

Prüfbericht-Nr.: Test report no.:	IN25YR31 001	Auftrags-Nr.: Order no.:	146966291 010	Seite 1 von 230 Page 1 of 230
Kunden-Referenz-Nr.: Client reference no.:	2390953	Auftragsdatum: Order date:	2024-09-24	
Auftraggeber: Client:	Proxim Wireless Corporation 2114 Ringwood Avenue, San Jose, CA 95131			
Prüfgegenstand: Test item:	EdgeAX 5GHz Radio Module	Serien-Nr.: serial no.:	Engineering Sample	
Bezeichnung.: Identification .:	Edge AX5			
Auftrags-Inhalt: Order content:	Testing and issue of Test report with Grant Certificate			
Prüfgrundlage: Test specification:	FCC Part 15 Subpart E 15.247,15.407,15.207, 15.205 & 15.209 RSS 247 Issue 3 & RSS Gen Issue 5			
Wareneingangsdatum: Date of sample receipt:	2024-07-02			
Prüfmuster-Nr Test sample no	A003759215-012 A003759215-005			
Prüfzeitraum: Testing period:	2024-10-05 - 2025-01-02			
Ort der Prüfung: Place of testing:	Wireless laboratory, Bangalore			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (India) Pvt.Ltd., 27/B, 2nd Cross, Electronic City Phase1 Bangalore -560 100, India FCC Test site registration number: 496599 ISED Test site registration number: 27711			
Prüfergebnis*: Test result*:	Pass			
geprüft von: tested by:	genehmigt von: authorized by:			
Datum: Date: 2025-02-18			Ausstellatum: Issue date: 2025-02-18	
Stellung / Position:	M.V.Naveen Kumar Senior Engineer	Stellung / Position:	Madhu K.N Assistant Manager	
Sonstiges / Other:	FCC ID: HZB-MEGA5 IC: 1856A-MEGA5 HVIN: Megabit 5 dual			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend 3 = satisfactory	4 = ausreichend N/A = nicht anwendbar 4 = sufficient N/A = not applicable
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	5 = mangelhaft N/T = nicht getestet 5 = poor N/T = not tested	
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

Prüfbericht - Nr.:

IN25YR31 001

Seite 2 von 230

Test Report No.:

Page 2 of 230

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
2	Wie vertraglich vereinbart, wurde dieses Dokument nur digital unterzeichnet. Der TÜV Rheinland hat nicht überprüft, welche rechtlichen oder sonstigen diesbezüglichen Anforderungen für dieses Dokument gelten. Diese Überprüfung liegt in der Verantwortung des Benutzers dieses Dokuments. Auf Verlangen des Kunden kann der TÜV Rheinland die Gültigkeit der digitalen Signatur durch ein gesondertes Dokument bestätigen. Diese Anfrage ist an unseren Vertrieb zu richten. Eine Umweltgebühr für einen solchen zusätzlichen Service wird erhoben. <i>As contractually agreed, this document has been signed digitally only. TUV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TUV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged.</i>
3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	Die Entscheidungsregel für Konformitätserklärungen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. <i>The decision rule for statements of conformity in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report.</i>

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 3 von 230
Page 3 of 230

TEST SUMMARY

Test Item	Applicable Standard		Result
	FCC 47 CFR 15	ISED	
Emission Bandwidth	15.407 (a) & (e)	RSS Gen Issue 5 Section 6.7 RSS 247 Issue 3 Section 6.2.2.1; 6.2.3.1	Pass
Frequency Stability	15.407 (g)	RSS Gen Issue 5 Section 8.11	Pass
Maximum Conducted Output Power	15.247 (b) & 15.407 (a)	RSS 247 Issue 3 Section 6.2.2.1; 6.2.3.1	Pass
Maximum Power Spectral Density	15.407 (a)	RSS 247 Issue 3 Section 6.2.2.1; 6.2.3.1	Pass
Dynamic Frequency Selection	15.407 (h)	RSS 247 Issue 3 Section 6.3	Pass
Spurious Radiated Emissions & Restricted Bands of Operation	15.407 (b) / (15.205 & 15.209)	RSS 247 Issue 3 Section 6.2.2.2; 6.2.3.2 RSS Gen Issue 5 Section 8.9 & 8.10	Pass
AC Power Line Conducted Emission	15.207	RSS Gen Issue 5 Section 8.8	Pass
Antenna Requirement	15.203	-	Pass

*N/A → Not Applicable

*Note: The Radio Module tested in Host condition and host names mentioned below.

Host Name for Edge AX5 5GHz Radio Module is Stratum™ X3 and Stratum™ X1.

Radio Modules to be hosted in following devices.

SX3-1020A-US & SX3-1021A-US & SX1-1023C-US

SX3-1020A-WD & SX3-1021A-WD & SX1-1023C-WD

Product Category: Electronics Testing
Test Discipline : EMC Test Facility

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 4 von 230
Page 4 of 230

REVISION HISTORY OF THIS REPORT

Report Number	Version	Description	Issue date
IN25YR31 001	01	Initial issue of report	2025-02-18

Table of Contents

1	GENERAL REMARKS	6
1.1	Attachments	6
2	TEST SITES	7
2.1	Testing Facilities	7
2.2	List of Test and Measurement Instruments.....	7
3	GENERAL PRODUCT INFORMATION.....	9
3.1	Product Function and Intended Use	9
3.2	Ratings and System Details of Equipment under Test	9
3.3	Measurement Uncertainty:	11
4	TEST SET-UP AND OPERATION MODE.....	12
4.1	Principle of Configuration Selection	12
4.2	UUT Operation and Software.....	12
4.3	Special Accessories and Auxiliary Equipment	12
4.4	Test Modes_ data rates & Modulation	12
4.5	Simultaneous Transmission	12
4.6	Countermeasures to achieve EMC Compliance	12
4.7	List of frequencies	13
5	OPERATIONAL DESCRIPTION.....	14
6	TEST METHODOLOGY	15
6.1	AC Powerline on Conducted emission.....	15
6.1.1	Test Setup Configuration.....	15
6.2	Radiated Emission Test	16
6.2.1	Test Setup Configuration.....	16
7	TEST RESULTS	18
7.1	Emission Bandwidth.....	18
7.2	Maximum Conducted Output Power	22
7.3	Maximum Power Spectral Density	43
7.4	Dynamic Frequency Selection (DFS).....	60
7.4.1	DFS Channel Availability check time.....	64
7.4.2	DFS Inservice Monitoring / Non-Occupancy Period.....	67
7.4.3	DFS Detection Bandwidth	69
7.4.4	Statistical Performace Check	72
7.5	Spurious Radiated Emissions & Restricted Bands of Operation	127
7.6	FREQUENCY STABILITY.....	210
7.7	AC POWER LINE CONDUCTED EMISSION.....	213
7.8	Additional requirement	216
7.8.1	Limits:	216
7.8.2	Test Results.....	216
8	LIST OF TABLES.....	221
9	POWER TABLE	221

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 6 von 230

Page 6 of 230

1 GENERAL REMARKS

1.1 Attachments

All attachments are part of this test report and are issued in separate document

1: TEST SETUP PHOTOS

2: EUT EXTERNAL PHOTOS

3: EUT INTERNAL PHOTOS

4: FCC LABEL AND LABEL LOCATION

5: BLOCK DIAGRAM

6: SPECIFICATION OF EUT

7: SCHEMATIC DIAGRAM

8: BILL OF MATERIAL

9: USER MANUAL

10: MAXIMUM PERMISSIBLE EXPOSURE INFORMATION

11: APPENDIX-1 FOR TEST PLOTS

2 TEST SITES

2.1 Testing Facilities

- | | |
|--|--|
| <p>1. TÜV Rheinland (India) Pvt.Ltd.,
27/B, 2nd Cross,
ElectronicCityPhase1
Bangalore – 560 100,
India
Radiated Measurement site type :
Fully anechoic chamber (used for above 1 GHz
measurements)</p> | <p>2. TUV Rheinland (India) Pvt.Ltd.,
108 , Beside ISBR Business School,
Electronic city Phase I
Bangalore - 560 100.
India
Radiated Measurement site type :
Semi anechoic chamber (used for below 1 GHz
measurements)</p> |
|--|--|

2.2 List of Test and Measurement Instruments

Table 1: List of test and measurement instruments

Equipment	Manufacturer	Model Name	Serial Number	Firmware Versions	Calibration Due Date	Periodicity	Test Facility
EMI Receiver	Rohde & Schwarz	ESW 44	101732	4.73 SP5	17.09.2025	Yearly	Radiated Spurious Emission
Active loop antenna	Frankonia	LAX-10	LAX-10-800	-	23-03-2025	Yearly	
Balun & Biconical Antenna	Schwarzbeck mess-elektronik	VHBB-9124 / BBA-9106	01028	-	08.02.2025	Yearly	
Log-Periodic Antenna	Schwarzbeck mess-elektronik	VUSLP-9111B	9111B-111	-	08.02.2025	Yearly	
Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-01944	-	12.11.2025	Yearly	
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA 9170-0904	-	15-01-2025	Yearly	
EMI Test Receiver	Rohde & Schwarz	ESW44	101773	1.72.SP1	26.01.2025	Yearly	
Semi Anechoic Chamber	Frankonia	-	-	-	-	-	
Fully Anechoic Chamber	Albatross	-	-	-	-	-	
Signal Analyzer	Rohde & Schwarz	FSV7	101644	3.40	09.02.2025	Yearly	Conducted Test Parameters
Open Switch & Control Unit	Rohde & Schwarz	OSP120 Incl. B157	OSP120-101323 & B157-100894	1.27.0.0	16.01.2026	Yearly	
Vector Signal Generator	Rohde & Schwarz	SMBV 100A	260789	4.15.125.49	09.02.2025	Yearly	
RF and microwave Signal Generator	Rohde & Schwarz	SMB 100A	108788	3.01.203.3 2	09.02.2025	Yearly	

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 8 von 230
Page 8 of 230

Vector Signal Generator	Rohde & Schwarz	SMU200 A	100994	-	02.05.2025	Yearly	
Spectrum Analyzer	Rohde & Schwarz	FSU26	200767	-	27.09.2025	Yearly	
EMI Receiver	Rohde & Schwarz	ESR7	101133	3.48 SP3	16.09.2025	Yearly	Conducted AC Power line Test
Two Line V-Network (LISN)	Rohde & Schwarz	ENV 216	100022	-	15-04-2025	Yearly	
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100811	-	08-07-2025	Yearly	

Table 2: Instrument application Software versions

SL. No.	Test Type	Application software	Version
1	Radiated spurious emission measurement in 10mtr-SAC	BAT EMC	3.20.0.17
2	Radiated spurious emission measurement in FAC	EMC 32	10.60.20
3	Antenna Port conducted measurement: TS8997 system	WMS 32	10.60.20
4	Antenna Port conducted measurement: CTE system	CTE	52.1

3 GENERAL PRODUCT INFORMATION

3.1 Product Function and Intended Use

The EdgeAX 5 GHz radio module is based on 11ax WiFi standard Qualcomm chipset operating in 2x2 MIMO mode. It is designed to be used in Proxim Stratum X3 or Stratum X1 host device.

Both Stratum X3 and X1 are based on Qualcomm processor.

Differences between Stratum X3 and Stratum X1 are based on the Ethernet controller and number of available ethernet ports:

- Stratum X3 provides three 1Gbps ports
- Stratum X1 provides one 1Gbps port

The Stratum™ X3 and X1 are highly efficient radio endpoints that deliver up to one gigabit throughput in both point-to-point and multipoint wide area network configurations. Able to operate in MIMO 2x2, with either integrated or external antenna (software switchable on some variant), the Stratum™ X3 and X1 are ideally suited to backhaul, video surveillance, or multipoint deployments.

Powered by Proxim WOPR® (Wireless Outdoor Router Protocol), managed via web GUI, CLI, Bluetooth- enabled Proxim BlueConnect™ and SNMP for ProximVision® Advanced, these platforms offer advanced Quality of Service, granular service level management, and very secure networking.

3.2 Ratings and System Details of Equipment under Test

Table 3: Ratings and System Details as declared by the Supplier

Radio Protocol	WI-FI 5GHz	
Operating Frequency Range	UNII-2a _ 5250MHz to 5350MHz UNII-2c _ 5470MHz to 5725MHz*	
No. of Channels	(Refer Table 5)	
Channel Spacing	20 MHz, 40MHz, 80MHz	
Modulation	OFDMA: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM	
Power level index setting used	Refer the power levels Clause: 9 POWER TABLE	
Maximum Measured Average Power (dBm)	12.44dBm@5500MHz_acmode_VHT20MHz_MCS8 for Omni Antenna(12dBi) 11.53dBm@5500MHz_acmode_VHT20MHz_MCS8 for Integrated Panel Antenna(15dBi) 12.42dBm@5500MHz_axmode_HE20MHz_MCS11 for Sector Antenna(21dBi) 6.40dBm@5500MHz_axmode_HE20MHz_MCS11 for Integrated panel Antenna(23dBi) 4.24dBm@5700MHz_ amode_ 6Mbps for panel Antenna(28dBi)	
Number of antennas	2*2 MIMO	
Antenna Model & Gain(dBi)	Please refer Table 4: Antenna Details	
Supply Voltage to Product	36-57V DC to EUT(Through POE injector) & 110-230V AC to PoE injector	
Environmental Conditions	Storage	-50°C to 70°C
	Operating	-40°C to 60°C

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 10 von 230

Page 10 of 230

EUT Dimension(L x Wx H)

Radio Module : 35.3 x 62.6 x 7.3 mm

Host Device:

SX3-1020A: 250 x 220 x 62 mm

SX3-1021A: 305 x 305 x 85 mm

SX1-1023C: 170 x 217 x 56 mm

***Disclaimer:** The information/data is supplied by the client and the same is considered to arrive at the final value. Any changes made apart from the specified specification, can directly impact on the tests results. Refer the products user manual for more details.

