ACCREDITED
Certificate # 3939.01

FCC TEST REPORT

(Part 15, Subpart E)

Applicant:	HMD Global Oy
Address:	Bertel Jungin aukio 9,02600 Espoo, Finland

Manufacturer or Supplier:	HMD Global Oy
Address:	Bertel Jungin aukio 9,02600 Espoo, Finland
Product:	Smart phone
Brand Name:	HMD
Model Name:	TA-1600/TA-1688
FCC ID:	2AJOTTA-1600
Date of tests:	Apr. 08, 2024 ~ May. 31, 2024

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 15, Subpart E, Section 15.407**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Simon Wang Date: May. 31, 2024	Luke Lu Date: May. 31, 2024

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSU-NQN2403180115RF03	Original release	May. 31, 2024

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART E		
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**
15.407(b)(9)	AC Power Conducted Emission	Compliance
15.407(b) (1/2/3/4/5)	Radiated Emission & Band Edge Measurement	Compliance
15.407(a/1/2/3)	Maximum conducted output Power	Compliance
15.407(a/1/2/3)	Peak Power Spectral Density	Compliance
15.407(a)(2)(12)	26 dB Bandwidth	Compliance
15.407(e)	6 dB Bandwidth	Compliance
15.203	Antenna Requirement	Compliance

NOTE:

1. Except the data of RSE and Band Edge Measurement, other data please refer to Appendix C.
2. Preliminary Investigation scans were completed to compare Full RU Tone modes and Single User Tone modes. It was found that SU modes were the worst case over Full RU-Tone mode in every instance, and the physical waveforms of SU mode and FULL RU-Tone are the same, and both FULL RU-Tone mode have lower power than SU mode. Therefore, only SU mode was report as it is representative of Full RU-Tone worst case scenario.
3. RLAN 5G supports SISO&MIMO mode，the whole testing has assessed the MIMO mode by referring to their maximum conducted power. and the 802.11ax HE40/80MHz RU26T/52T/106T/242T modes are cover by the 11ax HE20MHz modes, the 802.11ax HE80MHz RU484T modes are cover by the 11ax HE40MHz modes.
4. For 802.11n HT20/ ac VHT20 and 802.11n HT40 / ac VHT40 mode, the whole testing is assessed only 802.11n HT20/ HT40 by referring to their higher conducted power.
5. Only the worse data was reported.

***Test Lab Information Reference**

Lab B:

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

Lab Address:

Tower N, Innovation Center, 88 Zhuyi Road, High-tech District, Suzhou City, Anhui Province

Accredited Test Lab Cert 6613.01

The FCC Site Registration No. is 434559; The Designation No. is CN1325.

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
AC Power Conducted emissions	±2.70dB
Radiated emissions (9KHz~30MHz)	±2.68dB
Radiated emissions (30MHz~1GHz)	±4.98dB
Radiated emissions (1GHz ~6GHz)	±4.70dB
Radiated emissions (6GHz ~18GHz)	±4.60dB
Radiated emissions (18GHz ~40GHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Power Spectral Density	±0.85 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Smart phone
BRAND NAME	HMD
MODEL NAME	TA-1600/TA-1688
NOMINAL VOLTAGE	5.0Vdc/9.0Vdc /12.0Vdc(adapter) 3.89Vdc (battery)
MODULATION	OFDM, OFDMA
TRANSFER RATE	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps 802.11ac: up to 866.7Mbps 802.11ax: up to 1020.8Mbps
OPERATING FREQUENCY	5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5720MHz, 5745 ~ 5825MHz
NUMBER OF CHANNEL	5180 ~ 5240MHz: 4 for 802.11a, 802.11n/ac/ax (20MHz)/ 802.11ax(20M RU 26/52/106/242) 2 for 802.11n/ac/ax (40MHz)/ 802.11ax(40M RU 484) 1 for 802.11ac/ax (80MHz)/ 802.11ax(80MRU996) 5260 ~ 5320MHz: 4 for 802.11a, 802.11n/ac/ax (20MHz)/ 802.11ax(20M RU 26/52/106/242) 2 for 802.11n/ac/ax (40MHz)/ 802.11ax(40M RU 484) 1 for 802.11ac/ax (80MHz)/ 802.11ax(80M RU 996) 5500 ~ 5720MHz: 12 for 802.11a, 802.11n/ac/ax (20MHz)/ 802.11ax(20M RU 26/52/106/242) 6 for 802.11n/ac/ax (40MHz)/ 802.11ax(40M RU 484) 3 for 802.11ac/ax (80MHz)/ 802.11ax(80M RU 996) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n/ac/ax (20MHz)/ 802.11ax(20M RU 26/52/106/242) 2 for 802.11n/ac/ax (40MHz)/ 802.11ax(40M RU 484) 1 for 802.11ac/ax (80MHz)/ 802.11ax(80MRU 996)
MAX. OUTPUT POWER	32.36mW for 5180 ~ 5240MHz

	30.20mW for 5260 ~ 5320MHz 32.51mW for 5500 ~ 5720MHz 12.74mW for 5745 ~ 5825MHz
ANTENNA TYPE	PIFA Antenna
ANTENNA GAIN	ANT 8: -3dBi for 5180 ~ 5240MHz -3dBi for 5260 ~ 5320MHz -3dBi for 5500 ~ 5720MHz -3dBi for 5745 ~ 5825MHz ANT 11: -3dBi for 5180 ~ 5240MHz -3dBi for 5260 ~ 5320MHz -3dBi for 5500 ~ 5720MHz -3dBi for 5745 ~ 5825MHz
HW VERSION	V2
SW VERSION	00WW_0_340
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitter and two receiver.

MODULATION MODE	TX FUNCTION
802.11a	2TX/2RX
802.11n/802.11ac/ax (20MHz)	2TX/2RX
802.11n/802.11ac/ax (40MHz)	2TX/2RX
802.11ac/ax (80MHz)	2TX/2RX
802.11ax (20MHz RU 26/52/106/242)	2TX/2RX
802.11ax (40MHz RU 484)	2TX/2RX
802.11ax (80MHz RU 996)	2TX/2RX

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

4. Antenna gain and EUT conducted cable loss are provided by the customer, and the laboratory will record the results based on these items that involve these two parameters.

5. List of Accessory:

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
LCD Panel	BOE	BOE	BF066XMM-TL4-F900	6.55inch, AMOLED;
Back cover	BIEL	BIEL	Panda-X	158 mm*73 mm*0.6 mm
Bezel	BIEL	BIEL	6103HG02-T6	160 mm_76 mm_8.5 mm
Photo Camera 1	AAC	AAC	P50AD01	50MP,AF
Photo Camera 2	AAC	AAC	W13FD02	13MP Ultra Wide, FF
Video Camera 1	AAC	AAC	T50AD01	50MP Tele, AF
Video Camera 2	AAC	AAC	MA8SD01	108MP+OIS, AF
CPU	Qualcomm	Qualcomm	SM-7435-1-PSP1026-TR-00-0-AB	Platform Baseband Chip_PSP_mmW_8 core_SMT
eMMC1 (=ROM1)	Samsung	Samsung	KM8L9001JM-B624T07	uMCP_254-ball FBGA_128GB_LPDDR4X_64Gb_SMT
eMMC2 (=ROM2)	Samsung	Samsung	KM8F9001JM-B813T07	uMCP_254-ball FBGA_256GB_LPDDR4X_64Gb_SMT
eMMC3 (=ROM3)	Samsung	Samsung	KM8F9001MM-B830T07	uMCP_254-ball FBGA_256GB_LPDDR4X_96Gb_SMT
Battery	HMD	Gaoyuan	HBA4633AA	RatedCapacity:4500mAh/17.51Wh

