

Prüfbericht-Nr.: Test report No.:	50072840 (		Auftrags-Nr.: Order No.:	164079332	Seite 1 von 32 Page 1 of 32
Kunden-Referenz-Nr Client reference No.:	:: N/A		Auftragsdatum: Order date.:	21.11.2016	
Auftraggeber: Client:		lectronics Internat Des Voeux Road V		n, Hong Kong	
Prüfgegenstand: Test item:	5" Video Ba	by Monitor With Wi-	Fi Internet Viewin	g (Baby Unit)	
Bezeichnung / Typ-N	Ir.: MBP855CC	NNECTBU			
Identification / Type N	o.: (Trade Marl	c: motorola)			
Auftrags-Inhalt: Order content:	FCC and IC	approval	-		
Prüfgrundlage:		Part 15: Subpart C		RSS-247 Issue 1	May 2015
Test specification:		Part 15: Subpart C		RSS-Gen Issue 4	
		Part 15: Subpart C Part 2: Section 2.1		RSS-102 Issue 5	
		Part 2: Section 2.1 Part 15: Subpart B		ICES-003 Issue 6	January 2016
		Part 15: Subpart B			
Wareneingangsdatur Date of receipt:					
Prüfmuster-Nr.:	A00045244	6-001 to	1		
Test sample No.:	A00045244	6-003			
Prüfzeitraum: Testing period:	20.12.2016	- 01.03.2017			
Ort der Prüfung: Place of testing:	Accurate Te	chnology Co., Ltd.	T Please	e refer to photo doc	uments
Prüflaboratorium: Testing laboratory:	TÜV Rheinl Co., Ltd.	and (Shenzhen)			
Prüfergebnis*: Test result*:	Pass				
geprüft von I tested b	py:		kontrolliert von	I reviewed by:	
/	Hed Can			Da	- las
03.03.2017	Alex Lan / Projec	t Engineer	03.03.2017	Owen Tian / Tech	nical Certifier
	ne/Stellung ne/Position	Unterschrift Signature	Datum Date	Name/Stellung Name/Position	Unterschrift Signature
Sonstiges / Other:		-			
FCC ID: VLJ-MBP88					
IC: 4522A-MBP88	HVIN: MBP855CC	NNECTBU			
Zustand des Prüfgeg Condition of the test ite		nlieferung:		ständig und unbeso	
Legende: 1 = sehr gut	2 = gut	3 = befriedigend		4 = ausreichend	5 = mangelhalt
	o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.	g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T ≈ nicht geteste
Legend: 1 = very good	2 = good	3 = satisfactory	and the state of t	4 = sufficient	5 = poor
	m. test specifications(s)	F(ail) = failed a.m. test spo if das o.g. Prüfmuste		N/A = not applicable	N/T = not tested
		n das o.g. Frumuste Dieser Bericht bered			
This test report only relate					

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.



**Products** 

Prüfbericht - Nr.: 50072840 001

Test Report No.

Seite 2 von 32 Page 2 of 32

# **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 20DB BANDWIDTH

RESULT: Pass

5.1.9 CARRIER FREQUENCY SEPARATION

RESULT: Pass

5.1.10 NUMBER OF HOPPING FREQUENCY

RESULT: Pass

5.1.11 TIME OF OCCUPANCY

RESULT: Pass

5.1.12 CONDUCTED EMISSION ON AC MAINS

RESULT: Pass

5.1.13 RADIATED EMISSION

RESULT: Pass

6.1.1 ELECTROMAGNETIC FIELDS

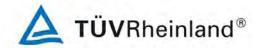
RESULT: Pass



50072840 001 Prüfbericht - Nr.: Test Report No.

Seite 3 von 32 Page 3 of 32

	Contents	
1	GENERAL REMARKS	5
1.1	COMPLEMENTARY MATERIALS	5
2	Test Sites	5
2.1	TEST FACILITIES	5
2.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS	6
2.3	Traceability	7
2.4	CALIBRATION	7
2.5	MEASUREMENT UNCERTAINTY	7
2.6	LOCATION OF ORIGINAL DATA	7
2.7	STATUS OF FACILITY USED FOR TESTING	7
3	GENERAL PRODUCT INFORMATION	8
3.1	PRODUCT FUNCTION AND INTENDED USE	8
3.2	RATINGS AND SYSTEM DETAILS	8
3.3	INDEPENDENT OPERATION MODES	11
3.4	NOISE GENERATING AND NOISE SUPPRESSING PARTS	11
3.5	SUBMITTED DOCUMENTS	11
4	TEST SET-UP AND OPERATION MODES	12
4.1	PRINCIPLE OF CONFIGURATION SELECTION	12
4.2	TEST OPERATION AND TEST SOFTWARE	12
4.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	12
4.4	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE	12
4.5	TEST SETUP DIAGRAM	13
5	Test Results	15
5.1	TRANSMITTER REQUIREMENT & TEST SUITES	
5.1 5.1		
5.1 5.1		
5.1		
5.1		
5.1		
5.1 5.1		
5. 1 5. 1		
5.1	7.10 Number of Hopping Frequency	
	7.11 Time of Occupancy	
	1.12 Conducted Emission on AC Mains	
6	SAFETY HUMAN EXPOSURE	30
6.1	RADIO FREQUENCY EXPOSURE COMPLIANCE	30
6.1		



**Products** 

	bericht - Nr.: Report No.	50072840 001	Seite 4 von 32 Page 4 of 32
7	PHOTOGRAPHS OF T	HE TEST SET-UP	32
8	LIST OF TABLES		32

# Products

Prüfbericht - Nr.:

50072840 001

Test Report No.

Seite 5 von 32 Page 5 of 32

### 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: Photographs of the Test Set-up

Appendix B: Test Results of Conducted Testing

Appendix C: Test Results of Radiated Testing

### 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, 518057, 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.



Products

Prüfbericht - Nr.: 50072840 001

Test Report No.

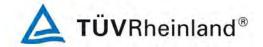
Seite 6 von 32 Page 6 of 32

# 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	FSV40	101495	06.01.2018	
Open Switch and Control Unit	R&S	OSP120+OSP- B157	101244+100866	06.01.2018	
Spurious Emission					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until	
Spectrum Analyzer	R&S	FSV40	101495	06.01.2018	
Test Receiver	R&S	ESCS30	100307	06.01.2018	
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	09.01.2018	
Loop Antenna	Schwarzbeck	FMZB1516	1516131	09.01.2018	
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	09.01.2018	
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	09.01.2018	
RF Switching Unit+PreAMP	Compliance Direction	RSU-M2	38322	06.01.2018	
Pre-Amplifier	R&S	CBLU11835 40-01	3791	06.01.2018	
50 Coaxial Switch	Anritsu Corp	MP59B	6200506474	06.01.2018	
RF Coaxial Cable	SUHNER	N-3m	No.8	06.01.2018	
RF Coaxial Cable	RESENBERGER	N-3.5m	No.9	06.01.2018	
RF Coaxial Cable	SUHNER	N-6m	No.10	06.01.2018	
RF Coaxial Cable	RESENBERGER	N-12m	No.11	06.01.2018	
RF Coaxial Cable	RESENBERGER	N-0.5m	No.12	06.01.2018	
Conducted Emission on AC Mains					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Until	
Test Receiver	R&S	ESCS30	100307	06.01.2018	
L.I.S.N.	Schwarzbeck	NLSK8126	8126431	06.01.2018	
50Ω Coaxial Switch	Anritsu	MP59B	6100175589	06.01.2018	



 Prüfbericht - Nr.:
 50072840 001
 Seite 7 von 32

 Test Report No.
 Page 7 of 32

### 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 basics 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.

Item		Extended Uncertainty
Conducted Emission		± 3.0 dB
Radiated Emission (30-1000MHz)	Field strength (dBµV/m)	± 6.0 dB
Radiated Emission (above 1000MHz)	Field strength (dBµV/m)	± 6.0 dB
Radio Spectrum		± 1.5 dB

### 2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B & C 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 Material Port Keyuan Rd., Science & Industry Park, Nanshan Shenzhen, 518057, P.R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

# Products

 Prüfbericht - Nr.:
 50072840 001
 Seite 8 von 32

 Test Report No.
 Page 8 of 32

### 3 General Product Information

### 3.1 Product Function and Intended Use

The EUT is a 5" Video Baby Monitor With Wi-Fi Internet Viewing system which contains baby unit and parent unit, the baby unit supports Wi-Fi 802.11 b/g/n and general 2.4GHz wireless technologies, and the parent unit only supports general 2.4GHz wireless technology.

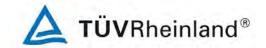
This report is for approval of baby unit, the shared parent unit has been approved in TÜV Rheinland report 50061259 001.

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

### 3.2 Ratings and System Details

**Table 2: Technical Specification of EUT** 

General Information of EUT	Value
Kind of Equipment	5" Video Baby Monitor With Wi-Fi Internet Viewing (Baby Unit)
Type Designation	MBP855CONNECTBU
Trade Mark	motorola
FCC ID	VLJ-MBP88
IC	4522A-MBP88
HVIN	MBP855CONNECTBU
Operating Voltage	DC 5.0V 1500mA input via AC/DC adapter
	DC 3.6V, 900mA via battery
Testing Voltage	AC 120V, 60Hz
AC/DC Adapter #1	Model: S012BEU0500150
	Input: AC 100-240V~50/60Hz, 500mA
	Output: DC 5.0V~1500mA
AC/DC Adapter #2	Model: BLJ06W050150P1-U
	Input: AC 100-240V~50/60Hz, 0.2A
	Output: DC 5.0V~1500mA
Battery #1	Model: AAA
	DC 3.6V, 900mAh Ni-MH battery
Battery #2	Model: GPRHCH93C021
	DC 3.6V, 900mAh Ni-MH battery
Battery #1 is the same as Battery	#2, only the manufactory and model number are different.
Technical Specification of general	ral 2.4GHz Wireless
Operating Frequency	2402 - 2477 MHz
Type of Modulation	GFSK
Channel Number	22 channels
Channel Separation	2 / 5 MHz
Antenna Type	Integral Antenna
Antenna Gain	0 dBi



 Prüfbericht - Nr.:
 50072840 001
 Seite 9 von 32

 Test Report No.
 Page 9 of 32

Technical Specification of Wi-Fi 802.11 b/g/n			
Operating Frequency	2412 - 2462 MHz for 802.11b/g/n(HT20)		
	2422 - 2452 MHz for 802.11n(HT40)		
Type of Modulation	DSSS(DBPSK/DQPSK/CCK)		
	OFDM(BPSK/QPSK/16QAM/64QAM)		
Data Rate	1/2/5.5/11 Mbps for 802.11b		
	6/9/12/18/24/36/48/54 Mbps for 802.11g		
	MCS0 ~ MCS7 for 802.11n		
Channel Number	11 channels for 802.11b/g/n(HT20)		
	7 channels for 802.11n(HT40)		
Channel Separation	5 MHz		
Antenna Type	Integral Antenna		
Gain	0 dBi		

Table 3: RF Channel and Frequency of General 2.4GHz Wireless

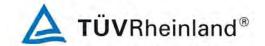
RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
CH02	2402	CH30	2430	CH67	2467
CH04	2404	CH35	2435	CH69	2469
CH06	2406	CH40	2440	CH71	2471
CH08	2408	CH45	2445	CH73	2473
CH10	2410	CH50	2450	CH75	2475
CH15	2415	CH55	2455	CH77	2477
CH20	2420	CH60	2460	1	/
CH25	2425	CH65	2465	1	1

Table 4: RF Channel and Frequency of Wi-Fi 802.11 b/g/n

RF Channel	802.11 b/g/n(HT20)	802.11 n(HT40)
Kr Chamilei	Frequency (MHz)	Frequency (MHz)
01	2412	1
02	2417	1
03	2422	2422
04	2427	2427
05	2432	2432
06	2437	2437
07	2442	2442
08	2447	2447
09	2452	2452
10	2457	1
11	2462	1

Test frequencies are lowest channel: 2412 MHz, middle channel: 2437 MHz and highest channel: 2462 MHz for 802.11b/g/n(HT20)

Test frequencies are lowest channel: 2422 MHz, middle channel: 2437 MHz and highest channel: 2452 MHz for 802.11n(HT40)



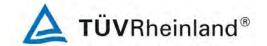
Products

Prüfbericht - Nr.: 50072840 001 Test Report No.

