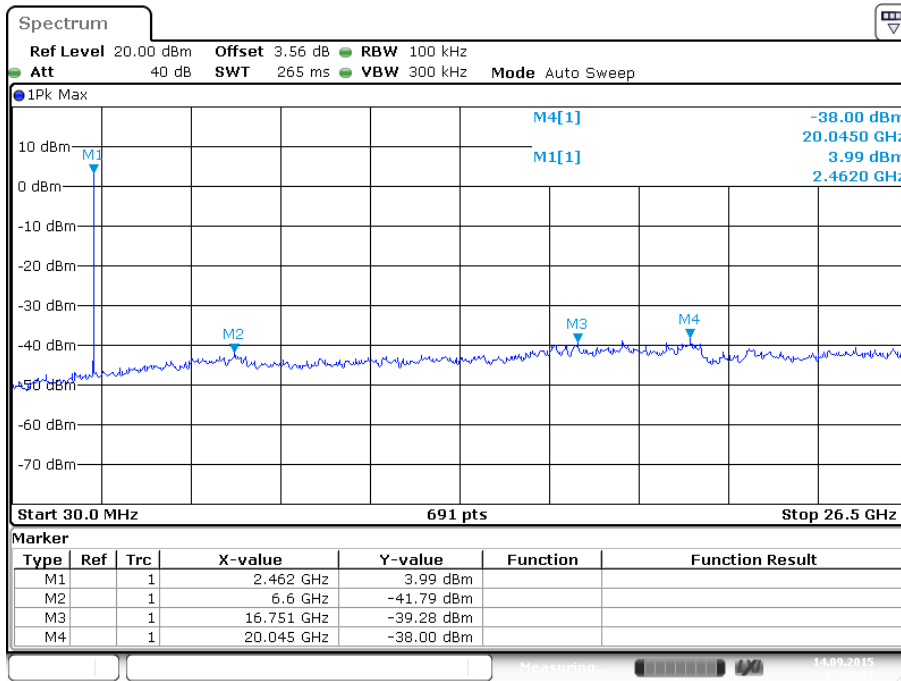
Low channel:



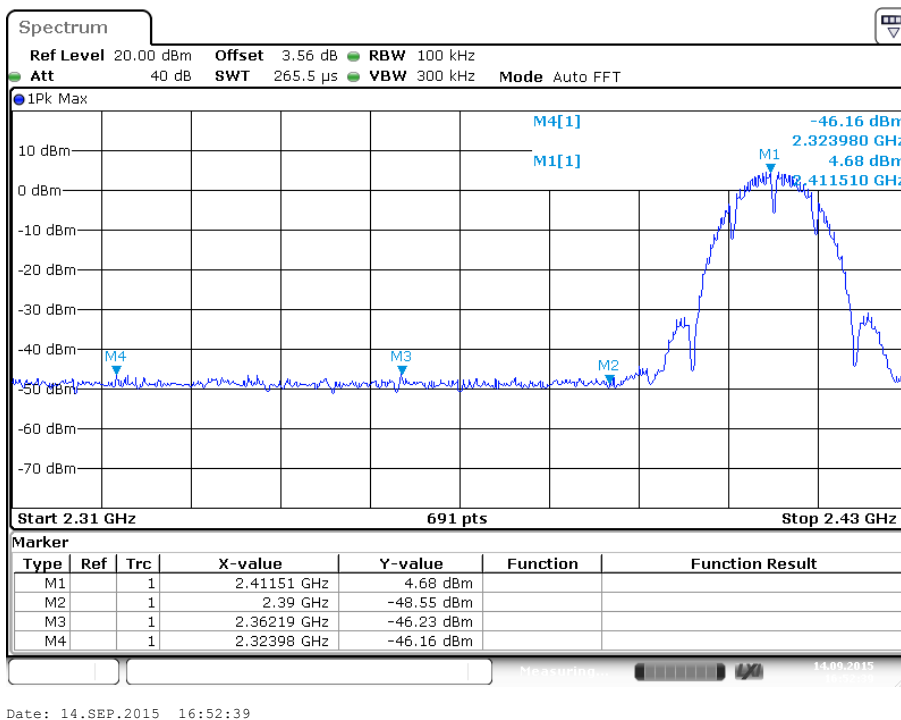
Middle channel:



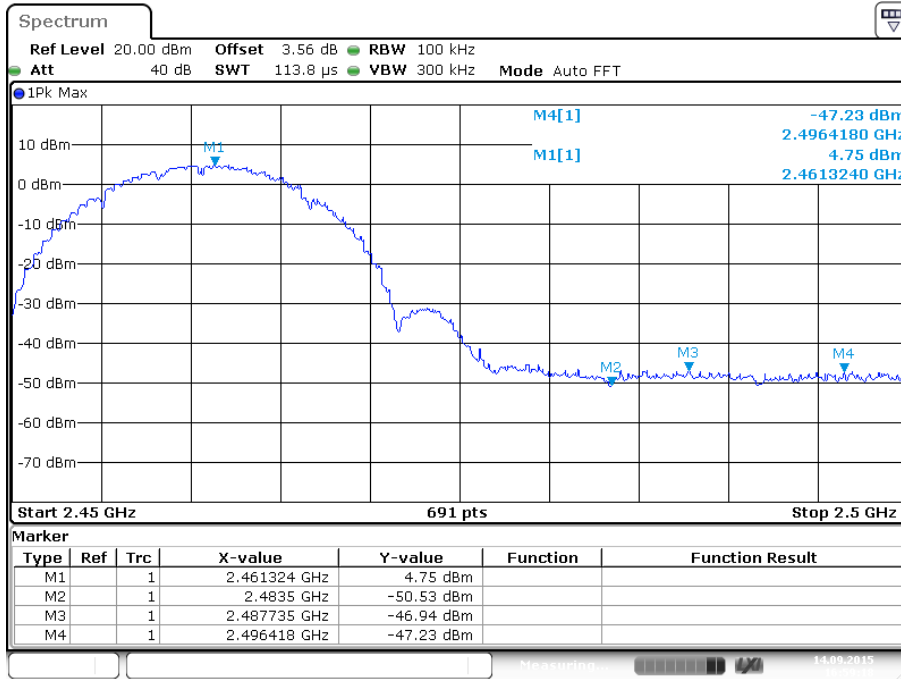
High channel:


Test Plot of 100 kHz Bandwidth of Frequency Band Edge

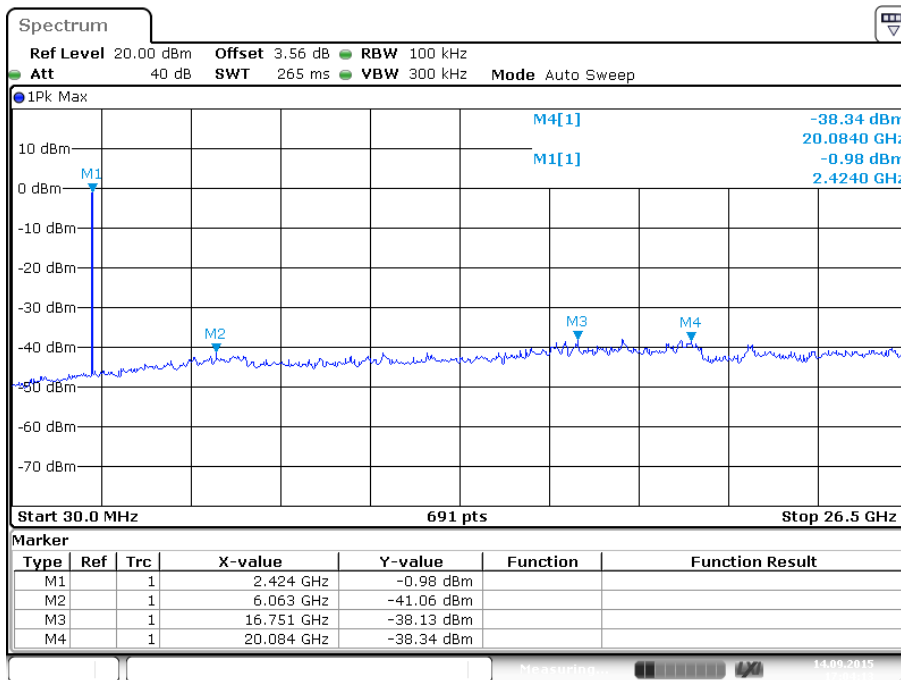
Low channel:



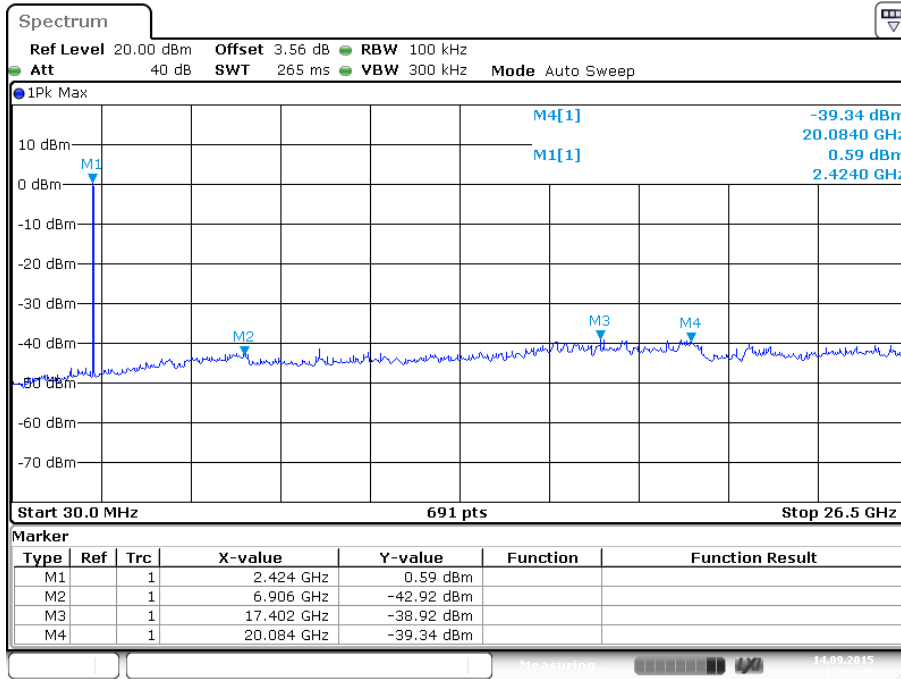
High channel:


Test Plot of Conducted Spurious Emissions Measured in 100kHz Bandwidth, 802.11g

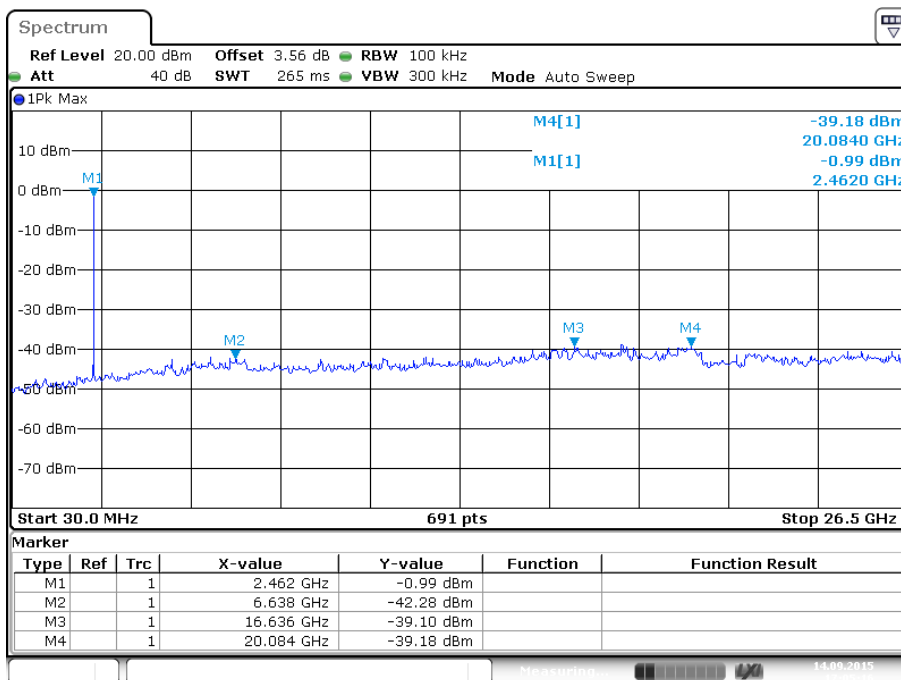
Low channel:



Middle channel:

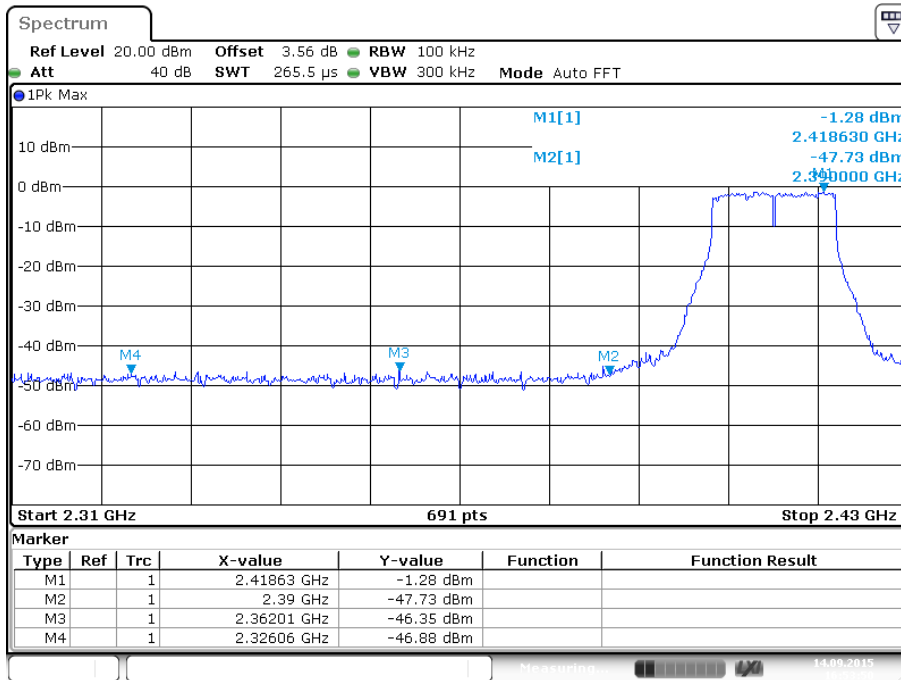


High channel:

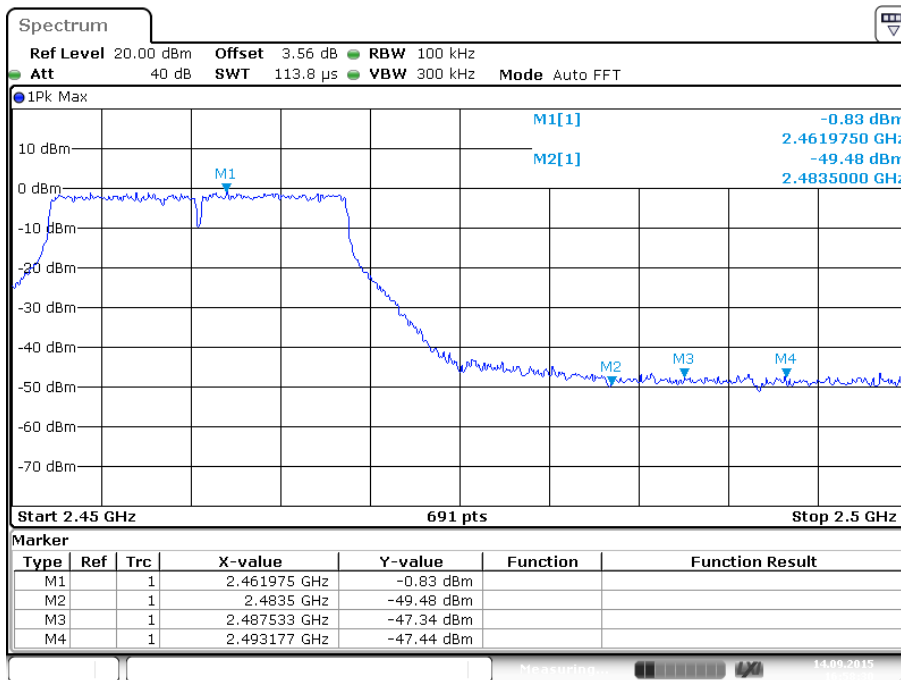


Test Plot of 100 kHz Bandwidth of Frequency Band Edge

Low channel:

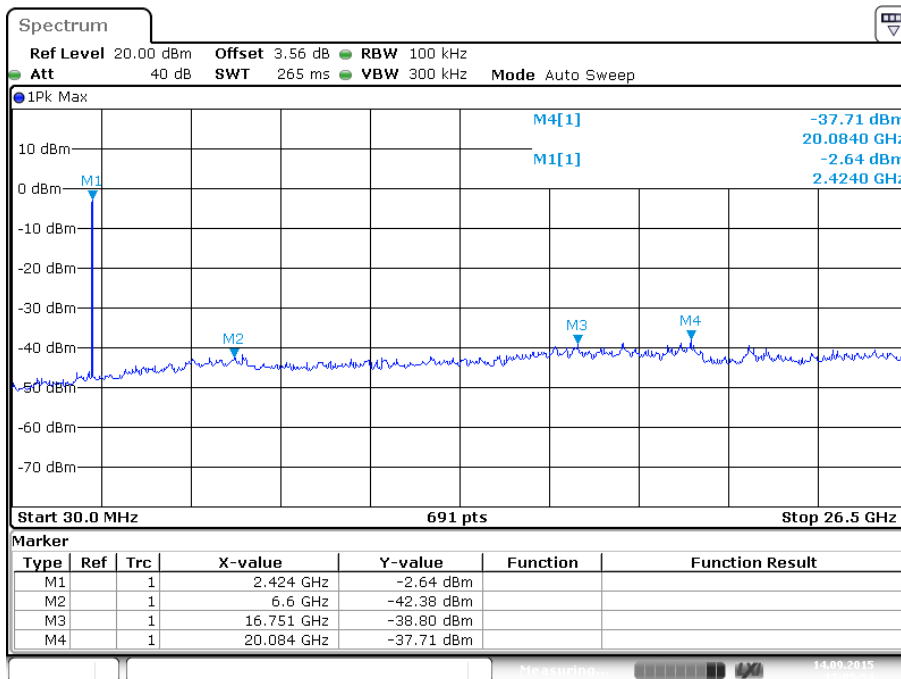


High channel:

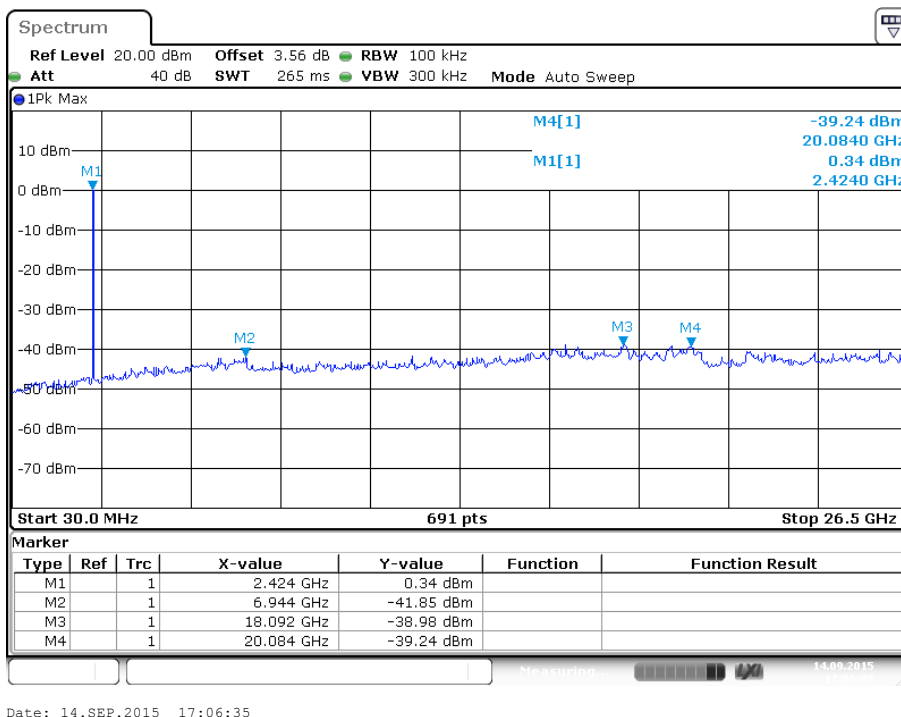


Test Plot of Conducted Spurious Emissions Measured in 100kHz Bandwidth, 802.11n(HT20)