6. The differences between the first and second supply as follows and the specifications and RF parameters are the same.

Key Component list						
No.	Component	Description	First supply		Second supply	
			Supplier	Spec	Supplier	Spec
1	USB/ Analog audio headsets	Analog Audio Switch	Dioo	DIO4480WL25 Analog switch & MUX_WLCSP25_2.7-5.5V_3-Channel_1000MHz _SMT	Will	WAS4780C-25/TR Analog switch & MUX_CSP-25L_2.7-5.5V_2-Channel_950MHz_ SMT
2	Wireless charge	Load Switch	SGM	SGM2575ADYG/TR Load Switch_34 mΩ_11 W_WLCSP_SGM2575ADY G/TR_SGM	Dioo	DIO7290WL4 Load Switch_85 mΩ_11 W_WLCSP-4
3	Sensor	Barometer	Bosch	BMP580 Baroceptor _LGA-10_±0.05 hPa_48 bit_ SMT	Go er mic ro	SPL07-003 Baroceptor_10pin LGA_0.5Pa/°C_24 bit_SMT
4	Sensor	eCOMPASS	VTC	AF6837 Magnetic field sensor_WLCSP_10 LSB/μT_16 bit_I2C_SMT	Memsic	MMC5603NJL Ecompass_MMC56 03NJL_M EMSIC_MCOs
5	RF IC	LNA	Will	WS7916DF-6/TR RF_LNA_6-pin DFN_1150 MHz to 1615_SMT	Awinic	AW5005EDNR RF_LNA_AW5005 EDNR_Awi nic
6	Receiver	SP2T	Will	WS78022D-6/TR DFN-6_0.1GHz - 3.8GHz_SPDT_GPIO_SMT	Champ hill	QX8612GD 0.7 to 2.7GHz_SPDT_2 W_GPIO
7	USB connector	USB type-C connector	LETCON	15-16815-105-M1 USB TYPE C Connector_0.9 mm_16 pin_Female Head (elastic end)_Horizontal_None-waterproof_4.27 mm_Gold_SMT_480M	HRD	UC141-0B100DR0 USB TYPE C Connector_0.9 mm_16 pin_Female Head (elastic end)_Horizontal_No ne- waterproof_4.3 mm_Gold_SMT_48 0M

2.2 DESCRIPTION OF TEST MODES

FOR 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n, 802.11ac/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106/242):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n, 802.11ac/ax (40MHz)/ 802.11ax (40MHz RU 484):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac/ax (80MHz)/ 802.11ax (80MHz RU 996):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
42	5210 MHz		

FOR 5260 ~ 5320MHz

4 channels are provided for 802.11a, 802.11n, 802.11ac/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106/242):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n, 802.11ac/ax (40MHz)/ 802.11ax (40MHz RU 484):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac/ax (80MHz)/ 802.11ax (80MHz RU 996):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
58	5290 MHz		

FOR 5500 ~ 5720MHz

12 channels are provided for 802.11a, 802.11n, 802.11ac/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106/242):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
100	5500 MHz	124	5620MHz
104	5520 MHz	128	5640MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720 MHz

6 channels are provided for 802.11n, 802.11ac/ax (40MHz)/ 802.11ax (40MHz RU 484):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
102	5510 MHz	126	5630MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

3 channel is provided for 802.11ac/ax (80MHz)/ 802.11ax (80MHz RU 996):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
106	5530 MHz	122	5610 MHz
138	5690 MHz		

FOR 5745 ~ 5825MHz

5 channels are provided for 802.11a, 802.11n, 802.11ac/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106/242):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

3 channels are provided for 802.11n, 802.11ac/ax (40MHz)/ 802.11ax (40MHz RU 484):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
142	5710 MHz	159	5795 MHz
151	5755 MHz		

2 channel is provided for 802.11ac/ax (80MHz)/ 802.11ax (80MHz RU 996):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
138	5690 MHz	155	5775 MHz

2.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	-	**Powered by Adapter with wifi(5G) link**
B	-	-	-	√	Powered by Battery with wifi(5G) link
C	-	-	-	-	Powered by USB with wifi(5G) link

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

NOTE:
The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane.**
NOTE: "-"means no effect

RADIATED EMISSION TEST (BELOW 1GHz):

☒ 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).
☒ The following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
A	802.11ac(80MHz)	5500-5720	106 to 138	138	OFDM	MCS0

RADIATED EMISSION TEST (ABOVE 1GHz):

☒ 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).

☒ The following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
A	802.11n/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106)		36 to 48	36, 40, 48	OFDM, OFDMA	MCS0
A	802.11n/ax (40MHz)		38 to 46	38, 46	OFDM, OFDMA	MCS0
A	802.11ac/ax (80MHz)		42	42	OFDM, OFDMA	MCS0
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
A	802.11n/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106)		52 to 64	52, 60, 64	OFDM, OFDMA	MCS0
A	802.11n/ax (40MHz)		54 to 62	54, 62	OFDM, OFDMA	MCS0
A	802.11ac/ax (80MHz)		58	58	OFDM, OFDMA	MCS0
A	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
A	802.11n/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106)		100 to 144	100, 116, 140, 144	OFDM, OFDMA	MCS0
A	802.11n/ax (40MHz)		102 to 142	102, 110, 134,142	OFDM, OFDMA	MCS0
A	802.11ac/ax (80MHz)		106 to 138	106, 122, 138	OFDM, OFDMA	MCS0
A	802.11a	5745-5825	149 to 165	149, 157,165	OFDM	6.0
A	802.11n/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106)		149 to 165	149, 157,165	OFDM, OFDMA	MCS0
A	802.11n/ax (40MHz)		151 to 159	151, 159	OFDM, OFDMA	MCS0
A	802.11ac/ax (80MHz)		155	155	OFDM, OFDMA	MCS0

POWER LINE CONDUCTED EMISSION TEST:

☒ 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).

☒ The following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
A	802.11ac(80MHz)	5500-5720	106 to 138	138	OFDM	MCS0

BANDEDGE MEASUREMENT:

☒ 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).

☒ The following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
A	802.11n/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106)		36 to 48	36, 40, 48	OFDM, OFDMA	MCS0
A	802.11n/ax (40MHz)		38 to 46	38, 46	OFDM, OFDMA	MCS0
A	802.11ac/ax (80MHz)		42	42	OFDM, OFDMA	MCS0
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
A	802.11n/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106)		52 to 64	52, 60, 64	OFDM, OFDMA	MCS0
A	802.11n/ax (40MHz)		54 to 62	54, 62	OFDM, OFDMA	MCS0
A	802.11ac/ax (80MHz)		58	58	OFDM, OFDMA	MCS0
A	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
A	802.11n/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106)		100 to 144	100, 116, 140, 144	OFDM, OFDMA	MCS0
A	802.11n/ax (40MHz)		102 to 142	102, 110, 134,142	OFDM, OFDMA	MCS0
A	802.11ac/ax (80MHz)		106 to 138	106, 122, 138	OFDM, OFDMA	MCS0
A	802.11a	5745-5825	149 to 165	149, 157,165	OFDM	6.0
A	802.11n/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106)		149 to 165	149, 157,165	OFDM, OFDMA	MCS0
A	802.11n/ax (40MHz)		151 to 159	151, 159	OFDM, OFDMA	MCS0
A	802.11ac/ax (80MHz)		155	155	OFDM, OFDMA	MCS0

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ 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).

☒ The following channel(s) was (were) selected for the final test as listed below.

☒ Only the power test item is tested for the FULL RU(802.11ax RU 242/484/996), the remaining test items are configured as follows.

EUT CONFIGURE MODE	MODE	FREQ. BAND (MHz)	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
A	802.11n/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106)		36 to 48	36, 40, 48	OFDM, OFDMA	MCS0
A	802.11n/ax (40MHz)		38 to 46	38, 46	OFDM, OFDMA	MCS0
A	802.11ac/ax (80MHz)		42	42	OFDM, OFDMA	MCS0
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
A	802.11n/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106)		52 to 64	52, 60, 64	OFDM, OFDMA	MCS0
A	802.11n/ax (40MHz)		54 to 62	54, 62	OFDM, OFDMA	MCS0
A	802.11ac/ax (80MHz)		58	58	OFDM, OFDMA	MCS0
A	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
A	802.11n/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106)		100 to 144	100, 116, 140, 144	OFDM, OFDMA	MCS0
A	802.11n/ax (40MHz)		102 to 142	102, 110, 134,142	OFDM, OFDMA	MCS0
A	802.11ac/ax (80MHz)		106 to 138	106, 122, 138	OFDM, OFDMA	MCS0
A	802.11a	5745-5825	149 to 165	149, 157,165	OFDM	6.0
A	802.11n/ax (20MHz)/ 802.11ax (20MHz RU 26/52/106)		149 to 165	149, 157,165	OFDM, OFDMA	MCS0
A	802.11n/ax (40MHz)		151 to 159	151, 159	OFDM, OFDMA	MCS0
A	802.11ac/ax (80MHz)		155	155	OFDM, OFDMA	MCS0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE<1G	23deg. C, 70%RH	DC5.0V/ 9.0V /12.0V By Adapter	Jace Hu
RE≥1G	23deg. C, 70%RH	DC5.0V/ 9.0V /12.0V By Adapter	Jace Hu
PLC	25deg. C, 52%RH	DC5.0V/ 9.0V /12.0V By Adapter	James Fu
APCM	25deg. C, 60%RH	DC 3.89V By Battery	James Fu

2.3 DUTY CYCLE OF TEST SIGNAL

Please Refer to Appendix C Of this test report.