Table 4: Antenna Details

Manufacturer	Antenna Name	Antenna Model	Antenna Gain/used Frequency range
Telimart India	Omni Directional Antenna	TM55D-HVOMNI-12	1 X 12±0.5/ 5.15 to 5.850GHz
Telimart India	Dual Polarization Sector Antenna	TM55D-HVSCTR-21	1 X 21±0.5/ 5.15 to 5.850GHz
Telimart India	Dual Polarization Directional Antenna	MT-466010/NVH	1 X 28±1.0/ 5.15 to 5.850GHz
Kingnet	15dBi Plane Antenna For NGP_LCP	XD1C-B180B15D-01A	15dBi 5.15-585GHz
SIGNAL PLUS TECHNOLOGY	Dual Polarization Integrated Panel Antenna	4900-5900MHz Panel Antenna	23dBi

Note:

1. For Antenna Dual Polarization Sector Antenna(TM55D-HVSCTR-21)10dB Attenuator was added infront of antenna ports due to the software linearity limitation.
2. For Antenna Dual Polarization Directional Antenna (MT-466010/NVH)10dB Attenuator was added infront of antenna ports due to the software linearity limitation.

3.3 Measurement Uncertainty:

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k = 2$

Table 5: Measurement Uncertainty

Parameter	Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1.5 dB
Power Spectral Density, conducted	±3 dB
Unwanted Emissions, conducted	±3 dB
SAC, radiated measurement	±6 dB
FAC, radiated measurement	±6 dB
Temperature	±3 °C
Supply Voltages	±3 %
Time	±5 %

4 TEST SET-UP AND OPERATION MODE

4.1 Principle of Configuration Selection

Transmission was enabled with highest possible duty cycle on low, mid and high channels.

4.2 UUT Operation and Software

Hardware Name & Version : Edge AX MB PCB & 1.0

Software version : 15.05.1

Software Name: Openwrt Chaos Calmer

4.3 Special Accessories and Auxiliary Equipment

Model Name & Model Number	Power Adapter Ratings
Gigabit PoE Injector RP026-5601100YG/Proxim 400-00031	Input: 100-240V~50/60Hz 1.5A Max Output: 56.0VDC 1.1A 61.6W +(3,4,5,6) pins, -(1,2,7,8) pins
Gigabit PoE Injector RP025-5600536YG/Proxim 400-00021	Input: 100-240V~50/60Hz 0.7A Max Output: 56.0VDC 0.536A 30W +(3,4,5,6) pins, -(1,2,7,8) pins

4.4 Test Modes_ data rates & Modulation

- None

4.5 Simultaneous Transmission

- None

4.6 Countermeasures to achieve EMC Compliance

- None

4.7 List of frequencies

Frequency Band	Channel No.	Frequency (MHz)
UNII 2A (5250-5350)	52	5260
	54	5270
	56	5280
	58	5290
	60	5300
	62	5310
	64	5320
UNII 2C (5470-5725)	100	5500
	102	5510
	106	5530
	108	5540
	112	5560
	116	5580
	120	5600
	124	5620
	128	5640
	132	5660
	134	5670
	136	5680
	138	5690
	140	5700
	142	5710
	144	5720

Table 6: List of Wi-Fi center Frequencies

Channel used for Wi-Fi Testing

Channel Bandwidth (20MHz)	Channel Bandwidth (40MHz)	Channel Bandwidth (80MHz)
5260	5270	5290
5320	5310	5530
5500	5510	5690
5600	5670	-
5700	5710	-
5720	-	-

Note:

TUV Sample Identification number : A003759215-012 & A003759215-005 – Radiated test Sample & Conducted test Sample

5 OPERATIONAL DESCRIPTION

The Edge AX1/AX3 PCBA with 5 GHz radio module is based on Qualcomm QCN6102, 802.11ax WiFi radio chipset operating in 2x2 MIMO mode. It is designed to be used in Proxim Stratum X1 (SX1) / Stratum X3 (SX3) host device. Both Stratum™ X1 and Stratum™ X3 products are based on Qualcomm IPQ5018 Dual Core ARM Cortex 64-bit A53 1.0GHz processor Maple Series. IPQ5018 is an SoC for 11ax Wi-Fi Access Points, Retail Routers and Carrier Gateways. The chip consists of a networking subsystem, and a CPU subsystem.

Differences between Stratum™ X1 and Stratum™ X3 products are based on the Ethernet controller and number of Ethernet ports available as below:

- Stratum X1 uses Qualcomm IPQ5018 built in ethernet controller and provides one 1Gbps port.
- Stratum X3 uses Qualcomm QCA8337N ethernet controller and provides three 1Gbps ports.

The Stratum™ X1 and Stratum™ X3 are highly efficient radio endpoints that deliver up to one gigabit throughput in both point-to-point and multipoint wide area network configurations. Able to operate in MIMO 2x2, with either integrated or external antenna (software switchable on some variant), the Stratum™ X1 and Stratum™ X3 are ideally suited to backhaul, video surveillance, or multipoint deployments.

Powered by Proxim WOPR® (Wireless Outdoor Router Protocol), managed via web GUI, CLI, Bluetooth- enabled Proxim BlueConnect™ and SNMP for ProximVision® Advanced, these platform offer advanced Quality of Service, granular service level management, and very secure networking.

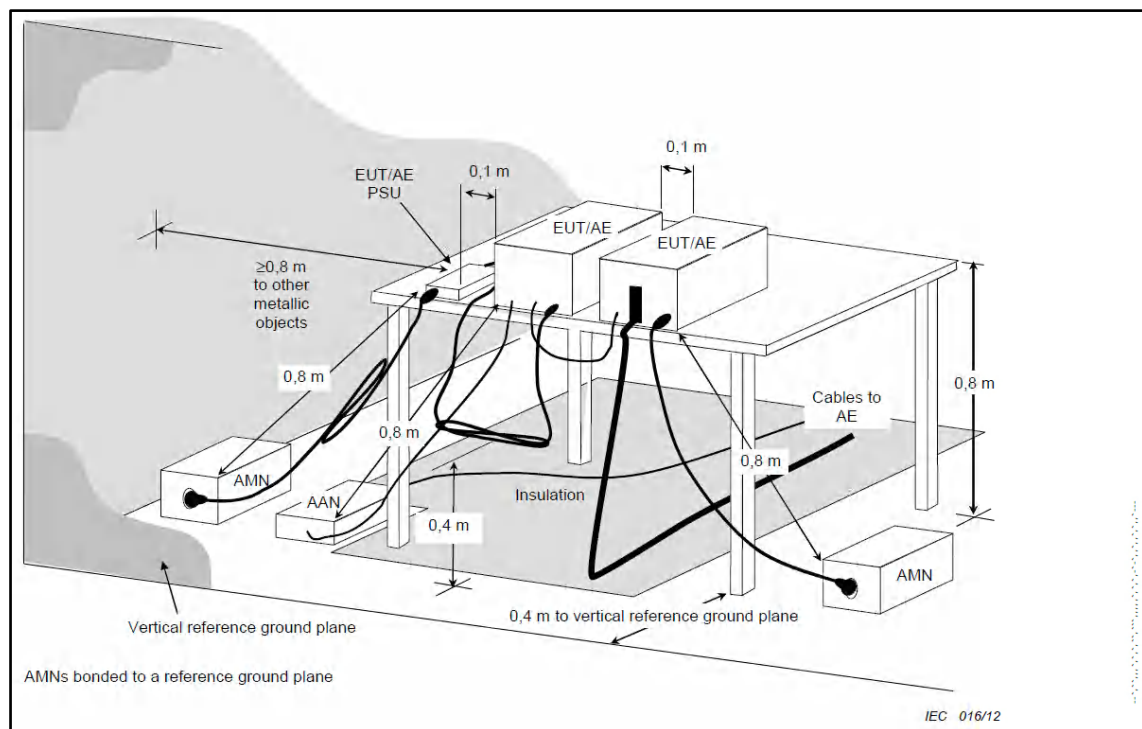
6 TEST METHODOLOGY

6.1 AC Powerline on Conducted emission

Measured levels of ac power-line conducted emission across the 50Ω LISN port (to which the EUT is connected). All emission voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord by the use of mating plugs and receptacles on the LISN, if used. Equipment shall be tested with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended by the manufacturer.

The device is placed on the test table, raised 80cm above the reference ground plane. The vertical conducting plane is located 40cm to the rear of the device. AC Conducted emission measurement is made over frequency range from 150kHz to 30MHz, this measurement was performed with EUT powered with an AC adaptor with 110V AC 60Hz supply.

6.1.1 Test Setup Configuration



6.2 Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.10-2013. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable for below 1 GHz & 1.5 m height for above 1 GHz measurement, and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000 MHz was performed by horn antenna, The measurement below 30 MHz was performed by loop antenna, Measurement from 30 MHz to 200 MHz was performed by Baloon and Biconical Antenna, and measurement from 200 MHz to 1 GHz was performed by Log-Periodic Antenna.