Seite 10 von 32 Page 10 of 32

**Table 5: Frequency Hopping Information** 

Technical Specification	Description
Hopping Sequence	Describe how the hopping sequence is generated. Provide an example of the hopping sequence channels, in order to demonstrate that the sequence meets the requirement specified in the definition of a frequency hopping spread spectrum system, found in Section 2.1. This system is controlled by microchip to generate Pseudorandom Frequency Hopping Sequence base on CCITT16 and distributed it over 22 hopping channels. The sequential hops are randomly distributed in both direction and magnitude of change in the hop set which meet the requirement specified in the definition of FCC part 2 section.1.
	Describe how each individual EUT meets the requirement that each of its hopping channels is used equally on average (e.g., that each new transmission event begins on the next channel in the hopping sequence after the final channel used in the previous transmission event). A single data frame is transmitted on each frequency location before skipping to the next hopping frequency in the list. So each hopping channels is used equally on average in long term.
	Describe how the associated receiver(s) complies with the requirement that its input bandwidth (either RF or IF) matches the bandwidth of the transmitted signal. Both receiver and transmitter are set to same bandwidth of 2MHz.
Receiver input bandwidth	Describe how the associated receiver(s) has the ability to shift frequencies in synchronization with the transmitted signals. Both transmitter and receiver will share the same device ID so the same sequence is generated for the communication. Moreover, the microchip has a clock recovery mechanism to synchronize the timing between the transmitter and receiver. With the same hopping sequence and timing, the receiver can shift frequencies in synchronization with the transmitted signals.



**Products** 

 Prüfbericht - Nr.:
 50072840 001
 Seite 11 von 32

 Test Report No.
 Page 11 of 32

# 3.3 Independent Operation Modes

The basic operation modes are:

- A. On, General 2.4GHz wireless transmitting
  - 1. Low channel
  - 2. Middle channel
  - 3. High channel
- B. On, Wi-Fi 802.11 b/g/n wireless transmitting
  - 1. Low channel
  - 2. Middle channel
  - 3. High channel
- C. On, General 2.4GHz wireless on hopping channel
- D. On, Normal operation with general 2.4GHz wireless
- E. On, Normal operation with Wi-Fi 802.11 b/g/n wireless
- F. On, Charging
- G. 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 Info
- 1 CC/1C Label and Location

- Operation Description

- Photo Document
- Schematics
- User Manual

 Prüfbericht - Nr.:
 50072840 001
 Seite 12 von 32

 Test Report No.
 Page 12 of 32

### 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. All testing were performed according to the procedures in ANSI C63.10: 2013 and ANSI C63.4: 2014.

According to clause 3.1, all tests were performed on model MBP855CONNECTBU in this report.

According to clause 3.2, Radio Spectrum and Radiated Spurious Emission tests were performed on model MBP855CONNECTBU with adapter #1 and battery # 1, and Conducted Emission tests were performed on model MBP855CONNECTBU with adapter #1, #2 and battery # 1 in this report.

### 4.3 Special Accessories and Auxiliary Equipment

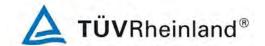
Table 6: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Notebook PC	Lenovo	4290-RT8	4290-RT8	N/A
5" Video Baby Monitor With Wi-Fi Internet Viewing (Parent Unit)	VTech (Dongguan) Telecommunications Ltd.	MBP855CONNECTPU	N/A	N/A

## 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).

Additional countermeasures to the submitted test sample(s) for Radiated Emission were employed to achieve compliance.



Prüfbericht - Nr.: 50072840 001

Test Report No.

Seite 13 von 32 Page 13 of 32

# 4.5 Test Setup Diagram

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

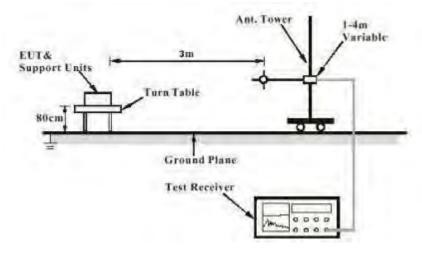
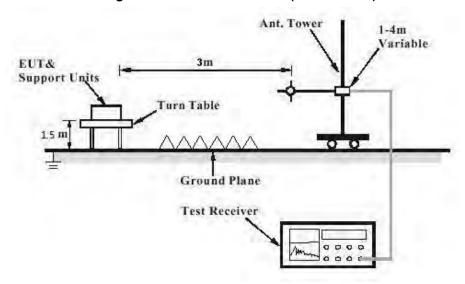
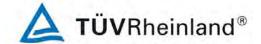


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)





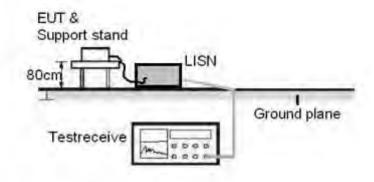
**Products** 

Test Report No.

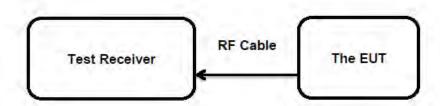
50072840 001 Prüfbericht - Nr.:

Seite 14 von 32 Page 14 of 32

#### **Diagram of Measurement Configuration for Mains Conduction Measurement**



#### **Diagram of Measurement Configuration for Conducted Transmitter Measurement**





**Products** 

Prüfbericht - Nr.: 50072840 001
Test Report No.

Seite 15 von 32 Page 15 of 32

### 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

Limit the use of antennas with directional gains that do not

exceed 6 dBi

According to the manufacturer declared, the EUT has an internal antenna, the directional gain of antenna is 0 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.

Refer to EUT Photo for further details.



**Products** 

 Prüfbericht - Nr.:
 50072840 001
 Seite 16 von 32

 Test Report No.
 Page 16 of 32

### **5.1.2 Maximum Peak Conducted Output Power**

RESULT: Pass

**Test Specification** 

Test standard : FCC Part 15.247(b)(1)&(3)

RSS-247 Clause 5.4(2)&(4)

Basic standard : ANSI C63.10: 2013

Limits : FHSS < 0.125 Watts, DSSS < 1.0 Watts

Kind of test site : Shielded Room

**Test Setup** 

Date of testing : Refer to test result Input voltage : AC 120V, 60Hz

Operation mode : A, B

Test channel : Low / Middle / High

Ambient temperature :  $25 \,^{\circ}\text{C}$  Relative humidity :  $56 \,^{\circ}\text{M}$  Atmospheric pressure :  $101 \,^{\circ}\text{kPa}$ 

For details refer to following test result.



# Products

Prüfbericht - Nr.: 500

50072840 001

Seite 17 von 32 Page 17 of 32

Test Report No.

Table 7: Test Result of Maximum Peak Conducted Output Power, General 2.4GHz

Test Mode	Frequency	Measured Power		Limit
rest wode	(MHz)	(dBm)	(W)	(W)
0 1	2402	18.06	0.06397	
General 2.4GHz	2440	17.81	0.06039	
2.40112	2477	17.42	0.05521	< 0.125
	Measured	18.06	0.06397	

Table 8: Test Result of Maximum Peak Conducted Output Power, Wi-Fi 802.11 b/g/n

Test Mode	Data Rate	Frequency	Measure	d Power	Limit
rest wode	Dala Rale	(MHz)	dBm	W	Lillit
		2412	15.70	0.03715	
802.11b	1 Mbps	2437	16.10	0.04074	
		2462	16.30	0.04266	
		2412	14.30	0.02692	
802.11g	6 Mbps	2437	14.40	0.02754	
		2462	14.60	0.02884	
000 44.5	MCS0	2412	12.80	0.01905	< 1.0W
802.11n (HT20)		2437	13.00	0.01995	
(11120)		2462	13.20	0.02089	
222.44	02.11n HT40) MCS0	2422	11.60	0.01445	
00=		2437	11.30	0.01349	
(11140)		2452	11.40	0.01380	
Maxin	Maximum Measured Value			0.04266	

Note: The cable loss is taken into account in results.



**Products** 

 Prüfbericht - Nr.:
 50072840 001
 Seite 18 von 32

 Test Report No.
 Page 18 of 32

### **5.1.3 Conducted Power Spectral Density**

RESULT: Pass

**Test Specification** 

Test standard : FCC Part 15.247(e)

RSS-247 Clause 5.2(2)

Basic standard : ANSI C63.10: 2013

Limits : 8 dBm / 3kHz
Kind of test site : Shielded Room

**Test Setup** 

Date of testing : Refer to test result Input voltage : AC 120V, 60Hz

Operation mode : B

Test channel : Low / Middle / High

Ambient temperature :  $25 \,^{\circ}\text{C}$  Relative humidity :  $56 \,^{\circ}\text{M}$  Atmospheric pressure :  $101 \,^{\circ}\text{kPa}$ 

For details refer to following test result.

Table 9: Test Result of Power Spectral Density, Wi-Fi 802.11 b/g/n

Test Mode	Data Rate	Frequency (MHz)	Measured Peak Power Spectral Density (dBm/3KHz)
		2412	-1.35
802.11b	1 Mbps	2437	-0.94
		2462	-0.60
		2412	-16.11
802.11g	6 Mbps	2437	-15.39
		2462	-15.58
222.44	MCS0	2412	-17.26
802.11n (HT20)		2437	-17.09
(11120)		2462	-17.12
200.44		2422	-21.84
802.11n (HT40)	MCS0	2437	-21.58
(11140)		2452	-21.42
Max	imum Measured V	-0.60	

Note: The cable loss is taken into account in results.

For the measurement records, refer to the appendix B.



**Products** 

 Prüfbericht - Nr.:
 50072840 001
 Seite 19 von 32

 Test Report No.
 Page 19 of 32

#### 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 : Refer to test result Input voltage : AC 120V, 60Hz

Operation mode : B

Test channel : Low / Middle / High

Ambient temperature :  $25 \,^{\circ}\text{C}$  Relative humidity :  $56 \,^{\circ}\text{M}$  Atmospheric pressure :  $101 \,^{\circ}\text{kPa}$ 

For details refer to following test result.

Table 10: Test Result of 6dB Bandwidth, Wi-Fi 802.11 b/g/n

Test Mode	Data Rate	Frequency (MHz)	-6dB Bandwidth (MHz)	Limit (kHz)
		2412	9.726	
802.11b	1 Mbps	2437	9.639	
		2462	9.682	
		2412	16.541	
802.11g	6 Mbps	2437	16.541	
		2462	16.541	
200.44	- MCSO	2412	17.843	> 500
802.11n (HT20)		2437	17.844	
(11120)		2462	17.800	
000.44		2422	36.382	
802.11n (HT40)	MCS0	2437	36.209	
(11140)		2452	36.382	
Minimum Measured Value		9.639		

For the measurement records, refer to the appendix B.



**Products** 

 Prüfbericht - Nr.:
 50072840 001
 Seite 20 von 32

 Test Report No.
 Page 20 of 32

#### 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 : Refer to test result Input voltage : AC 120V, 60Hz

Operation mode : A, B

Test channel : Low / Middle / High

Ambient temperature :  $25 \, ^{\circ}\text{C}$  Relative humidity :  $56 \, \%$  Atmospheric pressure :  $101 \, \text{kPa}$ 

For details refer to following test result.



**Products** 

Prüfbericht - Nr.: 50072840 001

Test Report No.

Seite 21 von 32 Page 21 of 32

Table 11: Test Result of 99% Bandwidth, General 2.4GHz

Test Mode	Frequency (MHz)	99% Bandwidth (MHz)	Limit (kHz)
	2402	1.567	
General 2.4GHz	2440	1.589	,
	2477	1.580	/
Maximum Mea	sured Value	1.589	

Table 12: Test Result of 99% Bandwidth, Wi-Fi 802.11 b/g/n

Test Mode	Data Rate	Frequency (MHz)	99% Bandwidth (MHz)	Limit (kHz)
		2412	14.891	
802.11b	1 Mbps	2437	14.848	
		2462	14.805	
		2412	16.498	
802.11g	6 Mbps	2437	16.541	
		2462	16.498	
000.44		2412	17.757	1
802.11n (HT20)	MCS0	2437	17.757	
(11120)		2462	17.757	
000 44		2422	36.122	
802.11n (HT40)	MCS0	2437	36.122	
(11140)		2452	36.122	
Max	Maximum Measured Value			

For the measurement records, refer to the appendix B.