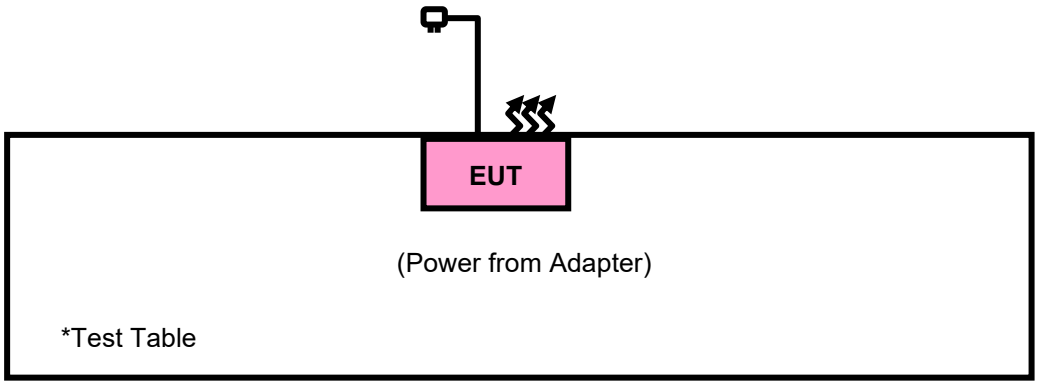
2.4 DESCRIPTION OF SUPPORT UNITS

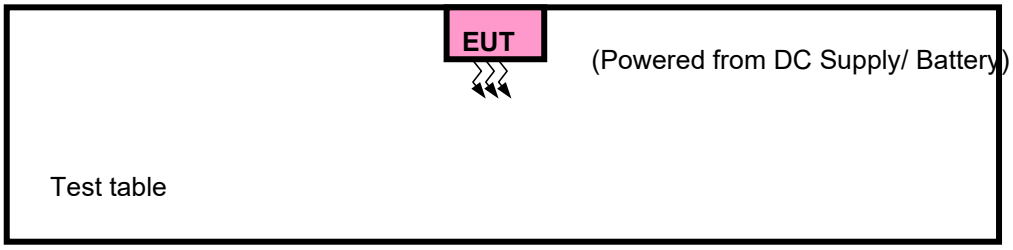
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

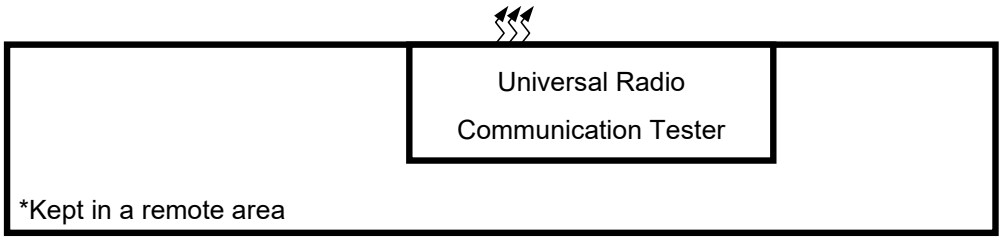
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Laptop	Lenovo	Thinkpad E14	SL10W47313	N/A
2	Adapter	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.5m
2	USB Line: Unshielded, Detachable, 1.0m;

2.4.1 CONFIGURATION OF SYSTEM UNDER TEST







2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart E (15.407)
KDB 789033 D02 General U-NII Test Procedures New Rules v02r01
ANSI C63.10-2020

All test items have been performed and recorded as per the above standards.

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (Certification). The test report has been issued separately.

3 TEST TYPES AND RESULTS

3.4 RADIATED EMISSION AND BANDEDGE MEASUREMENT

3.4.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

3.4.2 LIMITS OF UNWANTED EMISSION

	APPLICABLE TO	LIMIT	
RESTRICTED BANDS	789033 D02 General UNII Test Procedures New Rules v02r01	FIELD STRENGTH AT 3m (dBμV/m)	
		PK : 74	AV : 54
OUT OF THE RESTRICTED BANDS	APPLICABLE TO	EIRP LIMIT (dBm/MHz)	EQUIVALENT FIELD STRENGTH AT 3m (dBμV/m)
	15.407(b)(1)	PK : -27	PK : 68.2
	15.407(b)(2)		
	15.407(b)(3)		
	15.407(b)(4)	See note 2 (FCC 16-24)	

NOTE: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts).

2. 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.

3.4.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,22	Aug.29,24
Pre-Amplifier	R&S	SCU08F1	101028	Sep.16,22	Sep.15,24
Signal Generator	R&S	SMB100A	182185	Feb.15,24	Feb.14,26
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESW44	101973	Feb.24,24	Feb.23,26
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Feb.27,24	Feb.26,26
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,22	Aug.21,24
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Feb.22,24	Feb.21,26
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,22	Aug.21,24
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.22,24	Feb.21,26
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.27,22	Jun.26,24
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	N/A	N/A
DC Source	HYELEC	HY3010B	551016	Aug.31,22	Aug.30,24
Hygrothermograph	DELI	20210528	SZ014	Sep.06,22	Sep.05,24
6DB attenuator	Tonscend Technology Co., Ltd	N/A	23062787	N/A	N/A
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.00M	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.00M	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Apr.28,23	Apr.27,24
CABLE	R&S	W13.02	N/A	Apr.27,24	Apr.26,26
CABLE	R&S	W12.14	N/A	Apr.28,23	Apr.27,24
CABLE	R&S	W12.14	N/A	Apr.27,24	Apr.26,26

NOTE: 1. The calibration interval of the above test instruments is 12/ 24 / 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 3m Chamber.

3. The FCC Site Registration No. is 434559; The Designation No. is CN1325.

3.4.4 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3-meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise, the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE:

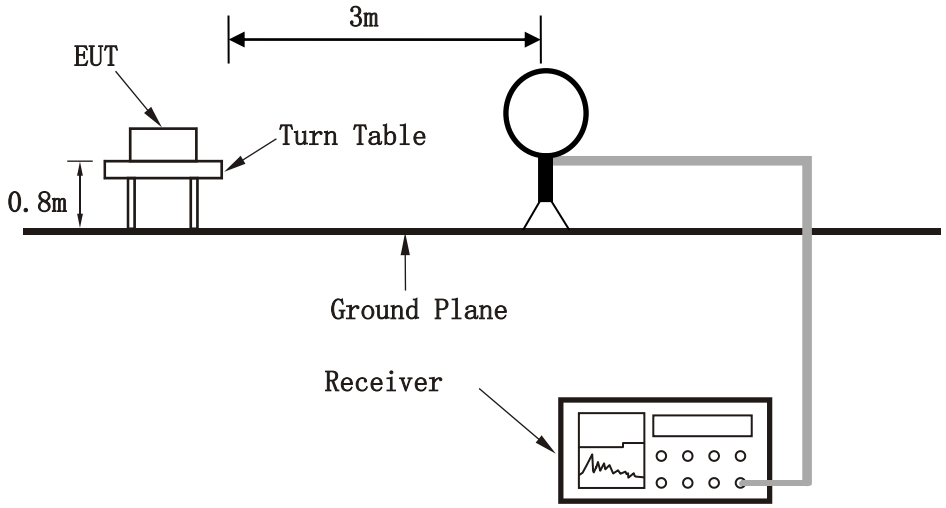
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated, and the worst-case emissions are reported.

