

TÜV AUSTRIA  
SERVICES GMBH

Office:  
Deutschstrasse 10  
1230 Vienna/Austria  
T: +43 5 0454-0  
F: +43 5 0454-6505  
E: pzv@tuv.at  
W: www.tuv.at

Business Area  
Industry & Energy  
Austria  
Technik

**Applicant:** StreamUnlimited Engineering GmbH  
High Tech Campus Vienna  
Gutheil-Schoder-Gasse 10  
A-1100 Vienna

**Tested Product:** STREAM810 Bluetooth / BLE / WIFI streaming module  
Test report for Bluetooth part only

**FCC-ID:** 2AJYB-S810

**IC-ID:** 20504-S810

**Manufacturer:** See applicant

**Output power /  
field strength:** 38,9 mW cond.      **power supply:** 5 VDC



Testing Laboratory,  
Inspection Body,  
Certification Body,  
Calibration Laboratory,  
Verifizierungsstelle

**Frequency range:** 5180 - 5825 MHz      **Channel separation:** 20 MHz  
with gaps

Notified Body 0408  
IC 2932K-1

**Standard:** FCC: 47 CFR Part 15 (October 1, 2017 edition)  
RSS-247 Issue 2, February 2017

Non-executive  
Board of Directors:  
KR DI Johann  
Marihart

**TUV Austria Services GmbH**  
**Test laboratory for EMC**

Supervisor of EMC-laboratory:

Ing. Wilhelm Seier



Copy Nbr.: 01

checked by:

Ing. Michael Emminger

Management:  
DI Dr. Stefan Haas  
Mag. Christoph Wenninger

Registered Office:  
Deutschstrasse 10  
1230 Vienna/Austria

Branch Offices:  
www.tuv.at/standorte

Company Register  
Court / - Number:  
Vienna / FN 288476 f

Bank Details:  
IBAN  
AT13120005294900106  
BIC BKAUATWW

IBAN  
AT1531000010409328  
BIC RZBAATWW

VAT ATU63240488  
DVR 3002476

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The results of this test report only refer to the provided equipment.

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## 1. Applicant

**Company:** StreamUnlimited Engineering GmbH

**Department:** Director Systems

**Address:** High Tech Campus Vienna  
Gutheil-Schoder-Gasse 10  
A-1100 Vienna

**Contact person:** Mr. DI Christoph Apel

**EUT received on:** 06.08.2018

**Tests were performed on:** 06.08.2018

## 2. Description of EUT

**EUT:** Bluetooth / BLE / WIFI module "STREAM810"

**Serial Number:** Prototype mounted in special case

**Manufacturer:** StreamUnlimited Engineering GmbH  
High Tech Campus Vienna  
Gutheil-Schoder-Gasse 10  
A-1100 Vienna

**Description:** StreamUnlimited Engineering GmbH provided the following configuration for the measurements:

Prototype mounted in special case with special antennas

**Operating mode:** The measurements were carried out at the following running states:  
test-firmware running, transmitting continuously

**Technical data EUT:** Rated voltage: 5VDC  
Rated current: <1A  
Rated frequency: DC

Mains voltage during the tests: 5VDC internal battery

**Climatic conditions in the emc laboratory:** Relative humidity: 44%  
Temperature: 30°C

### 3. Standards / Final result

Name	Title	Deviation	Result
Title 47 CFR Part 15 October 1 <sup>st</sup> 2017 edition	RADIO FREQUENCY DEVICES	none	OK
RSS-247 Issue 2, February 2017	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices	none	OK
Result: Opinions and interpretation of testing laboratory OK: EUT passed NOK: EUT failed			

This is only an additional report to cover a new antenna with higher gain in the 5 GHz ranges.

#### **4.1. TEST OBJECT DATA**

##### **General EUT Description**

This Bluetooth / BLE / WIFI module is using either 2.4 GHz frequencies or 5 GHz (WIFI only). This test report is only for the 5 GHz WIFI part to cover an additional antenna set.

##### **2.1033 (c) Technical description**

###### **2.1033 (4) Type of emission:**

802.11 standards – Channel bandwidths 20 MHz, 40 MHz (aggregation of 2 non-overlapping 20 MHz OFDM channels) or 80 MHz (aggregation of 4 non-overlapping 20 MHz OFDM channels) – Channel spacing 20 / 40 / 80 MHz respectively.

###### **2.1033 (5) Frequency range:**

5180 till 5240 MHz; 5260 till 5320 MHz; 5500 till 5700 MHz and 5745 till 5825 MHz (channel center frequencies) in 20 MHz steps resulting in 24 Channels of 20 MHz bandwidth  
5190 till 5230 MHz; 5270 till 5310 MHz; 5510 till 5670 MHz and 5755 till 5795 MHz (channel center frequencies) in 40 MHz steps resulting in 11 Channels of 40 MHz bandwidth  
5210 / 5290 / 5530 / 5690 / 5775 MHz (channel center frequencies with 80 MHz channel bandwidth) giving a total number of five 80MHz-Channels

**2.1033 (6) Power range and Controls:** The maximum peak output power is 38,9 mW and there is no power regulation.

**2.1033 (7) Maximum output power rating:** 38,9 mW.

**2.1033 (8) DC Voltage and Current:** 5 V DC

maximum current consumption: 300 mA)

RSS-135 This standard does not apply to:

- 1.1.(a) a receiver that scans radio frequencies for the purpose of enabling its associated transmitter to avoid transmitting in an occupied frequency but which does not have the capability of decoding the message (e.g. converting it to audio voice) contained in the radio signal

New Antennas used for radiated measurements: 'TE 2195505-2' and 'TE 2195501-2' mounted in the standard case.

Tests were performed August 6<sup>th</sup> 2018.

#### 4.2. Number of channels and channel spacing

§ 2.1033

##### Conducted Measurement

Rated output power: 38,9 mW

There are 24 Channels used starting at 5170 till 5825 MHz (with gaps) each separated by 20 MHz channel spacing with a maximum bandwidth of 20 MHz.

Two channels spaced by 20 MHz can be used simultaneously to give a RF-Bandwidth of 40 MHz, resulting in 11 different channels with 40 MHz bandwidth and center frequencies of 5180 till 5795 MHz each separated by 40 MHz channel spacing.

4 channels spaced by 20 MHz can be used simultaneously to give a RF-Bandwidth of 80 MHz, resulting in 5 different channels with 80 MHz bandwidth and center frequencies of 5210 till 5775 MHz each separated by 80 MHz channel spacing.