**Products** 

 Prüfbericht - Nr.:
 50072840 001
 Seite 22 von 32

 Test Report No.
 Page 22 of 32

### 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 : Refer to test result Input voltage : AC 120V, 60Hz

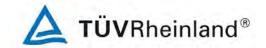
Operation mode : A, B

Test channel : Low / Middle / High

Ambient temperature :  $25 \, ^{\circ}\text{C}$ Relative humidity :  $56 \, \%$ Atmospheric pressure :  $101 \, \text{kPa}$ 

Test results of 100kHz Bandwidth of Frequency Band Edge by Conducted method refer to test plots, and compliance is achieved as well.

For the measurement records, refer to the appendix B.



# Products

 Prüfbericht - Nr.:
 50072840 001
 Seite 23 von 32

 Test Report No.
 Page 23 of 32

### 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 Issue 4 Table 4

Kind of test site : 3m Semi-anechoic Chamber

**Test Setup** 

Date of testing : Refer to test result Input voltage : AC 120V, 60Hz

Operation mode : A, B

Test channel : Low / Middle / High

Ambient temperature : 23°C
Relative humidity : 48%

Atmospheric pressure : 101 kPa

#### Remark:

Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case spurious emissions configuration of the each mode were reported.

The measured result is below the specification limit by a margin less than the measurement uncertainty (the minimum margin is 1.7dB and the test lab's measurement uncertainty of this test is 6.0dB); above situation was awared to the client, and it was considered as acceptable by the client as well.

For the measurement records, refer to the appendix C.



**Products** 

 Prüfbericht - Nr.:
 50072840 001
 Seite 24 von 32

 Test Report No.
 Page 24 of 32

#### 5.1.8 20dB Bandwidth

RESULT: Pass

**Test Specification** 

Test standard : FCC Part 15.247(a)(1)

RSS-247 Clause 5.1(1)

Basic standard : ANSI C63.10: 2013

Kind of test site : Shielded Room

**Test Setup** 

Date of testing : Refer to test result Input voltage : AC 120V, 60Hz

Operation mode : A

Test channel : Low / Middle / High

Ambient temperature :  $25 \, ^{\circ}\text{C}$  Relative humidity :  $56 \, \%$  Atmospheric pressure :  $101 \, \text{kPa}$ 

For details refer to following test result.

Table 13: Test Result of 20dB Bandwidth, General 2.4GHz

Test Mode	Frequency (MHz)	20dB Bandwidth (kHz)	2/3 of 20dB Bandwidth (kHz)	Limit (MHz)
	2402	1363.2	908.800	
General 2.4GHz	2440	1367.6	911.733	1
	2477	1358.9	905.933	
Maximum Measured Value		1367.60	911.733	/

For the measurement records, refer to the appendix B.



 Prüfbericht - Nr.:
 50072840 001
 Seite 25 von 32

 Test Report No.
 Page 25 of 32

### **5.1.9 Carrier Frequency Separation**

RESULT: Pass

**Test Specification** 

Test standard : FCC Part 15.247(a)(1)

RSS-247 Clause 5.1(2)

Basic standard : ANSI C63.10: 2013

Limits : ≥ 25kHz or 2/3 of 20dB bandwidth, whichever is greater

Kind of test site : Shielded Room

**Test Setup** 

Date of testing : Refer to test result Input voltage : AC 120V, 60Hz

Operation mode : C

Test channel : Low / Middle / High

Ambient temperature :  $25 \,^{\circ}\text{C}$  Relative humidity :  $56 \,^{\circ}\text{M}$  Atmospheric pressure :  $101 \,^{\circ}\text{kPa}$ 

For details refer to following test result.

Table 14: Test Result of Carrier Frequency Separation, General 2.4GHz

Test Mode	Test Channel	Frequency (MHz)	Measured Channel Separation (KHz)	Limit (kHz)
	Low Channel	2402		≥ 25kHz or 2/3
	Adjacency Channel	2404	2005.8	
	Middle Channel	2440		
General 2.4GHz	Adjacency Channel	2445	5001.0	of 20dB bandwidth
	High Channel	2477		
	Adjacency Channel	2475	2005.8	

Note: The limit is maximum 2/3 of the 20 dB bandwidth: 911.733 KHz.

For the measurement records, refer to the appendix B



**Products** 

 Prüfbericht - Nr.:
 50072840 001
 Seite 26 von 32

 Test Report No.
 Page 26 of 32

### **5.1.10** Number of Hopping Frequency

RESULT: Pass

**Test Specification** 

Test standard : FCC part 15.247(a)(1)(iii)

RSS-247 Clause 5.1(4)

Basic standard : ANSI C63.10: 2013

Limits : ≥ 15 non-overlapping channels

Kind of test site : Shielded Room

**Test Setup** 

Date of testing : Refer to test result Input voltage : AC 120V, 60Hz

For details refer to following test result.

Table 15: Test Result of Number of Hopping Frequency, General 2.4GHz

Test Mode	Frequency Range	Measured Quantity of Hopping Channel	Limit
General 2.4GHz	2402 - 2477 MHz	20	≥15

For the measurement records, refer to the appendix B.



**Products** 

 Prüfbericht - Nr.:
 50072840 001
 Seite 27 von 32

 Test Report No.
 Page 27 of 32

### 5.1.11 Time of Occupancy

RESULT: Pass

**Test Specification** 

Test standard : FCC part 15.247(a)(1)(iii)

RSS-247 Clause 5.1(4)

Basic standard : ANSI C63.10: 2013

Limits : < 0.4s

Kind of test site : Shielded Room

**Test Setup** 

Date of testing : Refer to test result Input voltage : AC 120V, 60Hz

Operation mode : C

Test channel : Low / Middle / High

Ambient temperature :  $25 \,^{\circ}\text{C}$  Relative humidity :  $56 \,^{\circ}\text{M}$  Atmospheric pressure :  $101 \,^{\circ}\text{kPa}$ 

For details refer to following test result.

Table 16: Test Result of Time of Occupancy, General 2.4GHz

Test EUT	Frequency (MHz)	Pulse width (ms)	Number of Channels	Measured Dwell time (s)	Limit (s)
	2402	0.275	89	0.024	
General 2.4GHz	2440	0.268	92	0.025	0.4s
2.40112	2477	0.268	106	0.028	

Note:

Dwell time = Pulse width x Number of channels in Period Period = 0.4 (seconds/ channel) x 20 (channel) = 8 seconds

For the measurement records, refer to the appendix B.



 Prüfbericht - Nr.:
 50072840 001
 Seite 28 von 32

 Test Report No.
 Page 28 of 32

#### 5.1.12 Conducted Emission on AC Mains

RESULT: Pass

**Test Specification** 

Test standard : FCC Part 15.107(a) & FCC Part 15.207(a)

RSS-Gen Clause 8.8 & ICES-003

Basic standard : ANSI C63.10: 2013 & ANSI C63.4: 2014

Frequency range : 0.15 – 30MHz

Limits : FCC Part 15.107(a) & FCC Part 15.207(a)

RSS-Gen Table 3 & ICES-003 Table 2

Kind of test site : Shielded Room

**Test Setup** 

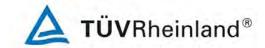
Date of testing : Refer to test result Input voltage : AC 120V, 60Hz

Operation mode : D+F, E+F

Earthing : Not connected

Ambient temperature :  $24 \, ^{\circ}\text{C}$  Relative humidity :  $53 \, ^{\circ}\text{M}$  Atmospheric pressure :  $101 \, \text{kPa}$ 

For the measurement records, refer to the appendix  ${\sf C}.$ 



50072840 001 Prüfbericht - Nr.:

Seite 29 von 32 Page 29 of 32 Test Report No.

#### **Radiated Emission** 5.1.13

**RESULT: Pass** 

**Test Specification** 

Test standard : FCC Part 15.109(a)

ICES-003

Basic standard : ANSI C63.4: 2014

: 30 - 6000MHz Frequency range

Classification : Class B

Limits : FCC Part 15.109(a)

ICES-003 Table 5 & Table 7

Kind of test site : 3m Semi-anechoic Chamber

**Test Setup** 

Date of testing : Refer to test result Input voltage : AC 120V, 60Hz

Operation mode

: Not connected Earthing

Ambient temperature : 23 °C : 48 % Relative humidity : 101 kPa Atmospheric pressure

For the measurement records, refer to the appendix C.



Prüfbericht - Nr.: 50072840 001

Seite 30 von 32 Page 30 of 32 Test Report No.

### Safety Human Exposure

# 6.1 Radio Frequency Exposure Compliance

### **6.1.1 Electromagnetic Fields**

**RESULT:** Pass

**Test Specification** 

Test standard : CFR47 FCC Part 2: Section 2.1091

> CFR47 FCC Part 1: Section 1.1310 FCC KDB Publication 447498 v06

FCC KDB Publication 865664 D02 v01r02

OET Bulletin 65 (Edition 97-01) RSS-102 Issue 5 March 2015

#### > FCC requirements

FCC requirement: Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 20cm normally can be maintained between the user and the device.

#### MPE Calculation Method according to OET Bulletin 65

Power Density:  $S_{(mW/cm^2)} = PG/4\pi R^2$  or  $EIRP/4\pi R^2$ 

Where:

 $S = power density (mW/cm^2)$ 

P = power input to the antenna (mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

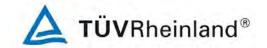
R = distance to the center of radiation of the antenna (cm)

#### The nominal maximum conducted output power specified:

2.4GHz FHSS: 19.00 dBm 802.11b/g/n: 17.00 dBm

From the peak RF output power, the minimum mobile separation distance, d=20 cm, as well as the antenna gain (Max. 0.0 dBi for 2.4GHz FHSS and 0.0 dBi 802.11b/g/n), the RF power density can be calculated as below:

For 2.4GHz FHSS:  $S_{(mW/cm^2)} = PG/4\pi R^2 = 0.016 \text{ mW/cm}^2$ For 802.11b/g/n:  $S_{(mW/cm^2)} = PG/4\pi R^2 = 0.010 \text{ mW/cm}^2$ 



**Products** 

Prüfbericht - Nr.: 50072840 001

Test Report No.

Seite 31 von 32 Page 31 of 32

#### Limits for Maximum Permissible Exposure (MPE) according to FCC Part 1.1310:

1.0 mW/cm<sup>2</sup>

For Simultaneous transmitting of 2.4GHz FHSS and 802.11b/g/n:

According to 865664D02 2.2 d) 1):

The sum of the ratios of the spatially averaged results to the applicable frequency dependent MPE limits = 0.016/1 + 0.010/1 = 0.026 < 1

▶ IC requirements: The EUT shall comply with the requirement of RSS-102 section 2.5.2.

#### **Exemption from Routine Evaluation Limits – RF Exposure Evaluation**

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $1.31 \times 10^{-2} f^{0.6834}$  W (adjusted for tune-up tolerance), where f is in MHz;

- RF exposure evaluation exempted power for 2.4GHz FHSS: 2.679 W
- RF exposure evaluation exempted power for 802.11b/g/n: 2.684 W

#### The nominal maximum conducted output power specified:

2.4GHz FHSS: 19.00 dBm 802.11b/g/n: 17.00 dBm

Antenna Gain: 0.0 dBi for 2.4GHz FHSS Antenna Gain: 0.0 dBi for 802.11b/g/n

The Max. e.i.r.p. for 2.4GHz FHSS: 19.00 dBm = 0.079 WThe Max. e.i.r.p. for 802.11b/g/n: 17.00 dBm = 0.050 W

Both e.i.r.p. for the 2.4GHz FHSS and 802.11b/g/n are less than the RF exposure evaluation exempted power. So RF exposure evaluation is not required.

"RF Radiation Exposure Statement Caution: This Transmitter must be installed to provide a separation distance of at least 20 cm from all persons."



**Products** 

Prüfbericht - Nr.: 50072840 001
Test Report No.