3.4.5 DEVIATION FROM TEST STANDARD

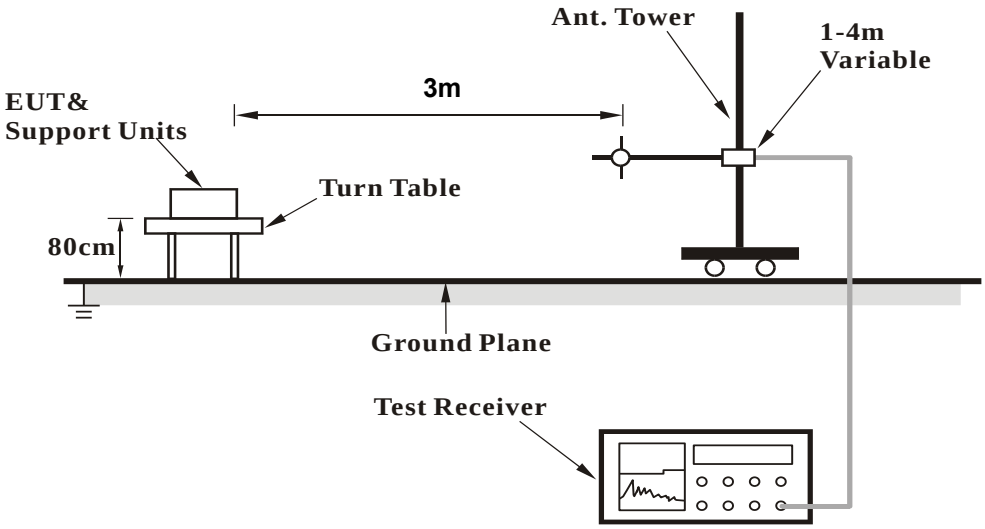
No deviation.

3.4.6 TEST SETUP

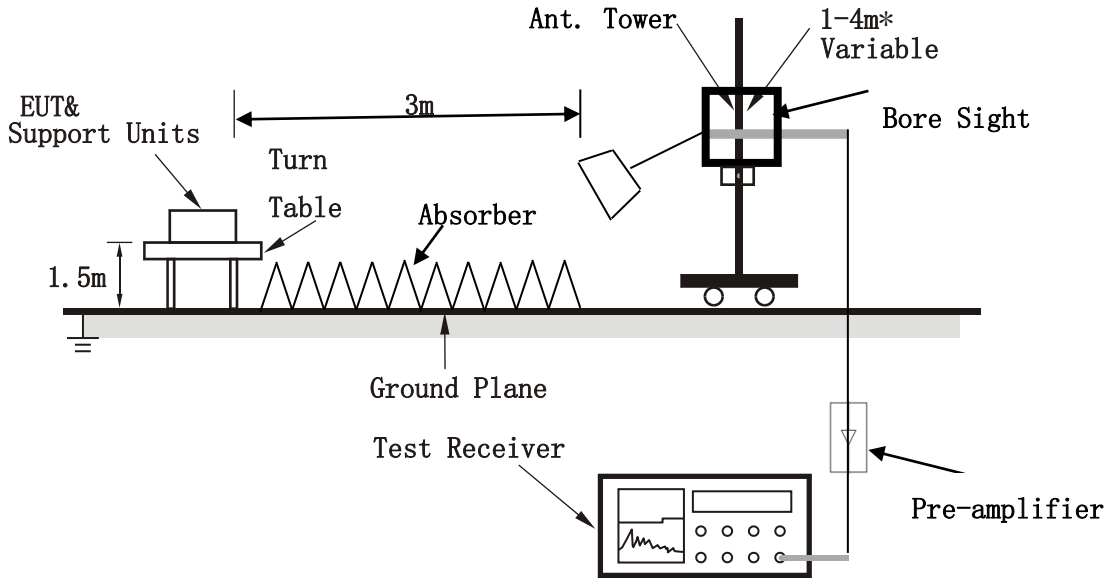
<Frequency Range 9KHz~30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.4.7 EUT OPERATING CONDITION

a. Set the EUT under full load condition and placed them on a testing table.

b. Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.

c. The necessary accessories enable the EUT in full functions.

3.4.8 TEST RESULTS

NOTE ： The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

BAND EDGE MEASUREMENT

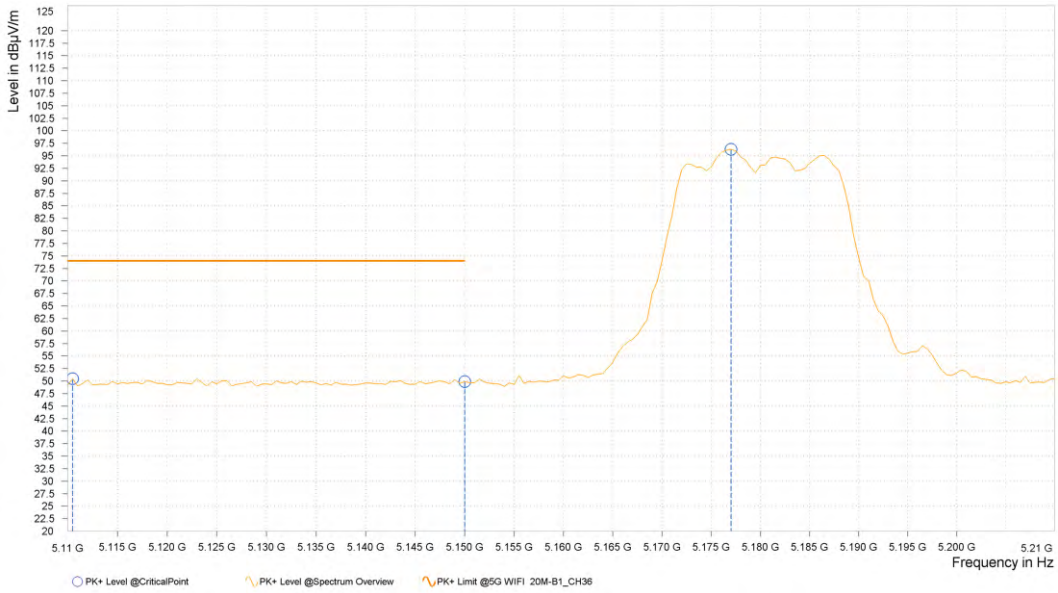
Band 1

802.11a

CHANNEL	TX Channel 36	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

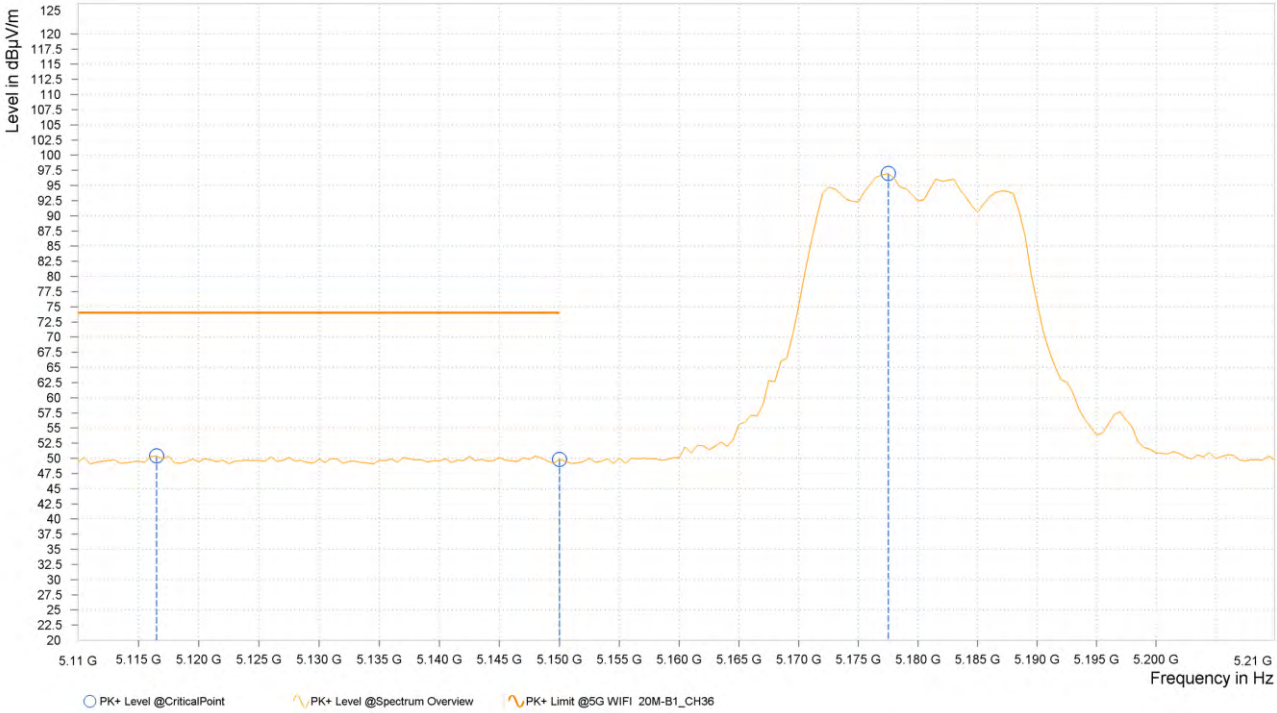
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,110.500	50.48	74.00	23.52	10.71	H	351.8	1.00
1	5,150.000	49.86	74.00	24.14	10.77	H	84.1	1.00
1	5,177.000	96.31			10.86	H	180.2	2.00



