TEST REPORT

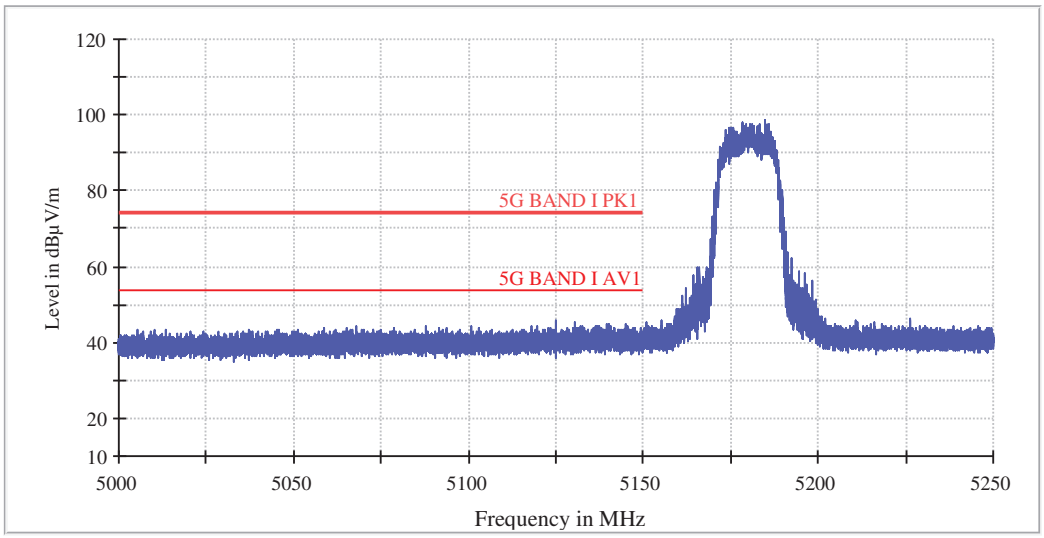
4.8 Band Edges Requirement

Test Requirement:	FCC Part 15 E clause 15.407(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits.
Test Method:	FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01,Clause G
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)
Limit:	(1) For transmitters operating in the 5.15–5.25 GHz band: All emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (2) For transmitters operating in the 5.725–5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

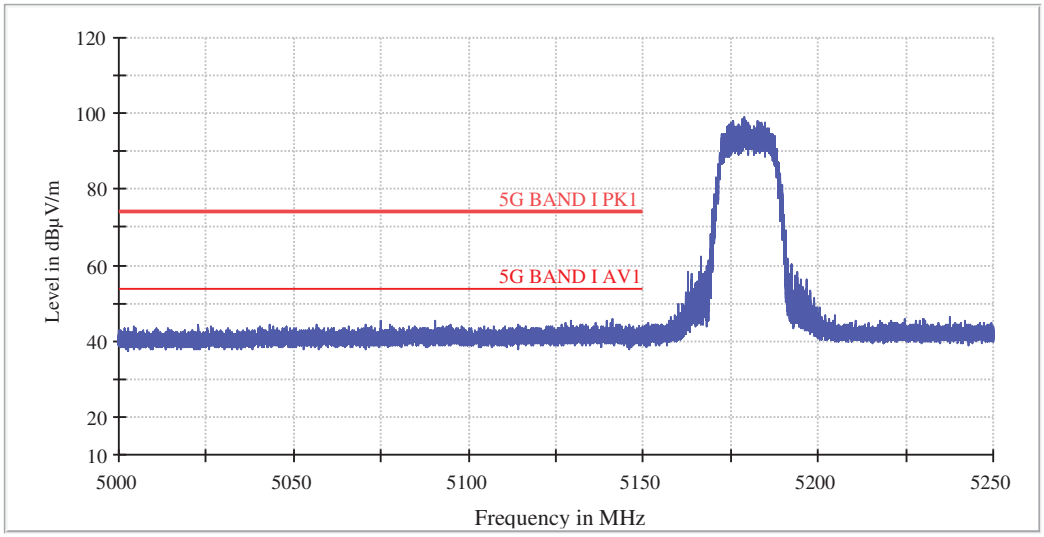
TEST REPORT

Result plots as follows:

Band I 5150 MHz to 5250 MHz
802.11a(20) mode
Channel 36: 5180 MHz:
Horizontal



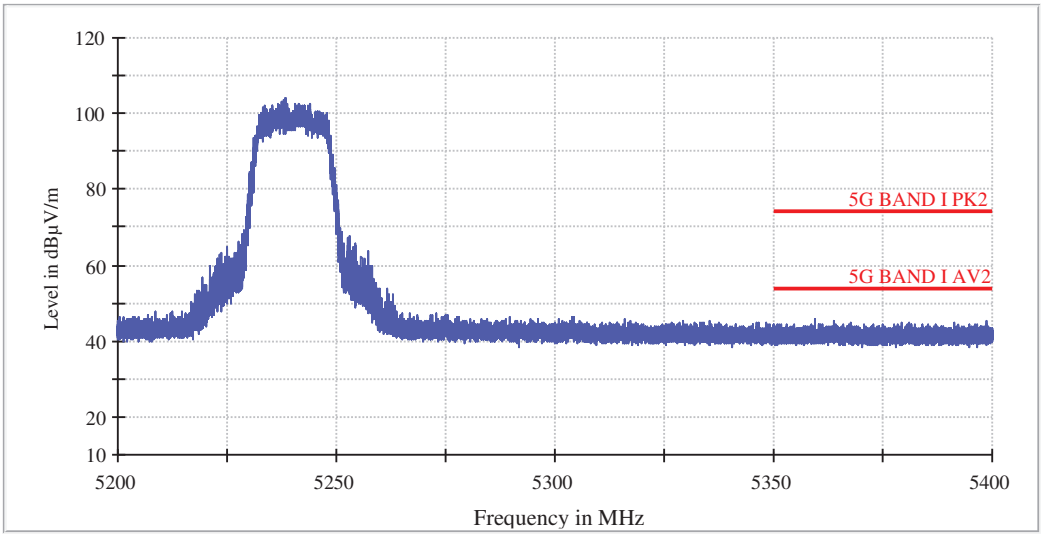
Vertical



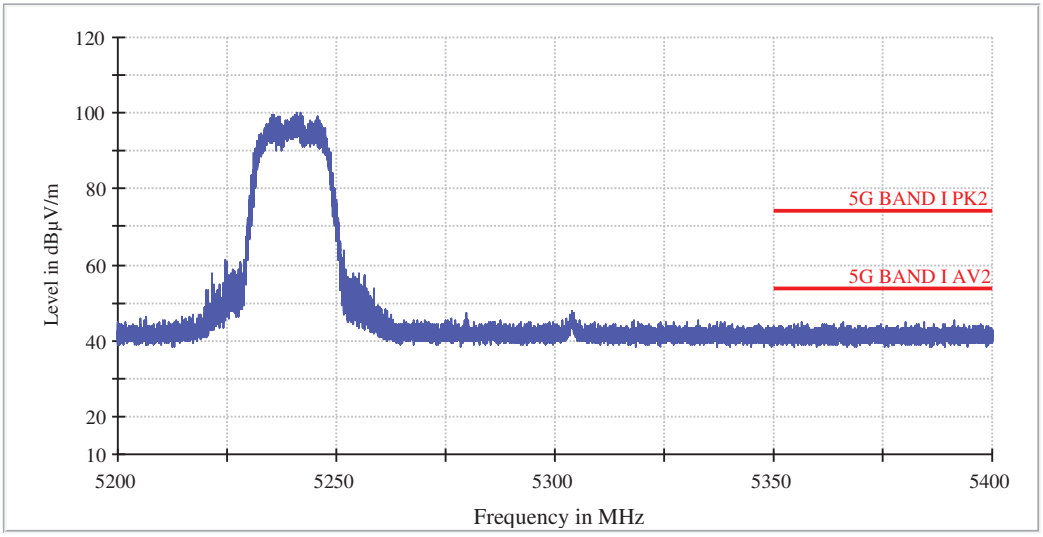
TEST REPORT

Channel 48: 5240 MHz:

Horizontal

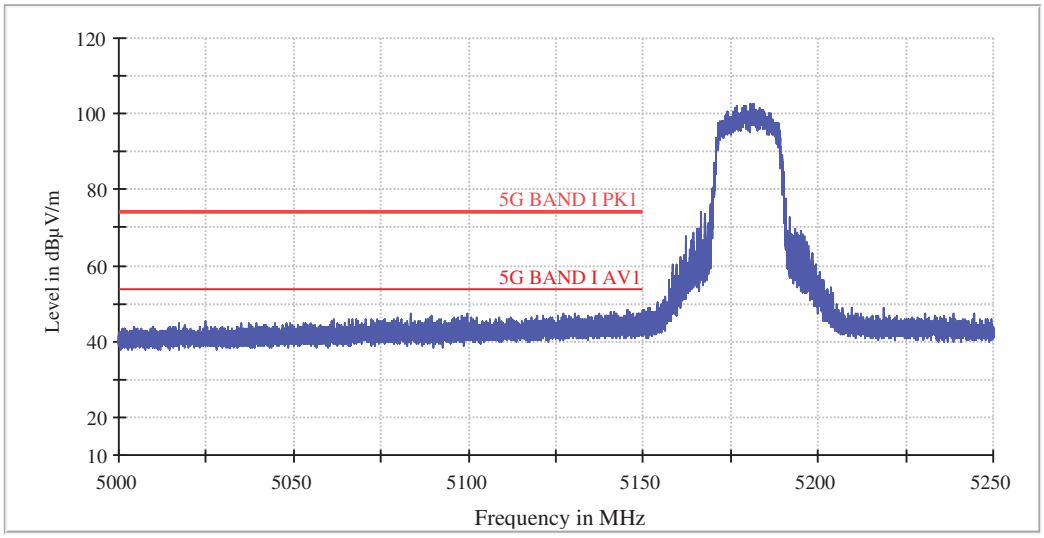


Vertical

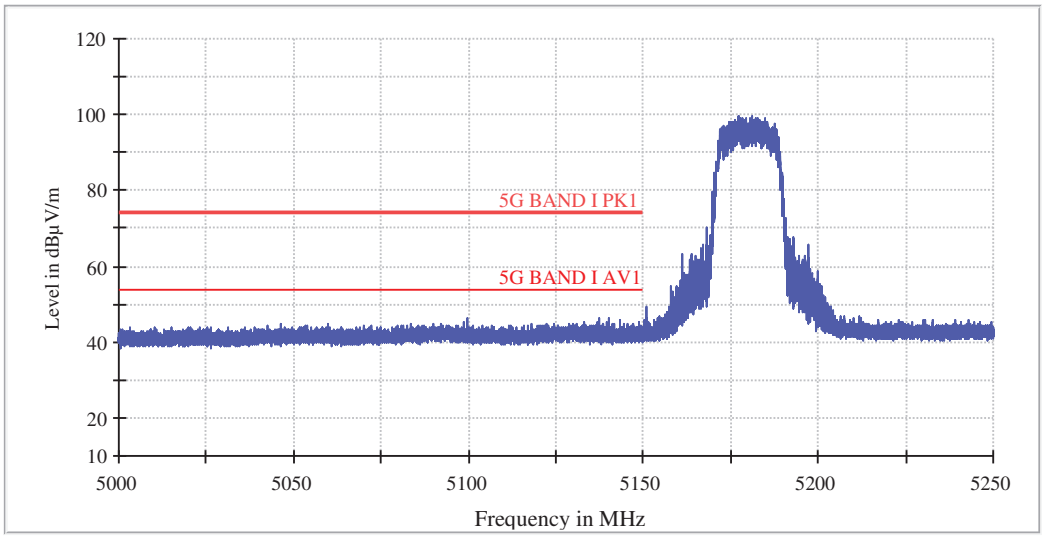


TEST REPORT

802.11an(HT 20) mode
Channel 36: 5180 MHz:
Horizontal

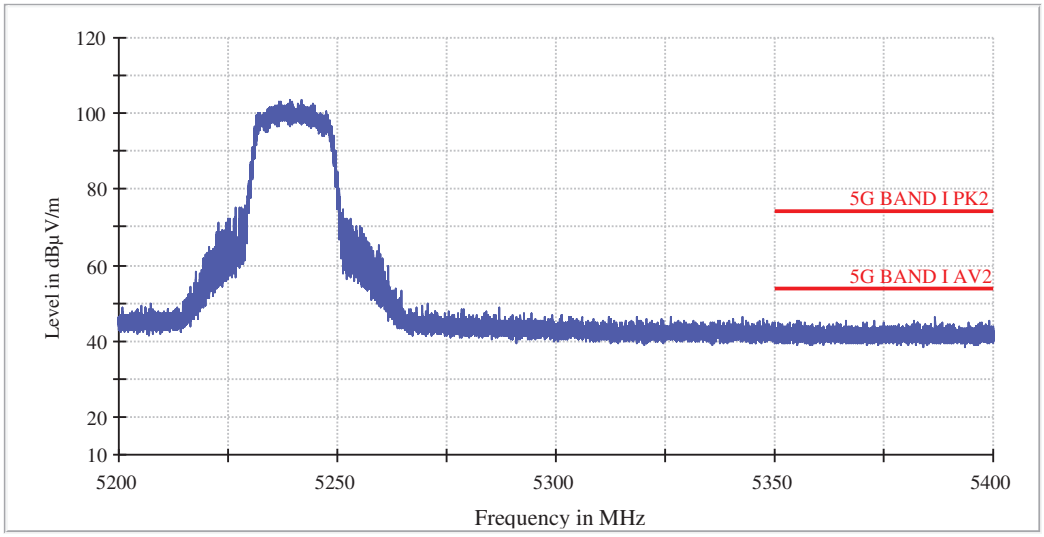


Vertical

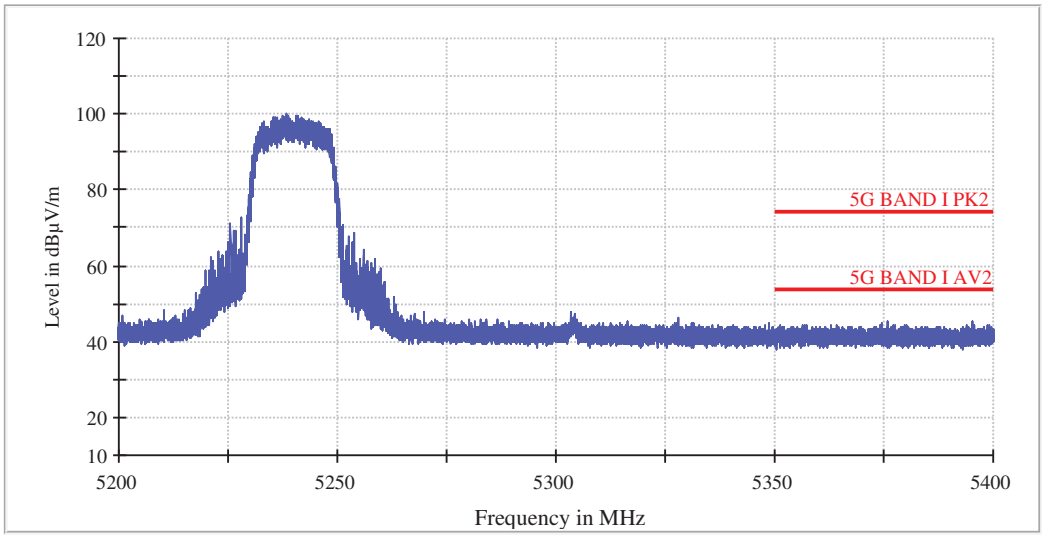


TEST REPORT

Channel 48: 5240 MHz:
Horizontal

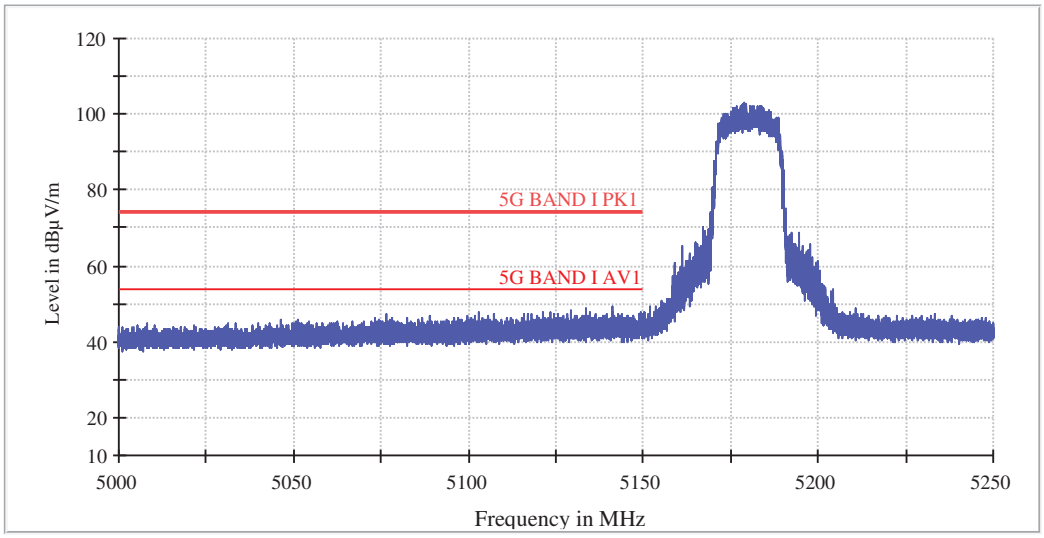


Vertical

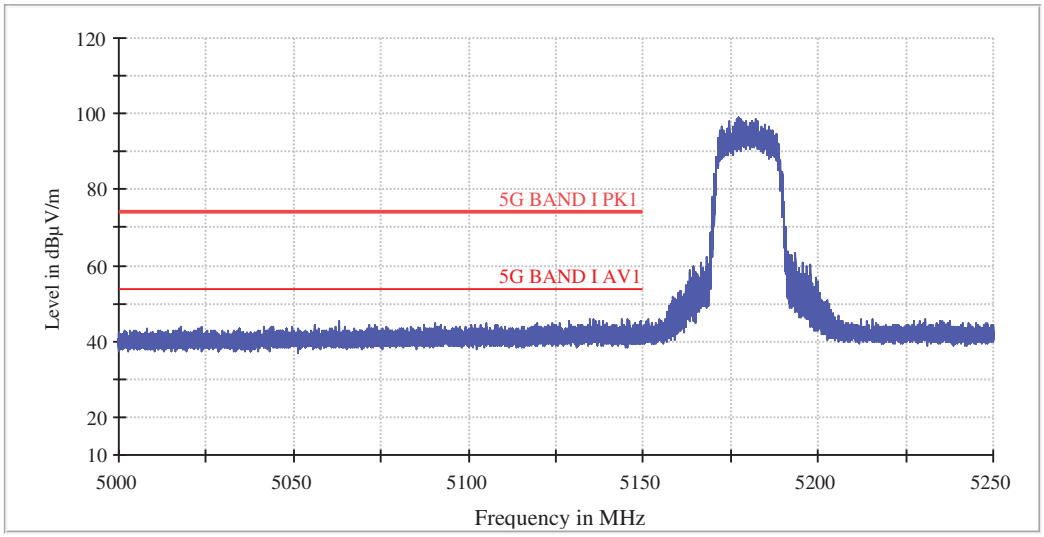


TEST REPORT

802.11ac(HT 20) mode
Channel 36: 5180 MHz:
Horizontal

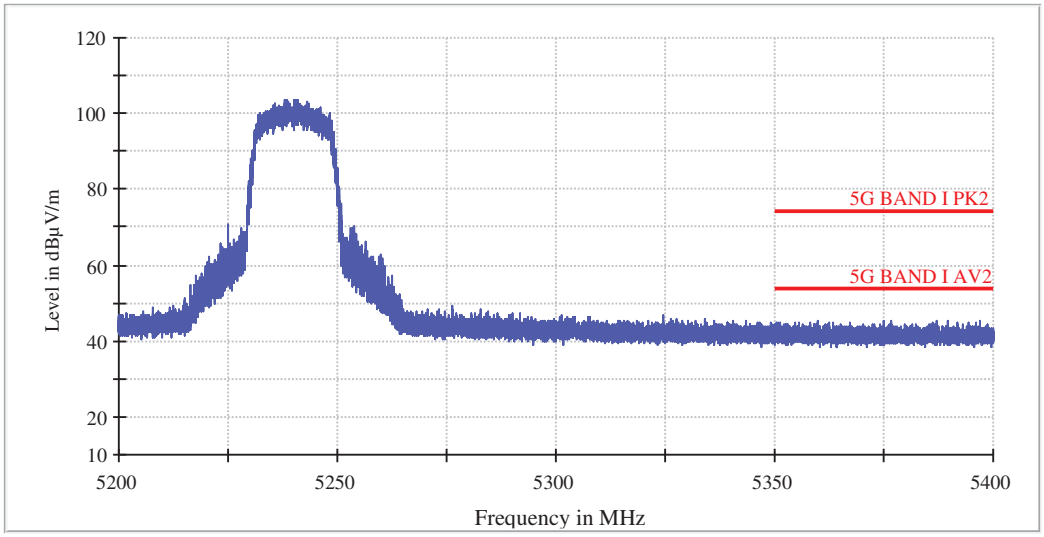


Vertical

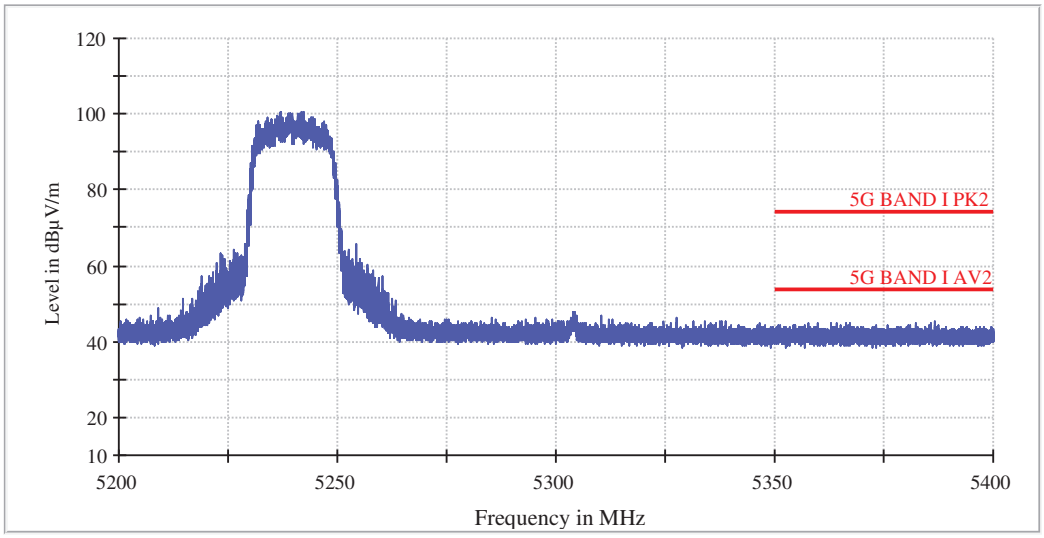


TEST REPORT

Channel 48: 5240 MHz:
Horizontal

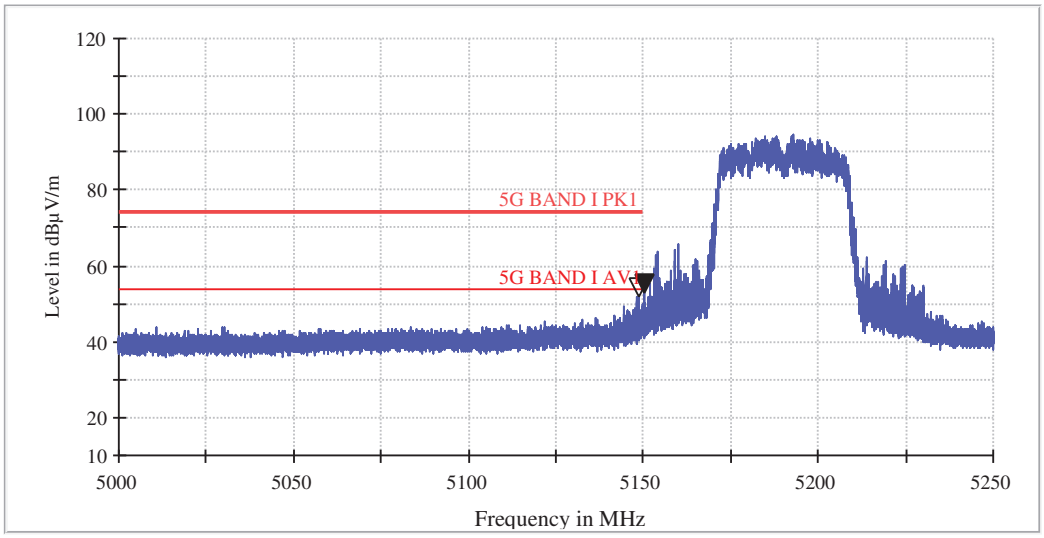


Vertical

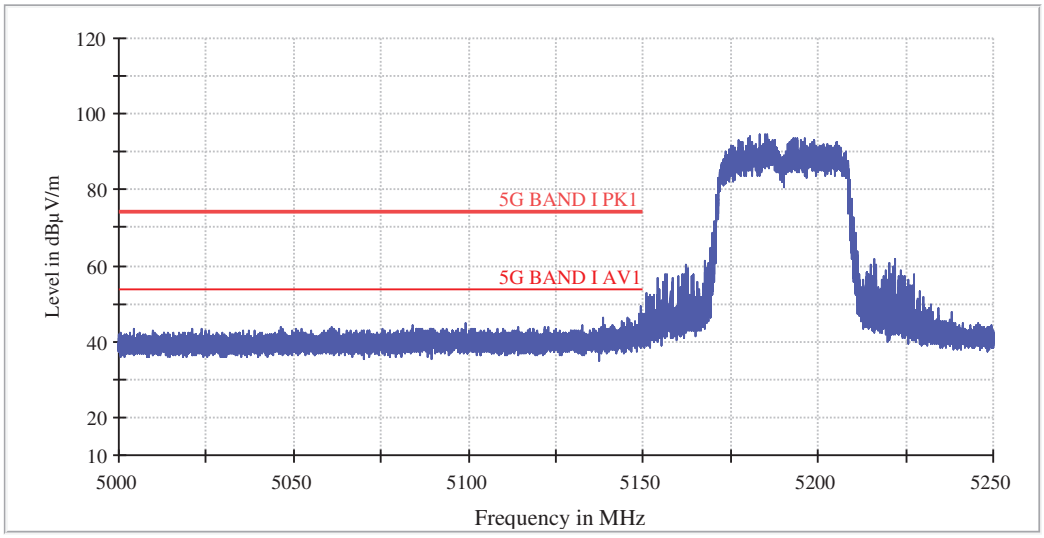