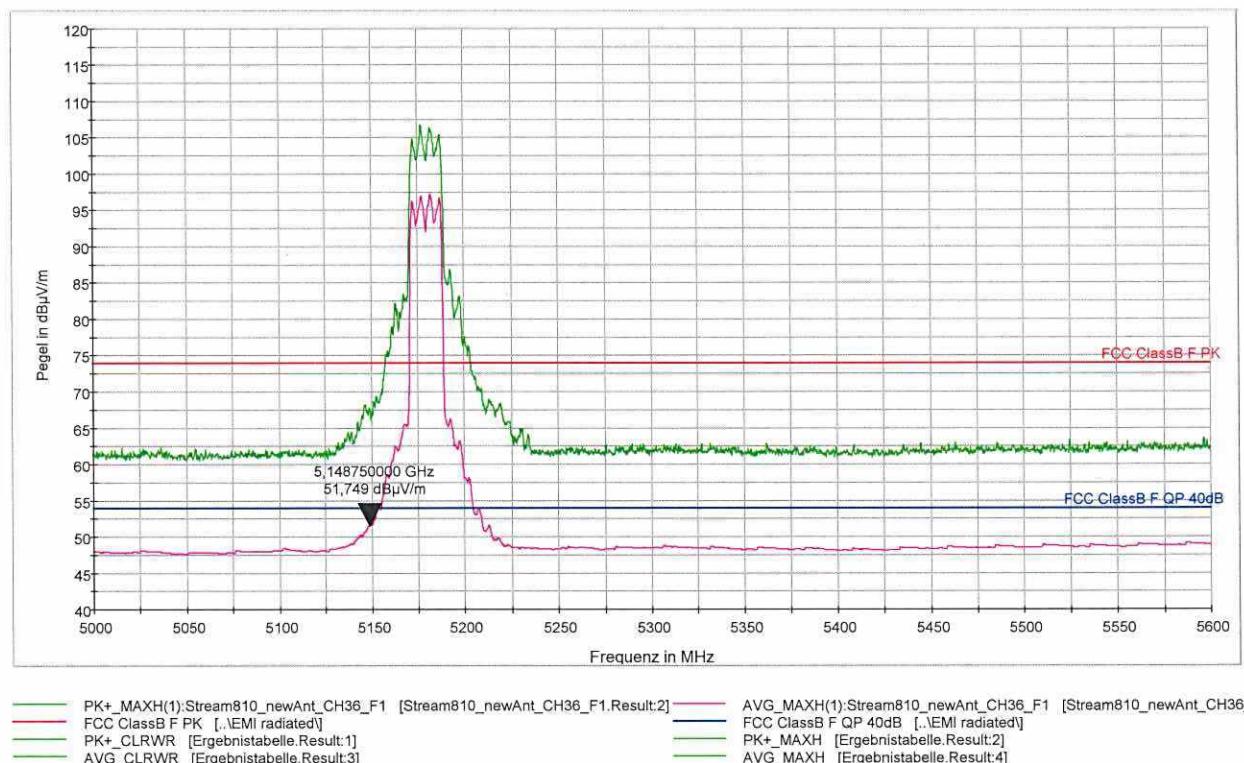
Test Equipment used: N/A

**4.3. Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 36: 5180 MHz



**LIMIT**

**SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edge of the nearest restricted band: 5150 MHz.

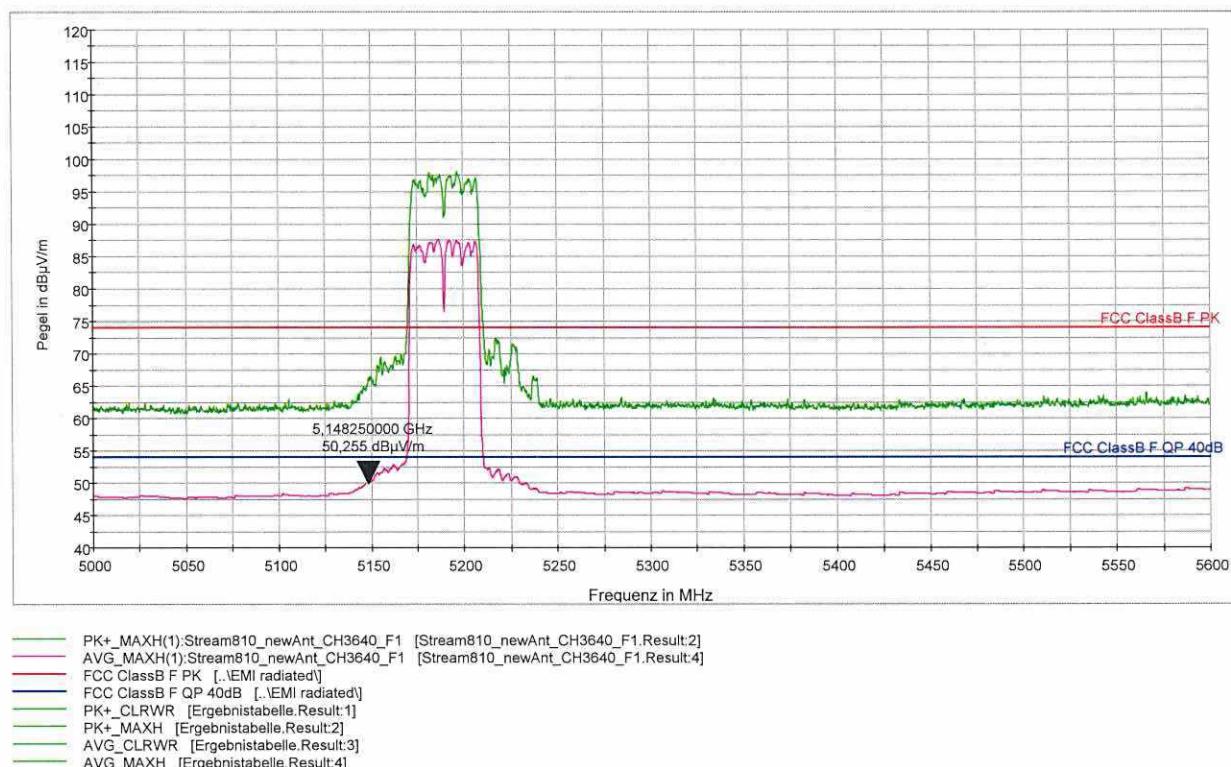
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 36-40: 5190 MHz