The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded

6.2.1 Test Setup Configuration

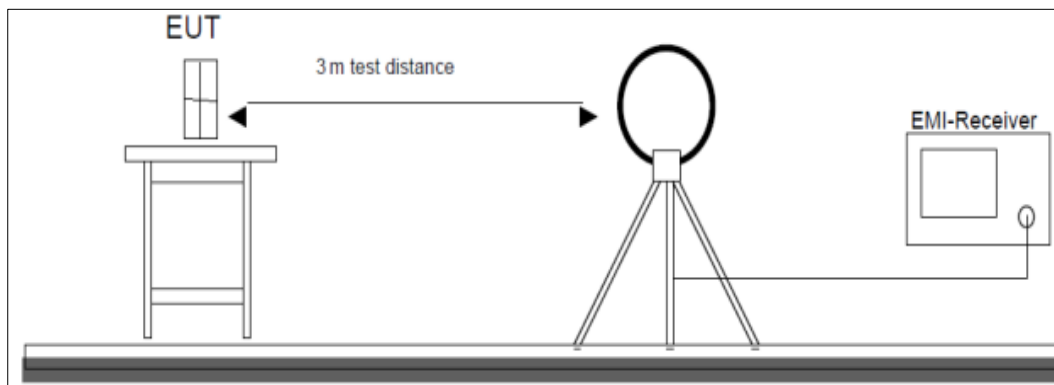


Figure 1: Frequency Range 9 kHz- 30 MHz

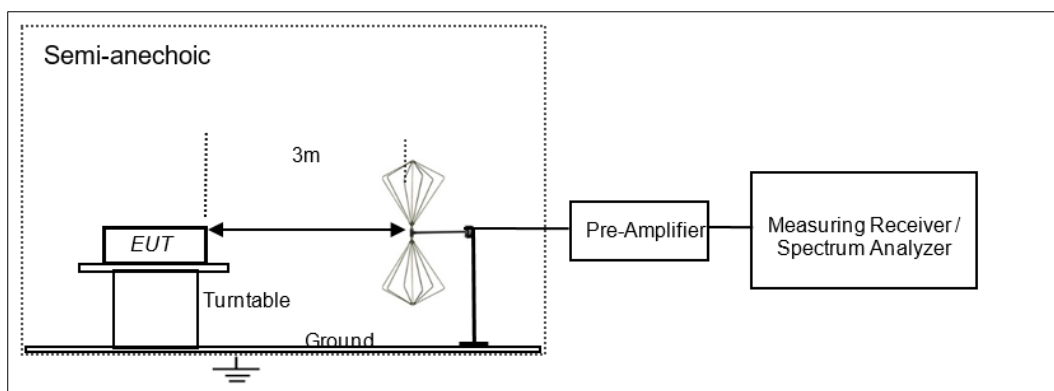


Figure 2: Frequency Range 30 MHz – 200 MHz

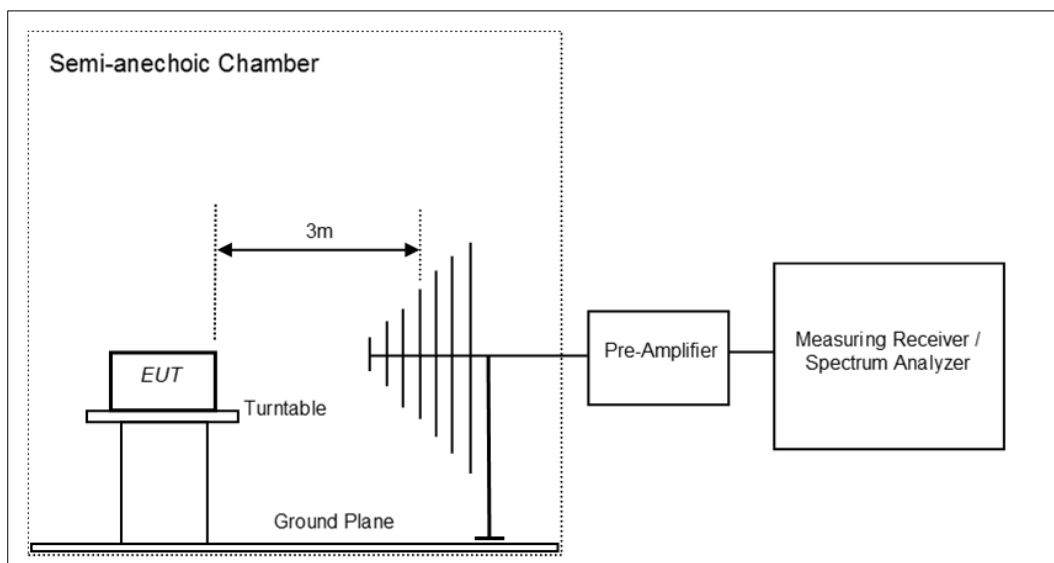


Figure 3: Frequency Range 200 MHz – 1 GHz

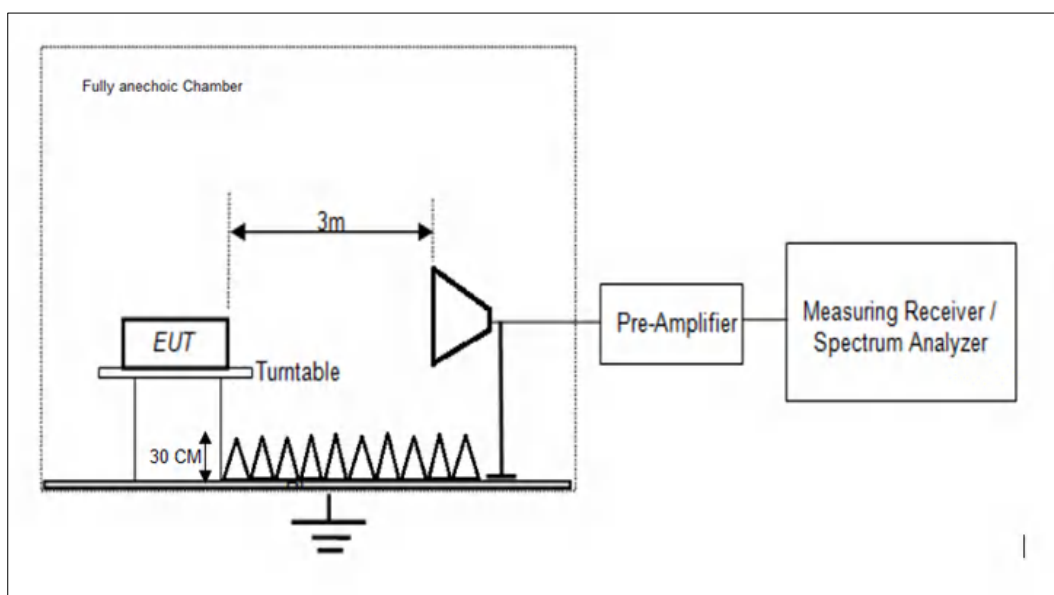


Figure 4: Frequency Range above 1 GHz

7 TEST RESULTS

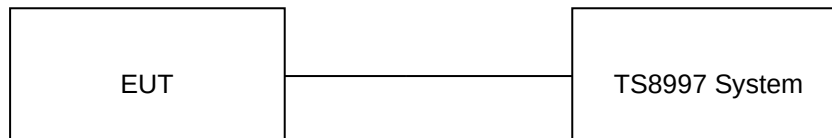
7.1 Emission Bandwidth

Result

Pass

Test Specification	FCC part 15 Subpart E, 15.407 (a) (2) RSS Gen Issue 5, section 6.7 & RSS 247 Issue 3, section 6.2.2.1 & 6.2.3.1
Test Method	Subclause 6.9.3 of ANSI C63.10
Measurement Bandwidth	Refer Test Method below
Detector	Refer Test Method below
Port of testing	Antenna port
Requirement	1. 99% emission band width measurement for reporting purpose only in the band 5250-5350 MHz 2. 99% emission band width measurement for reporting purpose only in the band 5470-5725 MHz

Test Method



The following procedure shall be used for measuring (99%) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency
2. Set span = 1.5 times to 5.0 times the OBW
3. Set RBW = 1% to 5% of the OBW
4. Set VBW $\geq 3 \times$ RBW
5. Use the 99% power bandwidth function of the instrument
6. Use sample detector with single sweep mode, or use Peak detector and Max Hold mode (until the trace is stabilized)

The following procedure shall be used for measuring 26dB emission bandwidth:

1. Set center frequency to the nominal EUT channel center frequency
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set VBW > RBW
4. Detector: Peak
5. Trace mode: Maxhold
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Note : All the steps in measurement method of KDB 789033 D02, ANSI C63.10 section 12.4.1 & 6.9.3, are followed

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 19 von 230

Page 19 of 230

Test Condition:

Normal Test Condition:

Temperature (Norm) = + 22.6 °C Voltage = 56VDC through PoE Injector Relative humidity: 62 %

KDB Guidelines applied:

Measurements were made as per section C(1) & D in KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Test results

Note:

1. All the losses are included during measurement
2. Testing has been performed in MIMO mode condition.
3. Testing is performed with the maximum Power level setting

Note: Refer Attached Appendix for test Plots

Modulation	Data rate	Channel Frequency (MHz)	26dB BW (MHz)	OBW 99% (MHz)
802.11a	6Mbps	5260.00	18.67	16.28
		5320.00	18.43	16.28
		5500.00	18.43	16.22
		5600.00	18.99	16.22
		5700.00	18.27	16.22
		5720.00	18.35	16.22
	54Mbps	5260.00	19.79	16.54
		5320.00	19.63	16.54
		5500.00	19.39	16.54
		5600.00	19.79	16.54
		5700.00	19.71	16.47
		5720.00	19.79	16.47
802.11n HT20	MCS0	5260.00	19.87	17.44
		5320.00	19.71	17.44
		5500.00	19.71	17.50
		5600.00	20.35	17.50
		5700.00	19.87	17.44
		5720.00	20.19	17.50
	MCS7	5260.00	21.79	17.82
		5320.00	21.31	17.76
		5500.00	21.15	17.76
		5600.00	21.63	17.82
		5700.00	21.47	17.76
		5720.00	21.31	17.76
802.11ac VHT20	MCS0	5260.00	19.87	17.44
		5320.00	20.19	17.44
		5500.00	20.51	17.44
		5600.00	20.83	17.50
		5700.00	19.95	17.44
		5720.00	19.95	17.50
	MCS8	5260.00	21.31	17.82
		5320.00	21.31	17.69
		5500.00	21.63	17.82
		5600.00	21.79	17.82
		5700.00	21.47	17.76
		5720.00	21.79	17.82

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 20 von 230
Page 20 of 230

Modulation	Data rate	Channel Frequency (MHz)	26dB BW (MHz)	OBW 99% (MHz)
802.11ax HE20	MCS0	5260.00	20.83	18.85
		5320.00	20.83	18.78
		5500.00	20.67	18.78
		5600.00	20.67	18.85
		5700.00	20.67	18.78
		5720.00	20.67	18.78
	MCS11	5260.00	22.12	19.04
		5320.00	22.60	19.04
		5500.00	22.12	19.04
		5600.00	22.60	19.04
		5700.00	22.60	19.04
		5720.00	22.28	19.10
802.11n HT40	MCS0	5270.00	39.58	35.90
		5310.00	39.90	35.90
		5510.00	39.90	35.90
		5670.00	40.22	36.03
		5710.00	39.42	35.90
	MCS7	5270.00	43.43	36.54
		5310.00	42.63	36.67
		5510.00	43.11	36.67
		5670.00	43.43	36.67
		5710.00	43.43	36.67
802.11ac VHT40	MCS0	5270.00	39.74	35.90
		5310.00	39.58	35.90
		5510.00	39.58	36.03
		5670.00	39.74	35.90
		5710.00	39.74	35.90
	MCS9	5270.00	43.11	36.67
		5310.00	42.79	36.67
		5510.00	42.63	36.54
		5670.00	43.27	36.67
		5710.00	42.79	36.67
802.11ax HE40	MCS0	5270.00	40.38	37.56
		5310.00	40.22	37.56
		5510.00	40.38	37.56
		5670.00	40.38	37.69
		5710.00	40.38	37.69
	MCS11	5270.00	43.91	38.08
		5310.00	43.59	38.21
		5510.00	43.27	38.08
		5670.00	43.75	38.08
		5710.00	43.59	38.08

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 21 von 230

Page 21 of 230

Modulation	Data rate	Channel Frequency (MHz)	26dB BW (MHz)	OBW 99% (MHz)
802.11ac VHT80	MCS0	5290.00	80.76	74.87
		5530.00	81.41	75.12
		5690.00	81.55	74.77
	MCS9	5290.00	88.46	76.41
		5530.00	87.82	76.41
		5690.00	87.22	76.18
802.11ax HE80	MCS0	5290.00	81.73	77.95
		5530.00	81.73	76.67
		5690.00	81.77	76.66
	MCS11	5290.00	89.10	77.95
		5530.00	87.18	78.21
		5690.00	88.89	77.74

7.2 Maximum Conducted Output Power

Result

Pass

Test Specification	FCC part 15 Subpart E 15.407 (a) (2) RSS 247 Issue 3 Clause 6.2.2.1 & 6.2.3.1
Test Method	Subclause 12.3.3.2 of ANSI C63.10
Measurement Bandwidth	Refer the remarks below
Detector	Average sample detector mode
Port of testing	Antenna port
Requirement for FCC	Please Refer the below

Limits:

For FCC 15.407(a)

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For ISED according to RSS-247 Clause 6.2

For Frequency range of 5250MHz to 5350MHz:

Power limits

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10 \log_{10} B$, dBm, whichever is less. Devices shall implement TPC in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

Devices, other than devices installed in vehicles, shall comply with the following:

- a. The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band;
- b. The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 23 von 230

Page 23 of 230

Frequency bands 5470-5600 MHz and 5650-5725 MHz

Power limits:

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

Test Method



Test Condition:

Normal Test Condition:

Temperature (Norm) = + 22.6 °C

Voltage = 56VDC through POE Injector

Relative humidity: 62 %

KDB Guidelines applied:

Measurements were made as per section E (3) sub-section (b) in KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 24 von 230
Page 24 of 230

Test results:

Note:

1. All the losses are included during measurement.
2. Testing has been performed in MIMO mode condition.

Antenna type & Antenna Gain: Omni Antenna & 12dBi

Modulation: 802.11a

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
20	6Mbps	5260	5.51	17.51	17.71	24.00	30.00
		5320	5.03	17.03	17.66	24.00	30.00
		5500	5.69	17.69	17.66	24.00	30.00
		5600	5.07	17.07	17.79	24.00	30.00
		5700	5.01	17.01	17.62	24.00	30.00
		5720	5.14	17.14	17.64	24.00	30.00
	54Mbps	5260	5.17	17.17	17.96	24.00	30.00
		5320	4.74	16.74	17.93	24.00	30.00
		5500	5.37	17.37	17.88	24.00	30.00
		5600	4.66	16.66	17.96	24.00	30.00
		5700	4.60	16.60	17.95	24.00	30.00
		5720	4.72	16.72	17.96	24.00	30.00

Modulation: 802.11n

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HT20	MCS0	5260	11.23	23.23	17.98	24.00	30.00
		5320	10.69	22.69	17.95	24.00	30.00
		5500	11.80	23.80	17.95	24.00	30.00
		5600	11.18	23.18	18.00	24.00	30.00
		5700	11.28	23.28	17.98	24.00	30.00
		5720	11.28	23.28	18.00	24.00	30.00
	MCS7	5260	11.95	23.95	18.00	24.00	30.00
		5320	11.43	23.43	18.00	24.00	30.00
		5500	12.40	24.40	18.00	24.00	30.00
		5600	11.82	23.82	18.00	24.00	30.00
		5700	11.88	23.88	18.00	24.00	30.00
		5720	11.93	23.93	18.00	24.00	30.00

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 25 von 230
Page 25 of 230

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HT40	MCS0	5270	4.19	16.19	18.00	24.00	30.00
		5310	3.65	15.65	18.00	24.00	30.00
		5510	4.37	16.37	18.00	24.00	30.00
		5670	4.00	16.00	18.00	24.00	30.00
		5710	3.70	15.70	18.00	24.00	30.00
	MCS7	5270	5.15	17.15	18.00	24.00	30.00
		5310	4.58	16.58	18.00	24.00	30.00
		5510	5.21	17.21	18.00	24.00	30.00
		5670	4.90	16.90	18.00	24.00	30.00
		5710	4.84	16.84	18.00	24.00	30.00

Modulation: 802.11ac

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
VHT20	MCS0	5260	11.19	23.19	17.98	24.00	30.00
		5320	10.72	22.72	18.00	24.00	30.00
		5500	11.80	23.80	18.00	24.00	30.00
		5600	11.16	23.16	18.00	24.00	30.00
		5700	11.26	23.26	18.00	24.00	30.00
		5720	11.29	23.29	18.00	24.00	30.00
	MCS8	5260	11.96	23.96	18.00	24.00	30.00
		5320	11.45	23.45	18.00	24.00	30.00
		5500	12.44	24.44	18.00	24.00	30.00
		5600	11.78	23.78	18.00	24.00	30.00
		5700	11.86	23.86	18.00	24.00	30.00
		5720	11.97	23.97	18.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
VHT40	MCS0	5270	4.16	16.16	18.00	24.00	30.00
		5310	3.62	15.62	18.00	24.00	30.00
		5510	4.34	16.34	18.00	24.00	30.00
		5670	3.94	15.94	18.00	24.00	30.00
		5710	3.69	15.69	18.00	24.00	30.00
	MCS9	5270	4.17	16.17	18.00	24.00	30.00
		5310	3.49	15.49	18.00	24.00	30.00
		5510	4.21	16.21	18.00	24.00	30.00
		5670	3.82	15.82	18.00	24.00	30.00
		5710	3.89	15.89	18.00	24.00	30.00