TEST REPORT

802.11an(HT 40) mode
Channel 38: 5190 MHz:
Horizontal



Vertical



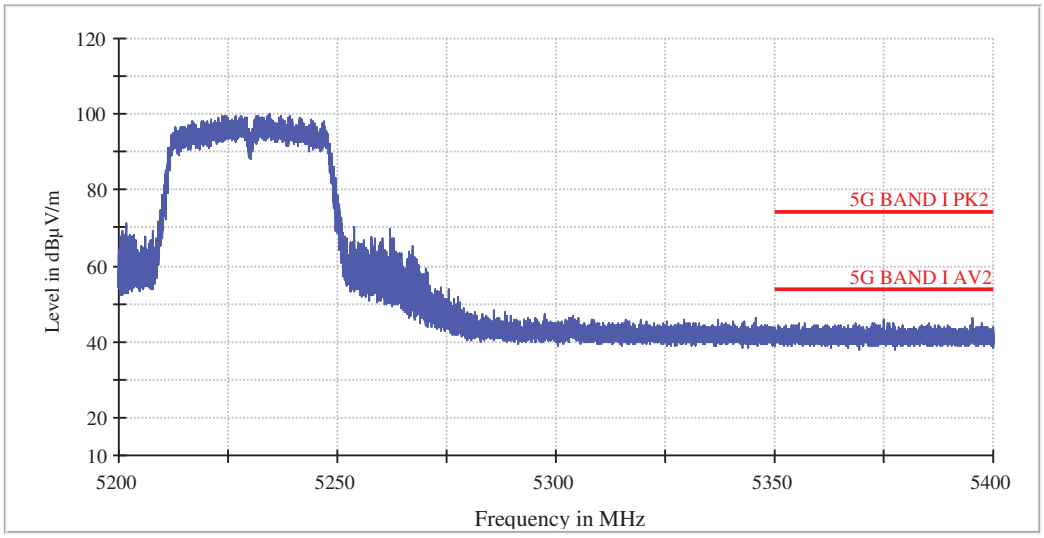
Peak Measurement:

Frequency (MHz)	Reading Level (dBµV)	Correct Factor	Emission Level (dBµV/m)	Limit (dBµV/m)	Antenna polarization
5148.7	52.9	-0.6	52.3	74	H
5150.3	54.2	-0.6	53.6	74	H

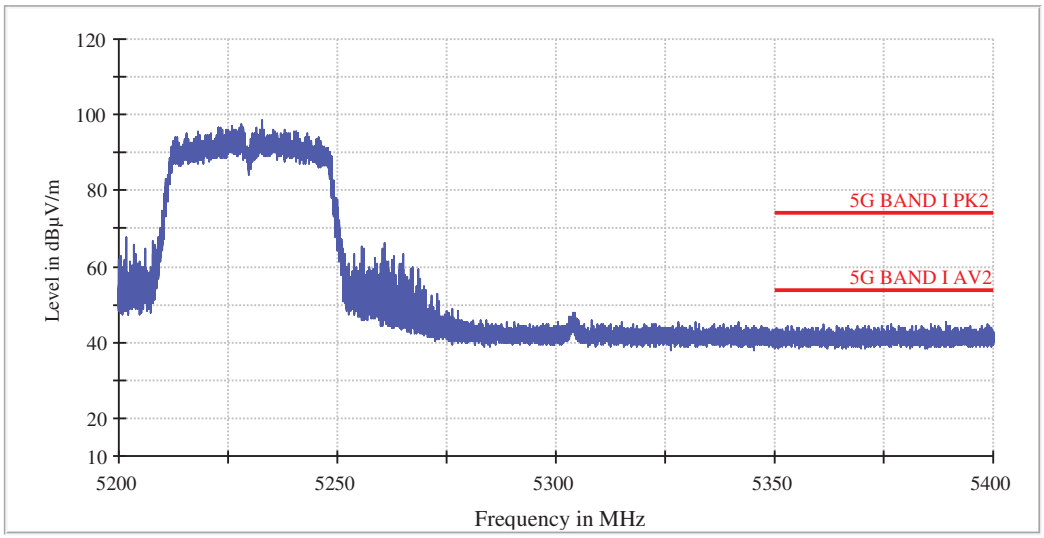
Remark:
When Peak emission level was below AV limit, the AV emission level did not be recorded.

TEST REPORT

Channel 46: 5230 MHz:
Horizontal

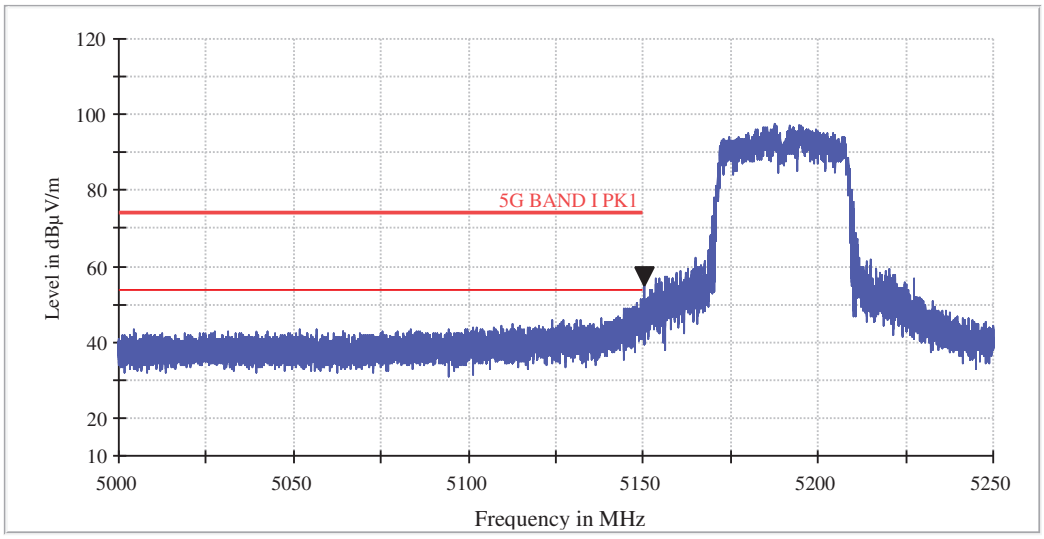


Vertical

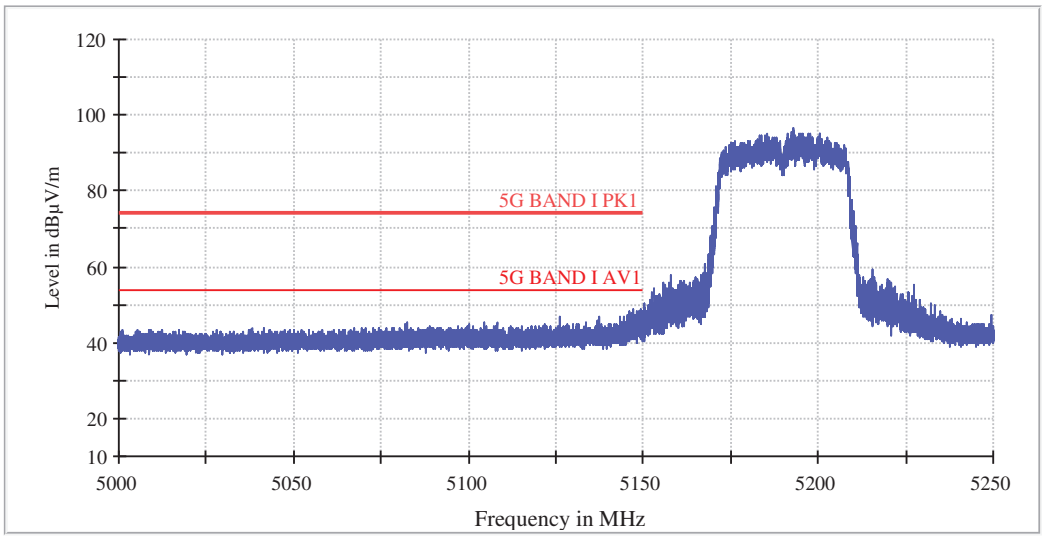


TEST REPORT

802.11ac(HT 40) mode
Channel 38: 5190 MHz:
Horizontal



Vertical

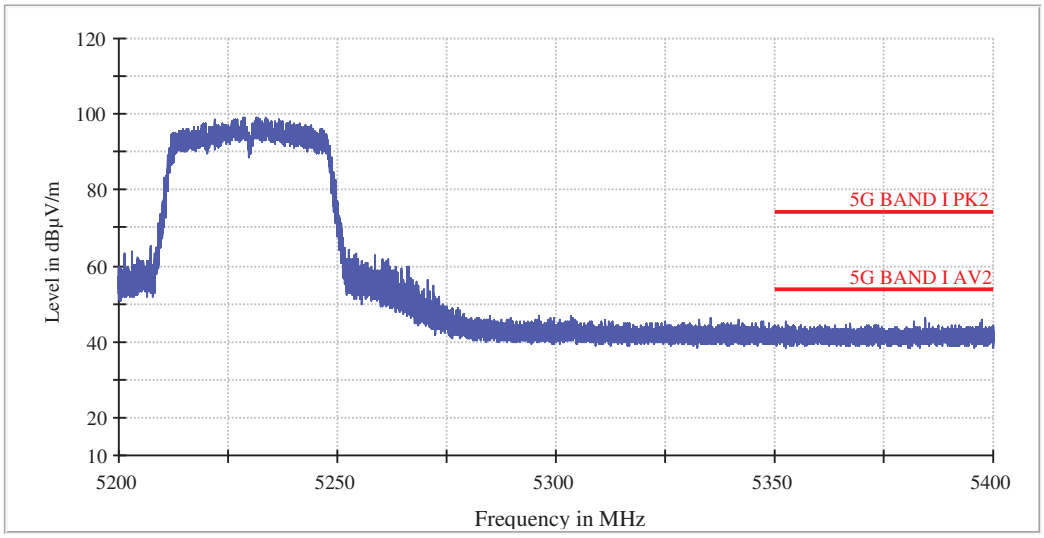


Peak Measurement:

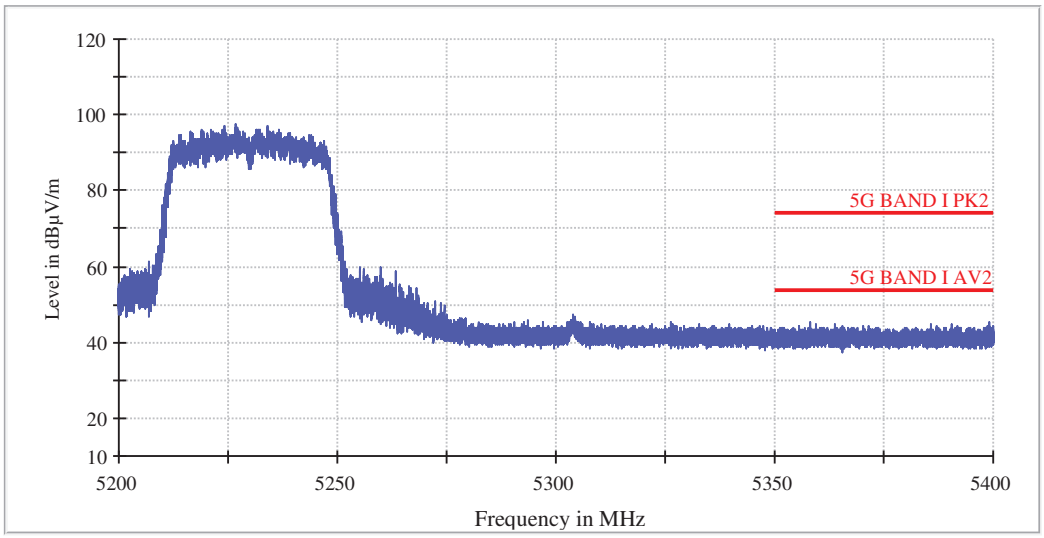
Frequency (MHz)	Reading Level (dBµV)	Correct Factor	Emission Level (dBµV/m)	Antenna polarization
5150.5	55.8	-0.6	55.2	H

TEST REPORT

Channel 46: 5230 MHz:
Horizontal

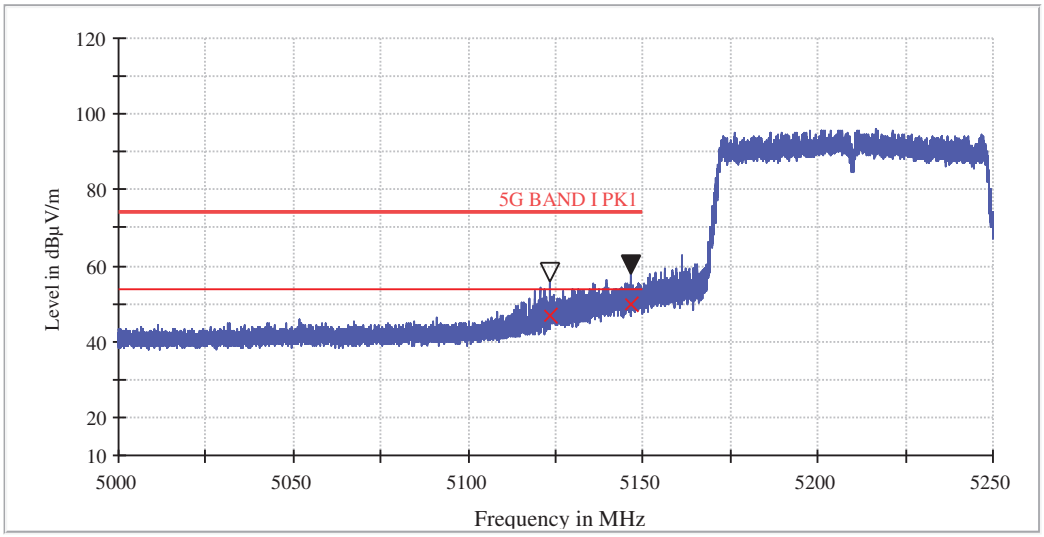


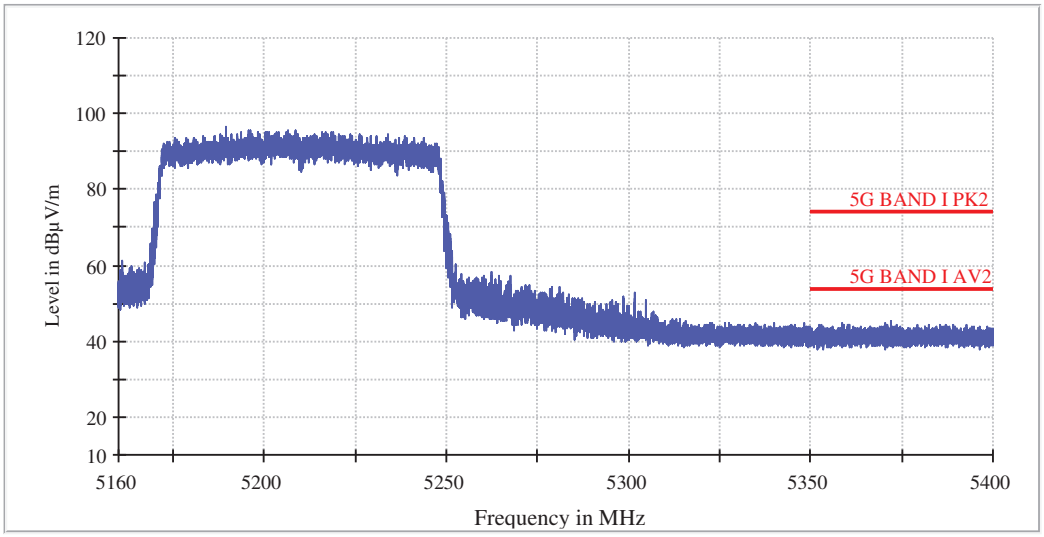
Vertical



TEST REPORT

802.11ac(HT 80)
Channel 42: 5210 MHz:
Horizontal





TEST REPORT

Peak Measurement:

Frequency (MHz)	Reading Level (dBμV)	Correct Factor	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
5123.6	56.6	-0.6	56.0	74	H
5146.4	58.6	-0.6	58.0	74	H

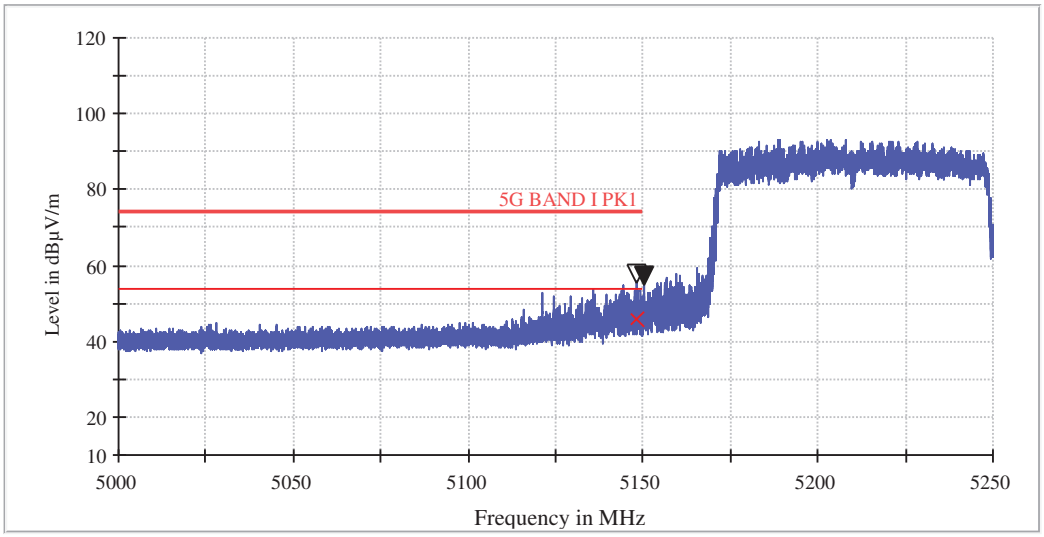
AV Measurement:

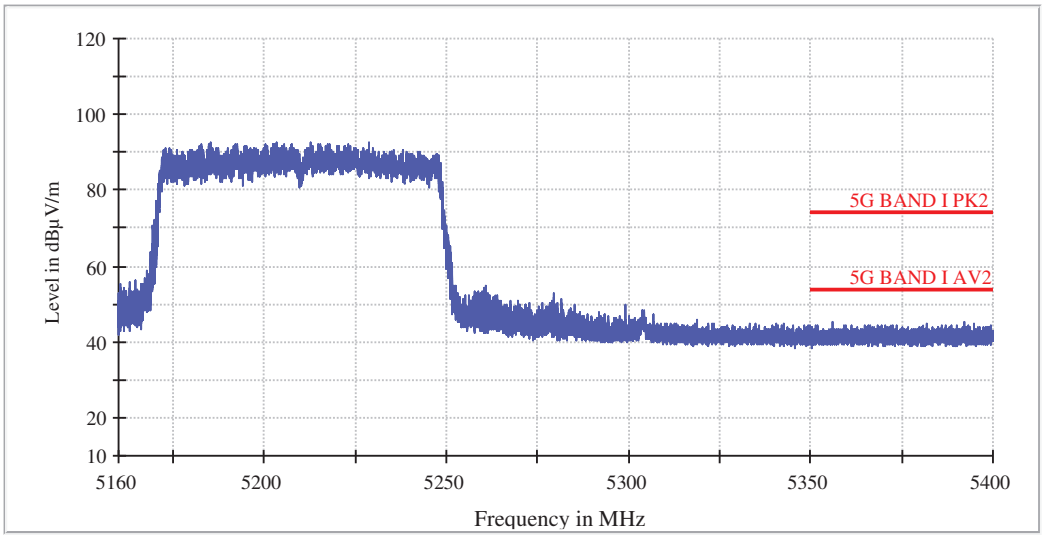
Frequency (MHz)	Reading Level (dBμV)	Correct Factor	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
5123.6	47.2	-0.6	46.6	54	H
5146.4	50.3	-0.6	49.7	54	H

Remark:
When Peak emission level was below AV limit, the AV emission level did not be recorded.

TEST REPORT

Vertical





TEST REPORT

Peak Measurement

Frequency (MHz)	Reading Level (dBμV)	Correct Factor	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
5148.0	56.4	-0.6	55.8	74	V
5150.2	56.0	-0.6	55.4	/	V

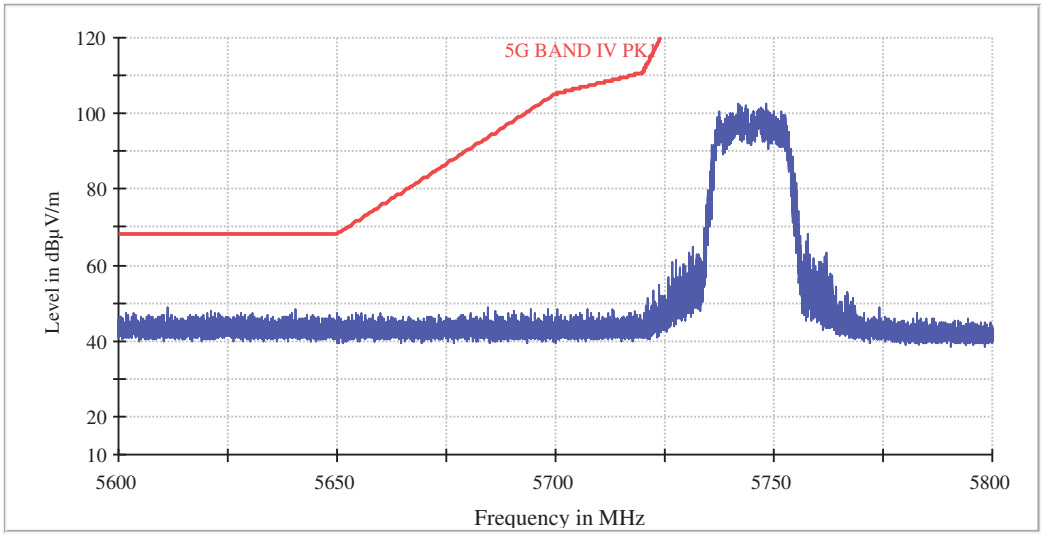
AV Measurement:

Frequency (MHz)	Reading Level (dBμV)	Correct Factor	Emission Level (dBμV/m)	Limit (dBμV/m)	Antenna polarization
5148.0	46.5	-0.6	45.9	54	V

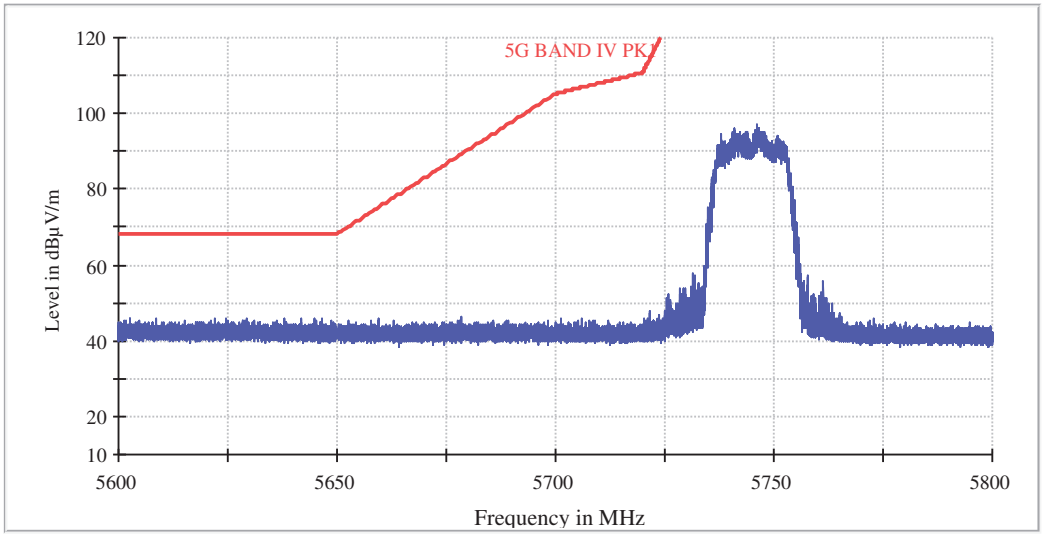
Remark:
When Peak emission level was below AV limit, the AV emission level did not be recorded.