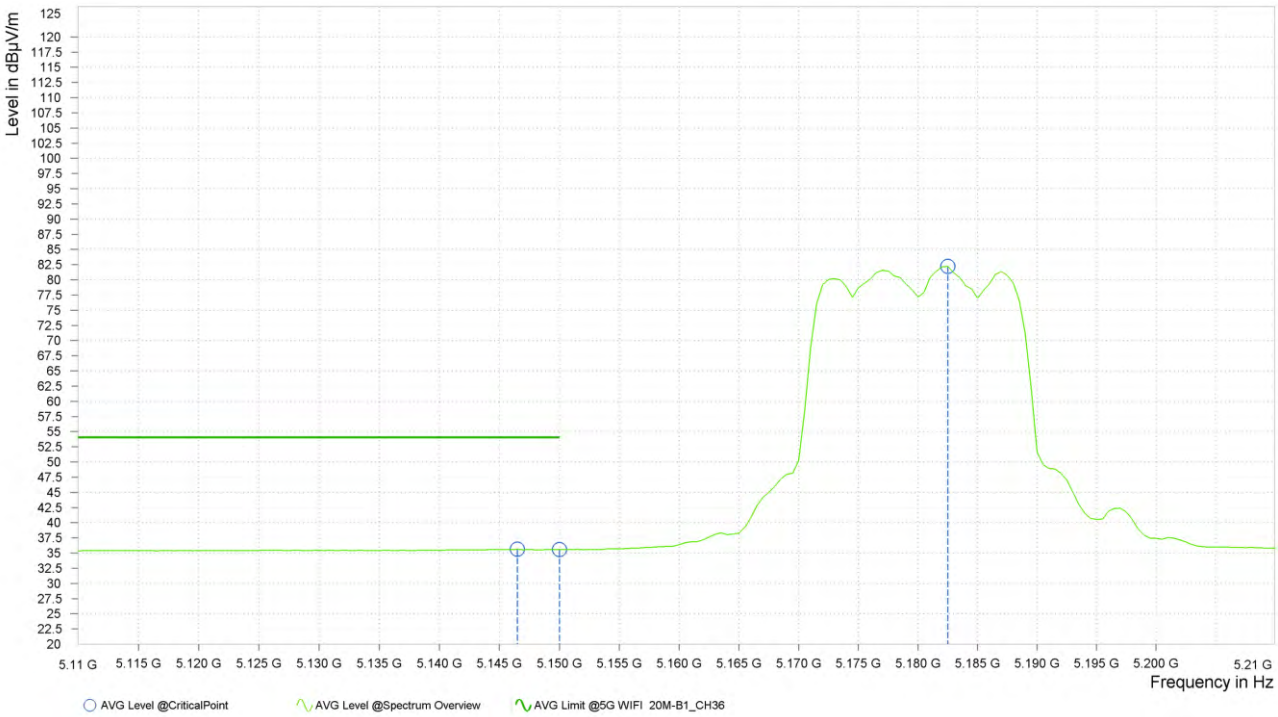
Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,111.000	35.39	54.00	18.61	10.72	H	134.4	1.00
1	5,150.000	35.50	54.00	18.50	10.77	H	6.2	2.00
1	5,177.000	82.21			10.86	H	179	2.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,116.500	50.42	74.00	23.58	10.72	V	359	1.00
1	5,150.000	49.85	74.00	24.15	10.77	V	0.9	2.00
1	5,177.500	96.98			10.86	V	226.5	1.00



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,146.500	35.63	54.00	18.37	10.76	V	1	1.00
1	5,150.000	35.57	54.00	18.43	10.77	V	233.6	1.00
1	5,182.500	82.22			10.87	V	233.6	1.00



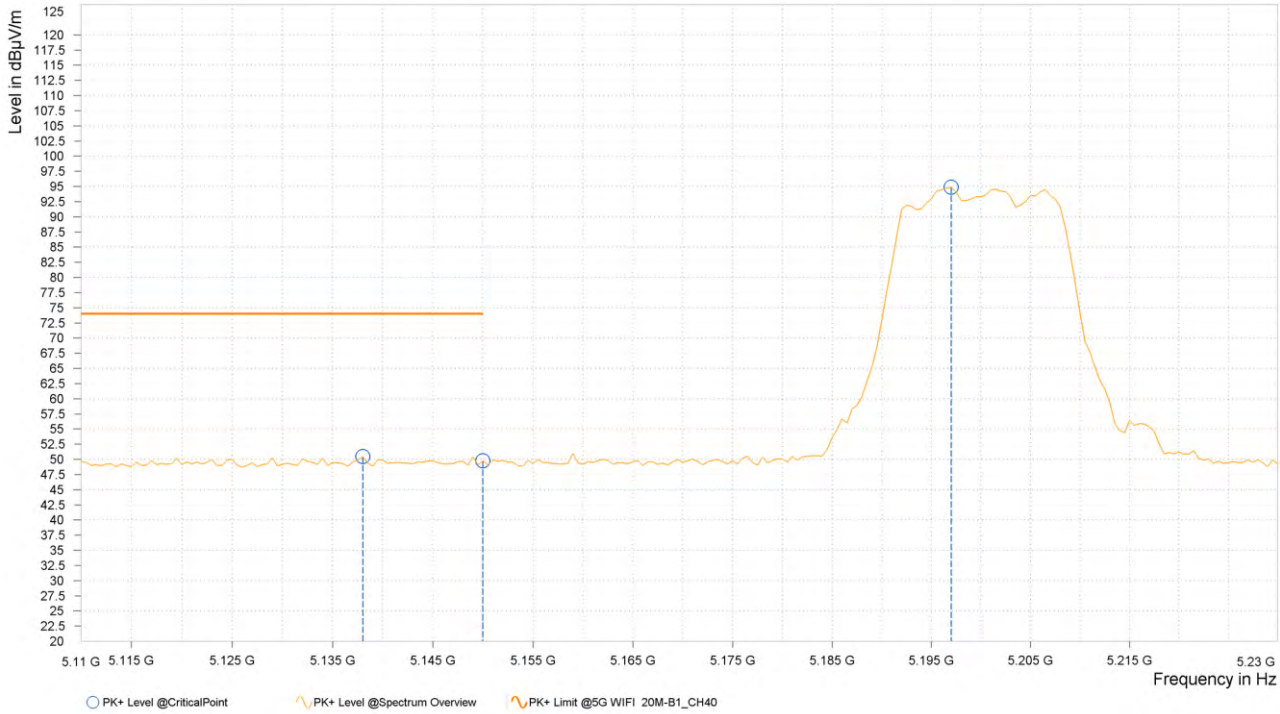
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 5180MHz: Fundamental frequency.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