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 26 von 230
Page 26 of 230

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE40	MCS0	5270	4.09	16.09	18.00	24.00	30.00
		5310	3.50	15.50	18.00	24.00	30.00
		5510	4.22	16.22	18.00	24.00	30.00
		5670	3.88	15.88	18.00	24.00	30.00
		5710	3.84	15.84	18.00	24.00	30.00
	MCS11	5270	4.15	16.15	18.00	24.00	30.00
		5310	3.53	15.53	18.00	24.00	30.00
		5510	4.18	16.18	18.00	24.00	30.00
		5670	3.96	15.96	18.00	24.00	30.00
		5710	3.92	15.92	18.00	24.00	30.00

Modulation: 802.11ax

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE20	MCS0	5260	9.24	21.24	18.00	24.00	30.00
		5320	8.85	20.85	18.00	24.00	30.00
		5500	9.98	21.98	18.00	24.00	30.00
		5600	9.15	21.15	18.00	24.00	30.00
		5700	9.24	21.24	18.00	24.00	30.00
		5720	9.30	21.30	18.00	24.00	30.00
	MCS11	5260	9.73	21.73	18.00	24.00	30.00
		5320	9.42	21.42	18.00	24.00	30.00
		5500	10.50	22.50	18.00	24.00	30.00
		5600	9.57	21.57	18.00	24.00	30.00
		5700	9.67	21.67	18.00	24.00	30.00
		5720	9.75	21.75	18.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
VHT80	MCS0	5290	4.89	16.89	18.00	24.00	30.00
		5530	6.33	18.33	18.00	24.00	30.00
		5690	5.04	17.04	18.00	24.00	30.00
	MCS9	5290	4.71	16.71	18.00	24.00	30.00
		5530	6.03	18.03	18.00	24.00	30.00
		5690	4.85	16.85	18.00	24.00	30.00

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 27 von 230
Page 27 of 230

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE80	MCS0	5290	5.03	17.03	18.00	24.00	30.00
		5530	6.42	18.42	18.00	24.00	30.00
		5690	5.18	17.18	18.00	24.00	30.00
	MCS11	5290	4.73	16.73	18.00	24.00	30.00
		5530	6.06	18.06	18.00	24.00	30.00
		5690	4.93	16.93	18.00	24.00	30.00

Note:

1. The duty cycle correction factor is added into the test data
2. The antenna Gain is 12dBi, the device employed Cyclic Dealy diversity (CDD) for MIMO 802.11 transmitters per KDB 662911D01 Multiple transmitter output v02r01, for Power measurement on 802.11 devices
Array gain =0dB(i.e., no array gain) for $N_{ANT} \leq 2$;
So directional gain = 12dBi

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 28 von 230

Page 28 of 230

Antenna type & Antenna Gain: Integrated Panel Antenna & 15dBi

Modulation: 802.11a

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
20	6Mbps	5260	4.50	19.50	14.71	24.00	30.00
		5320	4.06	19.06	14.66	24.00	30.00
		5500	4.68	19.68	14.66	24.00	30.00
		5600	3.98	18.98	14.79	24.00	30.00
		5700	4.14	19.14	14.62	24.00	30.00
		5720	4.42	19.42	14.64	24.00	30.00
	54Mbps	5260	4.16	19.16	14.96	24.00	30.00
		5320	3.78	18.78	14.93	24.00	30.00
		5500	4.30	19.30	14.88	24.00	30.00
		5600	3.52	18.52	14.96	24.00	30.00
		5700	3.75	18.75	14.95	24.00	30.00
		5720	3.97	18.97	14.96	24.00	30.00

Modulation: 802.11n

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HT20	MCS0	5260	10.26	25.26	14.98	24.00	30.00
		5320	9.79	24.79	14.95	24.00	30.00
		5500	10.87	25.87	14.95	24.00	30.00
		5600	10.03	25.03	15.00	24.00	30.00
		5700	9.95	24.95	14.98	24.00	30.00
		5720	10.03	25.03	15.00	24.00	30.00
	MCS7	5260	10.99	25.99	15.00	24.00	30.00
		5320	10.55	25.55	15.00	24.00	30.00
		5500	11.53	26.53	15.00	24.00	30.00
		5600	10.67	25.67	15.00	24.00	30.00
		5700	10.57	25.57	15.00	24.00	30.00
		5720	10.63	25.63	15.00	24.00	30.00

Modulation: 802.11ac

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
802.11ac VHT20	MCS0	5260	10.28	25.28	14.98	24.00	30.00
		5320	9.79	24.79	15.00	24.00	30.00
		5500	10.86	25.86	15.00	24.00	30.00
		5600	10.07	25.07	15.00	24.00	30.00
		5700	9.94	24.94	15.00	24.00	30.00
		5720	9.99	24.99	15.00	24.00	30.00
	MCS8	5260	10.99	25.99	15.00	24.00	30.00
		5320	10.55	25.55	15.00	24.00	30.00
		5500	11.49	26.49	15.00	24.00	30.00
		5600	10.70	25.70	15.00	24.00	30.00
		5700	10.57	25.57	15.00	24.00	30.00
		5720	10.63	25.63	15.00	24.00	30.00

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 29 von 230
Page 29 of 230

Modulation: 802.11ax

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE20	MCS0	5260	8.43	23.43	15.00	24.00	30.00
		5320	8.13	23.13	15.00	24.00	30.00
		5500	8.94	23.94	15.00	24.00	30.00
		5600	8.13	23.13	15.00	24.00	30.00
		5700	8.09	23.09	15.00	24.00	30.00
		5720	8.24	23.24	15.00	24.00	30.00
	MCS11	5260	8.94	23.94	15.00	24.00	30.00
		5320	8.65	23.65	15.00	24.00	30.00
		5500	9.51	24.51	15.00	24.00	30.00
		5600	8.57	23.57	15.00	24.00	30.00
		5700	8.48	23.48	15.00	24.00	30.00
		5720	8.72	23.72	15.00	24.00	30.00

Modulation: 802.11n-40MHz

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HT40	MCS0	5270	3.23	18.23	15.00	24.00	30.00
		5310	2.61	17.61	15.00	24.00	30.00
		5510	3.22	18.22	15.00	24.00	30.00
		5670	2.54	17.54	15.00	24.00	30.00
		5710	2.78	17.78	15.00	24.00	30.00
	MCS7	5270	4.17	19.17	15.00	24.00	30.00
		5310	3.52	18.52	15.00	24.00	30.00
		5510	4.10	19.10	15.00	24.00	30.00
		5670	3.75	18.75	15.00	24.00	30.00
		5710	4.00	19.00	15.00	24.00	30.00

Modulation: 802.11ac-40MHz

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
VHT40	MCS0	5270	3.20	18.20	15.00	24.00	30.00
		5310	2.59	17.59	15.00	24.00	30.00
		5510	3.20	18.20	15.00	24.00	30.00
		5670	2.51	17.51	15.00	24.00	30.00
		5710	2.73	17.73	15.00	24.00	30.00
	MCS9	5270	3.21	18.21	15.00	24.00	30.00
		5310	2.53	17.53	15.00	24.00	30.00
		5510	3.11	18.11	15.00	24.00	30.00
		5670	2.48	17.48	15.00	24.00	30.00
		5710	2.72	17.72	15.00	24.00	30.00

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 30 von 230

Page 30 of 230

Modulation: 802.11ax-40MHz

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE40	MCS0	5270	3.13	18.13	15.00	24.00	30.00
		5310	2.58	17.58	15.00	24.00	30.00
		5510	3.20	18.20	15.00	24.00	30.00
		5670	2.55	17.55	15.00	24.00	30.00
		5710	2.77	17.77	15.00	24.00	30.00
	MCS11	5270	3.21	18.21	15.00	24.00	30.00
		5310	2.53	17.53	15.00	24.00	30.00
		5510	3.12	18.12	15.00	24.00	30.00
		5670	2.70	17.70	15.00	24.00	30.00
		5710	2.86	17.86	15.00	24.00	30.00

Modulation: 802.11ac-80MHz

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
VHT80	MCS0	5290	3.87	18.87	15.00	24.00	30.00
		5530	5.22	20.22	15.00	24.00	30.00
		5690	3.80	18.80	15.00	24.00	30.00
	MCS9	5290	3.70	18.70	15.00	24.00	30.00
		5530	4.95	19.95	15.00	24.00	30.00
		5690	3.82	18.82	15.00	24.00	30.00

Modulation: 802.11ax-80MHz

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE80	MCS0	5290	4.00	19.00	15.00	24.00	30.00
		5530	5.30	20.30	15.00	24.00	30.00
		5690	4.09	19.09	15.00	24.00	30.00
	MCS11	5290	3.73	18.73	15.00	24.00	30.00
		5530	4.94	19.94	15.00	24.00	30.00
		5690	3.96	18.96	15.00	24.00	30.00

Note:

- The duty cycle correction factor is added in the final test data
- The antenna gain is 15dBi. The device employed cyclic delay diversity (CDD) for 802.11 MIMO Transmitting per KDB 662911D01 Multiple transmitter output v02r01, for power measurements on IEEE 802.11 devices Array Gain =0dB (i.e., no array gain) for $N_{ANT} \leq 2$;
So,
Directional gain =15dBi for 5250MHz to 5350MHz & 5470MHz to 5725MHz

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 31 von 230
Page 31 of 230

Antenna type & Antenna Gain: Sector Antenna & 21dBi

Modulation:802.11a

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
20	6Mbps	5260	9.32	20.32	18.71	24.00	30.00
		5320	8.38	19.38	18.66	24.00	30.00
		5500	9.42	20.42	18.66	24.00	30.00
		5600	8.80	19.80	18.79	24.00	30.00
		5700	9.41	20.41	18.62	24.00	30.00
		5720	9.14	20.14	18.64	24.00	30.00
	54Mbps	5260	9.37	20.37	18.96	24.00	30.00
		5320	6.85	17.85	18.93	24.00	30.00
		5500	8.95	19.95	18.88	24.00	30.00
		5600	5.79	16.79	18.96	24.00	30.00
		5700	6.24	17.24	18.95	24.00	30.00
		5720	6.07	17.07	18.96	24.00	30.00

Modulation:802.11n

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HT20	MCS0	5260	8.85	19.85	18.98	24.00	30.00
		5320	7.89	18.89	18.95	24.00	30.00
		5500	11.69	22.69	18.95	24.00	30.00
		5600	11.05	22.05	19.00	24.00	30.00
		5700	10.86	21.86	18.98	24.00	30.00
		5720	10.59	21.59	19.00	24.00	30.00
	MCS7	5260	11.75	22.75	19.00	24.00	30.00
		5320	11.13	22.13	19.00	24.00	30.00
		5500	12.36	23.36	19.00	24.00	30.00
		5600	11.83	22.83	19.00	24.00	30.00
		5700	11.44	22.44	19.00	24.00	30.00
		5720	11.87	22.87	19.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HT40	MCS0	5270	11.88	22.88	19.00	24.00	30.00
		5310	11.35	22.35	19.00	24.00	30.00
		5510	10.15	21.15	19.00	24.00	30.00
		5670	9.30	20.30	19.00	24.00	30.00
		5710	9.34	20.34	19.00	24.00	30.00
	MCS7	5270	11.81	22.81	19.00	24.00	30.00
		5310	11.26	22.26	19.00	24.00	30.00
		5510	10.38	21.38	19.00	24.00	30.00
		5670	9.27	20.27	19.00	24.00	30.00
		5710	9.26	20.26	19.00	24.00	30.00

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 32 von 230

Page 32 of 230

Modulation:802.11ac

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
VHT20	MCS0	5260	11.06	22.06	18.98	24.00	30.00
		5320	10.40	21.40	19.00	24.00	30.00
		5500	11.76	22.76	19.00	24.00	30.00
		5600	11.15	22.15	19.00	24.00	30.00
		5700	10.85	21.85	19.00	24.00	30.00
		5720	10.59	21.59	19.00	24.00	30.00
	MCS8	5260	11.80	22.80	19.00	24.00	30.00
		5320	11.10	22.10	19.00	24.00	30.00
		5500	12.42	23.42	19.00	24.00	30.00
		5600	11.85	22.85	19.00	24.00	30.00
		5700	11.44	22.44	19.00	24.00	30.00
		5720	9.45	20.45	19.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
VHT40	MCS0	5270	11.87	22.87	19.00	24.00	30.00
		5310	11.32	22.32	19.00	24.00	30.00
		5510	10.19	21.19	19.00	24.00	30.00
		5670	9.27	20.27	19.00	24.00	30.00
		5710	9.32	20.32	19.00	24.00	30.00
	MCS9	5270	11.83	22.83	19.00	24.00	30.00
		5310	11.29	22.29	19.00	24.00	30.00
		5510	11.45	22.45	19.00	24.00	30.00
		5670	11.29	22.29	19.00	24.00	30.00
		5710	11.43	22.43	19.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
VHT80	MCS0	5290	8.83	19.83	19.00	24.00	30.00
		5530	7.41	18.41	19.00	24.00	30.00
		5690	8.35	19.35	19.00	24.00	30.00
	MCS9	5290	9.20	20.20	19.00	24.00	30.00
		5530	7.73	18.73	19.00	24.00	30.00
		5690	8.63	19.63	19.00	24.00	30.00