**LIMIT**

**SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edge of the nearest restricted band: 5150 MHz.

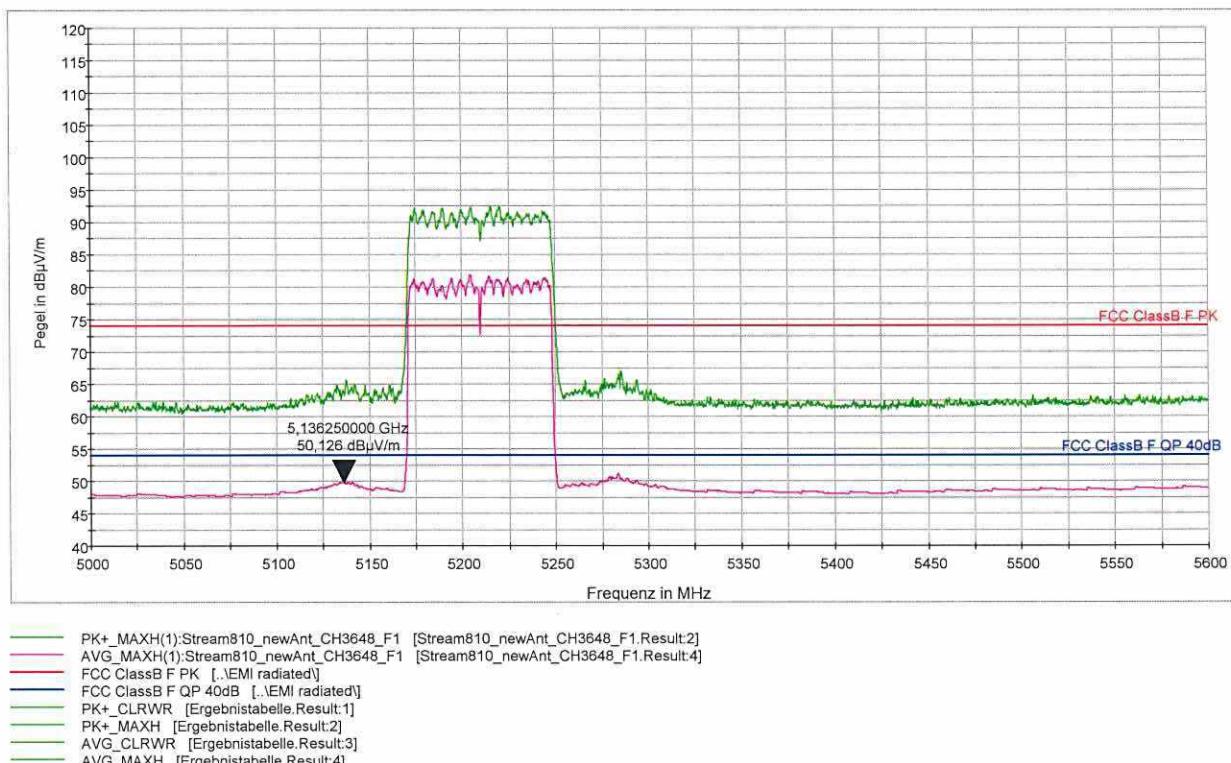
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 36-48: 5210 MHz



**LIMIT**

**SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edge of the nearest restricted band: 5150 MHz.

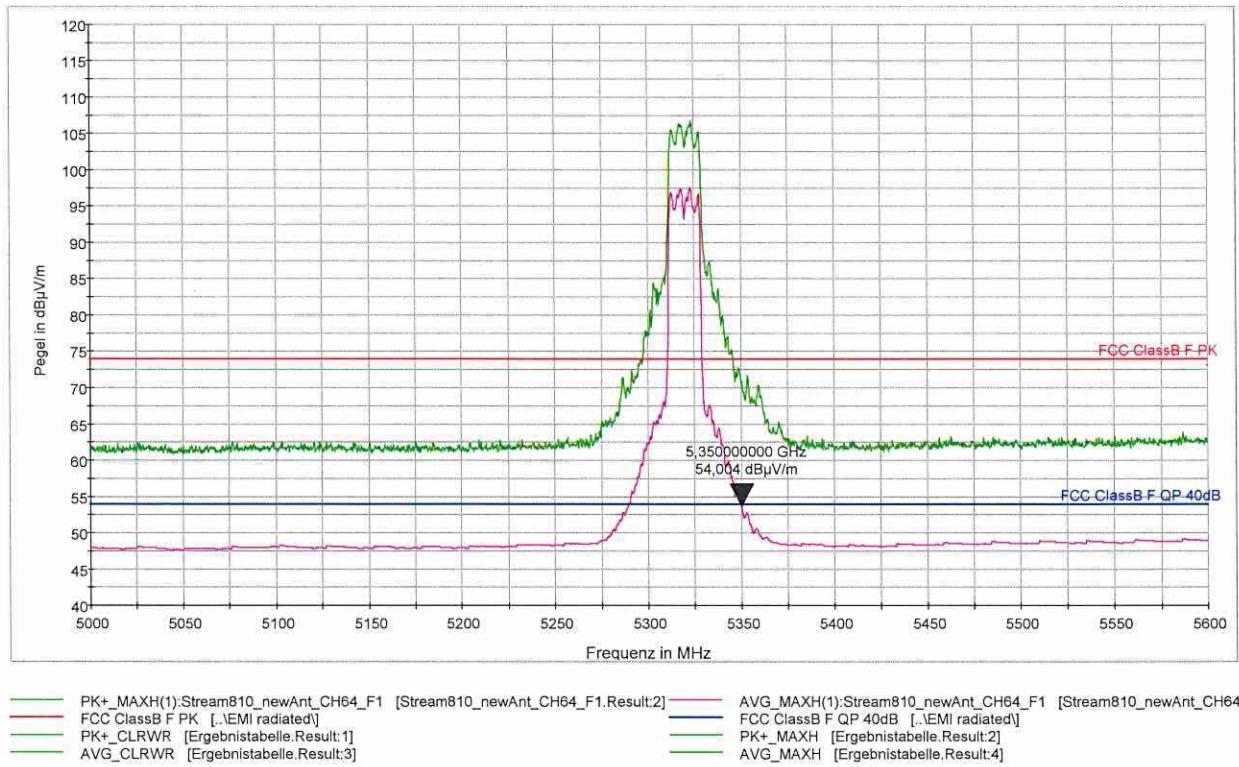
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 64: 5320 MHz



**LIMIT**

**SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edge of the nearest restricted band: 5350 MHz.

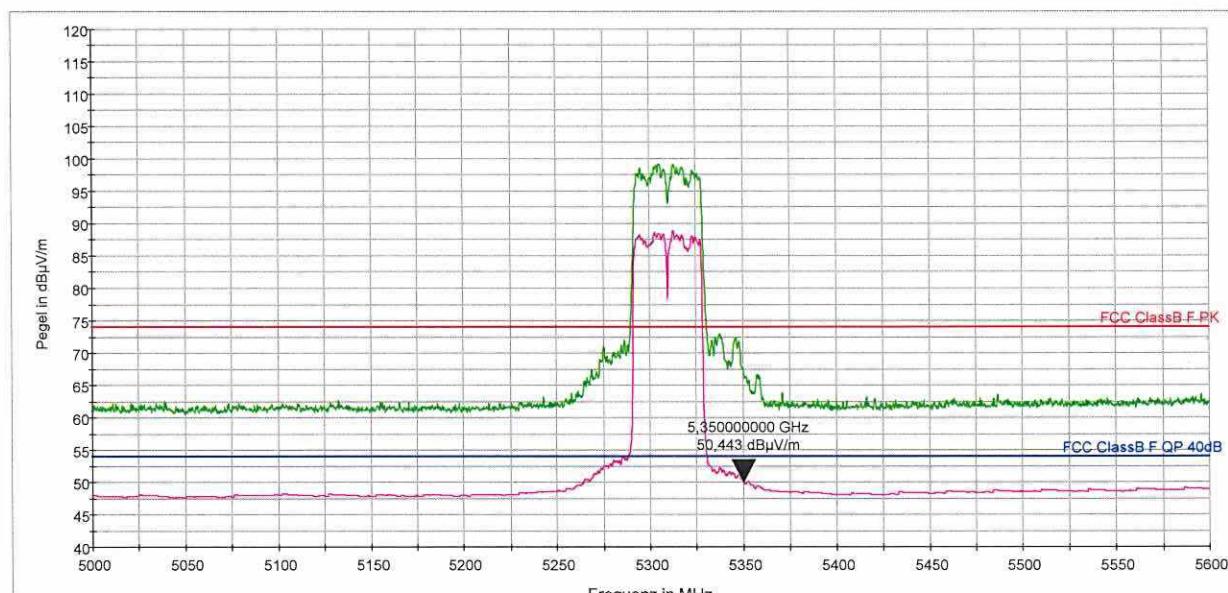
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 60-64: 5310 MHz