TEST REPORT

Band IV 5725 MHz to 5850 MHz
802.11a(20) mode
Channel 149: 5745 MHz:
Horizontal

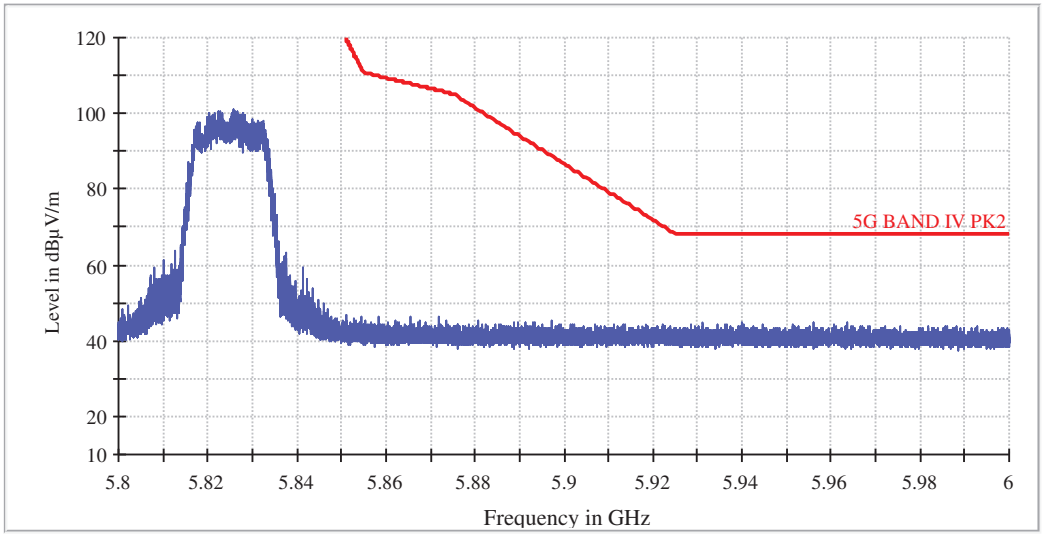


Vertical

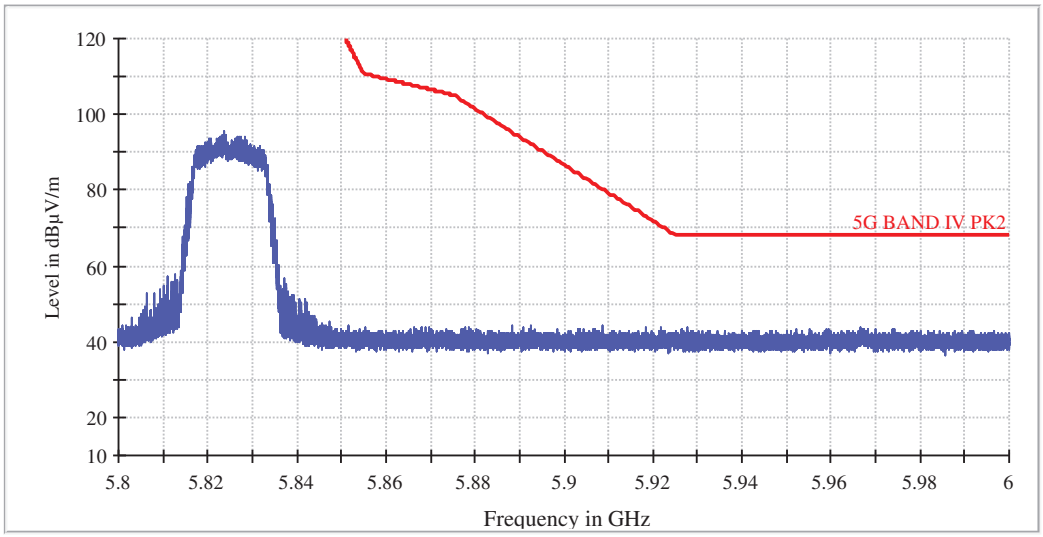


TEST REPORT

Channel 165: 5825 MHz:
Horizontal

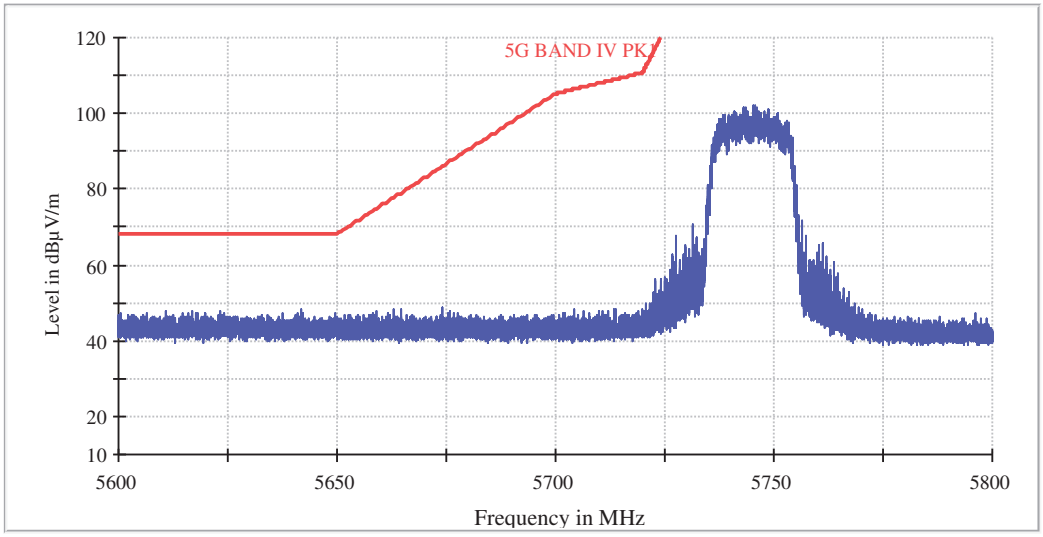


Vertical

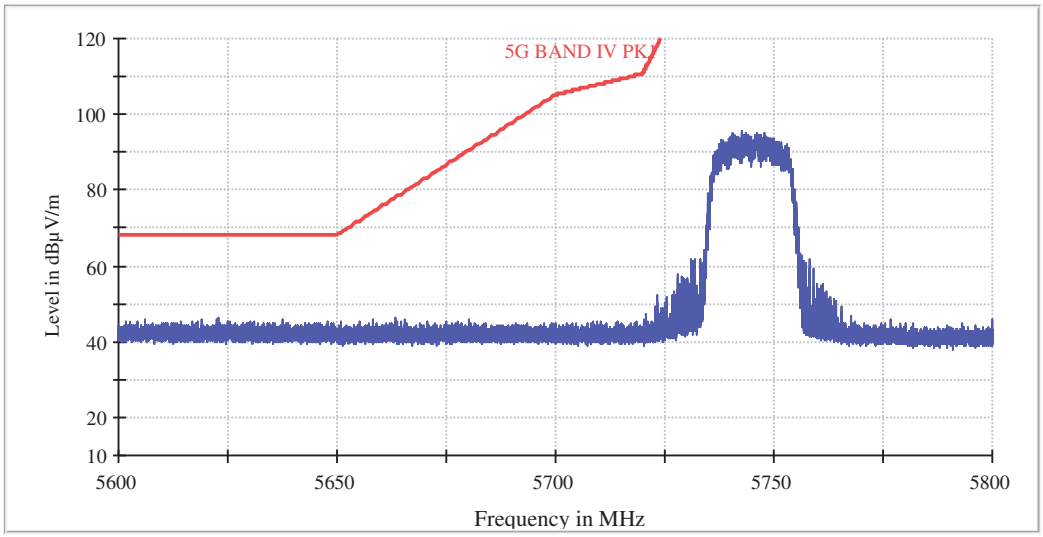


TEST REPORT

802.11an(HT 20) mode
Channel 149: 5745 MHz:
Horizontal

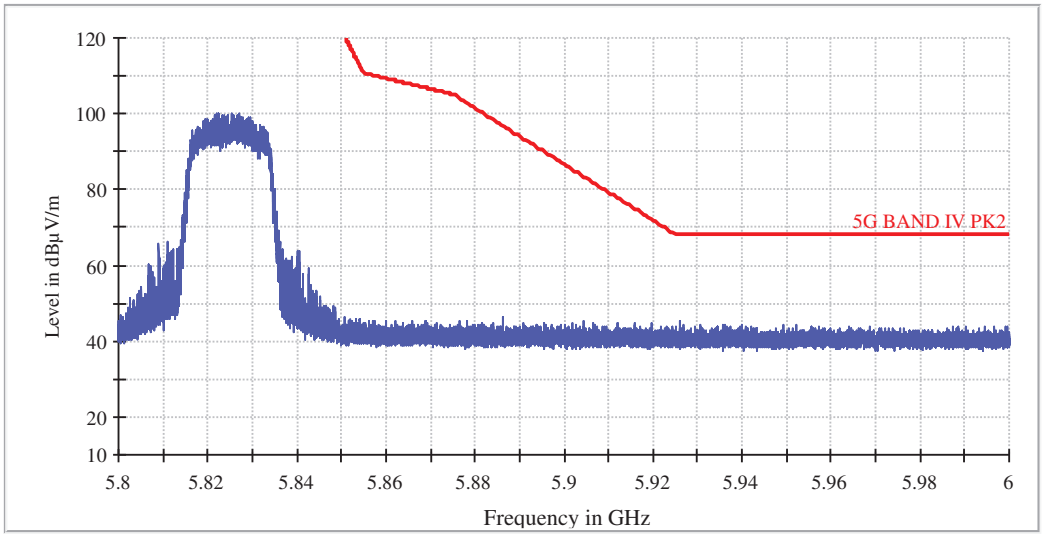


Vertical

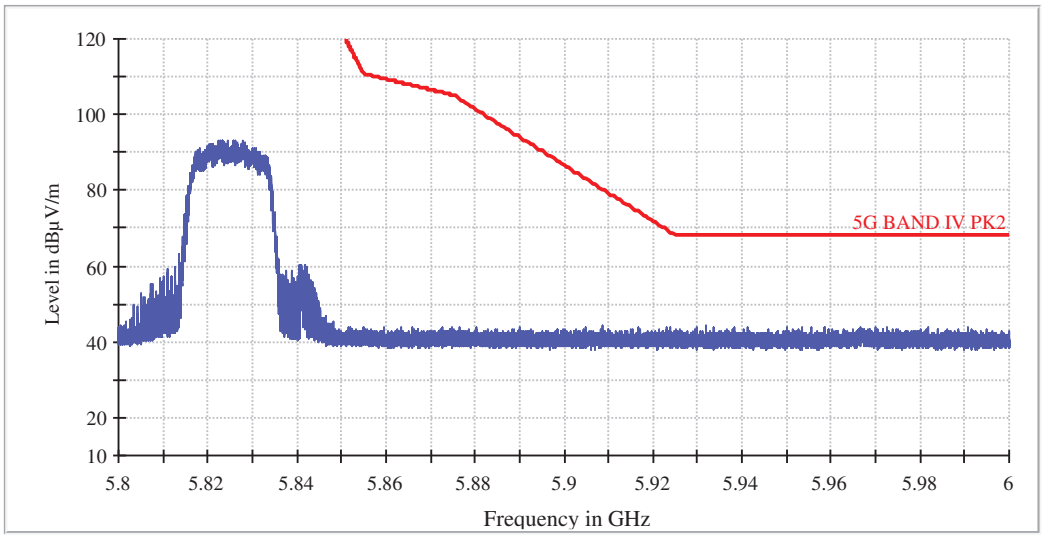


TEST REPORT

Channel 165: 5825 MHz:
Horizontal

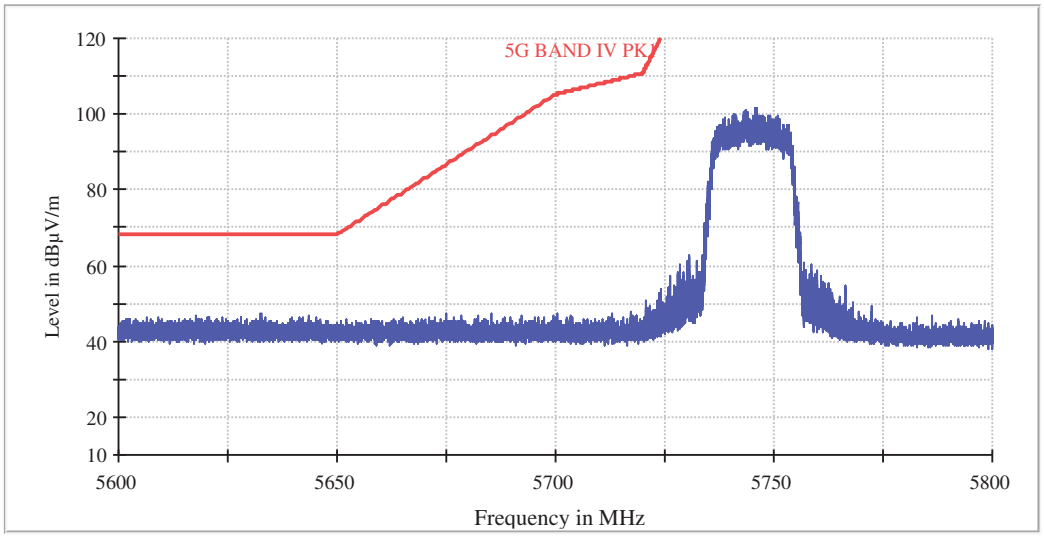


Vertical

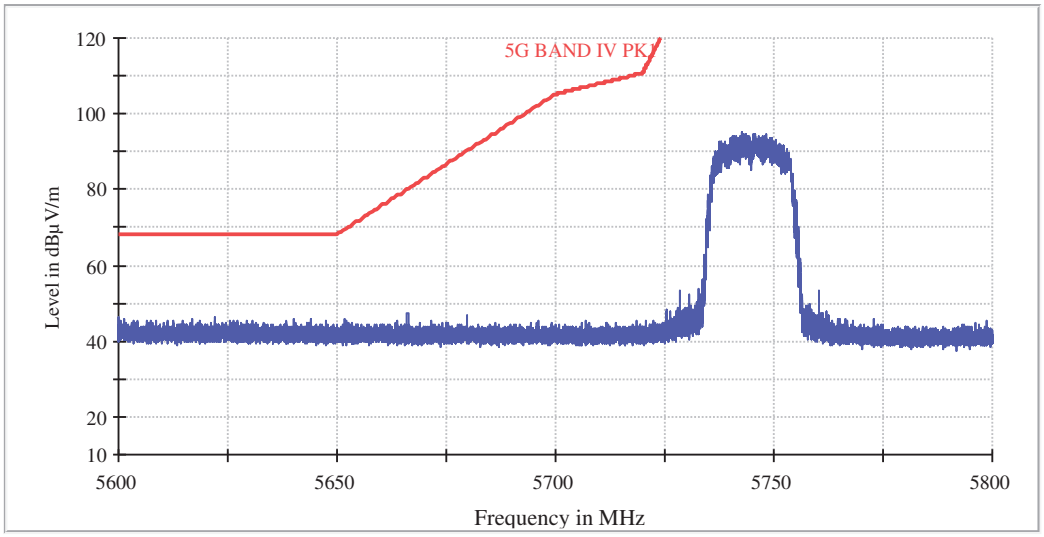


TEST REPORT

802.11ac(HT 20) mode
Channel 149: 5745 MHz:
Horizontal

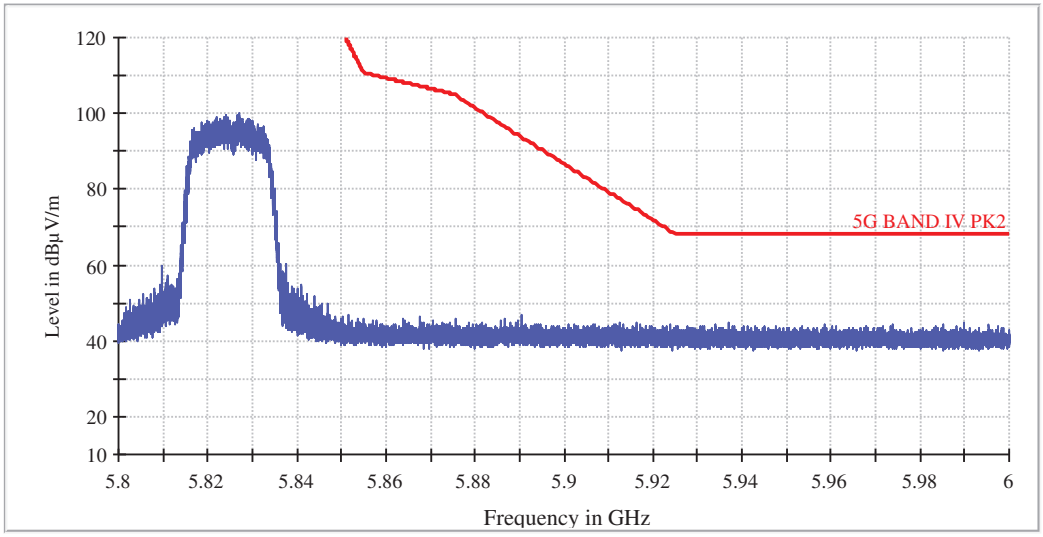


Vertical

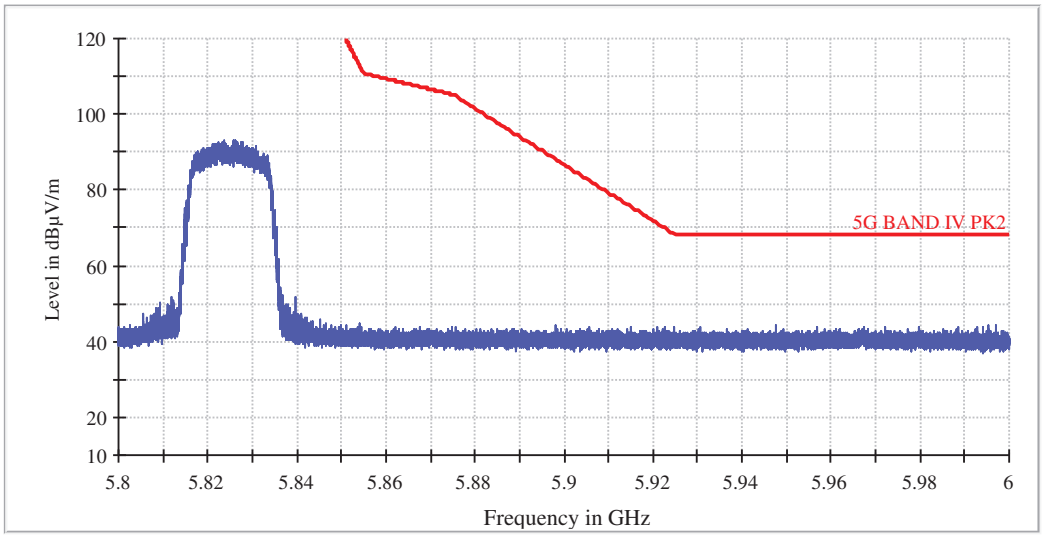


TEST REPORT

Channel 165: 5825 MHz:
Horizontal

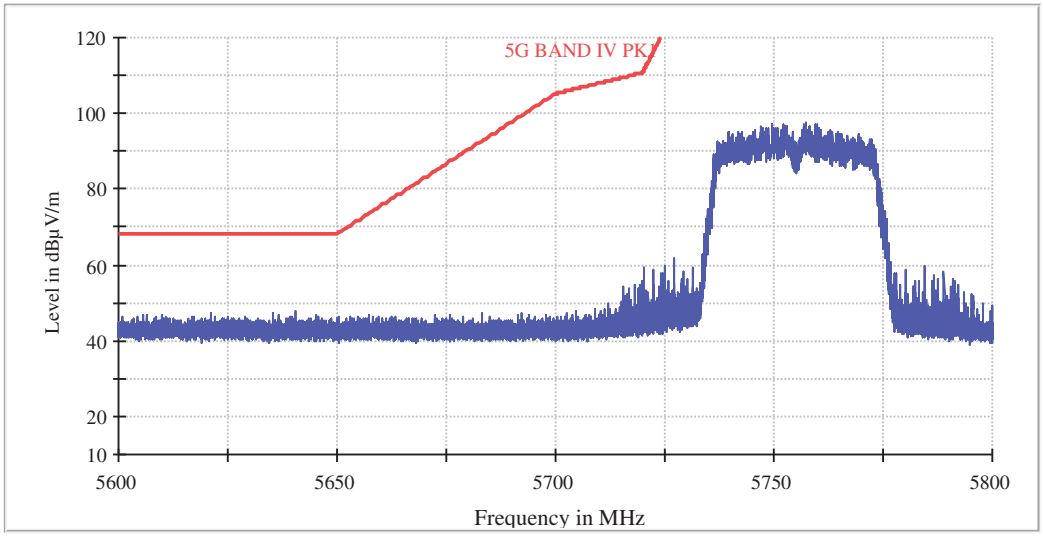


Vertical

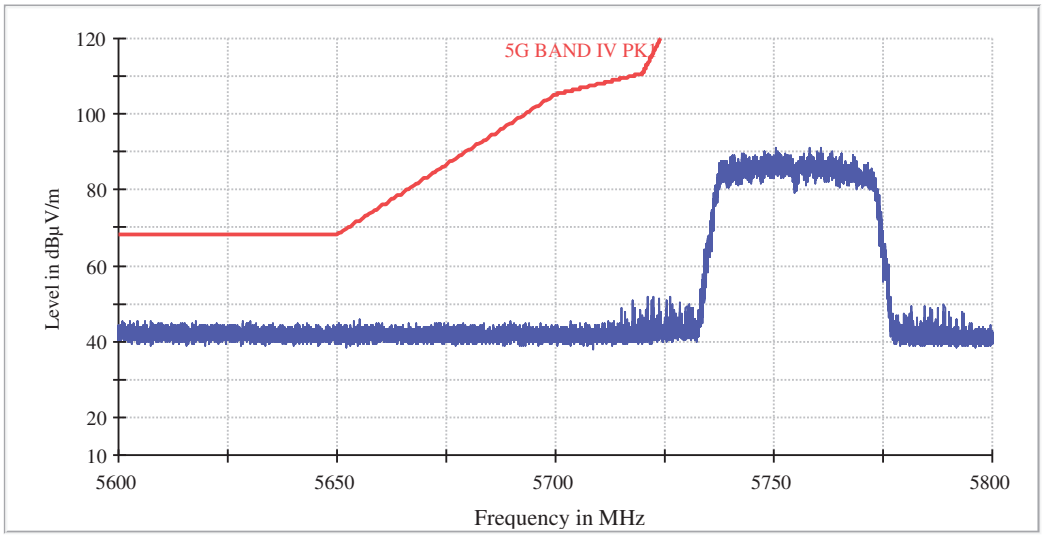


TEST REPORT

802.11an(HT 40) mode
Channel 151: 5755 MHz:
Horizontal

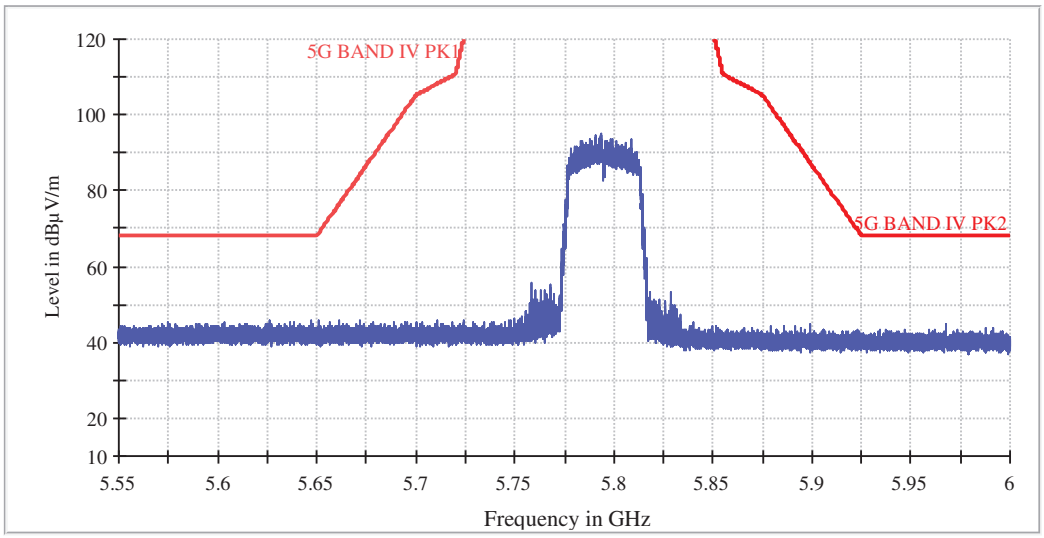


Vertical

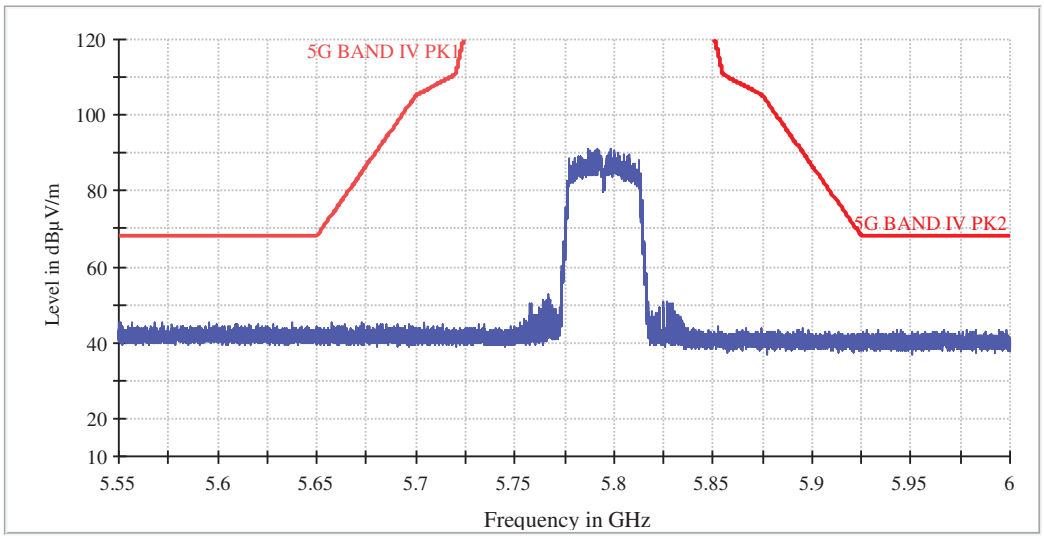


TEST REPORT

Channel 159: 5795 MHz:
Horizontal

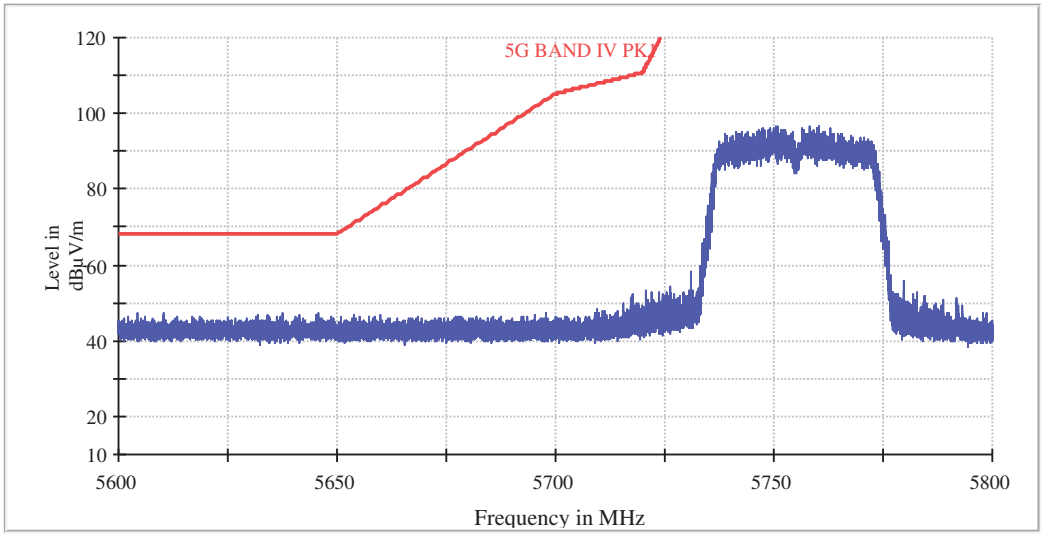


Vertical

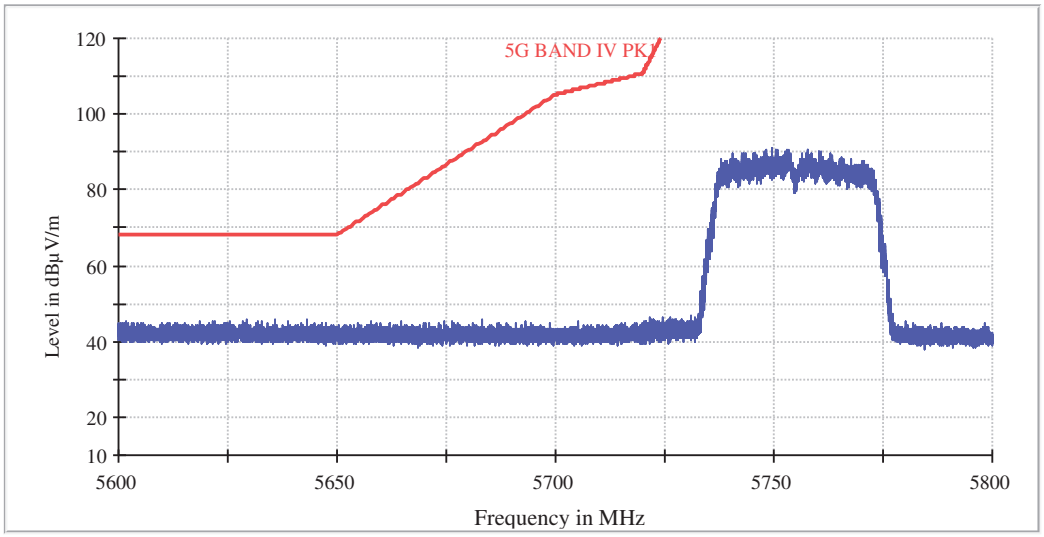


TEST REPORT

802.11ac(HT 40) mode
Channel 151: 5755 MHz:
Horizontal

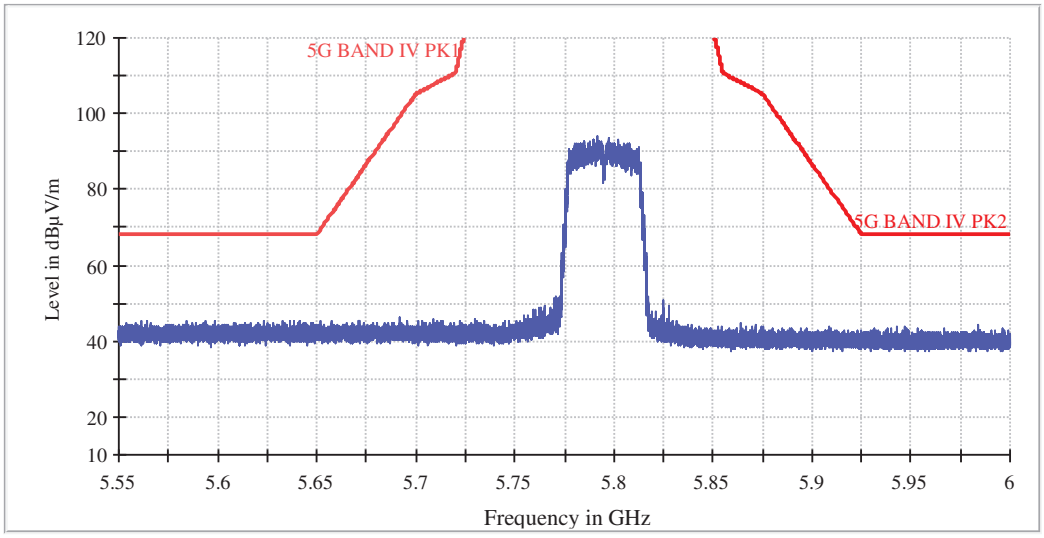


Vertical

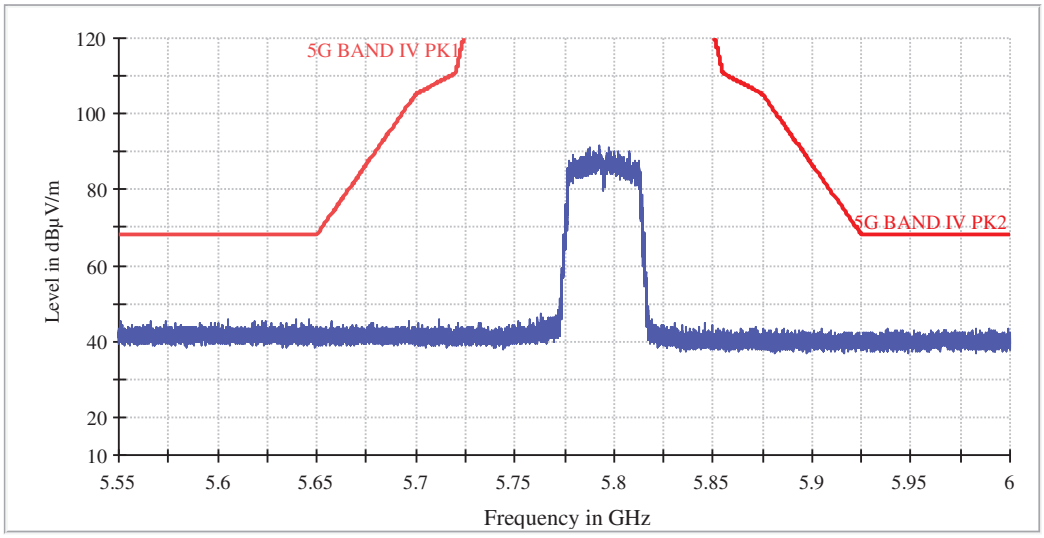


TEST REPORT

Channel 159: 5795 MHz:
Horizontal

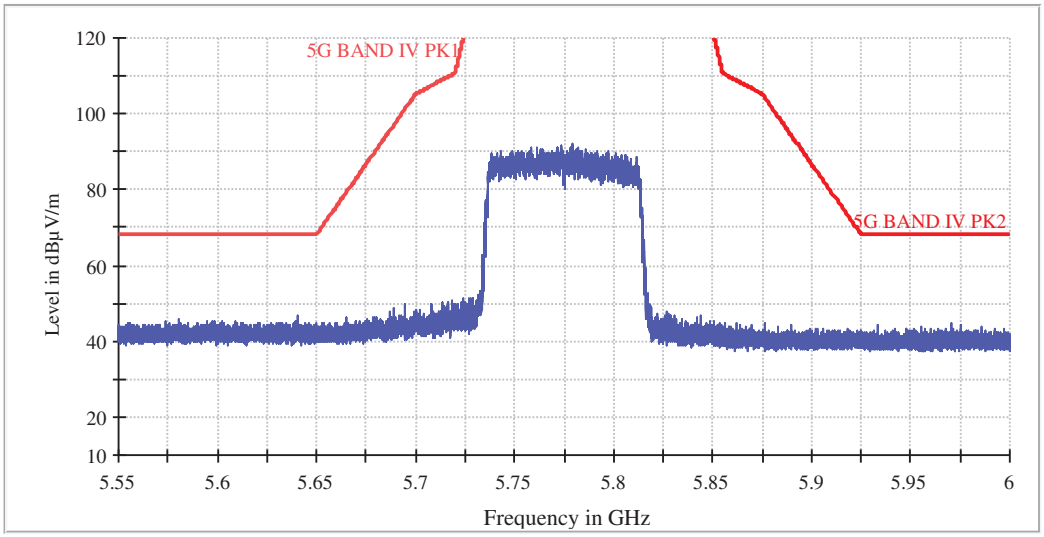


Veritcal

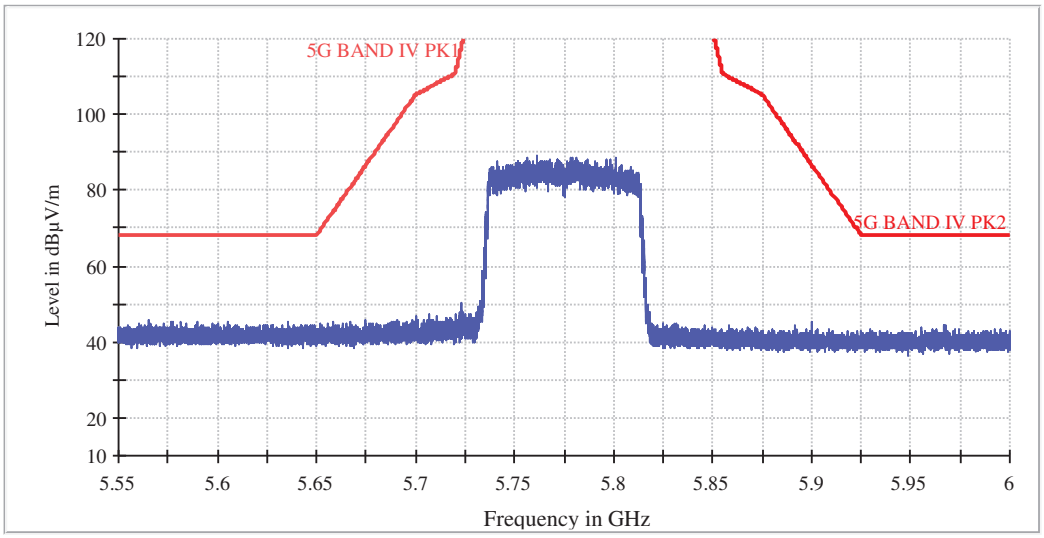


TEST REPORT

802.11ac(HT 80) mode
Channel 155: 5775 MHz:
Horizontal