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 33 von 230

Page 33 of 230

Modulation:802.11ax

Modulation	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE20	MCS0	5260	11.26	22.26	19.00	24.00	30.00
		5320	10.57	21.57	19.00	24.00	30.00
		5500	11.98	22.98	19.00	24.00	30.00
		5600	11.47	22.47	19.00	24.00	30.00
		5700	11.22	22.22	19.00	24.00	30.00
		5720	10.63	21.63	19.00	24.00	30.00
	MCS11	5260	11.77	22.77	19.00	24.00	30.00
		5320	11.11	22.11	19.00	24.00	30.00
		5500	12.42	23.42	19.00	24.00	30.00
		5600	11.88	22.88	19.00	24.00	30.00
		5700	11.69	22.69	19.00	24.00	30.00
		5720	11.25	22.25	19.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE40	MCS0	5270	11.52	22.52	19.00	24.00	30.00
		5310	11.00	22.00	19.00	24.00	30.00
		5510	12.13	23.13	19.00	24.00	30.00
		5670	8.89	19.89	19.00	24.00	30.00
		5710	11.19	22.19	19.00	24.00	30.00
	MCS11	5270	11.77	22.77	19.00	24.00	30.00
		5310	11.24	22.24	19.00	24.00	30.00
		5510	10.00	21.00	19.00	24.00	30.00
		5670	9.51	20.51	19.00	24.00	30.00
		5710	9.71	20.71	19.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE80	MCS0	5290	8.88	19.88	19.00	24.00	30.00
		5530	7.40	18.40	19.00	24.00	30.00
		5690	8.35	19.35	19.00	24.00	30.00
	MCS11	5290	9.45	20.45	19.00	24.00	30.00
		5530	7.71	18.71	19.00	24.00	30.00
		5690	8.73	19.73	19.00	24.00	30.00

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 34 von 230

Page 34 of 230

Note:

1. The duty cycle correction factor is added in the final test data
2. The antenna gain is 21dBi. 10dB Attenuator should be installed with this band for this antenna for the bands 5250M to 5350MHz & 5470MHz to 5725MHz, so the actual antenna gain is 11dBi, The device employed cyclic delay diversity (CDD) for 802.11 MIMO Transmitting per KDB 662911D01 Multiple transmitter output v02r01, for power measurements on IEEE 802.11 devices
Array Gain =0dB (i.e., no array gain) for $N_{ANT} \leq 2$;
So,
Directional gain =11dBi for 5250MHz to 5350MHz & 5470MHz to 5725MHz

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 35 von 230
Page 35 of 230

Antenna Type & Antenna Gain: Integrated Panel Antenna & 23dBi

Modulation: 802.11a

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
20MHz	6Mbps	5260	5.46	28.46	6.71	24.00	30.00
		5320	4.62	27.62	6.66	24.00	30.00
		5500	6.09	29.09	6.66	24.00	30.00
		5600	5.37	28.37	6.79	24.00	30.00
		5700	5.34	28.34	6.62	24.00	30.00
		5720	5.24	28.24	6.64	24.00	30.00
	54Mbps	5260	2.23	25.23	6.96	24.00	30.00
		5320	1.05	24.05	6.93	24.00	30.00
		5500	2.95	25.95	6.88	24.00	30.00
		5600	2.23	25.23	6.96	24.00	30.00
		5700	2.29	25.29	6.95	24.00	30.00
		5720	2.22	25.22	6.96	24.00	30.00

Modulation: 802.11n

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HT20	MCS0	5260	4.94	27.94	6.98	24.00	30.00
		5320	4.56	27.56	6.95	24.00	30.00
		5500	5.55	28.55	6.95	24.00	30.00
		5600	4.88	27.88	7.00	24.00	30.00
		5700	4.83	27.83	7.00	24.00	30.00
		5720	4.74	27.74	7.00	24.00	30.00
	MCS7	5260	5.56	28.56	7.00	24.00	30.00
		5320	4.20	27.20	7.00	24.00	30.00
		5500	6.24	29.24	7.00	24.00	30.00
		5600	5.47	28.47	7.00	24.00	30.00
		5700	5.37	28.37	7.00	24.00	30.00
		5720	5.32	28.32	7.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
802.11n HT40	MCS0	5270	0.47	23.47	7.00	24.00	30.00
		5310	3.43	26.43	7.00	24.00	30.00
		5510	6.00	29.00	7.00	24.00	30.00
		5670	5.40	28.40	7.00	24.00	30.00
		5710	5.41	28.41	7.00	24.00	30.00
	MCS7	5270	5.50	28.50	7.00	24.00	30.00
		5310	1.41	24.41	7.00	24.00	30.00
		5510	2.86	25.86	7.00	24.00	30.00
		5670	5.35	28.35	7.00	24.00	30.00
		5710	5.34	28.34	7.00	24.00	30.00

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 36 von 230
Page 36 of 230

Modulation: 802.11ac

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
VHT20	MCS0	5260	4.93	27.93	6.98	24.00	30.00
		5320	4.68	27.68	7.00	24.00	30.00
		5500	5.56	28.56	7.00	24.00	30.00
		5600	4.87	27.87	7.00	24.00	30.00
		5700	4.92	27.92	7.00	24.00	30.00
		5720	4.74	27.74	7.00	24.00	30.00
	MCS8	5260	5.54	28.54	7.00	24.00	30.00
		5320	4.28	27.28	7.00	24.00	30.00
		5500	6.23	29.23	7.00	24.00	30.00
		5600	5.44	28.44	7.00	24.00	30.00
		5700	5.36	28.36	7.00	24.00	30.00
		5720	5.31	28.31	7.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
VHT40	MCS0	5270	5.55	28.55	7.00	24.00	30.00
		5310	2.45	25.45	7.00	24.00	30.00
		5510	6.15	29.15	7.00	24.00	30.00
		5670	5.33	28.33	7.00	24.00	30.00
		5710	5.37	28.37	7.00	24.00	30.00
	MCS9	5270	5.28	28.28	7.00	24.00	30.00
		5310	1.43	24.43	7.00	24.00	30.00
		5510	2.87	25.87	7.00	24.00	30.00
		5670	5.39	28.39	7.00	24.00	30.00
		5710	5.34	28.34	7.00	24.00	30.00

Modulation	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
802.11ac VHT80	MCS0	5290	3.84	26.84	7.00	24.00	30.00
		5530	5.05	28.05	7.00	24.00	30.00
		5690	5.28	28.28	7.00	24.00	30.00
	MCS9	5290	1.64	24.64	7.00	24.00	30.00
		5530	2.57	25.57	7.00	24.00	30.00
		5690	5.55	28.55	7.00	24.00	30.00

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 37 von 230

Page 37 of 230

Modulation: 802.11ax

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE20	MCS0	5260	5.20	28.20	7.00	24.00	30.00
		5320	4.60	27.60	7.00	24.00	30.00
		5500	5.83	28.83	7.00	24.00	30.00
		5600	5.13	28.13	7.00	24.00	30.00
		5700	5.08	28.08	7.00	24.00	30.00
		5720	4.98	27.98	7.00	24.00	30.00
	MCS11	5260	5.68	28.68	7.00	24.00	30.00
		5320	4.39	27.39	7.00	24.00	30.00
		5500	6.40	29.40	7.00	24.00	30.00
		5600	5.55	28.55	7.00	24.00	30.00
		5700	5.41	28.41	7.00	24.00	30.00
		5720	5.36	28.36	7.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE40	MCS0	5270	4.93	27.93	7.00	24.00	30.00
		5310	2.42	25.42	7.00	24.00	30.00
		5510	6.02	29.02	7.00	24.00	30.00
		5670	5.18	28.18	7.00	24.00	30.00
		5710	5.15	28.15	7.00	24.00	30.00
	MCS11	5270	3.98	26.98	7.00	24.00	30.00
		5310	1.48	24.48	7.00	24.00	30.00
		5510	2.00	25.00	7.00	24.00	30.00
		5670	5.50	28.50	7.00	24.00	30.00
		5710	5.41	28.41	7.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE80	MCS0	5290	2.99	25.99	7.00	24.00	30.00
		5530	3.88	26.88	7.00	24.00	30.00
		5690	3.28	26.28	7.00	24.00	30.00
	MCS11	5290	1.23	24.23	7.00	24.00	30.00
		5530	2.59	25.59	7.00	24.00	30.00
		5690	2.08	25.08	7.00	24.00	30.00

Prüfbericht - Nr.:

IN25YR31 001

Seite 38 von 230

Test Report No.:

Page 38 of 230

Note:

1. The duty cycle correction factor is added in the final test data
2. The antenna gain is 23dBi, 5250M to 5350MHz & 5470MHz to 5725MHz, The device employed cyclic delay diversity (CDD) for 802.11 MIMO Transmitting per KDB 662911D01 Multiple transmitter output v02r01, for power measurements on IEEE 802.11 devices.
Array Gain =0dB (i.e., no array gain) for $N_{ANT} \leq 2$;
So,
Directional gain =23dBi for 5250MHz to 5350MHz & 5470MHz to 5725MHz.

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 39 von 230
Page 39 of 230

Antenna Type & Antenna Gain: Panel Antenna & 28dBi

Modulation: 802.11a

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
20MHz	6Mbps	5260	3.40	21.40	11.71	24.00	30.00
		5320	2.58	20.58	11.66	24.00	30.00
		5500	3.26	21.26	11.66	24.00	30.00
		5600	3.61	21.61	11.79	24.00	30.00
		5700	4.24	22.24	11.62	24.00	30.00
		5720	3.96	21.96	11.64	24.00	30.00
	54Mbps	5260	-0.12	17.88	11.96	24.00	30.00
		5320	-0.75	17.25	11.93	24.00	30.00
		5500	-0.11	17.89	11.88	24.00	30.00
		5600	0.38	18.38	11.96	24.00	30.00
		5700	1.20	19.20	11.95	24.00	30.00
		5720	1.03	19.03	11.96	24.00	30.00

Modulation: 802.11n

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HT20	MCS0	5260	3.14	21.14	11.98	24.00	30.00
		5320	2.33	20.33	11.95	24.00	30.00
		5500	3.04	21.04	11.95	24.00	30.00
		5600	3.41	21.41	12.00	24.00	30.00
		5700	4.05	22.05	11.98	24.00	30.00
		5720	3.76	21.76	12.00	24.00	30.00
	MCS7	5260	2.93	20.93	12.00	24.00	30.00
		5320	2.12	20.12	12.00	24.00	30.00
		5500	2.77	20.77	12.00	24.00	30.00
		5600	3.20	21.20	12.00	24.00	30.00
		5700	3.83	21.83	12.00	24.00	30.00
		5720	3.55	21.55	12.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HT40	MCS0	5270	3.04	21.04	12.00	24.00	30.00
		5310	2.13	20.13	12.00	24.00	30.00
		5510	2.84	20.84	12.00	24.00	30.00
		5670	3.74	21.74	12.00	24.00	30.00
		5710	3.92	21.92	12.00	24.00	30.00
	MCS7	5270	2.91	20.91	12.00	24.00	30.00
		5310	2.12	20.12	12.00	24.00	30.00
		5510	2.77	20.77	12.00	24.00	30.00
		5670	3.73	21.73	12.00	24.00	30.00
		5710	3.79	21.79	12.00	24.00	30.00

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 40 von 230
Page 40 of 230

Modulation: 802.11ac

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
VHT20	MCS0	5260	3.17	21.17	11.98	24.00	30.00
		5320	2.37	20.37	12.00	24.00	30.00
		5500	3.09	21.09	12.00	24.00	30.00
		5600	3.48	21.48	12.00	24.00	30.00
		5700	4.03	22.03	12.00	24.00	30.00
		5720	3.77	21.77	12.00	24.00	30.00
	MCS8	5260	2.96	20.96	12.00	24.00	30.00
		5320	2.14	20.14	12.00	24.00	30.00
		5500	2.82	20.82	12.00	24.00	30.00
		5600	3.20	21.20	12.00	24.00	30.00
		5700	3.83	21.83	12.00	24.00	30.00
		5720	3.53	21.53	12.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
VHT40	MCS0	5270	3.01	21.01	12.00	24.00	30.00
		5310	2.12	20.12	12.00	24.00	30.00
		5510	2.82	20.82	12.00	24.00	30.00
		5670	3.71	21.71	12.00	24.00	30.00
		5710	3.91	21.91	12.00	24.00	30.00
	MCS9	5270	2.91	20.91	12.00	24.00	30.00
		5310	2.06	20.06	12.00	24.00	30.00
		5510	2.71	20.71	12.00	24.00	30.00
		5670	3.68	21.68	12.00	24.00	30.00
		5710	3.81	21.81	12.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
VHT80	MCS0	5290	2.56	20.56	12.00	24.00	30.00
		5530	3.63	21.63	12.00	24.00	30.00
		5690	4.00	22.00	12.00	24.00	30.00
	MCS9	5290	2.32	20.32	12.00	24.00	30.00
		5530	3.35	21.35	12.00	24.00	30.00
		5690	3.69	21.69	12.00	24.00	30.00

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 41 von 230
Page 41 of 230

Modulation: 802.11ax

	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE20	MCS0	5260	3.14	21.14	12.00	24.00	30.00
		5320	2.32	20.32	12.00	24.00	30.00
		5500	3.03	21.03	12.00	24.00	30.00
		5600	3.41	21.41	12.00	24.00	30.00
		5700	4.07	22.07	12.00	24.00	30.00
		5720	3.77	21.77	12.00	24.00	30.00
	MCS11	5260	2.84	20.84	12.00	24.00	30.00
		5320	2.27	20.27	12.00	24.00	30.00
		5500	2.91	20.91	12.00	24.00	30.00
		5600	3.26	21.26	12.00	24.00	30.00
		5700	3.91	21.91	12.00	24.00	30.00
		5720	3.62	21.62	12.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE40	MCS0	5270	2.94	20.94	12.00	24.00	30.00
		5310	2.14	20.14	12.00	24.00	30.00
		5510	2.85	20.85	12.00	24.00	30.00
		5670	3.71	21.71	12.00	24.00	30.00
		5710	3.90	21.90	12.00	24.00	30.00
	MCS11	5270	2.90	20.90	12.00	24.00	30.00
		5310	2.14	20.14	12.00	24.00	30.00
		5510	2.74	20.74	12.00	24.00	30.00
		5670	3.72	21.72	12.00	24.00	30.00
		5710	3.85	21.85	12.00	24.00	30.00

Bandwidth	Data rate	Channel Frequency (MHz)	Measured Power (dBm)	Measured e.i.r.p (dBm)	FCC Limit (dBm)	ISED Limit (dBm)	ISED e.i.r.p limit (dBm)
HE80	MCS0	5290	2.37	20.37	12.00	24.00	30.00
		5530	3.73	21.73	12.00	24.00	30.00
		5690	4.12	22.12	12.00	24.00	30.00
	MCS11	5290	2.38	20.38	12.00	24.00	30.00
		5530	3.45	21.45	12.00	24.00	30.00
		5690	3.80	21.80	12.00	24.00	30.00

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 42 von 230

Page 42 of 230

Note:

1. The duty cycle correction factor is added in the final test data
2. The antenna gain is 28dBi. 10dB Attenuator should be installed with this band for this antenna for the bands 5250M to 5350MHz & 5470MHz to 5725MHz, so the actual antenna gain is 18dBi, The device employed cyclic delay diversity (CDD) for 802.11 MIMO Transmitting per KDB 662911D01 Multiple transmitter output v02r01, for power measurements on IEEE 802.11 devices
Array Gain =0dB (i.e., no array gain) for $N_{ANT} \leq 2$;
So,
Directional gain =18dBi for 5250MHz to 5350MHz & 5470MHz to 5725MHz.