Seite 32 von 32 Page 32 of 32

# 7 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix A.

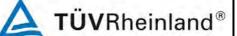
# 8 List of Tables

Table 1: List of Test and Measurement Equipment	6
Table 2: Technical Specification of EUT	
Table 3: RF Channel and Frequency of General 2.4GHz Wireless	9
Table 4: RF Channel and Frequency of Wi-Fi 802.11 b/g/n	
Table 5: Frequency Hopping Information	10
Table 6: List of Accessories and Auxiliary Equipment	
Table 7: Test Result of Maximum Peak Conducted Output Power, General 2.4GHz	17
Table 8: Test Result of Maximum Peak Conducted Output Power, Wi-Fi 802.11 b/g/n	17
Table 9: Test Result of Power Spectral Density, Wi-Fi 802.11 b/g/n	18
Table 10: Test Result of 6dB Bandwidth, Wi-Fi 802.11 b/g/n	19
Table 11: Test Result of 99% Bandwidth, General 2.4GHz	21
Table 12: Test Result of 99% Bandwidth, Wi-Fi 802.11 b/g/n	21
Table 13: Test Result of 20dB Bandwidth, General 2.4GHz	24
Table 14: Test Result of Carrier Frequency Separation, General 2.4GHz	25
Table 15: Test Result of Number of Hopping Frequency, General 2.4GHz	26
Table 16: Test Result of Time of Occupancy, General 2.4GHz	27

# **Appendix B: Test Results of Conducted Testing**

APPENDIX B: TEST RESULTS OF CONDUCTED TESTING	1
APPENDIX A.1: CONDUCTED POWER SPECTRAL DENSITY	2
Wi-Fi 802.11 b mode, 1 Mbps	2
Wi-Fi 802.11 g mode, 6 Mbps	3
Wi-Fi 802.11 n(HT20) mode, MCS0	5
Wi-Fi 802.11 n(HT40) mode, MCS0	6
APPENDIX A.2: 6DB BANDWIDTH	8
Wi-Fi 802.11 b mode, 1 Mbps	8
Wi-Fi 802.11 g mode, 6 Mbps	9
Wi-Fi 802.11 n(HT20) mode, MCS0	
Wi-Fi 802.11 n(HT40) mode, MCS0	
Appendix A.3: 99% Bandwidth	
General 2.4GHz	
Wi-Fi 802.11 b mode, 1 Mbps	
Wi-Fi 802.11 g mode, 6 Mbps	
Wi-Fi 802.11 n(HT20) mode, MCS0	
Wi-Fi 802.11 n(HT40) mode, MCS0	
APPENDIX A.4: 20DB BANDWIDTH	22
General 2.4GHz	22
APPENDIX A.5: CONDUCTED SPURIOUS EMISSIONS MEASURED IN 100 KHz BANDWIDTH	24
General 2.4GHz	24
Wi-Fi 802.11 b mode, 1 Mbps	
Wi-Fi 802.11 g mode, 6 Mbps	
Wi-Fi 802.11 n(HT20) mode, MCS0	
Wi-Fi 802.11 n(HT40) mode, MCS0	
General 2.4GHz, Band Edge	
Wi-Fi 802.11 b mode, Band Edge	
Wi-Fi 802.11 g mode, Band Edge	
Wi-Fi 802.11 n(HT20) mode, Band Edge	
Wi-Fi 802.11 n(HT40) mode, Band Edge	
APPENDIX A.6: CARRIER FREQUENCY SEPARATION	
General 2.4GHz	
APPENDIX A.7: NUMBER OF HOPPING FREQUENCY	39
General 2.4GHz	39
APPENDIX A.8: TIME OF OCCUPANCY	40
General 2.4GHz	40