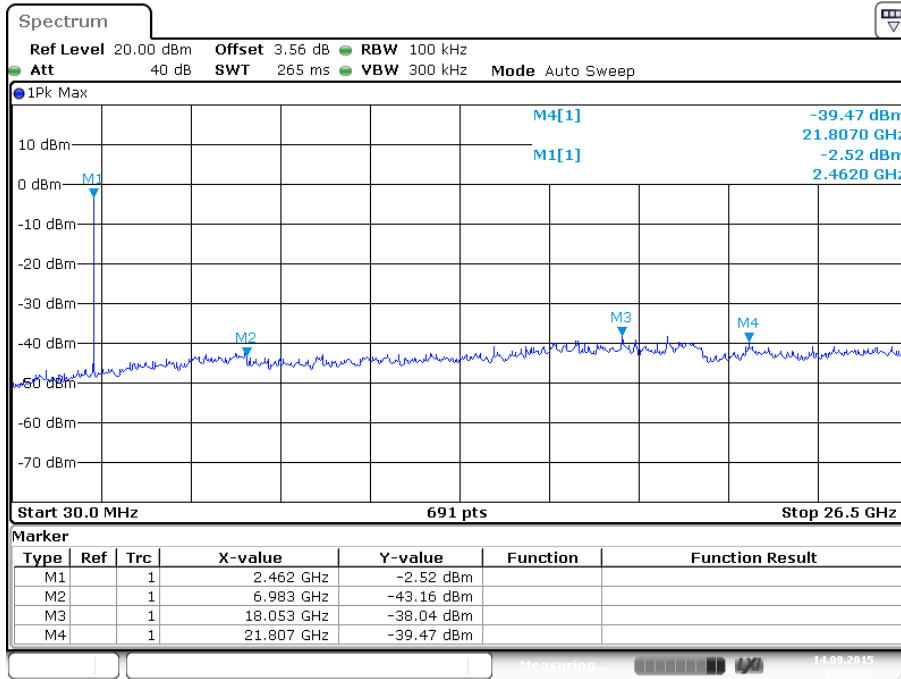
Low channel:



Middle channel:



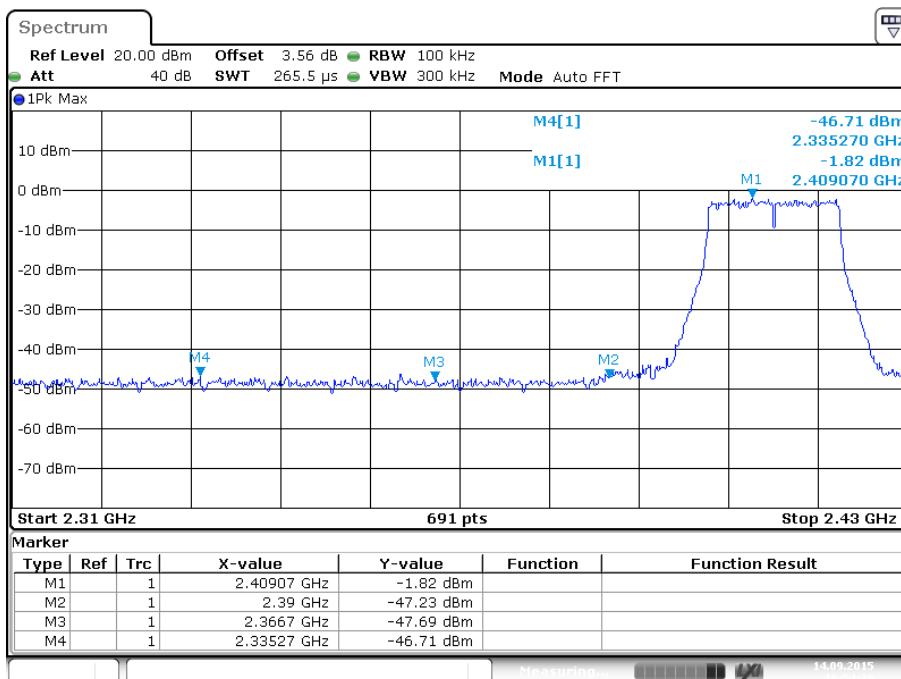
High channel:



Date: 14.SEP.2015 17:07:02

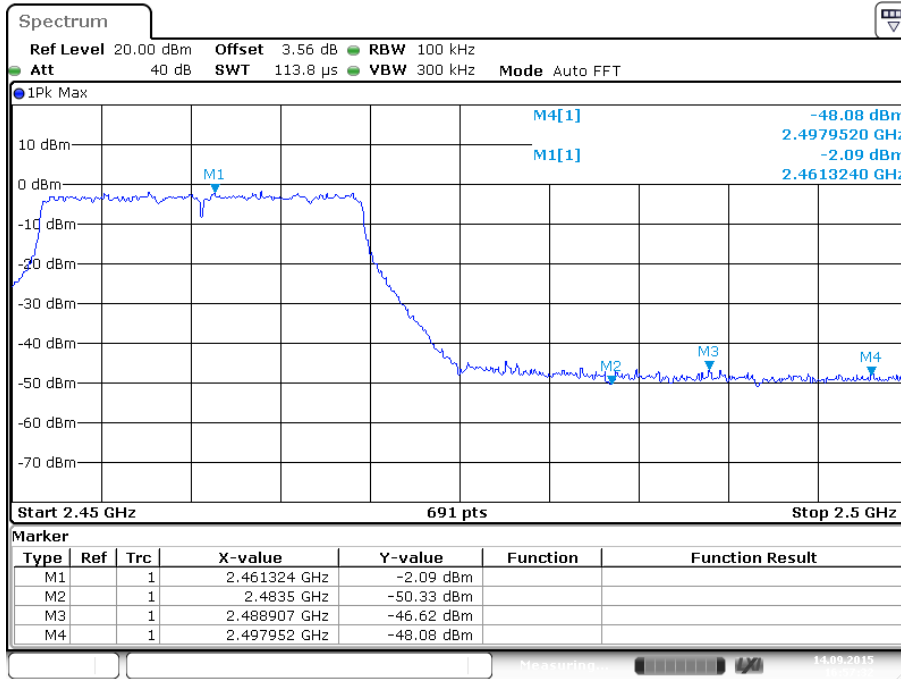
Test Plot of 100 kHz Bandwidth of Frequency Band Edge

Low channel:



Date: 14.SEP.2015 16:54:40

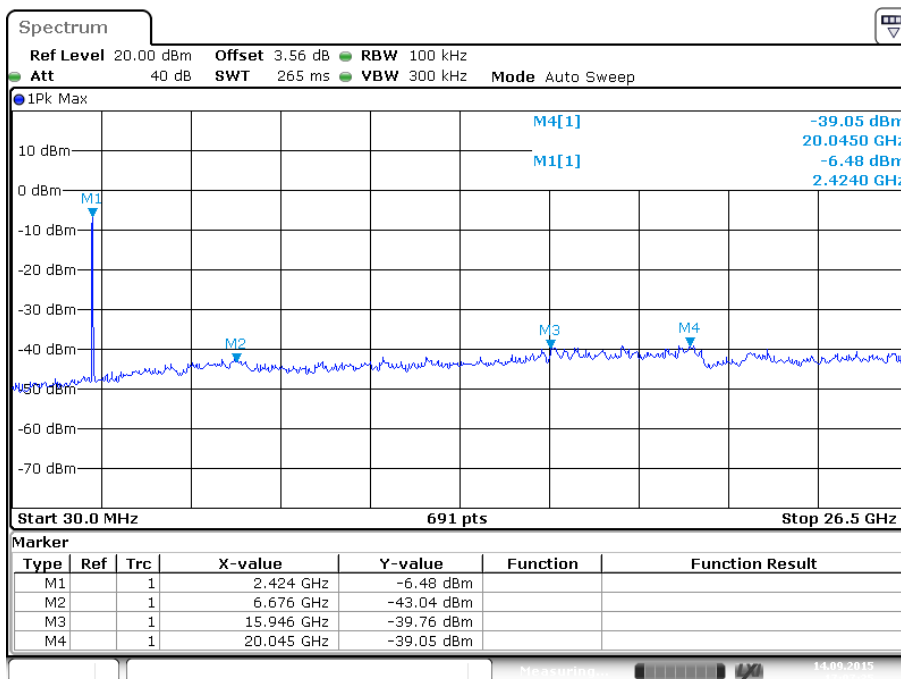
High channel:



Date: 14.SEP.2015 16:57:32

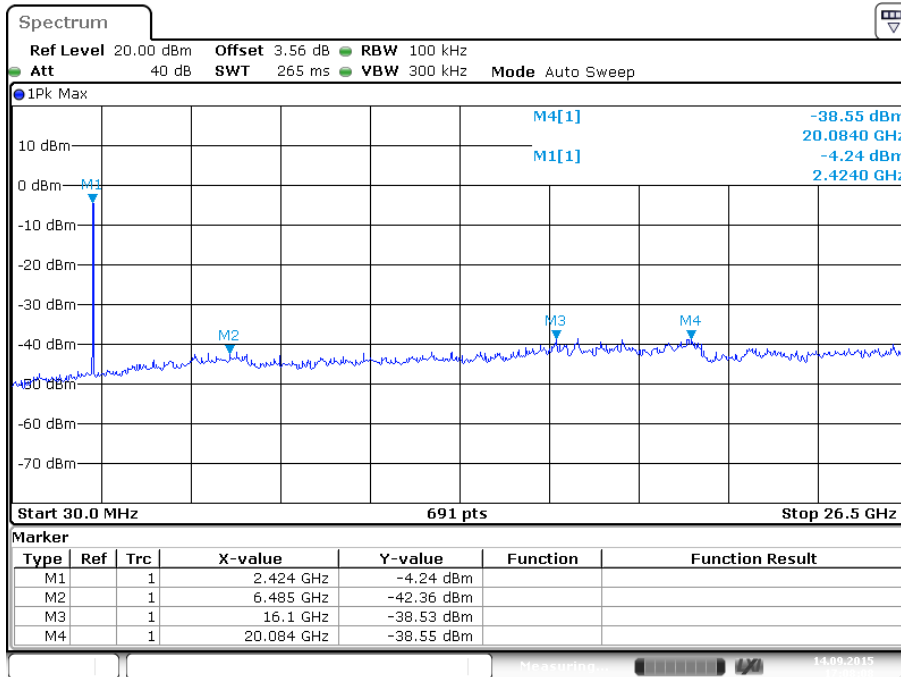
Test Plot of Conducted Spurious Emissions Measured in 100kHz Bandwidth, 802.11n(HT40)

Low channel:



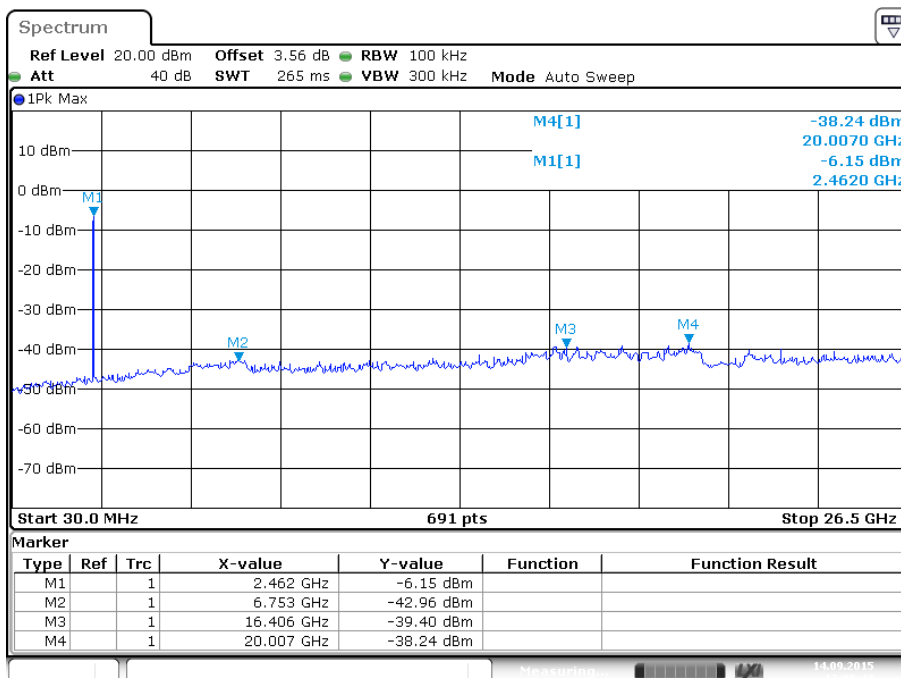
Date: 14.SEP.2015 17:07:35

Middle channel:



Date: 14.SEP.2015 17:08:08

High channel:



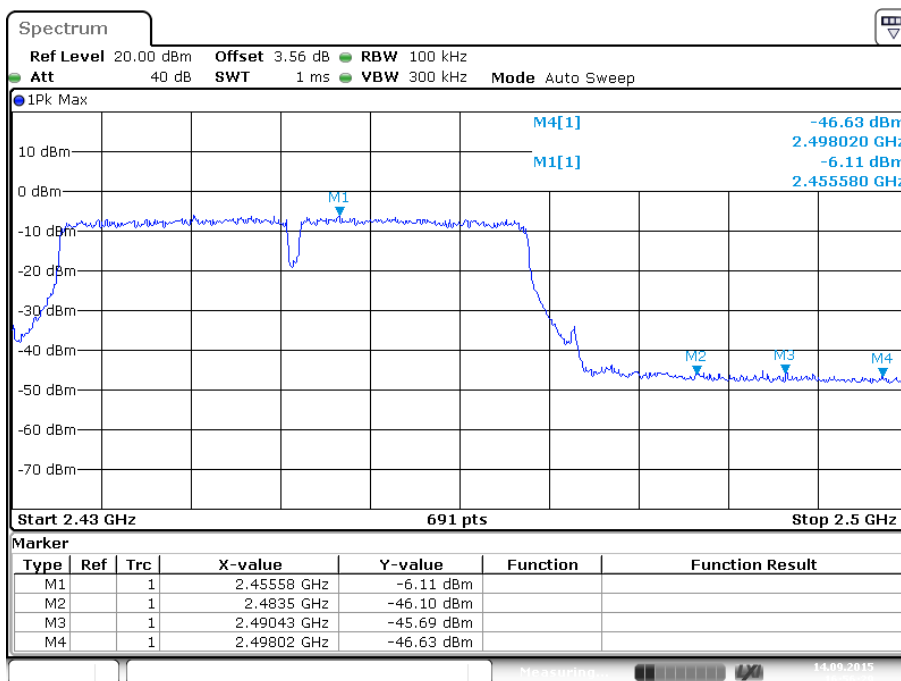
Date: 14.SEP.2015 17:08:43

Test Plot of 100 kHz Bandwidth of Frequency Band Edge

Low channel:



High channel:



5.1.7 Radiated Spurious Emission

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.247(d), FCC Part 15.205 RSS-247 Clause 3.3
Basic standard	: ANSI C63.10: 2013
Limits	: Refer to 15.209(a) of FCC part 15.247(d) RSS-Gen Table 4
Kind of test site	: 3m Semi-anechoic Chamber

Test Setup

Date of testing	: 22.09.2015
Input voltage	: AC 120V 60Hz via AC/DC adapter
Operation mode	: A.1
Test channel	: Low / Middle/ High
Ambient temperature	: 25°C
Relative humidity	: 56%
Atmospheric pressure	: 101 kPa

Remark:

During the pretest the EUT was rotated through three orthogonal axes to determine the attitude that maximizes the emissions. After that the EUT was manually handled to find the orientation that has the maximum emission, which is the orientation shown in the test set-up photos.

Testing was carried out within frequency range 9kHz to the tenth harmonics.

For the measurement records, refer to the appendix 1

5.1.8 Conducted Emissions

RESULT:**Pass****Test Specification**

Test standard	: FCC Part 15.207(a) RSS-Gen Clause 8.8
Basic standard	: ANSI C63.10: 2013
Frequency range	: 0.15 – 30MHz
Limits	: FCC Part 15.207(a) RSS-Gen Table 3
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 10.09.2015
Input voltage	: AC 120V 60Hz via AC/DC adapter
Operation mode	: B
Earthing	: Not connected
Ambient temperature	: 25°C
Relative humidity	: 56%
Atmospheric pressure	: 101 kPa

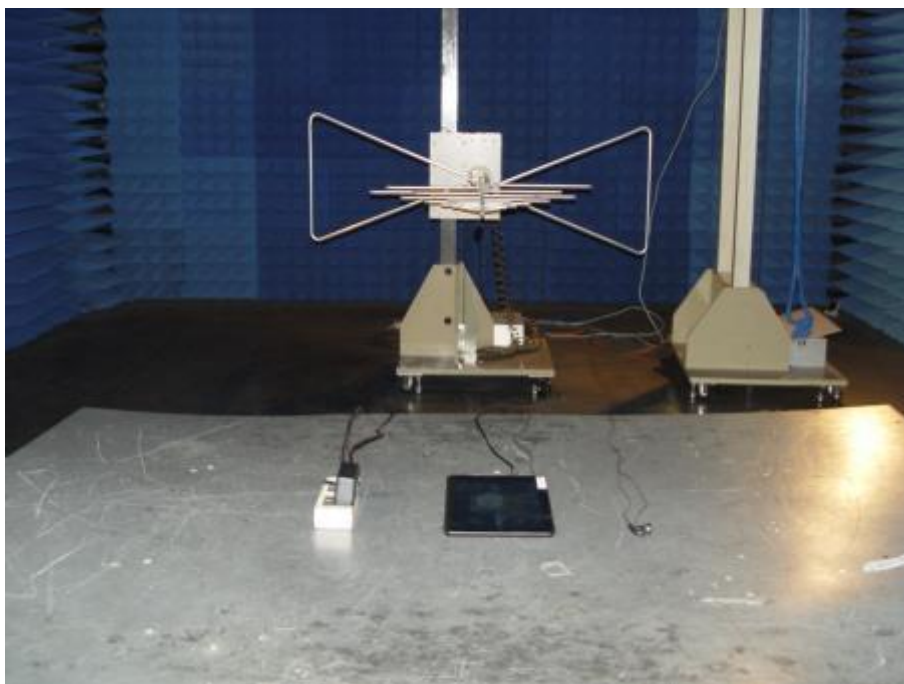
For the measurement records, refer to the appendix 1