7.3 Maximum Power Spectral Density

Result

Pass

Test Specification	FCC part 15 Subpart E 15.407 (a) (2) RSS 247 Issue 3 Clause 6.2.2.1 & 6.2.3.1
Test Method	Subclause 12.5 of ANSI C63.10
Measurement Bandwidth	1 MHz
Detector	Average sample detector
Port of testing	Antenna port
Requirement for FCC & IC	Refer the limits Below

Limits:

For FCC 15.407(a):

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to RSS 247 Issue 3 Clause 6.2

Frequency band: 5250MHz to 5350MHz

For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10 \log_{10} B$, dBm, whichever is less. Devices shall implement TPC in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.

Devices, other than devices installed in vehicles, shall comply with the following:

- The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band;
- The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

Frequency band: 5470MHz to 5600MHz and 5650MHz to 5725MHz

The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

Prüfbericht - Nr.:

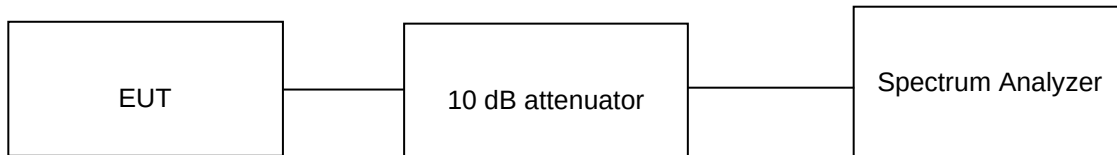
Test Report No.:

IN25YR31 001

Seite 44 von 230

Page 44 of 230

Test Method:



The following procedure shall be used:

1. Set center frequency to the nominal EUT channel center frequency
2. Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal
3. Set RBW = 1MHz (5.250-5.350 GHz band) & (5.470-5.725 GHz band)
4. Set VBW $\geq 3 \times$ RBW
5. Number of points in sweep $\geq 2 \times$ span / RBW. (This ensures that bin-to-bin spacing is $\leq$ RBW/2, so that narrowband signals are not lost between frequency bins.)
6. Sweep time = auto
7. Detector = power averaging (rms), if available. Otherwise, use sample detector mode
8. Do not use sweep triggering. Allow the sweep to "free run."
9. Trace average at least 100 traces and Compute power by integrating the spectrum across the EBW
10. Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission)

Test Condition:

Normal Test Condition:

Temperature (Norm) = + 22.6 °C

Voltage = 56VDC through POE Injector

Relative humidity: 62 %

KDB Guidelines applied:

Measurements were made as per section F in KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Test results:

Note:

1. All the losses are included during measurement and final values are mentioned in the test report
2. Duty cycle correction factor is considered in Final Average power

Duty cycle Correction factor = $10 \cdot \log(1/X)$ Where X is Duty Cycle

Note: Refer Attached Appendix for test Plots

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 45 von 230

Page 45 of 230

Antenna Type & Antenna Gain: Omni Antenna & 12dBi

Bandwidth: 20MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11a	6	5260	-7.26	-9.28	-5.14	2.00	11.00
		5320	-7.77	-9.62	-5.59	2.00	11.00
		5500	-7.67	-8.08	-4.86	2.00	11.00
		5600	-8.43	-8.32	-5.36	2.00	11.00
		5700	-8.27	-8.99	-5.60	2.00	11.00
		5720	-8.60	-9.71	-6.11	2.00	11.00
	54	5260	-8.67	-10.82	-6.60	2.00	11.00
		5320	-9.09	-10.99	-6.93	2.00	11.00
		5500	-9.16	-9.67	-6.40	2.00	11.00
		5600	-10.07	-9.75	-6.90	2.00	11.00
		5700	-9.93	-10.48	-7.19	2.00	11.00
		5720	-10.23	-11.65	-7.87	2.00	11.00
802.11n HT20	MCS0	5260	-1.39	-4.49	0.34	2.00	11.00
		5320	-2.31	-5.57	-0.63	2.00	11.00
		5500	-1.49	-3.25	0.73	2.00	11.00
		5600	-2.49	-3.60	0.00	2.00	11.00
		5700	-2.38	-3.30	0.19	2.00	11.00
		5720	-3.08	-3.94	-0.48	2.00	11.00
	MCS7	5260	-2.45	-4.74	-0.44	2.00	11.00
		5320	-2.99	-5.49	-1.05	2.00	11.00
		5500	-2.70	-3.81	-0.21	2.00	11.00
		5600	-3.69	-4.44	-1.04	2.00	11.00
		5700	-3.63	-4.12	-0.86	2.00	11.00
		5720	-4.23	-4.88	-1.53	2.00	11.00
802.11ac VHT20	MCS0	5260	-1.50	-4.58	0.24	2.00	11.00
		5320	-2.32	-5.58	-0.64	2.00	11.00
		5500	-1.57	-3.10	0.74	2.00	11.00
		5600	-2.44	-3.59	0.03	2.00	11.00
		5700	-2.20	-3.01	0.42	2.00	11.00
		5720	-3.10	-3.64	-0.35	2.00	11.00
	MCS8	5260	-2.38	-4.88	-0.44	2.00	11.00
		5320	-3.13	-5.50	-1.14	2.00	11.00
		5500	-2.69	-3.87	-0.23	2.00	11.00
		5600	-3.75	-4.60	-1.14	2.00	11.00
		5700	-3.83	-4.22	-1.01	2.00	11.00
		5720	-4.28	-5.00	-1.61	2.00	11.00
802.11ax HE20	MCS0	5260	-3.64	-6.78	-1.92	2.00	11.00
		5320	-4.10	-7.90	-2.59	2.00	11.00
		5500	-3.73	-5.25	-1.41	2.00	11.00
		5600	-4.84	-5.92	-2.34	2.00	11.00
		5700	-4.58	-5.57	-2.04	2.00	11.00
		5720	-5.18	-6.13	-2.62	2.00	11.00
	MCS11	5260	-4.81	-7.52	-2.95	2.00	11.00
		5320	-5.24	-7.84	-3.34	2.00	11.00
		5500	-5.08	-5.98	-2.50	2.00	11.00
		5600	-6.32	-6.90	-3.59	2.00	11.00
		5700	-6.21	-6.88	-3.52	2.00	11.00
		5720	-6.73	-7.39	-4.04	2.00	11.00

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 46 von 230
Page 46 of 230

Bandwidth: 40MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11n HT40	MCS0	5270	-11.67	-14.01	-9.67	2.00	11.00
		5310	-12.57	-14.79	-10.53	2.00	11.00
		5510	-12.29	-12.41	-9.34	2.00	11.00
		5670	-12.69	-13.17	-9.91	2.00	11.00
		5710	-12.70	-13.94	-10.27	2.00	11.00
	MCS7	5270	-12.48	-14.36	-10.31	2.00	11.00
		5310	-13.45	-14.96	-11.13	2.00	11.00
		5510	-13.00	-13.23	-10.10	2.00	11.00
		5670	-13.51	-14.05	-10.76	2.00	11.00
		5710	-13.55	-14.25	-10.88	2.00	11.00
802.11ac VHT40	MCS0	5270	-11.59	-13.87	-9.57	2.00	11.00
		5310	-12.60	-14.76	-10.54	2.00	11.00
		5510	-11.97	-12.16	-9.05	2.00	11.00
		5670	-12.73	-13.14	-9.92	2.00	11.00
		5710	-12.53	-13.81	-10.11	2.00	11.00
	MCS8	5270	-13.51	-15.29	-11.30	2.00	11.00
		5310	-14.42	-15.97	-12.12	2.00	11.00
		5510	-14.13	-13.98	-11.04	2.00	11.00
		5670	-14.58	-15.00	-11.77	2.00	11.00
		5710	-14.59	-15.06	-11.81	2.00	11.00
802.11ax HE40	MCS0	5270	-11.71	-14.20	-9.77	2.00	11.00
		5310	-12.79	-14.95	-10.73	2.00	11.00
		5510	-12.41	-12.55	-9.47	2.00	11.00
		5670	-12.87	-13.43	-10.13	2.00	11.00
		5710	-12.72	-13.60	-10.13	2.00	11.00
	MCS11	5270	-13.51	-15.35	-11.32	2.00	11.00
		5310	-14.51	-16.02	-12.19	2.00	11.00
		5510	-14.35	-14.41	-11.37	2.00	11.00
		5670	-14.64	-15.27	-11.93	2.00	11.00
		5710	-14.90	-15.38	-12.12	2.00	11.00

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 47 von 230
Page 47 of 230

Bandwidth: 80MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11ac VHT80	MCS0	5290	-13.54	-14.95	-11.18	2.00	11.00
		5530	-12.54	-12.41	-9.46	2.00	11.00
		5690	-13.86	-13.85	-10.84	2.00	11.00
	MCS9	5290	-16.22	-17.70	-13.89	2.00	11.00
		5530	-15.53	-15.42	-12.46	2.00	11.00
		5690	-16.33	-16.46	-13.38	2.00	11.00
802.11ax HE80	MCS0	5290	-13.32	-14.72	-10.95	2.00	11.00
		5530	-11.82	-12.19	-8.99	2.00	11.00
		5690	-12.90	-13.28	-10.08	2.00	11.00
	MCS11	5290	-16.32	-17.85	-14.01	2.00	11.00
		5530	-15.76	-15.39	-12.56	2.00	11.00
		5690	-16.87	-16.53	-13.69	2.00	11.00

Note:

The Maximum Antenna Gain is 12dBi in 5GHz band. The device employed cycle delay diversity (CDD) for 802.11 MIMO Transmitting per KDB 662911 D01. Multiple transmitter output v02r01, for PSD measurements on this devices.

Array Gain= $10\log(N_{ANT}/N_{SS})$ dB.

So, Directional Gain: $12\text{dBi} + 10*\log(2/1) = 15\text{dBi}$

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 48 von 230

Page 48 of 230

Antenna Type & Antenna gain: Integrated Panel Antenna & 15dBi

Bandwidth: 20MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11a	6	5260	-7.92	-7.92	-4.91	-1.00	11.00
		5320	-8.60	-8.70	-5.64	-1.00	11.00
		5500	-7.90	-8.36	-5.11	-1.00	11.00
		5600	-9.05	-8.42	-5.71	-1.00	11.00
		5700	-8.79	-8.06	-5.40	-1.00	11.00
		5720	-9.23	-8.72	-5.96	-1.00	11.00
	54	5260	-8.74	-9.10	-5.91	-1.00	11.00
		5320	-9.81	-9.86	-6.82	-1.00	11.00
		5500	-9.20	-9.51	-6.34	-1.00	11.00
		5600	-10.64	-9.82	-7.20	-1.00	11.00
		5700	-10.52	-9.64	-7.05	-1.00	11.00
		5720	-10.92	-10.34	-7.61	-1.00	11.00
802.11n HT20	MCS0	5260	-4.63	-4.60	-1.60	-1.00	11.00
		5320	-4.84	-4.17	-1.48	-1.00	11.00
		5500	-4.72	-4.13	-1.40	-1.00	11.00
		5600	-4.83	-4.67	-1.74	-1.00	11.00
		5700	-4.00	-4.71	-1.33	-1.00	11.00
		5720	-4.64	-4.14	-1.37	-1.00	11.00
	MCS7	5260	-4.46	-4.01	-1.22	-1.00	11.00
		5320	-4.57	-4.23	-1.39	-1.00	11.00
		5500	-4.98	-4.84	-1.90	-1.00	11.00
		5600	-4.10	-4.49	-1.28	-1.00	11.00
		5700	-4.37	-3.88	-1.11	-1.00	11.00
		5720	-4.73	-4.34	-1.52	-1.00	11.00
802.11ac VHT20	MCS0	5260	-4.76	-4.63	-1.68	-1.00	11.00
		5320	-4.12	-4.39	-1.24	-1.00	11.00
		5500	-4.69	-4.28	-1.47	-1.00	11.00
		5600	-4.84	-4.71	-1.76	-1.00	11.00
		5700	-4.94	-4.93	-1.92	-1.00	11.00
		5720	-4.82	-4.15	-1.46	-1.00	11.00
	MCS8	5260	-5.38	-3.09	-1.08	-1.00	11.00
		5320	-5.61	-4.10	-1.78	-1.00	11.00
		5500	-5.87	-2.92	-1.14	-1.00	11.00
		5600	-5.11	-3.64	-1.30	-1.00	11.00
		5700	-4.42	-3.89	-1.14	-1.00	11.00
		5720	-4.90	-4.34	-1.60	-1.00	11.00
802.11ax HE20	MCS0	5260	-4.44	-4.97	-1.69	-1.00	11.00
		5320	-4.70	-6.21	-2.38	-1.00	11.00
		5500	-3.70	-4.55	-1.09	-1.00	11.00
		5600	-5.09	-4.94	-2.00	-1.00	11.00
		5700	-5.04	-5.04	-2.03	-1.00	11.00
		5720	-5.68	-5.37	-2.51	-1.00	11.00
	MCS11	5260	-5.66	-5.54	-2.59	-1.00	11.00
		5320	-5.82	-6.37	-3.08	-1.00	11.00
		5500	-5.15	-5.33	-2.23	-1.00	11.00
		5600	-6.66	-6.07	-3.34	-1.00	11.00
		5700	-6.84	-6.37	-3.59	-1.00	11.00
		5720	-7.19	-6.55	-3.85	-1.00	11.00