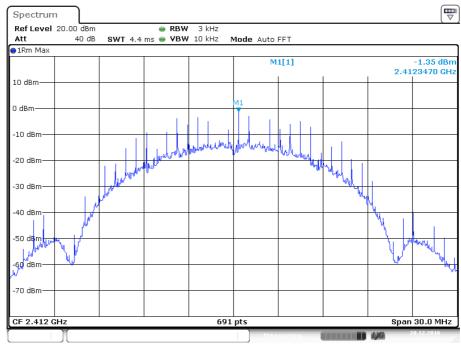




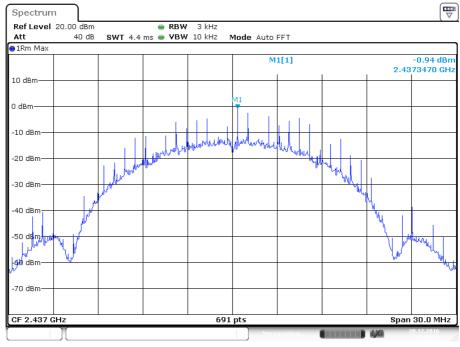
Page 2 of 42

### **Appendix B.1: Conducted Power Spectral Density**

#### Wi-Fi 802.11 b mode, 1 Mbps



Date: 20.DEC.2016 16:59:46



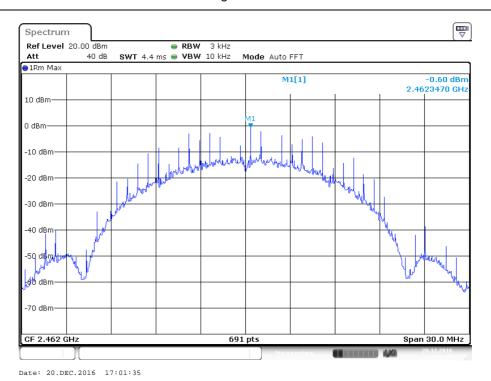
Date: 20.DEC.2016 17:00:41

# Appendix B 50072840 001

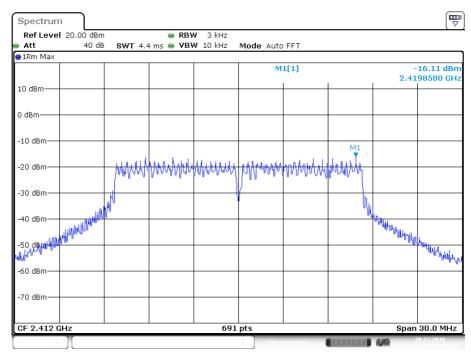


Produkte Products

Page 3 of 42



#### Wi-Fi 802.11 g mode, 6 Mbps



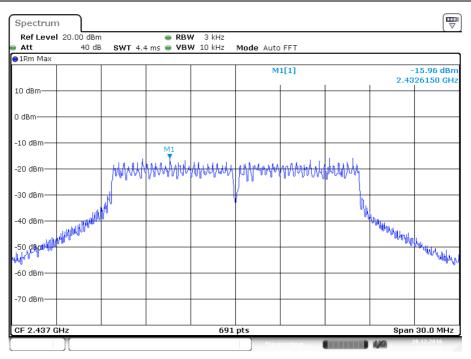
Date: 20.DEC.2016 17:31:33

# Appendix B 50072840 001

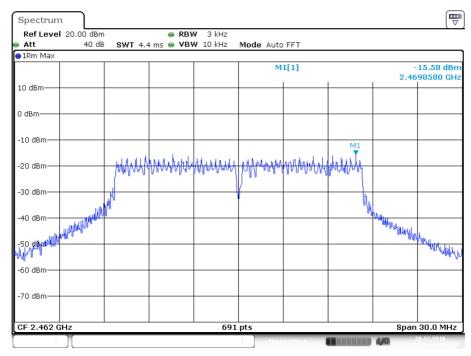


Produkte Products

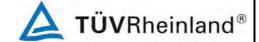
Page 4 of 42



Date: 20.DEC.2016 17:32:32



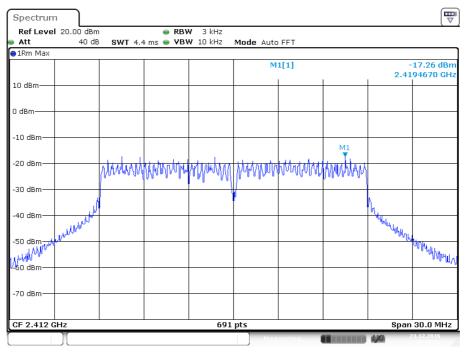
Date: 20.DEC.2016 17:33:44



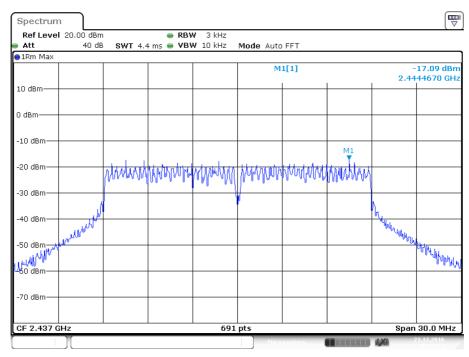
Produkte Products

Page 5 of 42

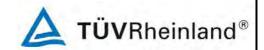
### Wi-Fi 802.11 n(HT20) mode, MCS0



Date: 21.DEC.2016 10:11:38



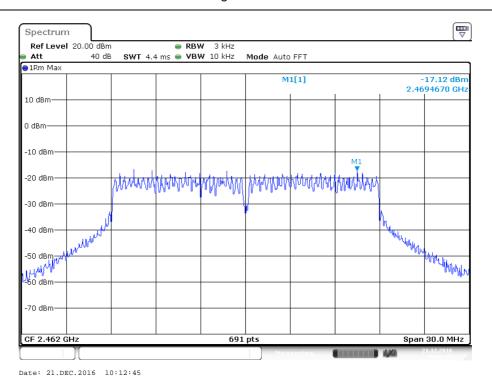
Date: 21.DEC.2016 10:12:15



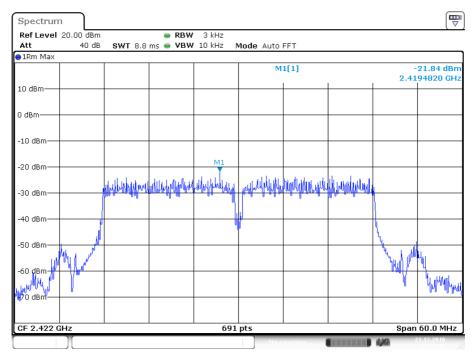
Products

Products

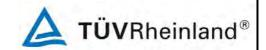
Page 6 of 42



### Wi-Fi 802.11 n(HT40) mode, MCS0



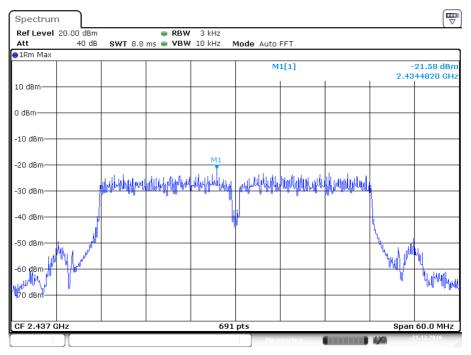
Date: 21.DEC.2016 10:31:41



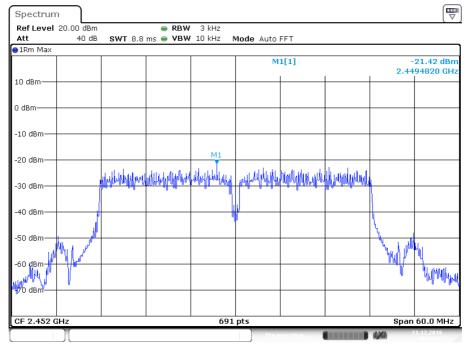
Products

Products

Page 7 of 42



Date: 21.DEC.2016 10:32:23



Date: 21.DEC.2016 10:32:52



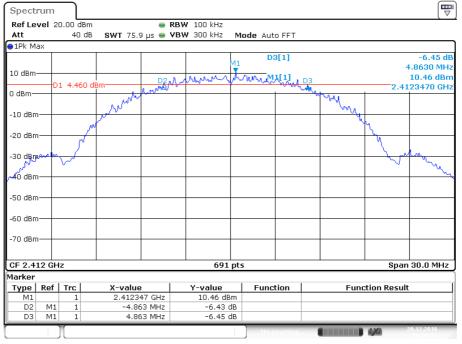


Produkte Products

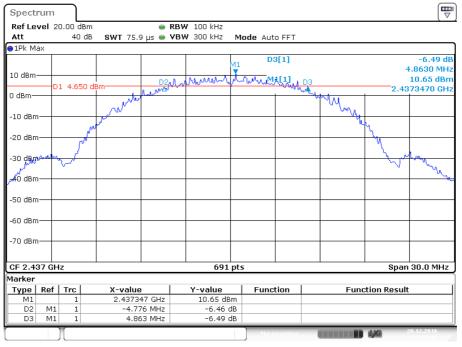
Page 8 of 42

### Appendix B.2: 6dB Bandwidth

#### Wi-Fi 802.11 b mode, 1 Mbps



Date: 20.DEC.2016 16:36:38



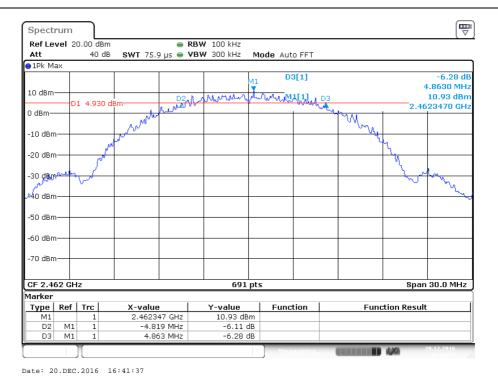
Date: 20.DEC.2016 16:39:50



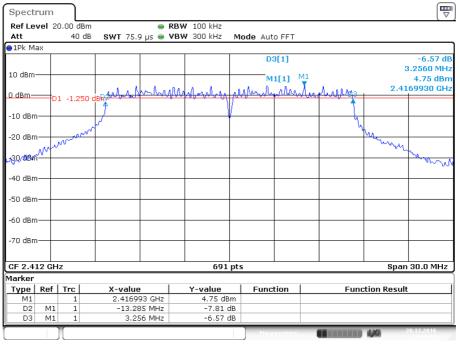
Products

Products

Page 9 of 42



### Wi-Fi 802.11 g mode, 6 Mbps



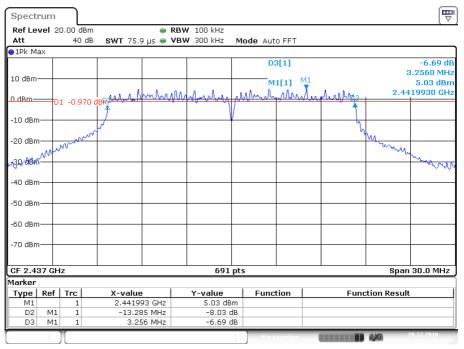
Date: 20.DEC.2016 17:06:58



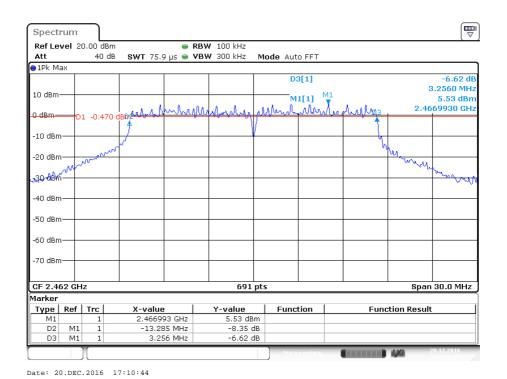
Products

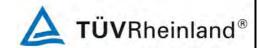
Products

Page 10 of 42



Date: 20.DEC.2016 17:08:47



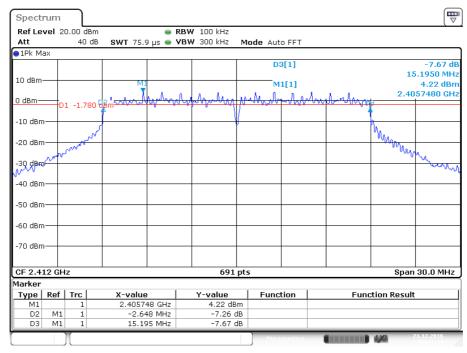


Products

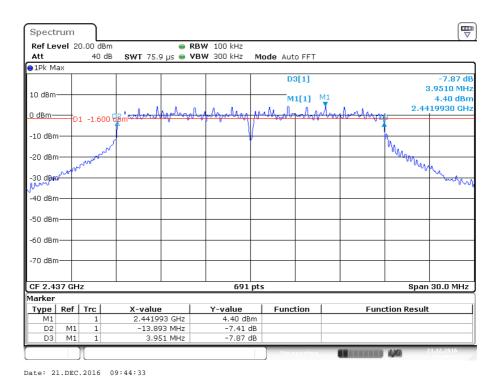
Products

Page 11 of 42