Legend:

- PK+\_MAXH(1);Stream810\_newAnt\_CH6064\_F1 [Stream810\_newAnt\_CH6064\_F1.Result:2]
- AVG\_MAXH(1);Stream810\_newAnt\_CH6064\_F1 [Stream810\_newAnt\_CH6064\_F1.Result:4]
- FCC ClassB F PK [..|EMI radiated]
- FCC ClassB F QP 40dB [..|EMI radiated]
- PK+\_CLRWR\_ [Ergebnistabelle.Result:1]
- PK+\_MAXH\_ [Ergebnistabelle.Result:2]
- AVG\_CLRWR\_ [Ergebnistabelle.Result:3]
- AVG\_MAXH\_ [Ergebnistabelle.Result:4]

**LIMIT**

**SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edge of the nearest restricted band: 5350 MHz.

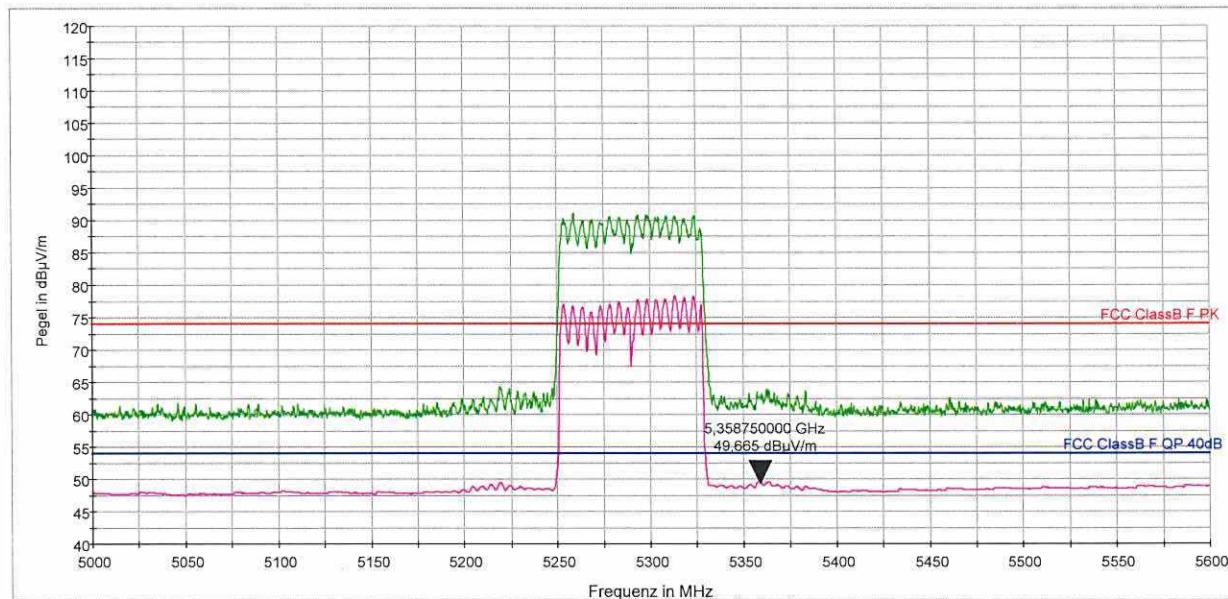
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 52-64: 5290 MHz



- PK+\_CLRWR(1);Stream810\_newAnt\_CH5264\_F1 [Stream810\_newAnt\_CH5264\_F1.Result:1]
- AVG\_CLRWR(1);Stream810\_newAnt\_CH5264\_F1 [Stream810\_newAnt\_CH5264\_F1.Result:3]
- FCC ClassB F PK [..EMI radiated]
- FCC ClassB F QP 40dB [..EMI radiated]
- PK+\_CLRWR [Ergebnistabelle.Result:1]
- PK+\_MAXH [Ergebnistabelle.Result:2]
- AVG\_CLRWR [Ergebnistabelle.Result:3]
- AVG\_MAXH [Ergebnistabelle.Result:4]

**LIMIT**

**SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edge of the nearest restricted band: 5350 MHz.

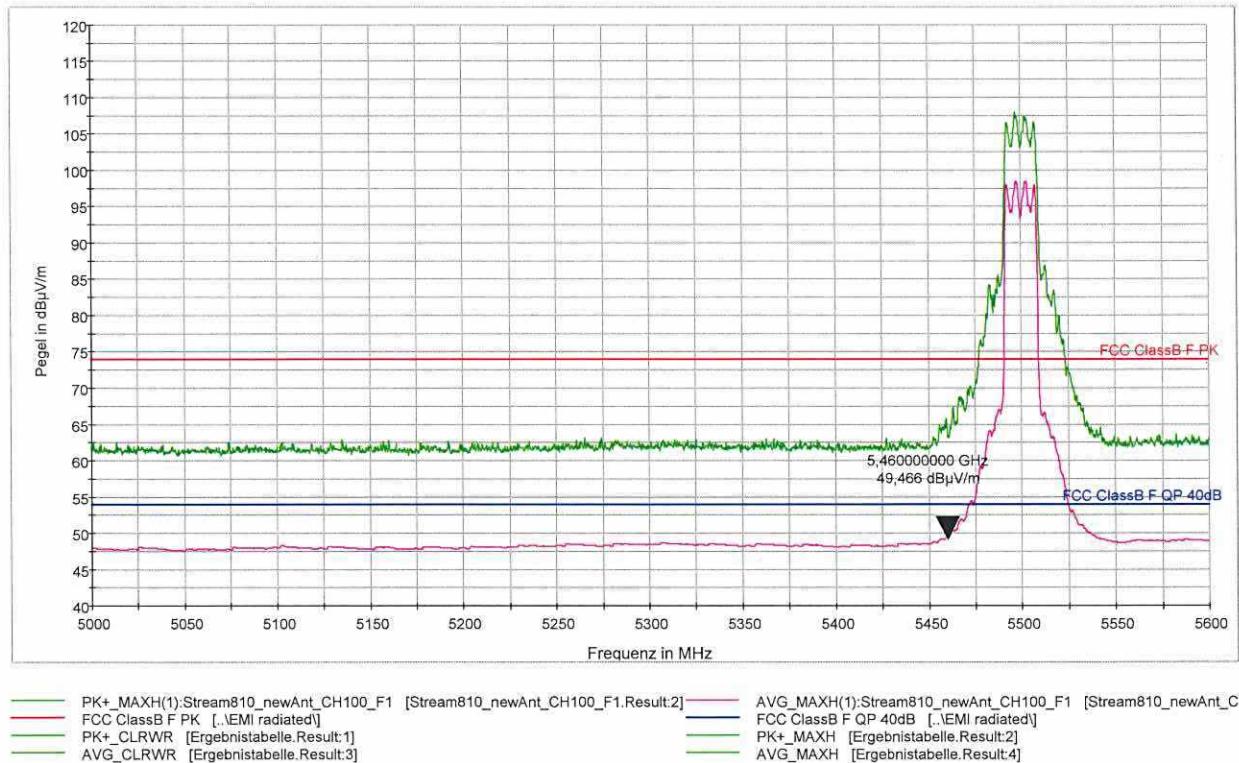
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 100: 5500 MHz