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 49 von 230

Page 49 of 230

Bandwidth: 40MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11n HT40	MCS0	5270	-12.37	-12.48	-9.41	-1.00	11.00
		5310	-13.01	-13.10	-10.04	-1.00	11.00
		5510	-12.33	-12.43	-9.37	-1.00	11.00
		5670	-13.47	-12.52	-9.96	-1.00	11.00
		5710	-13.47	-12.84	-10.13	-1.00	11.00
	MCS7	5270	-13.31	-13.00	-10.14	-1.00	11.00
		5310	-13.91	-13.65	-10.77	-1.00	11.00
		5510	-13.35	-13.13	-10.23	-1.00	11.00
		5670	-14.30	-13.72	-10.99	-1.00	11.00
		5710	-14.35	-13.54	-10.92	-1.00	11.00
802.11ac VHT40	MCS0	5270	-12.43	-12.46	-9.43	-1.00	11.00
		5310	-13.03	-13.04	-10.02	-1.00	11.00
		5510	-12.41	-12.30	-9.34	-1.00	11.00
		5670	-13.41	-12.53	-9.94	-1.00	11.00
		5710	-13.43	-12.98	-10.19	-1.00	11.00
	MCS8	5270	-14.19	-14.12	-11.14	-1.00	11.00
		5310	-14.90	-14.63	-11.75	-1.00	11.00
		5510	-14.32	-14.30	-11.30	-1.00	11.00
		5670	-15.31	-14.62	-11.94	-1.00	11.00
		5710	-15.30	-14.48	-11.86	-1.00	11.00
802.11ax HE40	MCS0	5270	-12.53	-12.74	-9.62	-1.00	11.00
		5310	-13.19	-13.43	-10.30	-1.00	11.00
		5510	-12.64	-12.57	-9.59	-1.00	11.00
		5670	-13.57	-12.68	-10.09	-1.00	11.00
		5710	-13.58	-13.02	-10.28	-1.00	11.00
	MCS11	5270	-14.30	-14.18	-11.23	-1.00	11.00
		5310	-14.94	-14.99	-11.95	-1.00	11.00
		5510	-14.43	-14.51	-11.46	-1.00	11.00
		5670	-15.42	-14.93	-12.16	-1.00	11.00
		5710	-15.30	-14.76	-12.01	-1.00	11.00

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 50 von 230
Page 50 of 230

Bandwidth: 80MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11ac VHT80	MCS0	5290	-14.12	-14.07	-11.08	-1.00	11.00
		5530	-12.78	-13.01	-9.88	-1.00	11.00
		5690	-14.69	-14.98	-11.82	-1.00	11.00
	MCS9	5290	-16.78	-16.52	-13.64	-1.00	11.00
		5530	-15.66	-15.55	-12.59	-1.00	11.00
		5690	-17.42	-17.32	-14.36	-1.00	11.00
802.11ax HE80	MCS0	5290	-13.93	-14.12	-11.01	-1.00	11.00
		5530	-12.60	-12.80	-9.69	-1.00	11.00
		5690	-14.53	-14.33	-11.42	-1.00	11.00
	MCS11	5290	-16.86	-16.75	-13.79	-1.00	11.00
		5530	-15.72	-15.62	-12.66	-1.00	11.00
		5690	-17.30	-17.25	-14.26	-1.00	11.00

Note:

1. The duty cycle correction factor is added in the final test data
2. The Maximum Antenna Gain is 15dBi in 5GHz band. The device employed cycle delay diversity (CDD) for 802.11 MIMO Transmitting per KDB 662911 D01. Multiple transmitter output v02r01, for PSD measurements on this devices.
3. Array Gain= $10\log(N_{ANT}/N_{SS})$ dB.
4. So, Directional Gain: 15dBi + $10*\log(2/1)$ = 18dBi

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 51 von 230
Page 51 of 230

Antenna Type & Antenna Gain: Sector Antenna & 21dBi

Bandwidth: 20MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11a	6	5260	-10.85	-13.77	-9.06	6.00	11.00
		5320	-11.84	-14.34	-9.90	6.00	11.00
		5500	-11.18	-12.54	-8.80	6.00	11.00
		5600	-11.84	-12.84	-9.30	6.00	11.00
		5700	-12.16	-12.81	-9.46	6.00	11.00
		5720	-12.69	-13.09	-9.88	6.00	11.00
	54	5260	-12.26	-14.10	-10.07	6.00	11.00
		5320	-12.96	-14.78	-10.77	6.00	11.00
		5500	-12.51	-13.13	-9.80	6.00	11.00
		5600	-13.30	-13.77	-10.52	6.00	11.00
		5700	-13.34	-14.20	-10.74	6.00	11.00
		5720	-13.77	-13.67	-10.71	6.00	11.00
802.11n HT20	MCS0	5260	-11.72	-14.81	-9.99	6.00	11.00
		5320	-12.53	-15.71	-10.82	6.00	11.00
		5500	-11.86	-13.43	-9.56	6.00	11.00
		5600	-12.50	-13.53	-9.97	6.00	11.00
		5700	-12.83	-13.62	-10.20	6.00	11.00
		5720	-13.15	-14.02	-10.55	6.00	11.00
	MCS7	5260	-12.41	-15.02	-10.51	6.00	11.00
		5320	-13.21	-15.31	-11.12	6.00	11.00
		5500	-12.91	-14.02	-10.42	6.00	11.00
		5600	-13.69	-14.46	-11.05	6.00	11.00
		5700	-14.03	-14.63	-11.31	6.00	11.00
		5720	-14.31	-14.72	-11.50	6.00	11.00
802.11ac VHT20	MCS0	5260	-11.54	-14.76	-9.85	6.00	11.00
		5320	-12.60	-15.65	-10.85	6.00	11.00
		5500	-11.72	-13.39	-9.46	6.00	11.00
		5600	-12.47	-13.70	-10.03	6.00	11.00
		5700	-12.68	-13.75	-10.17	6.00	11.00
		5720	-13.15	-13.71	-10.41	6.00	11.00
	MCS8	5260	-12.33	-15.04	-10.47	6.00	11.00
		5320	-13.23	-15.40	-11.17	6.00	11.00
		5500	-12.87	-14.00	-10.39	6.00	11.00
		5600	-13.79	-14.40	-11.07	6.00	11.00
		5700	-13.95	-14.60	-11.25	6.00	11.00
		5720	-14.41	-14.85	-11.61	6.00	11.00
802.11ax HE20	MCS0	5260	-11.62	-14.68	-9.88	6.00	11.00
		5320	-12.59	-15.57	-10.82	6.00	11.00
		5500	-11.76	-13.37	-9.48	6.00	11.00
		5600	-12.41	-13.44	-9.88	6.00	11.00
		5700	-12.76	-13.53	-10.12	6.00	11.00
		5720	-13.15	-13.58	-10.35	6.00	11.00
	MCS11	5260	-12.85	-15.39	-10.93	6.00	11.00
		5320	-13.80	-15.72	-11.64	6.00	11.00
		5500	-13.12	-14.34	-10.68	6.00	11.00
		5600	-14.08	-14.74	-11.39	6.00	11.00
		5700	-14.44	-14.95	-11.68	6.00	11.00
		5720	-14.77	-15.16	-11.95	6.00	11.00

Prüfbericht - Nr.:
Test Report No.:

IN25YR31 001

Seite 52 von 230
Page 52 of 230

Bandwidth: 40MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11n HT40	MCS0	5270	-13.81	-16.36	-11.89	6.00	11.00
		5310	-14.14	-17.08	-12.36	6.00	11.00
		5510	-16.18	-16.95	-13.54	6.00	11.00
		5670	-17.13	-17.81	-14.45	6.00	11.00
		5710	-17.46	-18.04	-14.73	6.00	11.00
	MCS7	5270	-15.56	-17.81	-13.53	6.00	11.00
		5310	-15.97	-18.53	-14.05	6.00	11.00
		5510	-18.01	-18.59	-15.28	6.00	11.00
		5670	-19.12	-19.46	-16.28	6.00	11.00
		5710	-19.25	-19.88	-16.54	6.00	11.00
802.11ac VHT40	MCS0	5270	-13.61	-16.32	-11.75	6.00	11.00
		5310	-14.07	-17.35	-12.40	6.00	11.00
		5510	-16.13	-16.91	-13.49	6.00	11.00
		5670	-17.03	-17.74	-14.36	6.00	11.00
		5710	-17.27	-18.03	-14.62	6.00	11.00
	MCS8	5270	-15.57	-17.96	-13.59	6.00	11.00
		5310	-15.86	-18.65	-14.02	6.00	11.00
		5510	-17.11	-17.65	-14.36	6.00	11.00
		5670	-16.76	-17.18	-13.95	6.00	11.00
		5710	-17.02	-17.46	-14.22	6.00	11.00
802.11ax HE40	MCS0	5270	-13.96	-16.65	-12.09	6.00	11.00
		5310	-14.54	-17.62	-12.80	6.00	11.00
		5510	-14.39	-15.44	-11.87	6.00	11.00
		5670	-15.23	-15.96	-12.57	6.00	11.00
		5710	-15.26	-16.03	-12.62	6.00	11.00
	MCS11	5270	-15.72	-18.05	-13.72	6.00	11.00
		5310	-16.09	-18.73	-14.20	6.00	11.00
		5510	-15.92	-17.00	-13.42	6.00	11.00
		5670	-17.00	-17.34	-14.16	6.00	11.00
		5710	-16.97	-17.83	-14.37	6.00	11.00

Bandwidth: 80MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11ac VHT80	MCS0	5290	-16.55	-19.25	-14.68	6.00	11.00
		5530	-18.89	-19.55	-16.20	6.00	11.00
		5690	-8.08	-8.43	-5.24	6.00	11.00
	MCS9	5290	-18.78	-21.50	-16.92	6.00	11.00
		5530	-20.97	-21.83	-18.37	6.00	11.00
		5690	-10.50	-10.50	-7.49	6.00	11.00
802.11ax HE80	MCS0	5290	-16.70	-19.40	-14.83	6.00	11.00
		5530	-19.13	-19.75	-16.42	6.00	11.00
		5690	-8.17	-8.34	-5.24	6.00	11.00
	MCS11	5290	-19.06	-21.54	-17.12	6.00	11.00
		5530	-20.96	-21.80	-18.35	6.00	11.00
		5690	-10.13	-10.39	-7.25	6.00	11.00

Note:

1. The duty cycle correction factor is added in the final test data
2. The antenna gain is 21dBi. 10dB Attenuator should be installed with this band for this antenna for the bands 5250MHz to 5350MHz & 5470MHz to 5725MHz, so the actual antenna gain is 11dBi, The device employed cyclic delay diversity (CDD) for 802.11 MIMO Transmitting per KDB 662911D01 Multiple transmitter output v02r01, for power measurements on IEEE 802.11 devices
Array Gain =0dB (i.e., no array gain) for $N_{ANT} \leq 2$;
So,
Directional gain =11dBi for 5250MHz to 5350MHz & 5470MHz to 5725MHz