### Wi-Fi 802.11 n(HT20) mode, MCS0



Date: 21.DEC.2016 09:41:15

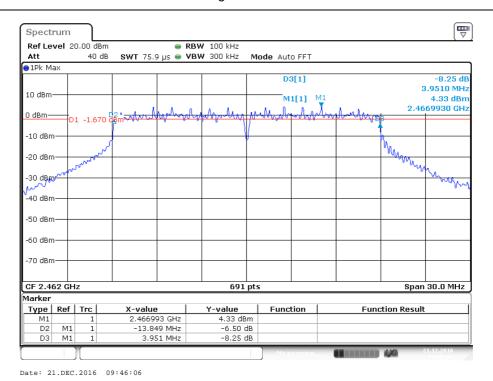




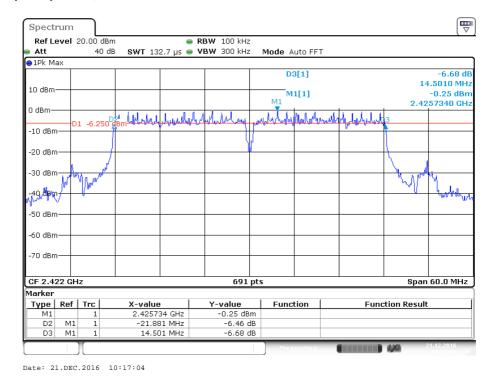
Products

Products

Page 12 of 42



#### Wi-Fi 802.11 n(HT40) mode, MCS0

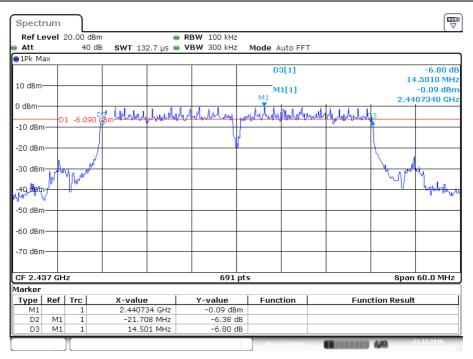




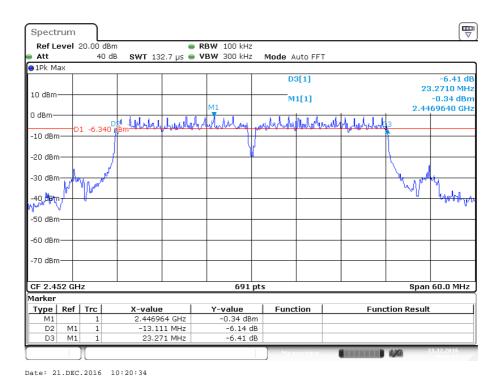
Products

Products

Page 13 of 42



Date: 21.DEC.2016 10:19:09



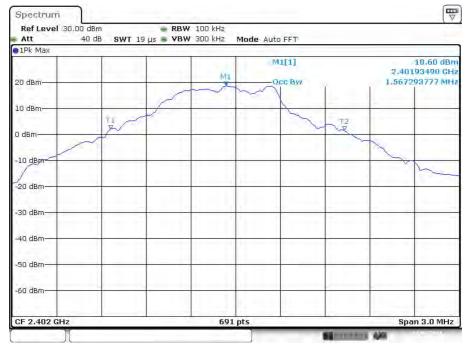


Produkte Products

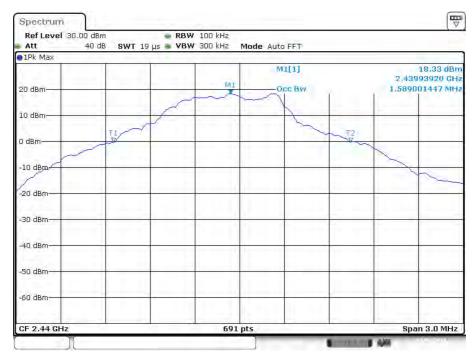
Page 14 of 42

### Appendix B.3: 99% Bandwidth

#### **General 2.4GHz**



Date: 14.FEB.2017 16:49:00

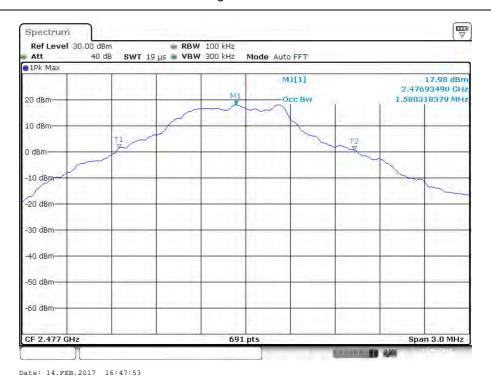


Date: 14.FEB.2017 16:48:36

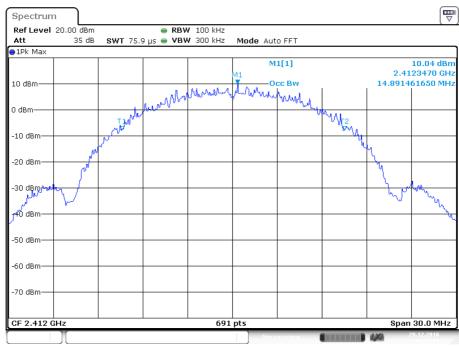


Produkte Products

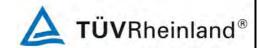
Page 15 of 42



### Wi-Fi 802.11 b mode, 1 Mbps

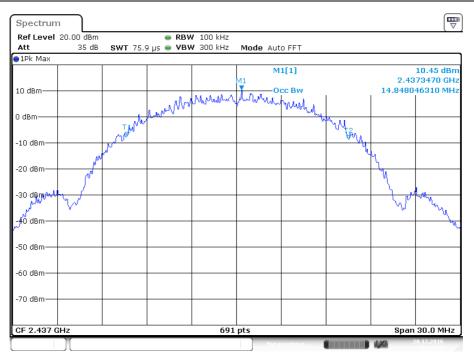


Date: 20.DEC.2016 16:45:06

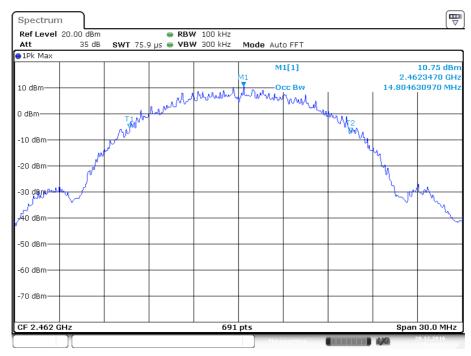


Produkte Products

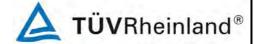
Page 16 of 42



Date: 20.DEC.2016 16:44:17



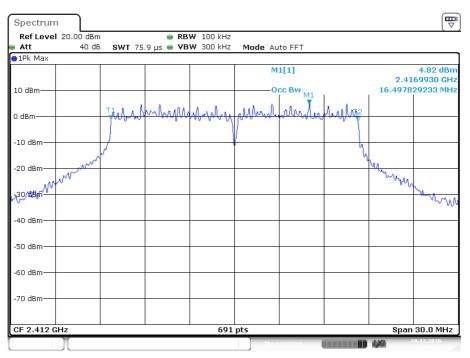
Date: 20.DEC.2016 16:43:17



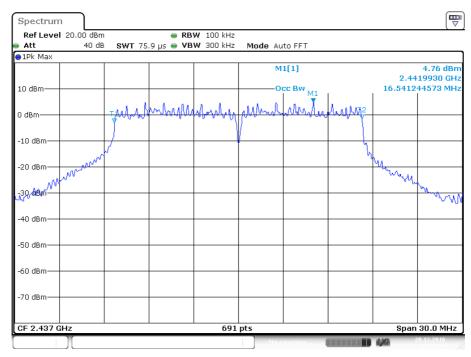
Produkte Products

Page 17 of 42

### Wi-Fi 802.11 g mode, 6 Mbps



Date: 20.DEC.2016 17:14:41

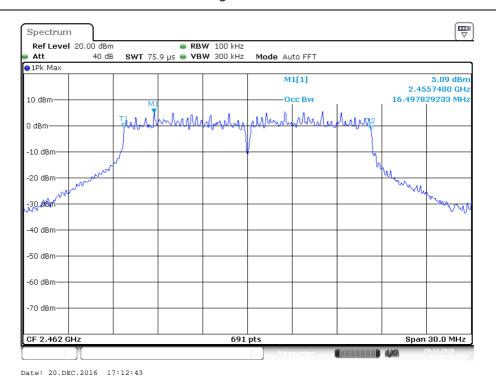


Date: 20.DEC.2016 17:13:51

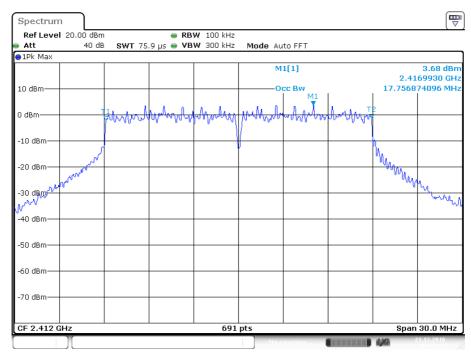


Produkte Products

Page 18 of 42



### Wi-Fi 802.11 n(HT20) mode, MCS0

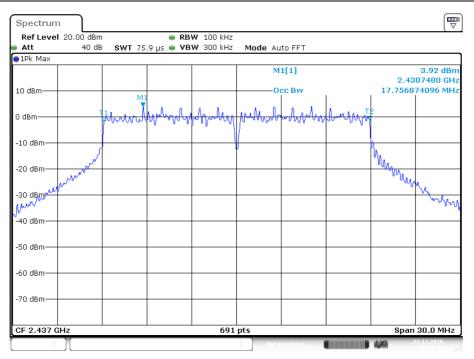


Date: 21.DEC.2016 09:49:25

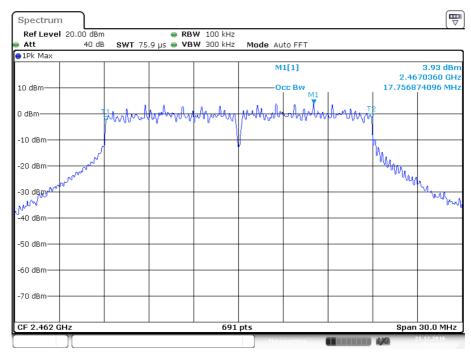


Produkte Products

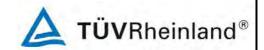
Page 19 of 42



Date: 21.DEC.2016 09:48:43



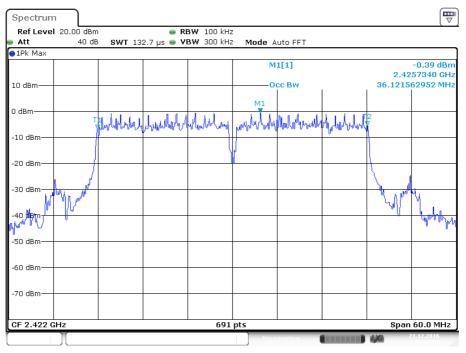
Date: 21.DEC.2016 09:47:35



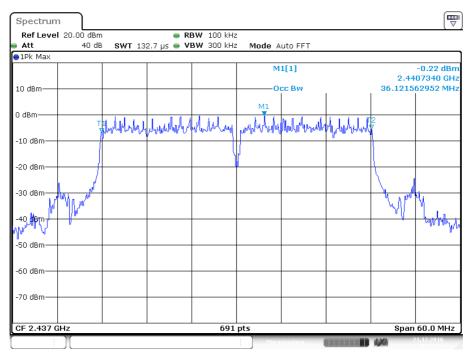
Produkte Products

Page 20 of 42

### Wi-Fi 802.11 n(HT40) mode, MCS0



Date: 21.DEC.2016 10:22:59

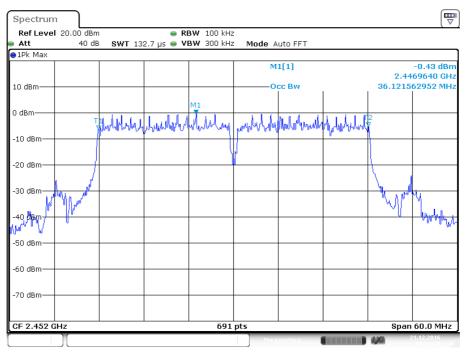


Date: 21.DEC.2016 10:22:14



Produkte Products

Page 21 of 42



Date: 21.DEC.2016 10:21:29



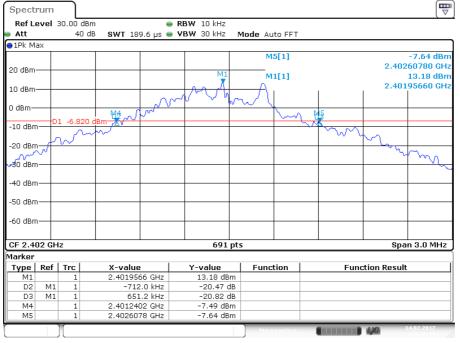
**TÜV**Rheinland®

Produkte Products

Page 22 of 42