**LIMIT**

**SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edge of the nearest restricted band: 5460 MHz.

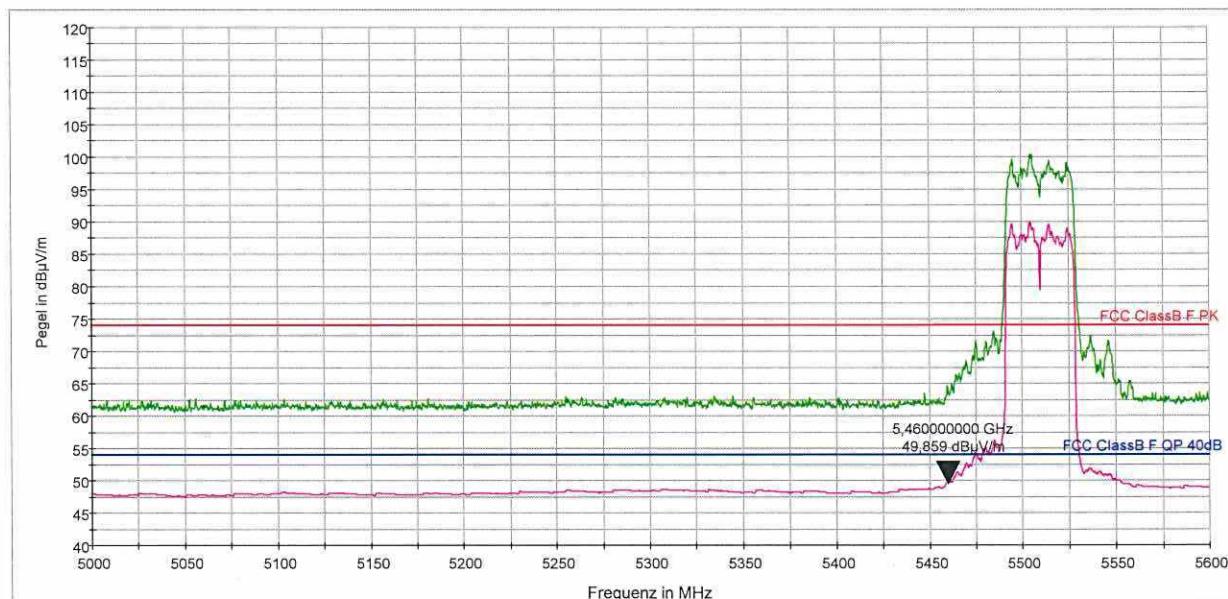
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 100-104: 5510 MHz



- PK+\_MAXH(1):Stream810\_newAnt\_CH100104\_F1 [Stream810\_newAnt\_CH100104\_F1.Result:2]
- AVG\_MAXH(1):Stream810\_newAnt\_CH100104\_F1 [Stream810\_newAnt\_CH100104\_F1.Result:4]
- FCC ClasB F PK [..EMI radiated]
- FCC ClasB F QP 40dB [..EMI radiated]
- PK+\_CLRWR [Ergebnistabelle.Result:1]
- PK+\_MAXH [Ergebnistabelle.Result:2]
- AVG\_CLRWR [Ergebnistabelle.Result:3]
- AVG\_MAXH [Ergebnistabelle.Result:4]

**LIMIT**

**SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edge of the nearest restricted band: 5460 MHz.

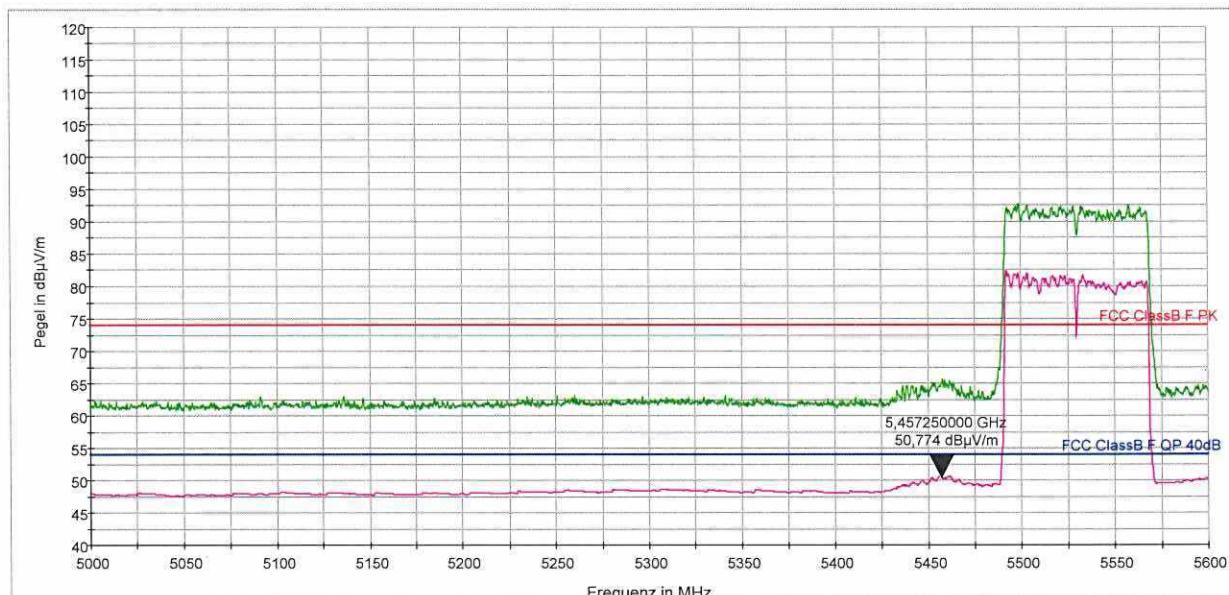
Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

**Emissions in restricted bands**  
**Emissions falling within restricted frequency bands**

**§ 15.209(a)**  
**RSS-Gen**

Measurement with Peak-Detector (green line) and Average detector (magenta line): Band Edge requirement

Setup: CH 100-112: 5530 MHz



Legend:

- PK+\_MAXH(1):Stream810\_newAnt\_CH100112\_F1 [Stream810\_newAnt\_CH100112\_F1.Result:2]
- AVG\_MAXH(1):Stream810\_newAnt\_CH100112\_F1 [Stream810\_newAnt\_CH100112\_F1.Result:4]
- FCC ClassB F PK [..EMI radiated]
- FCC ClassB F QP 40dB [..EMI radiated]
- PK+\_CLRWR [Ergebnistabelle.Result:1]
- PK+\_MAXH [Ergebnistabelle.Result:2]
- AVG\_CLRWR [Ergebnistabelle.Result:3]
- AVG\_MAXH [Ergebnistabelle.Result:4]

**LIMIT**

**SUBCLAUSE 15.209(a) – RSS-Gen**

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Band edge of the nearest restricted band: 5460 MHz.