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 54 von 230

Page 54 of 230

Antenna Type & Antenna Gain: Integrated Panel Antenna & 23dBi

Bandwidth: 20MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11a	6	5260	-14.90	-17.38	-12.96	-6.00	11.00
		5320	-15.85	-17.89	-13.74	-6.00	11.00
		5500	-14.52	-16.60	-12.43	-6.00	11.00
		5600	-15.47	-17.18	-13.23	-6.00	11.00
		5700	-16.34	-17.70	-13.96	-6.00	11.00
		5720	-16.64	-17.84	-14.19	-6.00	11.00
	54	5260	-15.63	-19.31	-14.08	-6.00	11.00
		5320	-17.17	-19.78	-15.27	-6.00	11.00
		5500	-15.55	-17.59	-13.44	-6.00	11.00
		5600	-16.58	-18.68	-14.49	-6.00	11.00
		5700	-17.68	-19.03	-15.29	-6.00	11.00
802.11n HT20	MCS0	5260	-15.76	-18.44	-13.89	-6.00	11.00
		5320	-16.35	-18.99	-14.46	-6.00	11.00
		5500	-15.41	-17.44	-13.30	-6.00	11.00
		5600	-16.40	-17.87	-14.06	-6.00	11.00
		5700	-17.02	-18.53	-14.70	-6.00	11.00
		5720	-17.16	-18.31	-14.69	-6.00	11.00
	MCS7	5260	-16.56	-18.94	-14.58	-6.00	11.00
		5320	-18.11	-19.74	-15.84	-6.00	11.00
		5500	-16.24	-18.01	-14.03	-6.00	11.00
		5600	-17.34	-18.68	-14.95	-6.00	11.00
		5700	-18.21	-19.39	-15.75	-6.00	11.00
802.11ac VHT20	MCS0	5260	-15.59	-18.58	-13.82	-6.00	11.00
		5320	-16.34	-18.98	-14.45	-6.00	11.00
		5500	-15.34	-17.35	-13.22	-6.00	11.00
		5600	-16.26	-17.84	-13.97	-6.00	11.00
		5700	-16.83	-18.54	-14.59	-6.00	11.00
		5720	-17.30	-18.70	-14.93	-6.00	11.00
	MCS8	5260	-16.51	-19.02	-14.58	-6.00	11.00
		5320	-17.95	-19.64	-15.70	-6.00	11.00
		5500	-16.25	-17.87	-13.97	-6.00	11.00
		5600	-17.53	-18.76	-15.09	-6.00	11.00
		5700	-18.25	-19.45	-15.80	-6.00	11.00
802.11ax HE20	MCS0	5260	-15.50	-18.39	-13.70	-6.00	11.00
		5320	-16.54	-19.14	-14.64	-6.00	11.00
		5500	-15.05	-17.35	-13.04	-6.00	11.00
		5600	-16.09	-17.82	-13.86	-6.00	11.00
		5700	-16.86	-18.36	-14.54	-6.00	11.00
		5720	-17.21	-18.56	-14.82	-6.00	11.00
	MCS11	5260	-16.87	-19.29	-14.90	-6.00	11.00
		5320	-18.38	-20.18	-16.18	-6.00	11.00
		5500	-16.50	-18.17	-14.24	-6.00	11.00
		5600	-17.62	-18.98	-15.24	-6.00	11.00
		5700	-18.56	-19.61	-16.04	-6.00	11.00
		5720	-18.76	-19.83	-16.25	-6.00	11.00

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 55 von 230

Page 55 of 230

Bandwidth: 40MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11n HT40	MCS0	5270	-17.75	-20.47	-15.89	-6.00	11.00
		5310	-20.32	-22.73	-18.35	-6.00	11.00
		5510	-17.50	-19.10	-15.22	-6.00	11.00
		5670	-18.88	-20.13	-16.45	-6.00	11.00
		5710	-19.46	-20.54	-16.96	-6.00	11.00
	MCS7	5270	-19.59	-22.05	-17.64	-6.00	11.00
		5310	-24.19	-26.23	-22.08	-6.00	11.00
		5510	-22.70	-23.50	-20.07	-6.00	11.00
		5670	-20.79	-22.07	-18.37	-6.00	11.00
		5710	-21.34	-22.36	-18.81	-6.00	11.00
802.11ac VHT40	MCS0	5270	-17.80	-20.55	-15.95	-6.00	11.00
		5310	-21.38	-23.65	-19.36	-6.00	11.00
		5510	-17.22	-19.27	-15.11	-6.00	11.00
		5670	-19.01	-20.12	-16.52	-6.00	11.00
		5710	-19.60	-20.84	-17.17	-6.00	11.00
	MCS8	5270	-19.72	-22.12	-17.75	-6.00	11.00
		5310	-24.24	-26.23	-22.11	-6.00	11.00
		5510	-22.70	-23.52	-20.08	-6.00	11.00
		5670	-20.73	-22.02	-18.32	-6.00	11.00
		5710	-21.36	-22.47	-18.87	-6.00	11.00
802.11ax HE40	MCS0	5270	-18.11	-20.78	-16.23	-6.00	11.00
		5310	-21.44	-23.94	-19.50	-6.00	11.00
		5510	-17.56	-19.69	-15.49	-6.00	11.00
		5670	-19.16	-20.56	-16.79	-6.00	11.00
		5710	-19.69	-21.22	-17.38	-6.00	11.00
	MCS11	5270	-21.56	-23.69	-19.49	-6.00	11.00
		5310	-24.39	-26.17	-22.18	-6.00	11.00
		5510	-23.81	-24.81	-21.27	-6.00	11.00
		5670	-20.98	-22.30	-18.58	-6.00	11.00
		5710	-21.47	-22.53	-18.96	-6.00	11.00

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 56 von 230

Page 56 of 230

Bandwidth: 80MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11ac VHT80	MCS0	5290	-22.32	-24.72	-20.35	-6.00	11.00
		5530	-20.94	-22.98	-18.83	-6.00	11.00
		5690	-11.40	-11.56	-8.47	-6.00	11.00
	MCS9	5290	-27.20	-29.38	-25.14	-6.00	11.00
		5530	-26.13	-26.96	-23.51	-6.00	11.00
		5690	-13.87	-14.09	-10.97	-6.00	11.00
802.11ax HE80	MCS0	5290	-23.23	-25.61	-21.25	-6.00	11.00
		5530	-21.94	-23.33	-19.57	-6.00	11.00
		5690	-12.87	-13.17	-10.01	-6.00	11.00
	MCS11	5290	-27.02	-29.46	-25.06	-6.00	11.00
		5530	-27.00	-27.09	-24.03	-6.00	11.00
		5690	-16.72	-16.90	-13.80	-6.00	11.00

1. The duty cycle correction factor is added in the final test data
2. The antenna gain is 23dBi. The device employed cyclic delay diversity (CDD) for 802.11 MIMO Transmitting per KDB 662911D01 Multiple transmitter output v02r01, for power measurements on IEEE 802.11 devices
Array Gain =0dB (i.e., no array gain) for $N_{ANT} \leq 2$;
So,
Directional gain =23dBi for 5250MHz to 5350MHz & 5470MHz to 5725MHz

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 57 von 230

Page 57 of 230

Antenna Type & Antenna Gain: Panel Antenna & 28dBi

Bandwidth: 20MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11a	6	5260	-17.50	-19.60	-15.41	-1.00	11.00
		5320	-18.33	-20.38	-16.22	-1.00	11.00
		5500	-17.89	-18.52	-15.18	-1.00	11.00
		5600	-18.65	-18.37	-15.50	-1.00	11.00
		5700	-18.51	-19.45	-15.94	-1.00	11.00
		5720	-18.84	-19.93	-16.34	-1.00	11.00
	54	5260	-18.60	-21.02	-16.63	-1.00	11.00
		5320	-19.89	-21.73	-17.70	-1.00	11.00
		5500	-19.59	-19.82	-16.69	-1.00	11.00
		5600	-19.26	-20.01	-16.61	-1.00	11.00
		5700	-20.06	-21.13	-17.55	-1.00	11.00
		5720	-20.30	-21.72	-17.94	-1.00	11.00
802.11n HT20	MCS0	5260	-17.81	-20.45	-15.92	-1.00	11.00
		5320	-18.70	-21.18	-16.76	-1.00	11.00
		5500	-18.37	-18.95	-15.64	-1.00	11.00
		5600	-18.87	-18.97	-15.91	-1.00	11.00
		5700	-18.86	-20.01	-16.39	-1.00	11.00
		5720	-19.08	-20.27	-16.62	-1.00	11.00
	MCS7	5260	-19.62	-21.73	-17.54	-1.00	11.00
		5320	-20.59	-21.96	-18.21	-1.00	11.00
		5500	-20.31	-20.61	-17.45	-1.00	11.00
		5600	-20.87	-20.73	-17.79	-1.00	11.00
		5700	-21.01	-21.68	-18.32	-1.00	11.00
		5720	-21.43	-22.30	-18.83	-1.00	11.00
802.11ac VHT20	MCS0	5260	-17.82	-20.21	-15.84	-1.00	11.00
		5320	-18.82	-21.06	-16.79	-1.00	11.00
		5500	-18.35	-19.04	-15.67	-1.00	11.00
		5600	-18.78	-18.71	-15.73	-1.00	11.00
		5700	-18.89	-19.84	-16.33	-1.00	11.00
		5720	-19.09	-19.97	-16.50	-1.00	11.00
	MCS8	5260	-19.33	-21.66	-17.33	-1.00	11.00
		5320	-20.34	-21.90	-18.04	-1.00	11.00
		5500	-20.27	-20.70	-17.47	-1.00	11.00
		5600	-20.78	-20.67	-17.71	-1.00	11.00
		5700	-20.96	-21.57	-18.24	-1.00	11.00
		5720	-21.19	-22.20	-18.66	-1.00	11.00
802.11ax HE20	MCS0	5260	-18.18	-20.55	-16.19	-1.00	11.00
		5320	-19.04	-21.40	-17.05	-1.00	11.00
		5500	-18.45	-19.29	-15.84	-1.00	11.00
		5600	-19.09	-19.15	-16.11	-1.00	11.00
		5700	-19.21	-20.06	-16.60	-1.00	11.00
		5720	-19.35	-20.52	-16.89	-1.00	11.00
	MCS11	5260	-19.97	-21.99	-17.85	-1.00	11.00
		5320	-20.84	-22.25	-18.48	-1.00	11.00
		5500	-20.61	-20.84	-17.71	-1.00	11.00
		5600	-21.23	-20.95	-18.08	-1.00	11.00
		5700	-21.45	-21.97	-18.69	-1.00	11.00
		5720	-21.65	-22.46	-19.03	-1.00	11.00

Prüfbericht - Nr.:

Test Report No.:

IN25YR31 001

Seite 58 von 230

Page 58 of 230

Bandwidth: 40MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11n HT40	MCS0	5270	-20.78	-23.10	-18.78	-1.00	11.00
		5310	-21.80	-23.83	-19.69	-1.00	11.00
		5510	-21.25	-21.67	-18.44	-1.00	11.00
		5670	-21.83	-22.21	-19.01	-1.00	11.00
		5710	-22.04	-22.97	-19.47	-1.00	11.00
	MCS7	5270	-22.71	-24.52	-20.51	-1.00	11.00
		5310	-23.56	-25.35	-21.35	-1.00	11.00
		5510	-23.40	-23.71	-20.54	-1.00	11.00
		5670	-23.88	-24.03	-20.94	-1.00	11.00
		5710	-24.09	-24.91	-21.47	-1.00	11.00
802.11ac VHT40	MCS0	5270	-20.64	-22.99	-18.65	-1.00	11.00
		5310	-21.70	-23.75	-19.59	-1.00	11.00
		5510	-21.20	-21.66	-18.41	-1.00	11.00
		5670	-21.74	-22.31	-19.01	-1.00	11.00
		5710	-21.93	-22.97	-19.41	-1.00	11.00
	MCS8	5270	-22.60	-24.57	-20.46	-1.00	11.00
		5310	-23.55	-25.17	-21.27	-1.00	11.00
		5510	-23.33	-23.60	-20.45	-1.00	11.00
		5670	-23.88	-24.03	-20.94	-1.00	11.00
		5710	-24.02	-24.81	-21.39	-1.00	11.00
802.11ax HE40	MCS0	5270	-20.88	-23.19	-18.87	-1.00	11.00
		5310	-22.02	-23.94	-19.86	-1.00	11.00
		5510	-21.42	-21.92	-18.65	-1.00	11.00
		5670	-22.11	-22.23	-19.16	-1.00	11.00
		5710	-21.90	-23.00	-19.40	-1.00	11.00
	MCS11	5270	-22.85	-24.75	-20.69	-1.00	11.00
		5310	-23.84	-25.55	-21.60	-1.00	11.00
		5510	-23.55	-23.79	-20.66	-1.00	11.00
		5670	-24.08	-24.36	-21.21	-1.00	11.00
		5710	-24.30	-25.14	-21.69	-1.00	11.00

Bandwidth: 80MHz

Mode	Data rate	Channel Frequency (MHz)	Measured PSD Chain-1 (dBm)	Measured PSD Chain-2 (dBm)	Measured Final PSD with DCCF (dBm)	FCC Limit (dBm)	IC Limit (dBm)
802.11ac VHT80	MCS0	5290	-23.44	-25.64	-21.39	-1.00	11.00
		5530	-22.66	-23.09	-19.86	-1.00	11.00
		5690	-15.43	-15.74	-12.57	-1.00	11.00
	MCS9	5290	-26.47	-28.24	-24.26	-1.00	11.00
		5530	-25.81	-25.96	-22.87	-1.00	11.00
		5690	-15.69	-16.44	-13.04	-1.00	11.00
802.11ax HE80	MCS0	5290	-23.57	-25.62	-21.46	-1.00	11.00
		5530	-22.90	-23.12	-20.00	-1.00	11.00
		5690	-15.63	-15.41	-12.51	-1.00	11.00
	MCS11	5290	-26.51	-28.24	-24.28	-1.00	11.00
		5530	-25.84	-25.79	-22.80	-1.00	11.00
		5690	-16.26	-16.38	-13.31	-1.00	11.00

***Note:**

1. The duty cycle correction factor is added in the final test data
2. The antenna gain is 28dBi. 10dB Attenuator should be installed with this band for this antenna for the bands 5250MHz to 5350MHz & 5470MHz to 5725MHz, so the actual antenna gain is 18dBi The device employed cyclic delay diversity (CDD) for 802.11 MIMO Transmitting per KDB 662911D01 Multiple transmitter output v02r01, for power measurements on IEEE 802.11 devices
Array Gain =0dB (i.e., no array gain) for $N_{ANT} \leq 2$;
So,
Directional gain =18dBi for 5250MHz to 5350MHz & 5470MHz to 5725MHz