### Appendix B.4: 20dB Bandwidth

#### General 2.4GHz



Date: 14.FEB.2017 16:40:29

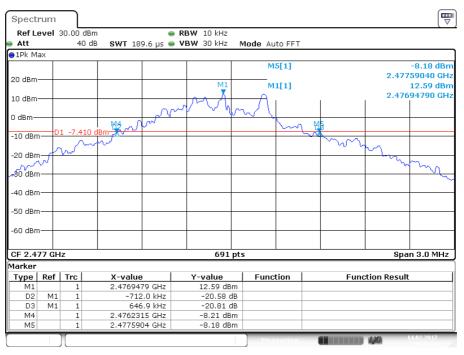


Date: 14.FEB.2017 16:43:20



Produkte Products

Page 23 of 42



Date: 14.FEB.2017 16:46:35





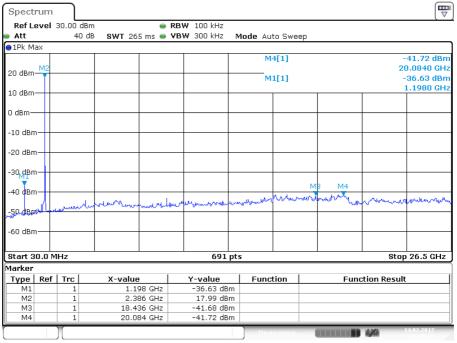
Products

Page 24 of 42

### Appendix B.5: Conducted Spurious Emissions Measured in 100 kHz Bandwidth

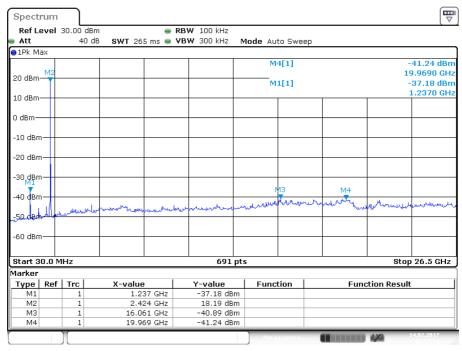
#### General 2.4GHz

Low Channel



Date: 14.FEB.2017 16:58:51

#### Middle Channel



Date: 14.FEB.2017 16:57:15

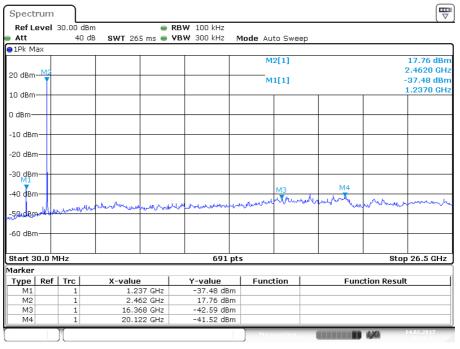


Products

Products

Page 25 of 42

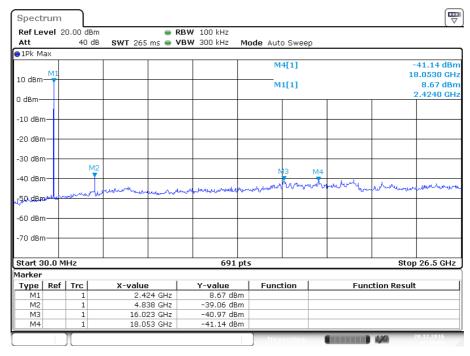
#### High Channel



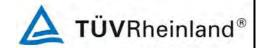
Date: 14.FEB.2017 16:55:47

#### Wi-Fi 802.11 b mode, 1 Mbps

Low Channel



Date: 20.DEC.2016 16:55:00

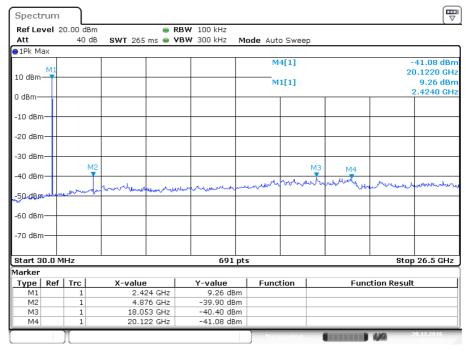


Products

Products

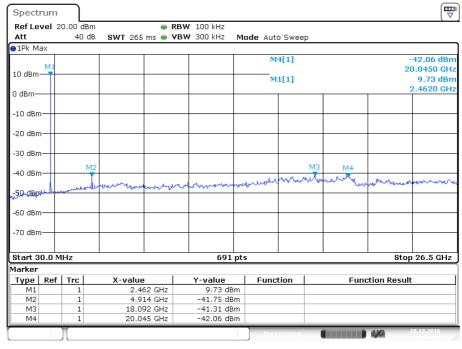
Page 26 of 42

#### Middle Channel



Date: 20.DEC.2016 16:53:55

#### High Channel



Date: 20.DEC.2016 16:52:40



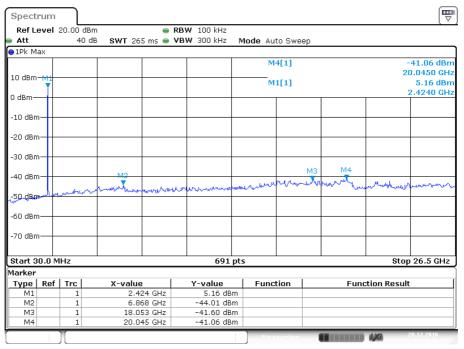
Products

Products

Page 27 of 42

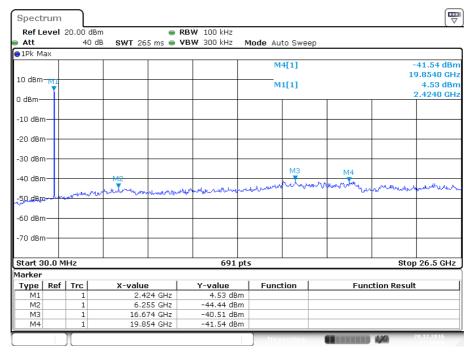
### Wi-Fi 802.11 g mode, 6 Mbps

Low Channel



Date: 20.DEC.2016 17:29:56

#### Middle Channel



Date: 20.DEC.2016 17:28:59

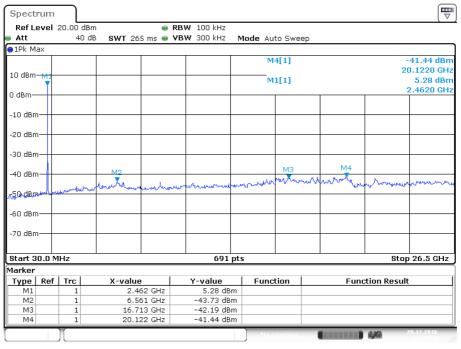


Products

Products

Page 28 of 42

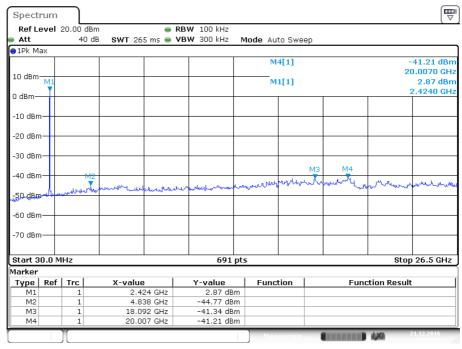
#### High Channel



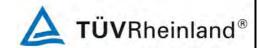
Date: 20.DEC.2016 17:28:00

#### Wi-Fi 802.11 n(HT20) mode, MCS0

Low Channel



Date: 21.DEC.2016 10:10:10



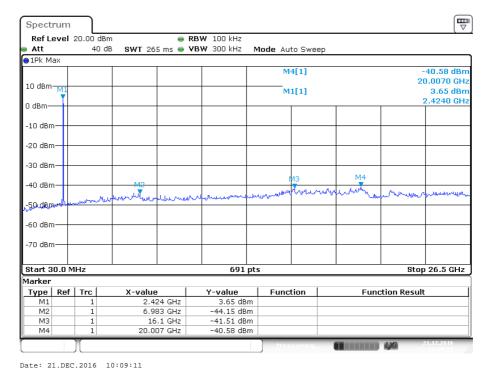
Products

Products

Page 29 of 42

#### Middle Channel

High Channel



#### Spectrum Ref Level 20.00 dBm ■ RBW 100 kHz Att SWT 265 ms ● VBW 300 kHz 40 dB Mode Auto Sweep ●1Pk Max M4[1] 40.46 dBn 19.9690 GH 10 dBm 3.45 dBn M1[1] 2.4620 GHz 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm more production -60 dBm -70 dBm Start 30.0 MHz Stop 26.5 GHz 691 pts Marker Type | Ref | Trc | X-value Y-value Function **Function Result** 2.462 GHz 9.128 GHz 18.092 GHz 19.969 GHz 3.45 dBm -44.00 dBm M1 M2 МЗ -41.89 dBm М4 -40.46 dBm