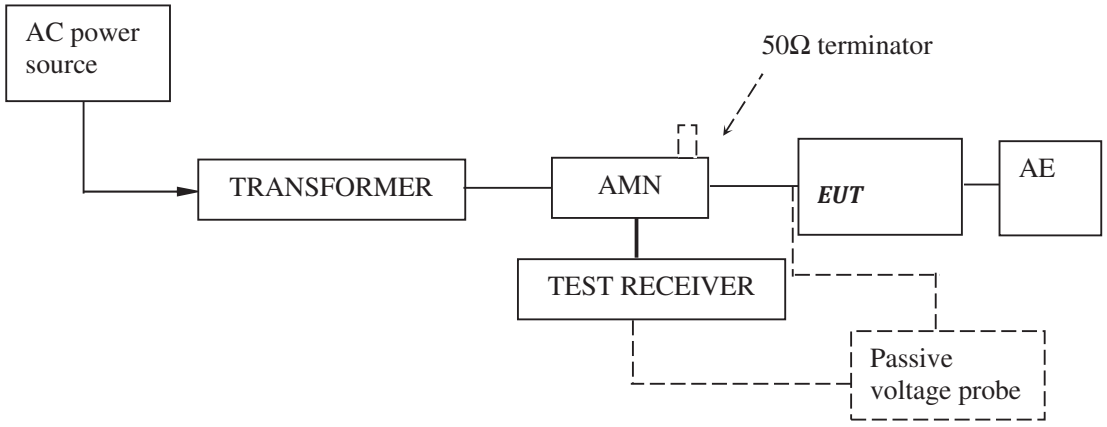
Vertical



TEST REPORT

4.9 Conducted Emission Test

Test Configuration:



Test Setup and Procedure:
Test was performed according to ANSI C63.10 Clause 6.2. The EUT was set to achieve the maximum emission level. The mains terminal disturbance voltage was measured with the EUT in a shielded room. The EUT was connected to AC power source through an Artificial Mains Network which provides a 50Ω linear impedance Artificial hand is used if appropriate (for handheld apparatus). The load/control terminal disturbance voltage was measured with passive voltage probe if appropriate.

The table-top EUT was placed on a 0.8m high non-metallic table above earthed ground plane (Ground Reference Plane).And for floor standing EUT, was placed on a 0.1m high non-metallic supported on GRP. The EUT keeps a distance of at least 0.8m from any other of the metallic surface. The Artificial Mains Network is situated at a distance of 0.8m from the EUT.

During the test, mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m

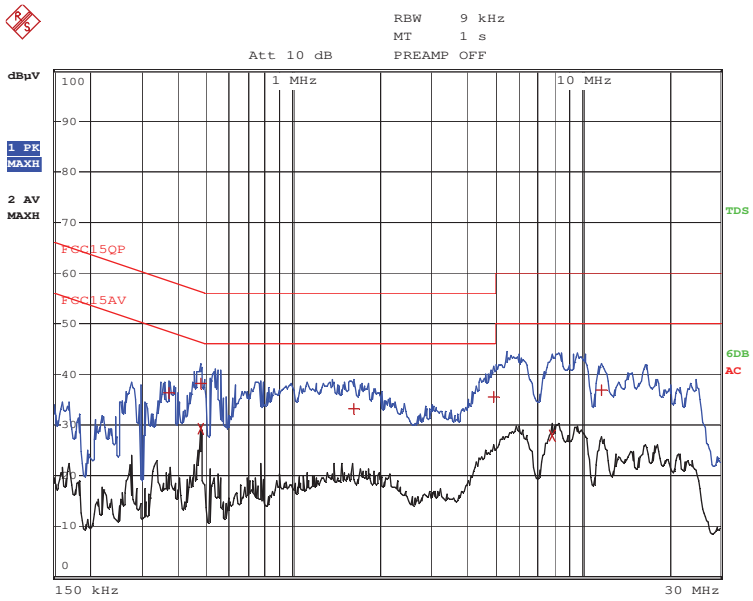
The bandwidth of test receiver was set at 9 kHz. The frequency range from 150 kHz to 30MHz was checked.

TEST REPORT

Test Data and Curve

At main terminal: Pass

Tested Wire: Live Operation Mode: Continuously transmitting



EDIT PEAK LIST (Final Measurement Results)

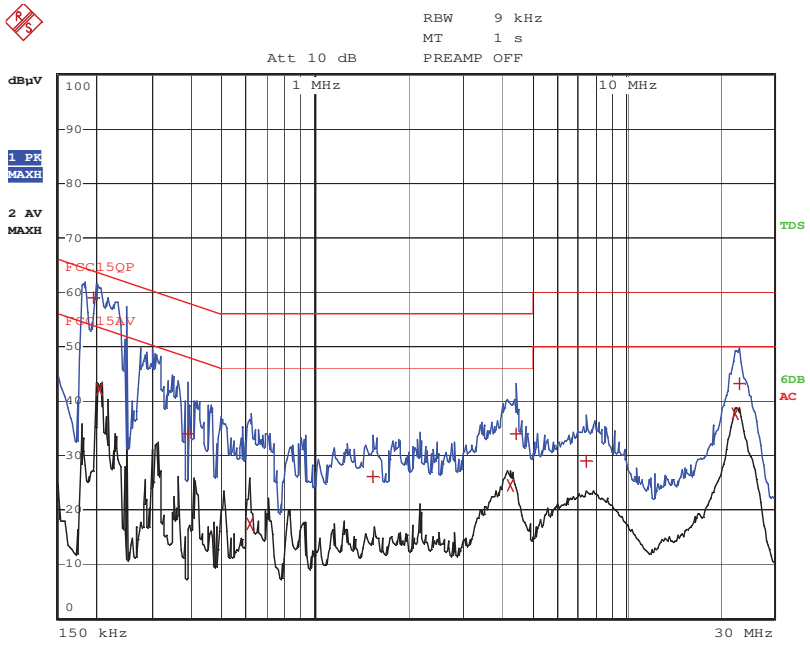
Trace1: FCC15QP
Trace2: FCC15AV
Trace3: ---

TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	370 kHz	36.37 L1	-22.13
1 Quasi Peak	478 kHz	38.15 L1	-18.21
2 Average	478 kHz	29.29 L1	-17.08
1 Quasi Peak	1.626 MHz	33.13 L1	-22.86
1 Quasi Peak	4.934 MHz	35.48 L1	-20.51