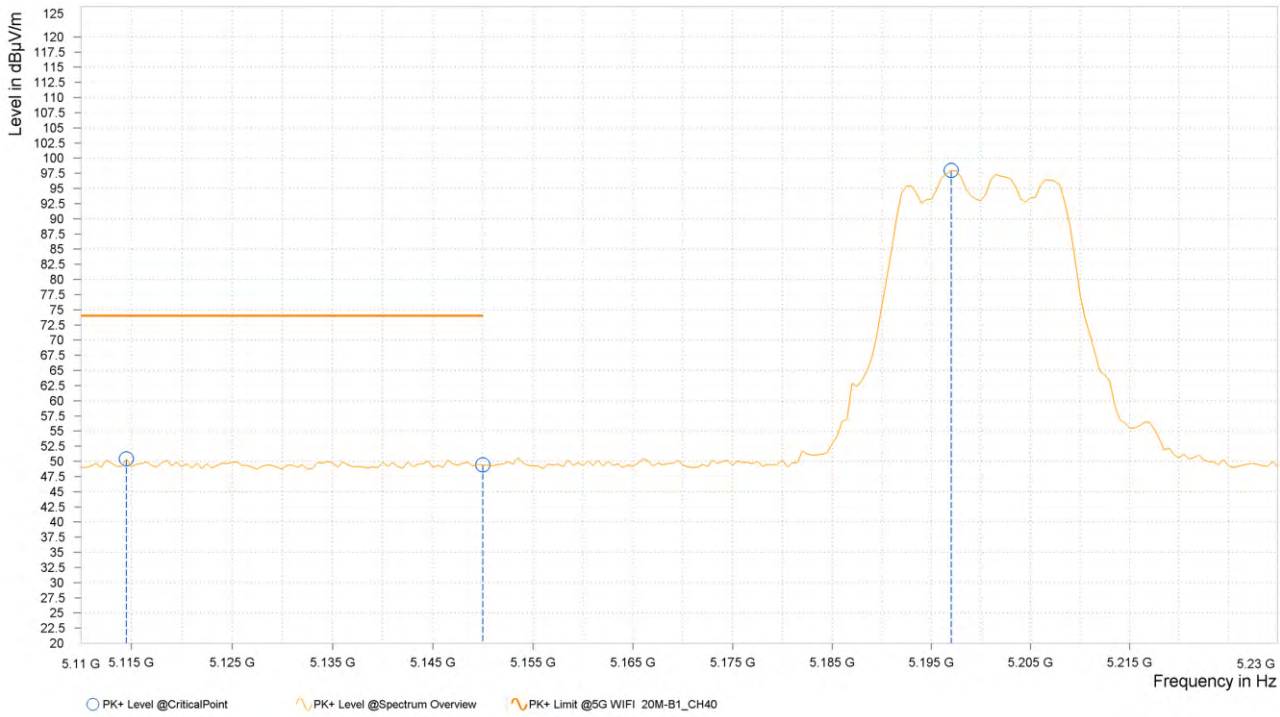
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,138.000	50.45	74.00	23.55	10.75	H	82.2	2.00
2	5,150.000	49.74	74.00	24.26	10.77	H	184.6	1.00
2	5,197.000	94.90			10.92	H	176.6	2.00



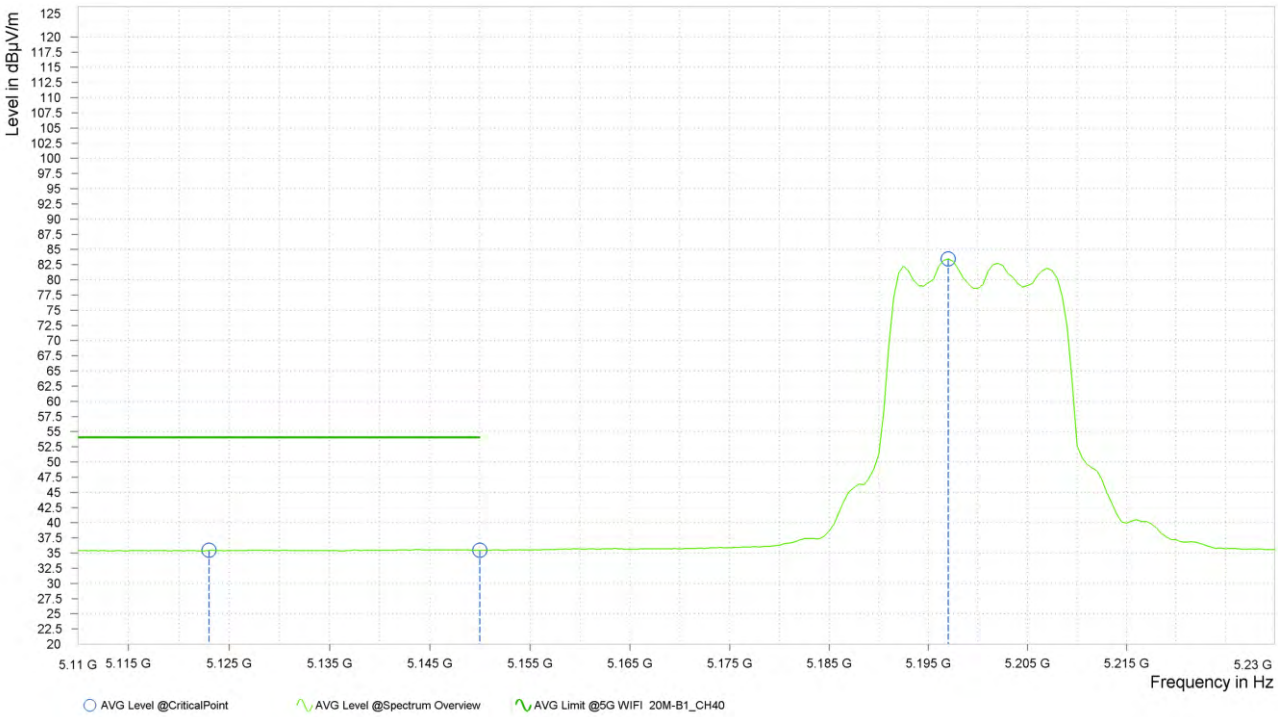
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,132.000	35.45	54.00	18.55	10.74	H	176.6	2.00
2	5,150.000	35.55	54.00	18.45	10.77	H	176.6	2.00
2	5,201.500	81.03			10.93	H	355.4	1.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,114.500	50.40	74.00	23.60	10.72	V	35.6	2.00
2	5,150.000	49.41	74.00	24.59	10.77	V	136.7	1.00
2	5,197.000	97.96			10.92	V	317.7	2.00



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,123.000	35.45	54.00	18.55	10.73	V	185.7	1.00
2	5,150.000	35.49	54.00	18.51	10.77	V	1	1.00
2	5,197.000	83.44			10.92	V	316.5	2.00



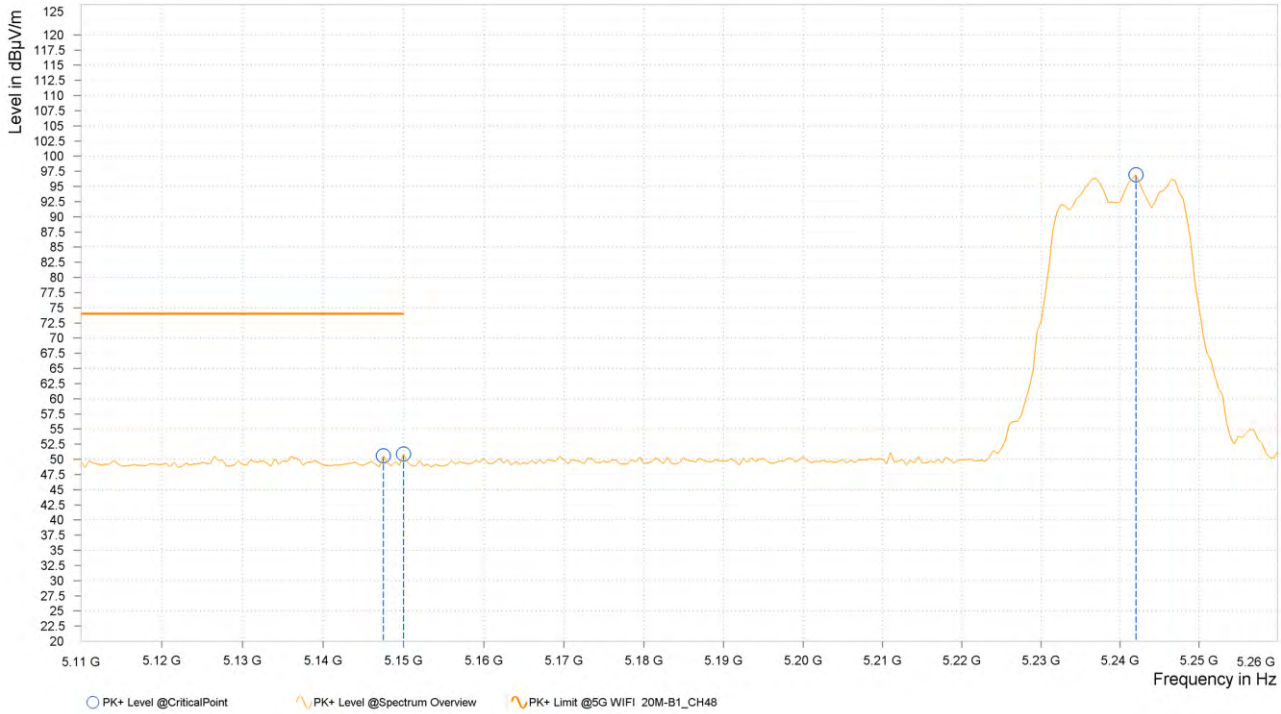
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 5200MHz: Fundamental frequency.