6 Photographs of the Test Set-Up

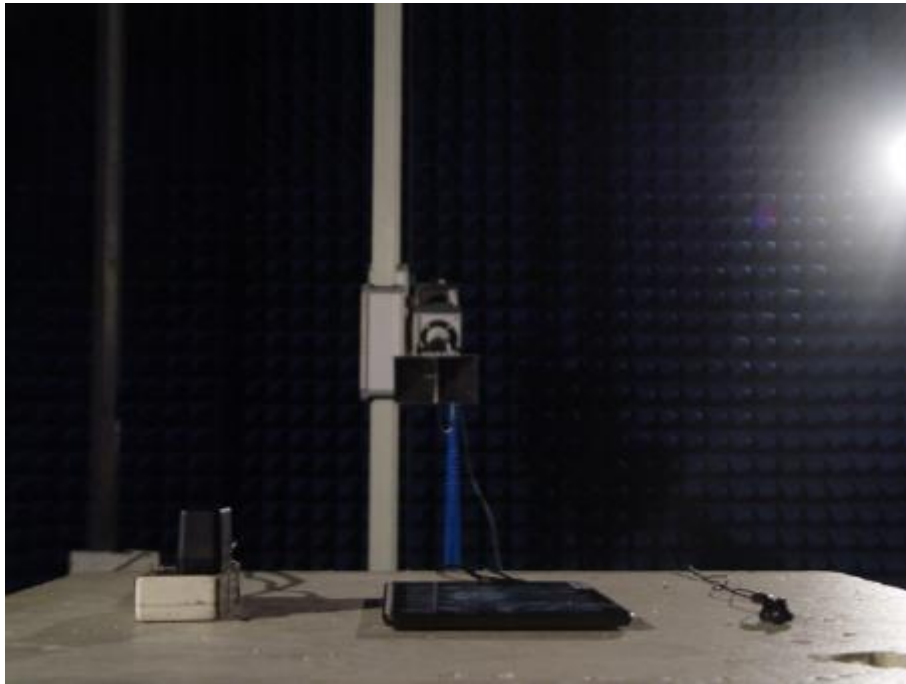
Photograph 1: Set-up for Radiated Spurious Emissions (9kHz - 30MHz)



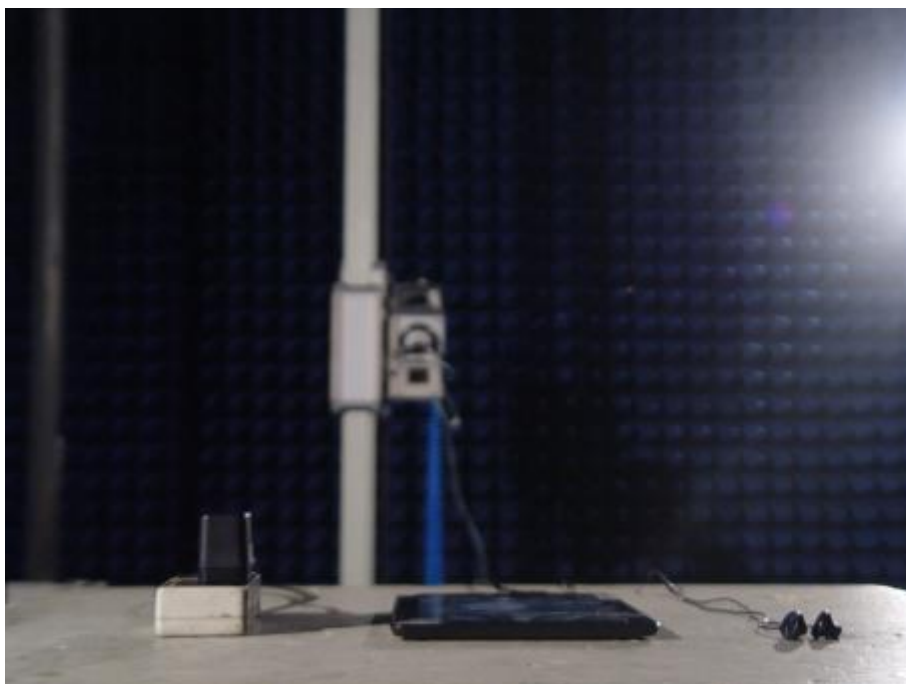
Photograph 2: Set-up for Radiated Spurious Emissions (30MHz-1GHz)



Photograph 3: Set-up for Radiated Spurious Emissions (1GHz ~ 18GHz)



Photograph 4: Set-up for Radiated Spurious Emissions (18GHz ~ 26GHz)



Photograph 5: Set-up for Conducted Emissions



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