2 Average	7.99 MHz	28.04 L1	-21.95
1 Quasi Peak	11.622 MHz	36.97 L1	-23.02

Remark:
1. Corr. (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBµV) = Corr. (dB) + Read Level (dBµV)
3. Delta Limit (dB) = Level (dBµV)-Limit (dBµV)

TEST REPORT

Tested Wire: Neutral Operation Mode: Continuously transmitting



EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCC15QP
Trace2:	FCC15AV
Trace3:	---

TRACE		FREQUENCY	LEVEL dBµV		DELTA LIMIT dB
1	Quasi Peak	198 kHz	58.81	L1	-4.87
2	Average	206 kHz	42.08	L1	-11.27
1	Quasi Peak	390 kHz	33.99	L1	-24.06
2	Average	618 kHz	17.55	L1	-28.44
1	Quasi Peak	1.546 MHz	26.17	L1	-29.82
2	Average	4.266 MHz	24.63	L1	-21.36
1	Quasi Peak	4.43 MHz	33.94	L1	-22.05
1	Quasi Peak	7.478 MHz	28.88	L1	-31.11
2	Average	22.626 MHz	37.56	L1	-12.43
1	Quasi Peak	23.194 MHz	43.14	L1	-16.85

Remark:
1. Corr. (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBµV) = Corr. (dB) + Read Level (dBµV)
3. Delta Limit (dB) = Level (dBµV)-Limit (dBµV)

TEST REPORT

5.0 Test Equipment List

Radiated Emission/Radio

Equipment No.	Equipment	Model	Manufacturer	Cal. Due date (YYYY-MM-DD)	Calibration Interval
EM030-04	3m Semi-Anechoic Chamber	9×6×6 m³	ETS·LINDGREN	2021/4/10	1Y
EM031-02	EMI Test Receiver (9 kHz~7 GHz)	R&S ESR7	R&S	2021/06/16	1Y
EM031-03	Signal and Spectrum Analyzer (10 Hz~40 GHz)	R&S FSV40	R&S	2021/7/6	1Y
EM011-04	Loop antenna (9 kHz-30 MHz)	HFH2-Z2	R&S	2021/6/18	1Y
EM061-03	TRILOG Super Broadband test Antenna (30 MHz-1.5 GHz) (TX)	VULB 9161	SCHWARZBECK	2021/6/18	1Y
EM033-01	TRILOG Super Broadband test Antenna(30 MHz-3 GHz) (RX)	VULB 9163	SCHWARZBECK	2021/6/18	1Y