Date: 21.DEC.2016 10:07:57



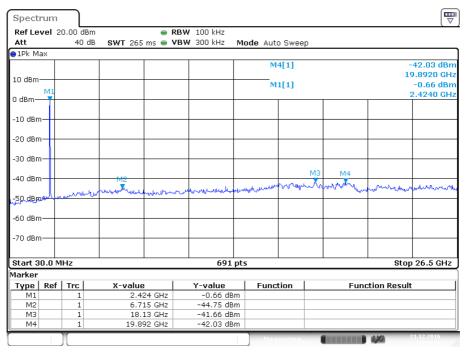
Products

Products

Page 30 of 42

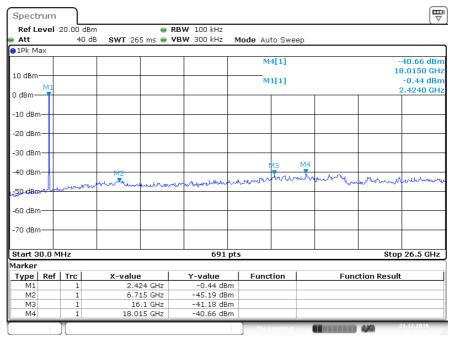
### Wi-Fi 802.11 n(HT40) mode, MCS0

Low Channel

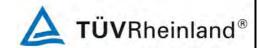


Date: 21.DEC.2016 10:30:30

### Middle Channel



Date: 21.DEC.2016 10:29:09

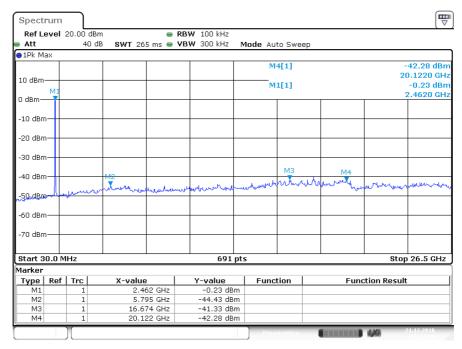


Products

Products

Page 31 of 42

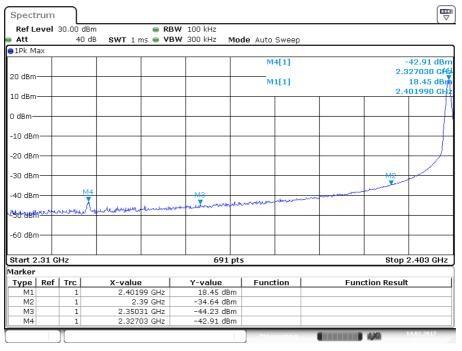
### High Channel



### Date: 21.DEC.2016 10:27:16

#### General 2.4GHz, Band Edge

Low Channel



Date: 14.FEB.2017 16:50:38

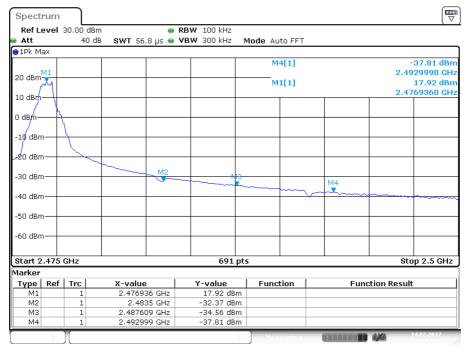


Products

Products

Page 32 of 42

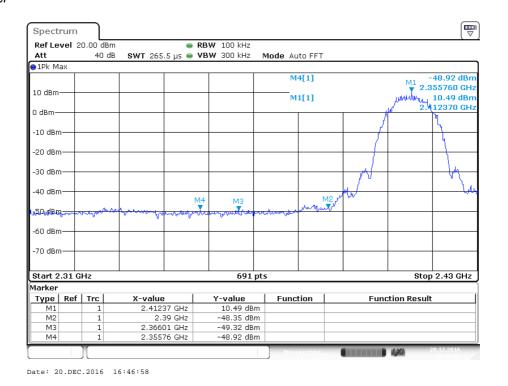
### High Channel



#### Date: 14.FEB.2017 16:52:05

#### Wi-Fi 802.11 b mode, Band Edge

Low Channel

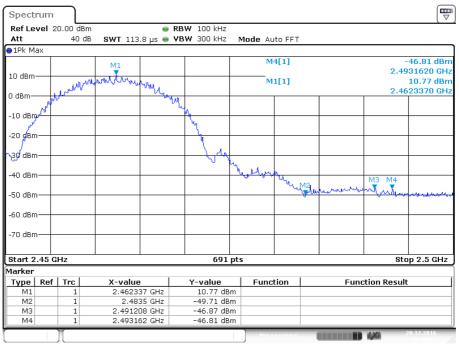




**Produkte Products** 

Page 33 of 42

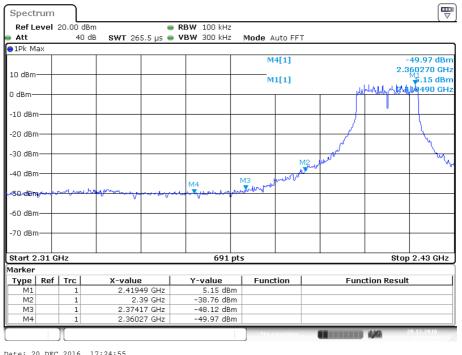
### High Channel



Date: 20.DEC.2016 16:49:23

### Wi-Fi 802.11 g mode, Band Edge

Low Channel



Date: 20.DEC.2016 17:24:55

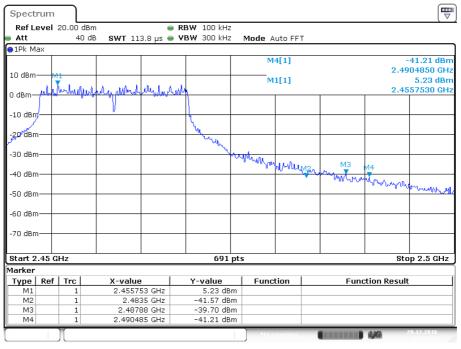


Products

Products

Page 34 of 42

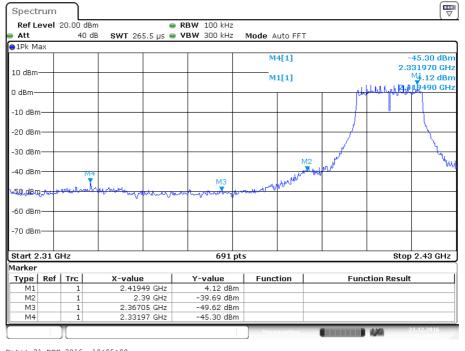
### High Channel



Date: 20.DEC.2016 17:26:24

### Wi-Fi 802.11 n(HT20) mode, Band Edge

Low Channel



Date: 21.DEC.2016 10:05:00

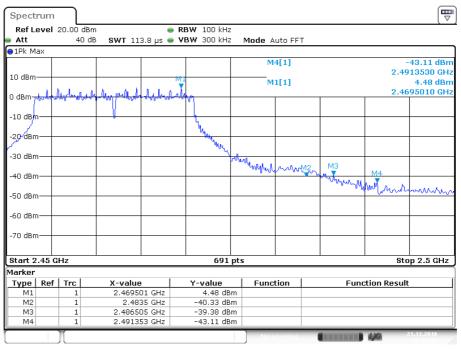


Products

Products

Page 35 of 42

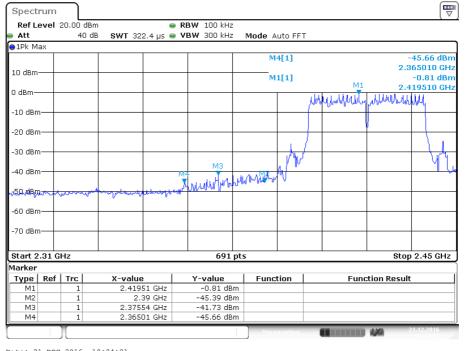
#### High Channel



Date: 21.DEC.2016 10:06:22

### Wi-Fi 802.11 n(HT40) mode, Band Edge

Low Channel



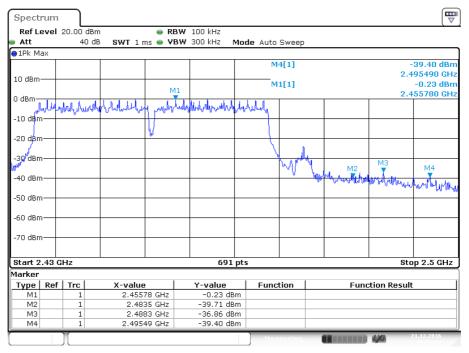
Date: 21.DEC.2016 10:24:21



Produkte Products

Page 36 of 42

### High Channel

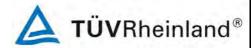


Date: 21.DEC.2016 10:25:44



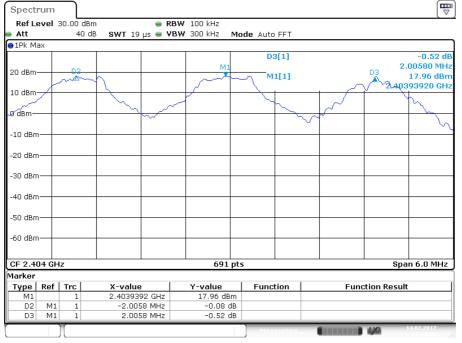
Products

1

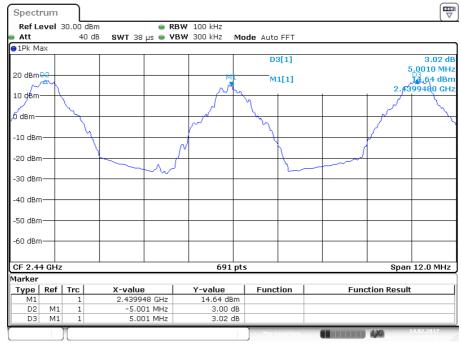


### **Appendix B.6: Carrier Frequency Separation**

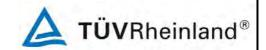
#### General 2.4GHz



Date: 14.FEB.2017 17:37:02

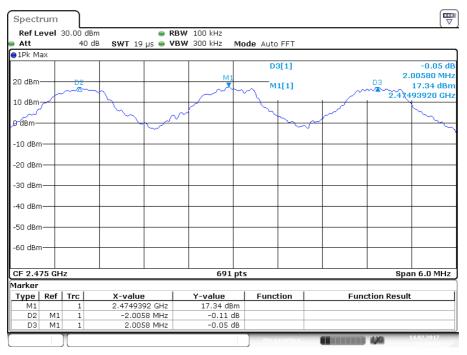


Date: 14.FEB.2017 17:32:47



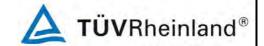
Produkte Products

Page 38 of 42



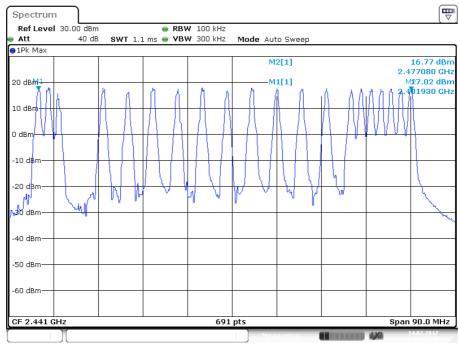
Date: 14.FEB.2017 17:34:01



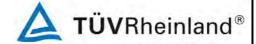


### **Appendix B.7: Number of Hopping Frequency**

### General 2.4GHz



Date: 14.FEB.2017 17:27:17



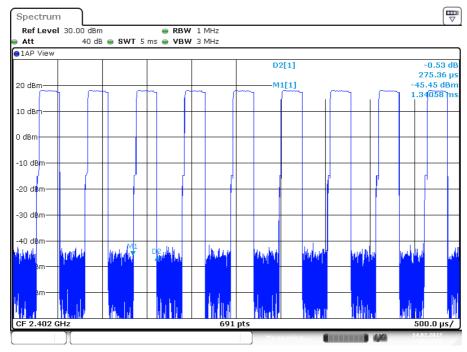
Produkte Products

Page 40 of 42

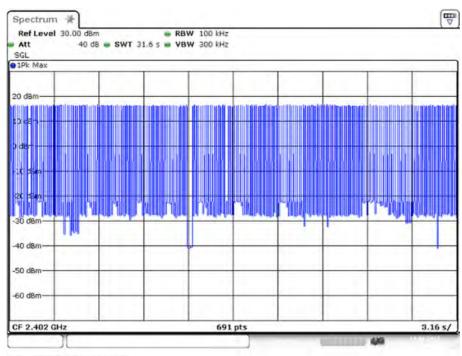
### **Appendix B.8: Time of Occupancy**

#### **General 2.4GHz**

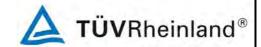
Low Channel



Date: 14.FEB.2017 17:07:57



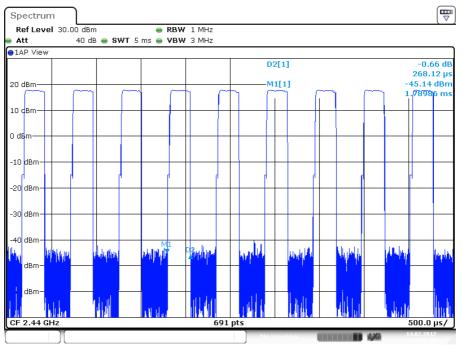
Date: 14.FEB.2017 17:46:38



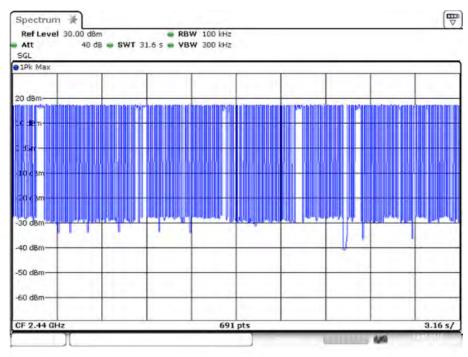
Produkte Products

Page 41 of 42

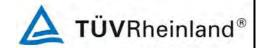
#### Middle Channel



Date: 14.FEB.2017 17:06:39



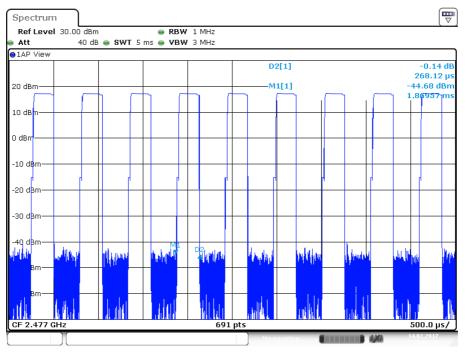
Pase: 14.FEB.2017 17:47:26



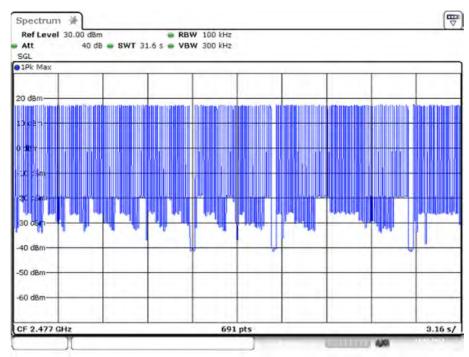
Produkte Products

Page 42 of 42

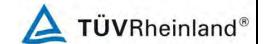
### High Channel



Date: 14.FEB.2017 17:04:50



Date: 14.FEB.2017 17:45:24



### **Appendix C: Test Results of Radiated Testing**

APPENDIX C: TEST RESULTS OF RADIATED TESTING	1
APPENDIX C.1: TEST RESULTS OF RADIATED SPURIOUS EMISSIONS	2
General 2.4GHz	2
Wi-Fi 802.11 b mode, 11 Mbps	14
Wi-Fi 802.11 g mode, 54 Mbps	26
Wi-Fi 802.11 n(HT20) mode, MCS0	38
Wi-Fi 802.11 n(HT40) mode, MCS0	
APPENDIX C.2: TEST RESULTS OF RADIATED EMISSIONS IN RESTRICTED BANDS	62
General 2.4GHz	62
Wi-Fi 802.11 b mode, 11 Mbps	66
Wi-Fi 802.11 g mode, 54 Mbps	70
Wi-Fi 802.11 n(HT20) mode, MCS0	
Wi-Fi 802.11 n(HT40) mode, MCS0	
APPENDIX C.3: TEST RESULTS OF CONDUCTED EMISSION ON AC MAINS	82
D+F mode with adapter #1	
D+F mode with adapter #2	
E+F mode with adapter #1	
E+F mode with adapter #2	
APPENDIX C.4: TEST RESULTS OF RADIATED EMISSION	90
F mode with adapter #1	90
F mode with adapter #2	94



Products Products

Page 2 of 97

Note 1: Testing was carried out within frequency range 9kHz to the tenth harmonics. The measurement results below 30MHz and above 18GHz were greater than 20dB below the limit, so only the radiated spurious emissions from 30MHz to 18GHz were reported.

### Appendix C.1: Test Results of Radiated Spurious Emissions General 2.4GHz 30MHz - 1GHz



#### ACCURATE TECHNOLOGY CO., LTD.

Site: 2# Chamber

I Port Keyuan Rd,
henzhen.P.R.China

Site: 2# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

F1,Bldg,A,Changyuan New Material Port Keyuan Rd, Science & Industry Park,Nanshan Shenzhen,P.R.China No.: LGW2017 #1271 Polarization

Test item: Radiation Test
Temp.( C)/Hum.(%) 23 C / 48 %

EUT: 5" Video Baby Monitor With Wi-Fi Internet Viewing

Mode: TX 2402MHz

Model: MBP855CONNECT

Manufacturer: Binatone

Standard: FCC Class B 3M Radiated

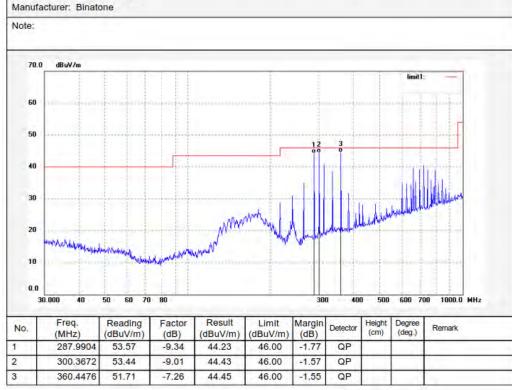
Polarization: Horizontal Power Source: AC 120V/60Hz

Date: 17/02/18/

Time:

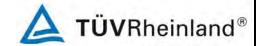
Engineer Signature: LGWADE

Distance: 3m





Page 3 of 97





**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

Polarization: Vertical

Date: 17/02/18/

Distance: 3m

Time:

Power Source: AC 120V/60Hz

Engineer Signature: LGWADE

Job No.: LGW2017 #1272

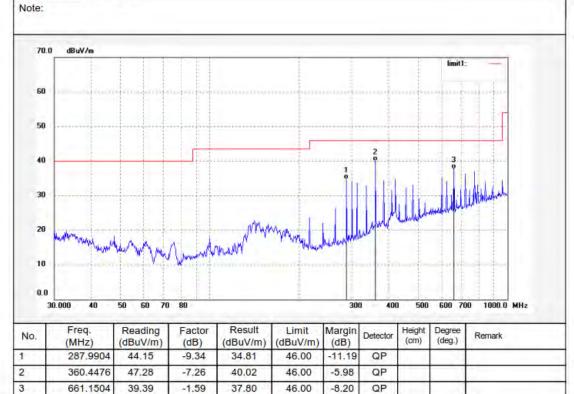
Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

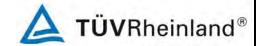
5" Video Baby Monitor With Wi-Fi Internet Viewing EUT:

Mode: Model: MBP855CONNECT Manufacturer: Binatone





Page 4 of 97





**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.: LGW2017 #1274

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

5" Video Baby Monitor With Wi-Fi Internet Viewing EUT:

Mode: TX 2440MHz MBP855CONNECT Model: Manufacturer: Binatone

Polarization: Horizontal

Power Source: AC 120V/60Hz

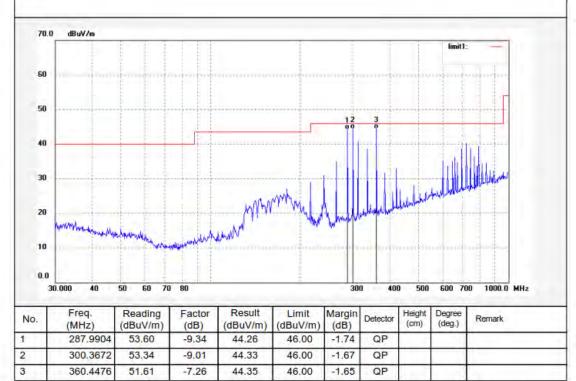
Date: 17/02/18/

Time:

Engineer Signature: LGWADE

Distance: 3m







**TÜV**Rheinland®

**Produkte Products** 

Page 5 of 97



### 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

Polarization: Vertical

Date: 17/02/18/

Distance: 3m

Time:

Power Source: AC 120V/60Hz

Engineer Signature: LGWADE

LGW2017 #1273

Standard: FCC Class B 3M Radiated

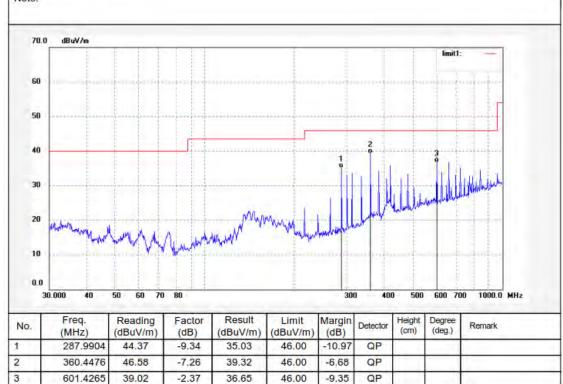
Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

5" Video Baby Monitor With Wi-Fi Internet Viewing EUT:

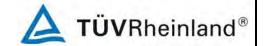
Mode: TX 2440MHz Model: MBP855CONNECT Manufacturer: Binatone

Note:



**50072840 001** Page 6 of 97

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.: LGW2017 #1275 Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 23 C / 48 %

EUT: 5" Video Baby Monitor With Wi-Fi Internet Viewing

Mode: TX 2477MHz

Model: MBP855CONNECT

Manufacturer: Binatone

actu

Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/02/18/

Time:

Engineer Signature: LGWADE

Distance: 3m