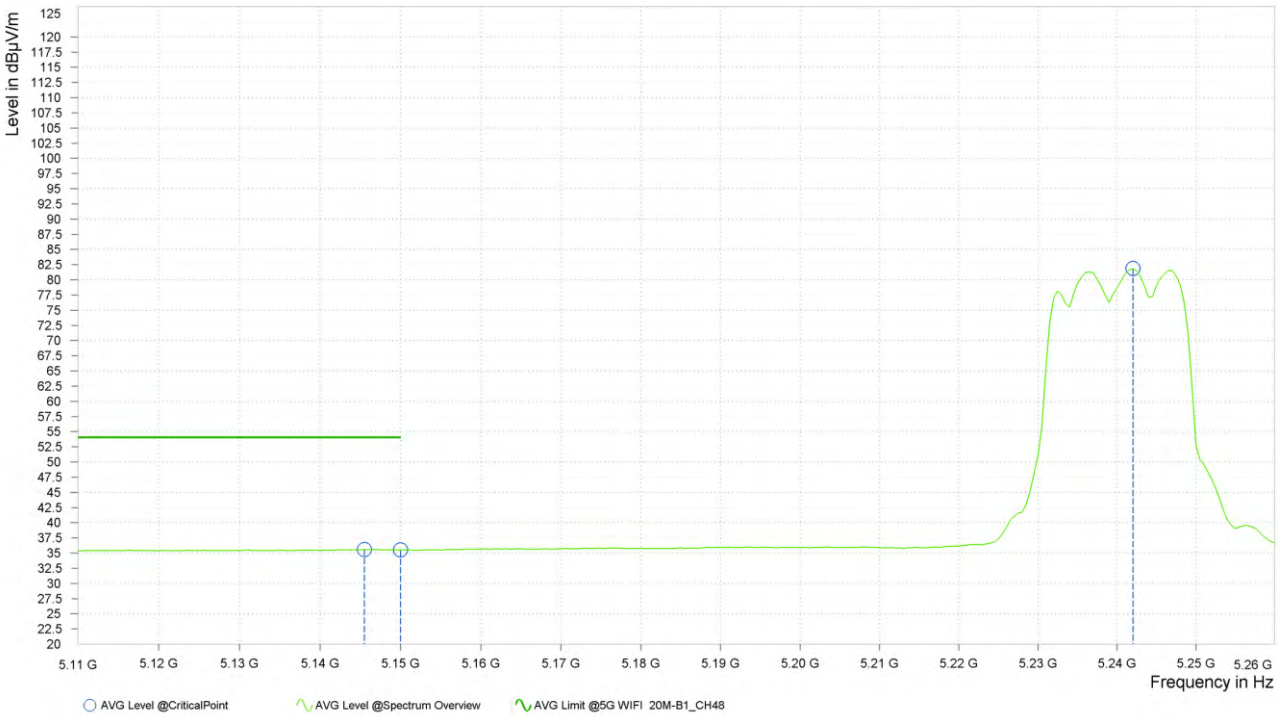
CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	5,147.500	50.60	74.00	23.40	10.76	H	269.8	2.00
3	5,150.000	50.90	74.00	23.10	10.77	H	224.4	2.00
3	5,242.000	96.94			10.90	H	90.1	1.00

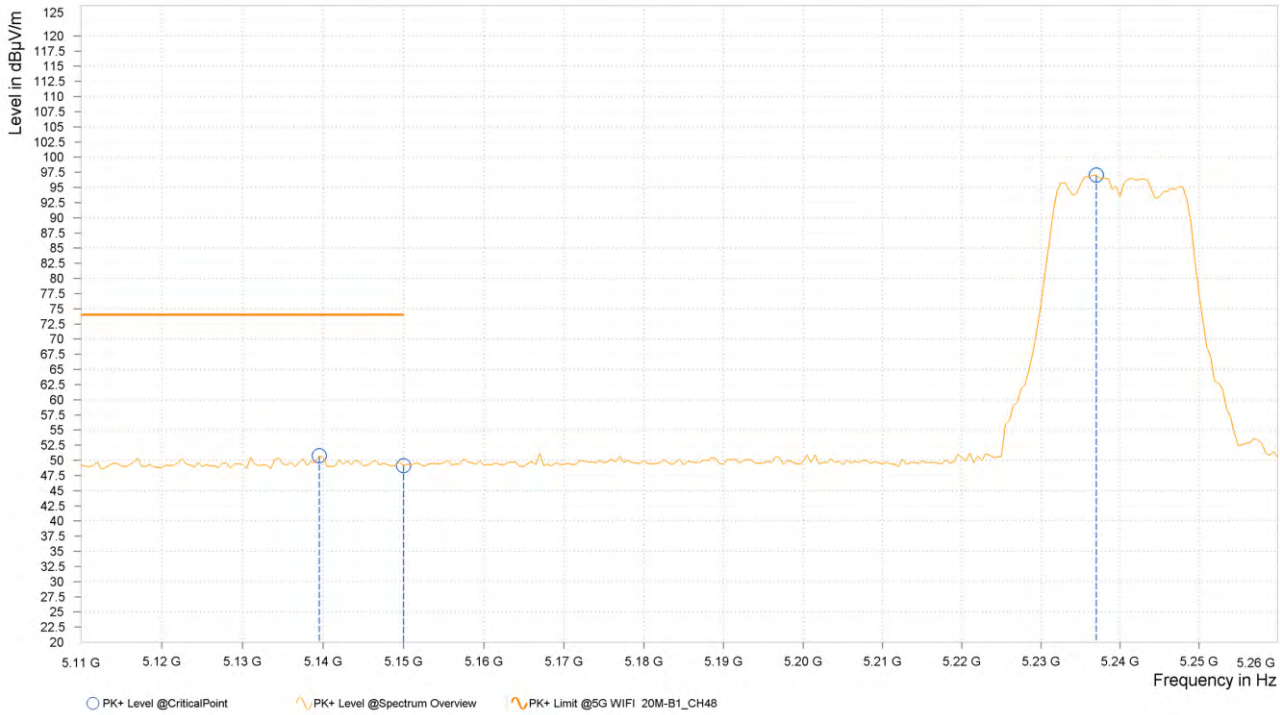


Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	5,145.500	35.61	54.00	18.39	10.76	H	3	2.00
3	5,150.000	35.51	54.00	18.49	10.77	H	140.3	1.00
3	5,242.000	81.85			10.90	H	92.6	1.00

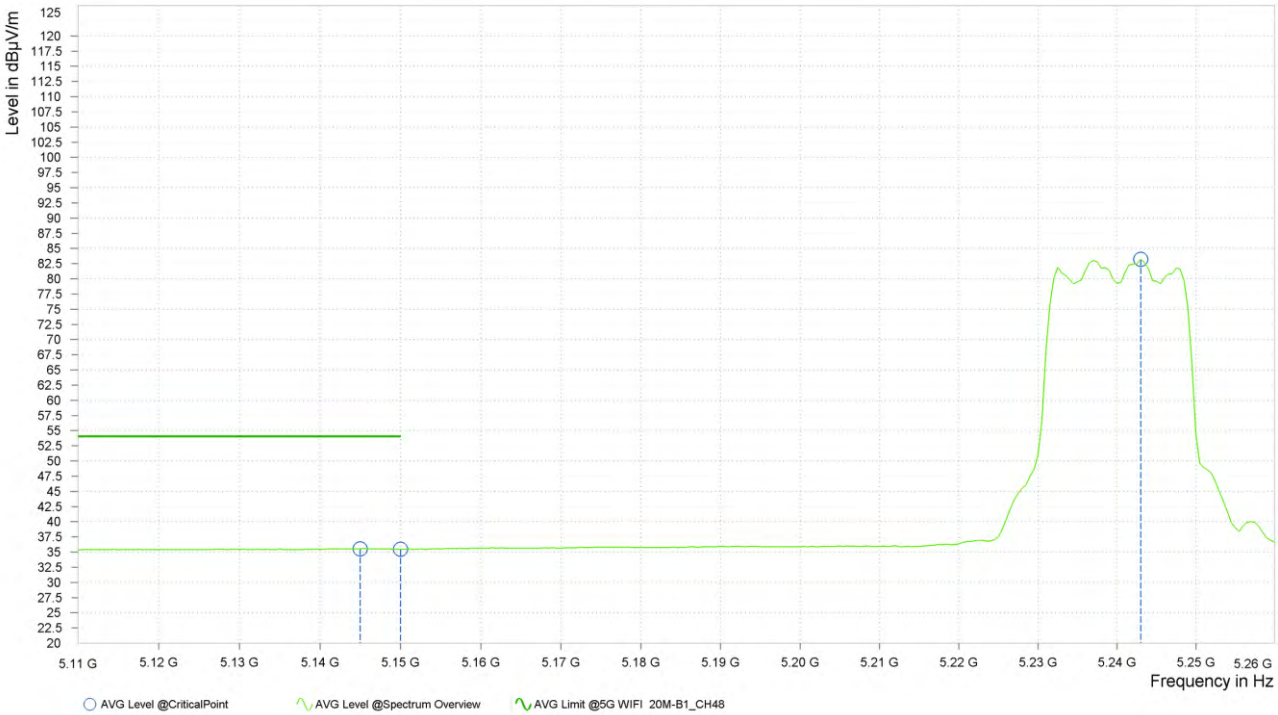


ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	5,139.500	50.73	74.00	23.27	10.75	V	1	1.00
3	5,150.000	49.13	74.00	24.87	10.77	V	98.6	1.00
3	5,237.000	97.03			10.91	V	175.4	2.00