Test Equipment used: EMV-100; EMV-101; EMV-102; EMV-103; EMV-105; EMV-110; EMV-200

# Appendix 1

## Test equipment used

<input type="checkbox"/> Anechoic Chamber with 3m measurement distance	NT-100	<input type="checkbox"/> Spectrumanalyzer – FSP7 9 kHz – 7 GHz	NT-200	Division: Industry & Energy
<input type="checkbox"/> Stripline according to ISO 11452-5	NT-108	<input type="checkbox"/> ESCI - Test receiver 9 kHz - 7 GHz	NT-203/1	Department: FG
<input type="checkbox"/> MA4000 - Antenna mast 1 - 4 m height	NT-110/1	<input type="checkbox"/> ESI26 – Test receiver 20 Hz – 26,5 GHz	NT-207	Test report number: INE-AT/FG-18/152
<input type="checkbox"/> DS - Turntable 0 - 400 ° Azimuth	NT-111/1	<input type="checkbox"/> Digital Radio Tester CTS55	NT-208	Page: 1 of 4
<input type="checkbox"/> CO3000 Controller Mast+Turntable	NT-112/1	<input type="checkbox"/> Noise-gen., ITU-R 559-2 20 Hz – 20 kHz	NT-209	Date: 13.08.2018
<input type="checkbox"/> HUF-Z3 - Log. Per. Antenna 200 - 1000 MHz	NT-121	<input type="checkbox"/> CMTA - Radiocommunication analyzer ; 0,1 - 1000 MHz	NT-210	Checked by:
<input type="checkbox"/> FMZB1513 - Loop Antenna 9 kHz - 30 MHz	NT-122/1	<input type="checkbox"/> 3271 - Spectrum analyzer 100 Hz - 26,5 GHz	NT-211	
<input type="checkbox"/> HFH-Z6 - Rod Antenna 9 kHz - 30 MHz	NT-123	<input type="checkbox"/> Digital Radio Tester Aeroflex 3920	NT-212/1	
<input type="checkbox"/> 3121C - Dipole Antenna 28 - 1000 MHz	NT-124	<input type="checkbox"/> Mixer M28HW 26,5 GHz - 40 GHz	NT-214	
<input type="checkbox"/> 3115 - Horn Antenna 1 - 18 GHz (immunity)	NT-125	<input type="checkbox"/> RubiSource T&M Timing reference	NT-216	
<input type="checkbox"/> 3116 - Horn Antenna 18 - 40 GHz	NT-126	<input type="checkbox"/> Radiocommunicationanalyzer SWR 1180 MD	NT-217	
<input type="checkbox"/> SAS-200/543 - Bicon. Antenna 20 MHz - 300 MHz	NT-127	<input type="checkbox"/> Mixer M19HWD 40 GHz - 60 GHz	NT-218	
<input type="checkbox"/> AT-1080 - Log. Per. Antenna 80 - 1000 MHz	NT-128	<input type="checkbox"/> Mixer M12HWD 60 GHz – 90 GHz	NT-219	
<input type="checkbox"/> HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-129	<input type="checkbox"/> DSO9104 Digital scope	NT-220/1	
<input type="checkbox"/> HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-130	<input type="checkbox"/> TPS 2014 Digital scope	NT-222	
<input type="checkbox"/> 3146 - Log. Per. Antenna 200 – 1000 MHz	NT-131	<input type="checkbox"/> Artificial Ear according to IEC 60318	NT-224	
<input type="checkbox"/> VULB 9163 Trilog Antenna 30 – 3000 MHz	NT-131/1	<input type="checkbox"/> 1 kHz Sound calibrator	NT-225	
<input type="checkbox"/> Loop Antenna H-Field	NT-132	<input type="checkbox"/> B10 - Harmonics and flicker analyzer	NT-232	
<input type="checkbox"/> Horn Antenna 500 MHz - 2900 MHz	NT-133	<input type="checkbox"/> SRM-3006 Spectrumanalyzer	NT-233/1a	
<input type="checkbox"/> Horn Antenna 500 MHz - 6000 MHz	NT-133/1	<input type="checkbox"/> E-field probe SRM 75 MHz – 3 GHz	NT-234	
<input type="checkbox"/> Log. per. Antenna 800 MHz - 2500 MHz	NT-134	<input type="checkbox"/> Field Meter NBM-500 incl. E- and H-Field probes	NT-240a-e	
<input type="checkbox"/> Log. per. Antenna 800 MHz - 2500 MHz	NT-135	<input type="checkbox"/> Hall-Teslameter ETM-1	NT-241	
<input type="checkbox"/> BiConiLog Antenna 26 MHz – 2000 MHz	NT-137	<input type="checkbox"/> EFA-3 H-field- / E-field probe	NT-243	
<input type="checkbox"/> Conical Dipol Antenna PCD8250	NT-138	<input type="checkbox"/> EHP-50F H-field- / E-field probe	NT-243/1	
<input type="checkbox"/> HF 906 - Horn Antenna 1 - 18 GHz (emission)	NT-139	<input type="checkbox"/> Field Meter EMR-200 100 kHz – 3 GHz	NT-244	
<input type="checkbox"/> HZ-1 Antenna tripod	NT-150	<input type="checkbox"/> E-field probe 100 kHz – 3 GHz	NT-245	
<input type="checkbox"/> BN 1500 Antenna tripod	NT-151	<input type="checkbox"/> H-field probe 300 kHz – 30 MHz	NT-246	
<input type="checkbox"/> Ant. tripod for EN61000-4-3 Model TP1000A	NT-156			
<input type="checkbox"/> Power quality analyzer Fluke 1760 (complete set)	NT-160 - NT-173			