EM033-02	Bouble-Ridged Waveguide Horn Antenna (800 MHz-18 GHz)(RX)	R&S HF907	R&S	2021/6/18	1Y
EM033-03	High Frequency Antenna & preamplifier(18 GHz~26.5 GHz) (RX)	R&S SCU-26	R&S	2021/4/24	1Y
EM033-04	High Frequency Antenna & preamplifier (26 GHz-40 GHz)	R&S SCU-40	R&S	2021/4/24	1Y
EM031-02-01	Coaxial cable(9 kHz-1 GHz)	N/A	R&S	2021/4/12	1Y
EM033-02-02	Coaxial cable(1 GHz-18 GHz)	N/A	R&S	2021/4/12	1Y
EM033-04-02	Coaxial cable(18 GHz~40 GHz)	N/A	R&S	2021/4/24	1Y
EM031-01	Signal Generator (9 kHz~6 GHz)	SMB100A	R&S	2021/7/02	1Y
EM040-01	Band Reject/Notch Filter	WRHFV	Wainwright	N/A	1Y
EM040-02	Band Reject/Notch Filter	WRCGV	Wainwright	N/A	1Y
EM040-03	Band Reject/Notch Filter	WRCGV	Wainwright	N/A	1Y
EM022-03	2.45 GHz Filter	BRM50702	Micro-Tronics	2021/5/10	1Y
SA016-16	Programmable Temperature & Humidity Test Chamber	MHU-800LJ	TERCHY	2021/06/16	1Y
SA016-22	Climatic Test Chamber	C7-1500	Vötsch	2021/06/16	1Y
SA012-74	Digital Multimeter	FLUKE175	FLUKE	2021/06/16	1Y
EM010-01	Regulated DC Power supply	PAB-3003A	GUANHUA	N/A	1Y
SA040-22	Regulated DC Power supply	IT6721	ITECH	2021/7/6	1Y
EM084-06	Audio Analyzer	8903B	HP	2021/4/15	1Y
EM045-01-01	EMC32 software (RE/RS)	V10.01.00	R&S	N/A	N/A
EM045-01-09	EMC32 software (328/893)	V9.26.01	R&S	N/A	N/A
EM046-06	Power Sensor	NRP6A	R&S	2021/3/12	1Y

Conducted emission at the mains terminals

Equipment No.	Equipment	Model	Manufacturer	Cal. Due date (YYYY-MM-DD)	Calibration Interval
EM080-05	EMI receiver	ESCI	R&S	2021/7/09	1Y
EM006-05	LISN	ENV216	R&S	2021/6/7	1Y
EM006-06	LISN	ENV216	R&S	2021/7/6	1Y
EM006-06-01	Coaxial cable	/	R&S	2021/4/12	1Y
EM004-04	EMC shield Room	8m×3m×3m	Zhongyu	2021/2/5	1Y

**********End of the test report**********