## Appendix 1 (continued)

### Test equipment used

<input type="checkbox"/> E-field probe 3 MHz – 18 GHz	NT-247	<input type="checkbox"/> 500W1000M7 - RF-Amplifier 80 - 1000 MHz / 500 W	NT-332	Division: Industry & Energy
<input type="checkbox"/> H-field probe 27 MHz – 1 GHz	NT-248	<input type="checkbox"/> AS0102-65R - RF-Amplifier 1 GHz - 2 GHz	NT-333	Department: FG
<input type="checkbox"/> ELT-400 1 Hz – 400 kHz	NT-249	<input type="checkbox"/> APA01 – RF-Amplifier 0,5 GHz – 2,5 GHz	NT-334	Test report number: INE-AT/FG-18/152
<input type="checkbox"/> MDS 21 - Absorbing clamp 30 - 1000 MHz	NT-250	<input type="checkbox"/> Preamplifier 1 GHz - 4 GHz	NT-335	Page: 2 of 4
<input type="checkbox"/> FCC-203I EM Injection clamp	NT-251	<input type="checkbox"/> Preamplifier for GPS MKU 152 A	NT-336	Date: 13.08.2018
<input type="checkbox"/> FCC-203I-DCN Ferrite decoupling network	NT-252	<input type="checkbox"/> Preamplifier 100 MHz – 23 GHz	NT-337	Checked by:
<input type="checkbox"/> PR50 Current Probe	NT-253	<input type="checkbox"/> DC Block 10 MHz – 18 GHz Model 8048	NT-338	
<input type="checkbox"/> i310s Current Probe	NT-254/1	<input type="checkbox"/> 2-97201 Electronic load	NT-341	
<input type="checkbox"/> Fluke 87 V True RMS Multimeter	NT-260	<input type="checkbox"/> TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-344	
<input type="checkbox"/> Model 2000 Digital Multimeter	NT-261	<input type="checkbox"/> TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-345	
<input type="checkbox"/> Fluke 87 V Digital Multimeter	NT-262/1	<input type="checkbox"/> VDS 200 Mobil-impuls-generator	NT-350	
<input type="checkbox"/> ESH2-Z5-U1 Artificial mains network 4x25A	NT-300	<input type="checkbox"/> LD 200 Mobil-impuls-generator	NT-351	
<input type="checkbox"/> ESH3-Z5-U1 Artificial mains network 2x10A	NT-301	<input type="checkbox"/> MPG 200 Mobil-Impuls-Generators	NT-352	
<input type="checkbox"/> ESH3-Z6-U1 Artificial mains network 1x100A	NT-302	<input type="checkbox"/> EFT 200 Mobil-impuls-generator	NT-353	
<input type="checkbox"/> ESH3-Z6-U1 Artificial mains network 1x100A	NT-302a	<input type="checkbox"/> AN 200 S1 Artificial Network	NT-354	
<input type="checkbox"/> PHE 4500/B Power amplifier	NT-304	<input type="checkbox"/> FP-EFT 32M 3 ph. Coupling filter (Burst)	NT-400/1	
<input type="checkbox"/> EZ10 T-Artificial Network	NT-305	<input type="checkbox"/> PHE 4500 - Mains impedance network	NT-401	
<input type="checkbox"/> SMG - Signal generator 0,1 - 1000 MHz	NT-310	<input type="checkbox"/> IP 6.2 Coupling filter for data lines (Surge)	NT-403	
<input type="checkbox"/> SMA100A - Signal generator 9 kHz - 6 GHz	NT-310/1	<input type="checkbox"/> TK 9421 High Power Volt. Probe 150 kHz - 30 MHz	NT-409	
<input type="checkbox"/> RefRad Reference generator	NT-312	<input type="checkbox"/> ESH2-Z3 - Probe 9 kHz - 30 MHz	NT-410	
<input type="checkbox"/> SMP 02 Signal generator 10 MHz - 20 GHz	NT-313	<input type="checkbox"/> IP 4 - Capacitive clamp (Burst)	NT-411	
<input type="checkbox"/> 40 MHz Arbitrary Generator TGA1241	NT-315	<input type="checkbox"/> Highpass-Filter 100 MHz – 3 GHz	NT-412	
<input type="checkbox"/> Artificial mains network NSLK 8127-PLC	NT-316	<input type="checkbox"/> Highpass-Filter 600 MHz – 4 GHz	NT-413	
<input type="checkbox"/> ESD 30 System up to 25 kV	NT-321	<input type="checkbox"/> Highpass-Filter 1250 MHz – 4 GHz	NT-414	
<input type="checkbox"/> PSURGE 4.1 Surge generator	NT-324	<input type="checkbox"/> Highpass-Filter 1800 MHz – 16 GHz	NT-415	
<input type="checkbox"/> IMU4000 Immunity test system	NT-325/1			
<input type="checkbox"/> VCS 500-M6 Surge-Generator	NT-326			
<input type="checkbox"/> Oscillatory Wave Simulator incl. Coupling networks	NT- 328a+b+c			
<input type="checkbox"/> BTA-250 - RF-Amplifier 9 kHz - 220 MHz / 250 W	NT-330			
<input type="checkbox"/> T82-50 RF-Amplifier 2 GHz – 8 GHz	NT-331			

## Appendix 1 (continued)

### Test equipment used

<input type="checkbox"/> Highpass-Filter 3500 MHz – 18 GHz	NT-416	<input type="checkbox"/> FCC-801-AF10 Coupling decoupling network	NT-461	Division: Industry & Energy
<input type="checkbox"/> RF-Attenuator 10 dB DC – 18 GHz / 50 W	NT-417	<input type="checkbox"/> FCC-801-S25 Coupling decoupling network	NT-462	Department: FG
<input type="checkbox"/> RF-Attenuator 6 dB DC – 18 GHz / 50 W	NT-418	<input type="checkbox"/> FCC-801-T4 Coupling decoupling network	NT-463	Test report number: INE-AT/FG-18/152
<input type="checkbox"/> RF-Attenuator 3 dB DC – 18 GHz / 50 W	NT-419	<input type="checkbox"/> FCC-801-C1 Coupling decoupling network	NT-464	Page: 3 of 4
<input type="checkbox"/> RF-Attenuator 20 dB DC - 1000 MHz / 25 W	NT-421	<input type="checkbox"/> SW 9605 - Current probe 150 kHz – 30 MHz	NT-465/1	Date: 13.08.2018
<input type="checkbox"/> RF-Attenuator 30 dB DC - 1000 MHz / 1 W	NT-423	<input type="checkbox"/> 95242-1 – Current probe 1 MHz – 400 MHz	NT-468	Checked by:
<input type="checkbox"/> RF-Attenuator 30 dB	NT-424	<input type="checkbox"/> 94106-1L-1 – Current probe 100 kHz – 450 MHz	NT-471	
<input type="checkbox"/> RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-425	<input type="checkbox"/> GA 1240 Power amplifier according to EN 61000-4-16	NT-480	
<input type="checkbox"/> RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-426	<input type="checkbox"/> Coupling networks according to EN 61000-4-16	NT-481 - NT-483	
<input type="checkbox"/> RF-Attenuator 6 dB	NT-428	<input type="checkbox"/> Van der Hoofden Test Head	NT-484	
<input type="checkbox"/> RF-Attenuator 0 dB - 81 dB	NT-429	<input type="checkbox"/> EMC Video/Audiosystem	NT-511/1	
<input type="checkbox"/> WRU 27 - Band blocking 27 MHz	NT-430	<input type="checkbox"/> ES-K1 Version 1.71 SP2 Test software	NT-520	
<input type="checkbox"/> WHJ450C9 AA - High pass 450 MHz	NT-431	<input type="checkbox"/> EMC32 Version 10.40.00 Test software	NT-520/1	
<input type="checkbox"/> WHJ250C9 AA - High pass 250 MHz	NT-432	<input type="checkbox"/> SRM-TS Version 1.3 software for SRM-3000	NT-522	
<input type="checkbox"/> RF-Load 150 W	NT-433	<input type="checkbox"/> SRM-TS Version 1.3.1 software for SRM-3006	NT-522/1	
<input type="checkbox"/> Impedance transducer 1:4 ; 1:9 ; 1:16	NT-435	<input type="checkbox"/> Spitzengerer und Spies Test software V4.1	NT-525	
<input type="checkbox"/> RF-Attenuator DC – 18 GHz 6 dB	NT-436	<input type="checkbox"/> Noise power test apparatus according to EN 55014	NT-530	
<input type="checkbox"/> RF-Attenuator DC – 18 GHz 6 dB	NT-437	<input type="checkbox"/> Vertical coupling plane (ESD)	NT-531	
<input type="checkbox"/> RF-Attenuator DC – 18 GHz 10 dB	NT-438	<input type="checkbox"/> Test cable #4 for EN 61000-4-6	NT-553	
<input type="checkbox"/> RF-Attenuator DC – 18 GHz 20 dB	NT-439	<input type="checkbox"/> Test cable #3 for conducted emission	NT-554	
<input type="checkbox"/> I+P 7780 Directional coupler 100 - 2000 MHz	NT-440	<input type="checkbox"/> Test cable #5+#6 ESD-cable (2x470k)	NT-555 + NT-556	
<input type="checkbox"/> ESH3-Z2 - Pulse limiter 9 kHz - 30 MHz	NT-441	<input type="checkbox"/> Test cable #8 Sucoflex 104EA	NT-559	
<input type="checkbox"/> Power Divider 6 dB/1 W/50 Ohm	NT-443	<input type="checkbox"/> Test cable #9 (for outdoor measurements)	NT-580	
<input type="checkbox"/> Directional coupler 0,1 MHz – 70 MHz	NT-444	<input type="checkbox"/> Test cable #10 (for outdoor measurements)	NT-581	
<input type="checkbox"/> Directional coupler 0,1 MHz – 70 MHz	NT-445	<input type="checkbox"/> Test cable #13 Sucoflex 104PE	NT-584	
<input type="checkbox"/> Tube imitations according to EN 55015	NT-450	<input type="checkbox"/> Test cable #21 for SRM-3000	NT-592	
<input type="checkbox"/> FCC-801-M3-16A Coupling decoupling network	NT-458	<input type="checkbox"/> Shield chamber	NT-600	
<input type="checkbox"/> FCC-801-M2-50A Coupling decoupling network	NT-459	<input type="checkbox"/> Climatic chamber	M-1200	
<input type="checkbox"/> FCC-801-M5-25 Coupling decoupling network	NT-460			

## Appendix 1 (continued)

### Test equipment used

<input type="checkbox"/> Anechoic Chamber 3 m / 5 m measuring distance	EMV-100	<input type="checkbox"/> Log.per Antenna 0,7 – 9 GHz STLP9149	EMV-305	Division: Industry & Energy
<input type="checkbox"/> Turntabel 6 m diameter	EMV-101	<input type="checkbox"/> HF- Amplifier 9 kHz-250 MHz BBA150 (low noise)	EMV-306	Department: FG
<input type="checkbox"/> Antenna mast 1 – 4 m	EMV-102	<input type="checkbox"/> Load Dump Generator LD 200N	EMV-350	Test report number: INE-AT/FG-18/152
<input type="checkbox"/> Mast and Turntable controller FC-06	EMV-103	<input type="checkbox"/> Ultra Compact Simulator UCS 200N100	EMV-351	Page: 4 of 4
<input type="checkbox"/> EMC Video/Audiosystem	EMV-104	<input type="checkbox"/> Automotive Power fail module PFM 200N100.1	EMV-352	Date: 13.08.2018
<input type="checkbox"/> EMC Software EMC32 Version 10.40.00	EMV-105	<input type="checkbox"/> Voltage Drop Symulator VDS 200Q100	EMV-353	Checked by:
<input type="checkbox"/> Hornantenna 1 – 18 GHz HF 907	EMV-110	<input type="checkbox"/> Arb. Generator AutoWave	EMV-354	
<input type="checkbox"/> Antennapre.amp. 1 – 18 GHz ERZ-LNA0200-1800-30-2	EMV-111	<input type="checkbox"/> Ultra Compact Simulator UCS 500N7	EMV-355	
<input type="checkbox"/> Trilog Antenna 30-3000 MHz VULB9163	EMV-112	<input type="checkbox"/> Coupling decoupling network CNI 503B7 / 32 A	EMV-356	
<input type="checkbox"/> Monopol 9 kHz – 30 MHz VAMP 9243	EMV-113	<input type="checkbox"/> Coupling decoupling network CNI 503B7 / 63 A	EMV-357	
<input type="checkbox"/> Antennapre.amp 18 – 40 GHz BBV 9721	EMV-114	<input type="checkbox"/> Telecom Surge Generator TSurge 7	EMV-358	
<input type="checkbox"/> Hornantenna 200 – 2000 MHz AH-220	EMV-110	<input type="checkbox"/> Coupling decoupling network CNI 508N2	EMV-359	
<input type="checkbox"/> DC Artificial Network PVDC 8300	EMV-150	<input type="checkbox"/> Coupling decoupling network CNV 504N2.2	EMV-360	
<input type="checkbox"/> AC Artificial Network NNLK 8121 RC	EMV-151	<input type="checkbox"/> Immunity generator NSG4060/NSG4060-1	EMV-361	
<input type="checkbox"/> EMI Receiver ESR26	EMV-200	<input type="checkbox"/> Coupling network CDND M316-2	EMV-362	
<input type="checkbox"/> Signalgenerator 9 kHz – 40 GHz N5173B	EMV-201	<input type="checkbox"/> Coupling network CT419-5	EMV-363	
<input type="checkbox"/> GPS Frequency normal B-88	EMV-202	<input type="checkbox"/> ESD Generator NSG 437	EMV-364	
<input type="checkbox"/> DC Power supply N5745A	EMV-203	<input type="checkbox"/> Pulse Limiter VTSD 9561-F BNC	EMV-405	
<input type="checkbox"/> Spektrum Analyzator FSV40	EMV-205	<input type="checkbox"/> Transient emission BSM200N40+BS200N100	EMV- 450+451	
<input type="checkbox"/> Thd Multimeter Model 2015	EMV-206	<input type="checkbox"/> Cap. Coupling Clamp HFK	EMV-455	
<input type="checkbox"/> Poweramplifier PAS15000	EMV- 207/abc	<input type="checkbox"/> Mag. Field System MS100N+MC26100+MC2630	EMV- 456-458	
<input type="checkbox"/> Inrush Current Source	EMV- 208/abc	<input type="checkbox"/> Coupling network CDN M2-100A	EMV-459	
<input type="checkbox"/> Arb.-generator Sycore	EMV-209	<input type="checkbox"/> Coupling network CDN M3-32A	EMV-460	
<input type="checkbox"/> Harmonics/Flicker analyzer ARS 16/3	EMV-210	<input type="checkbox"/> Coupling network CDN M5-100A	EMV-461	
<input type="checkbox"/> HF- Amplifier 9 kHz-250 MHz BBA150	EMV-300	<input type="checkbox"/> Current Clamp CIP 9136A	EMV-462	
<input type="checkbox"/> HF- Amplifier 80 -1000 MHz BBA150	EMV-301	<input type="checkbox"/> DC Artificial Network HV-AN 150	EMV- 464+465	
<input type="checkbox"/> HF- Amplifier 0,8 - 6 GHz BBA150	EMV-302	<input type="checkbox"/> Coupling Clamp EM 101	EMV-466	
<input type="checkbox"/> High Power Ant. 20-200 MHz VHBD 9134	EMV-303	<input type="checkbox"/> Decoupling Clamp FTC 101	EMV-467	
<input type="checkbox"/> Log.per Antenna 80-2700 MHz STLP 9128 E special	EMV-304	<input type="checkbox"/> Power attenuator 10 dB / 250 Watt	EMV-469/2	