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	5,145.000	35.55	54.00	18.45	10.76	V	357.8	1.00
3	5,150.000	35.46	54.00	18.54	10.77	V	359	1.00
3	5,243.000	83.22			10.90	V	42.4	1.00



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 5240MHz: Fundamental frequency.

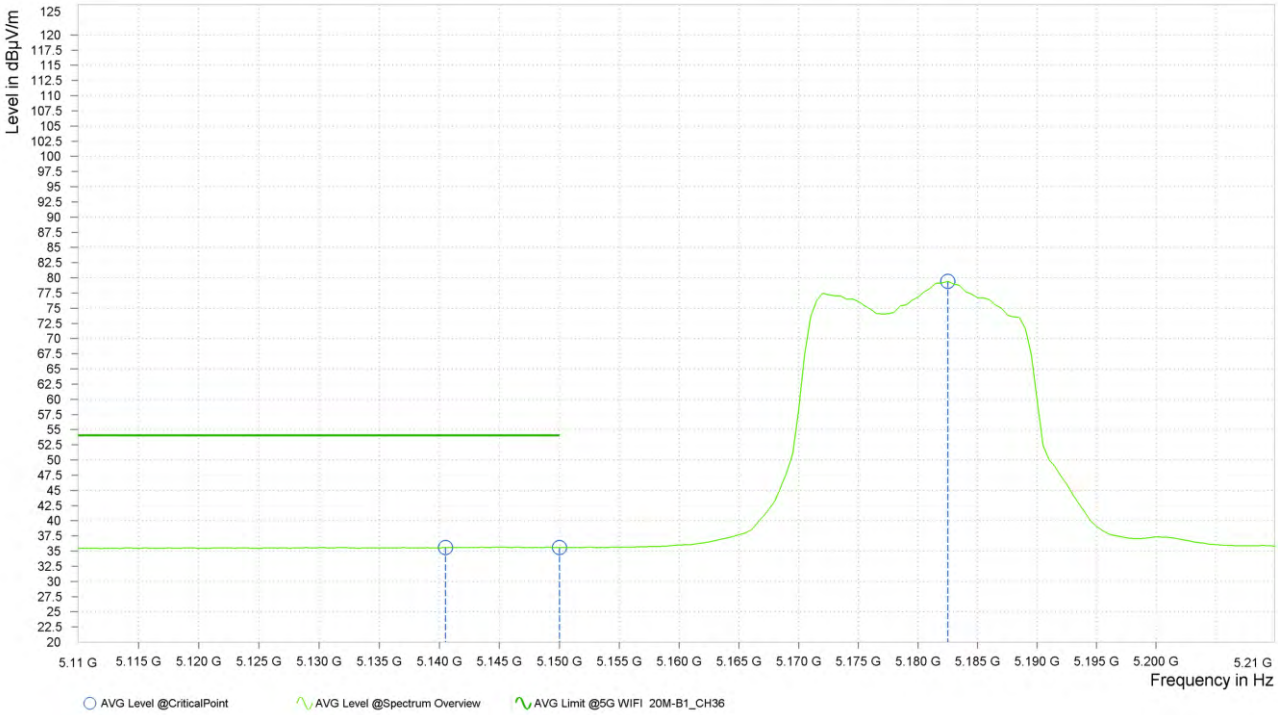
802.11n (20MHz)

CHANNEL	TX Channel 36	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

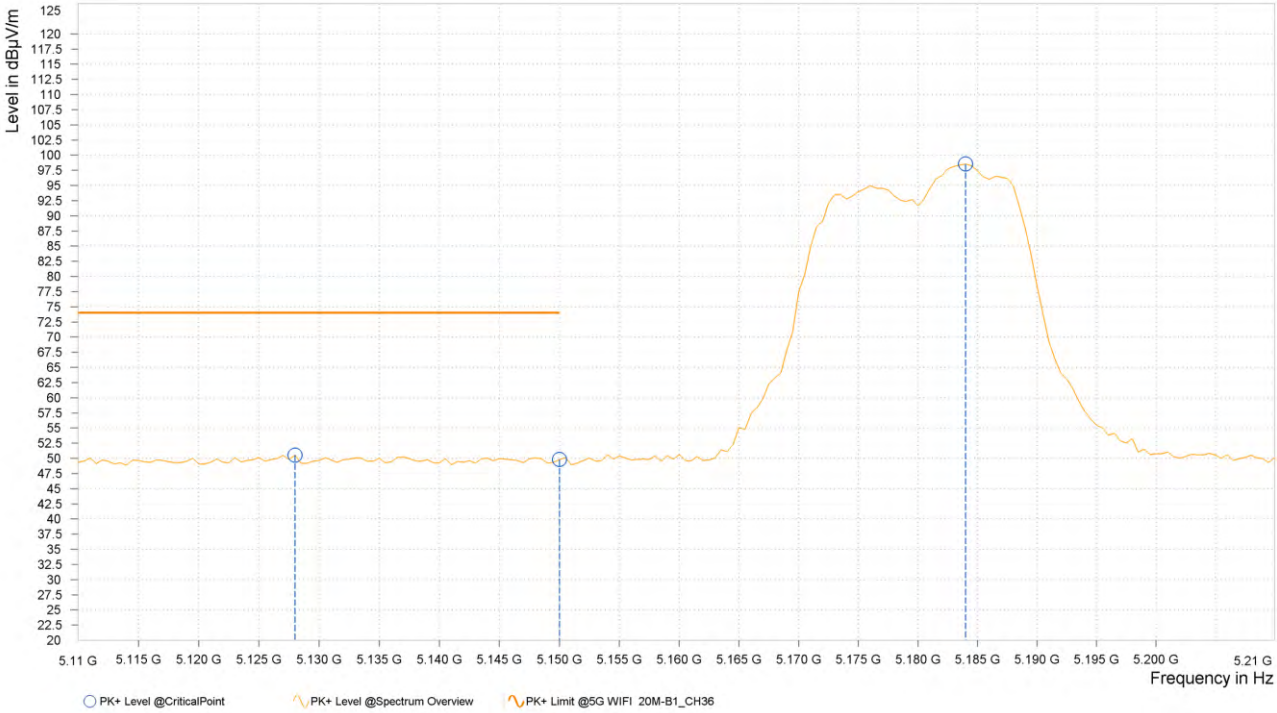
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,142.500	50.87	74.00	23.13	10.76	H	102.2	1.00
1	5,150.000	49.33	74.00	24.67	10.77	H	1	1.00
1	5,182.500	94.57			10.87	H	359	2.00

Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,140.500	35.60	54.00	18.40	10.75	H	153.8	2.00
1	5,150.000	35.61	54.00	18.39	10.77	H	153.8	2.00
1	5,182.500	79.42			10.87	H	359	2.00



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,128.000	50.53	74.00	23.47	10.74	V	351.2	1.00
1	5,150.000	49.80	74.00	24.20	10.77	V	359	1.00
1	5,184.000	98.54			10.88	V	314.1	2.00



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,146.500	35.68	54.00	18.32	10.76	V	155.1	2.00
1	5,150.000	35.59	54.00	18.41	10.77	V	257.5	1.00
1	5,183.000	82.45			10.87	V	311.7	2.00

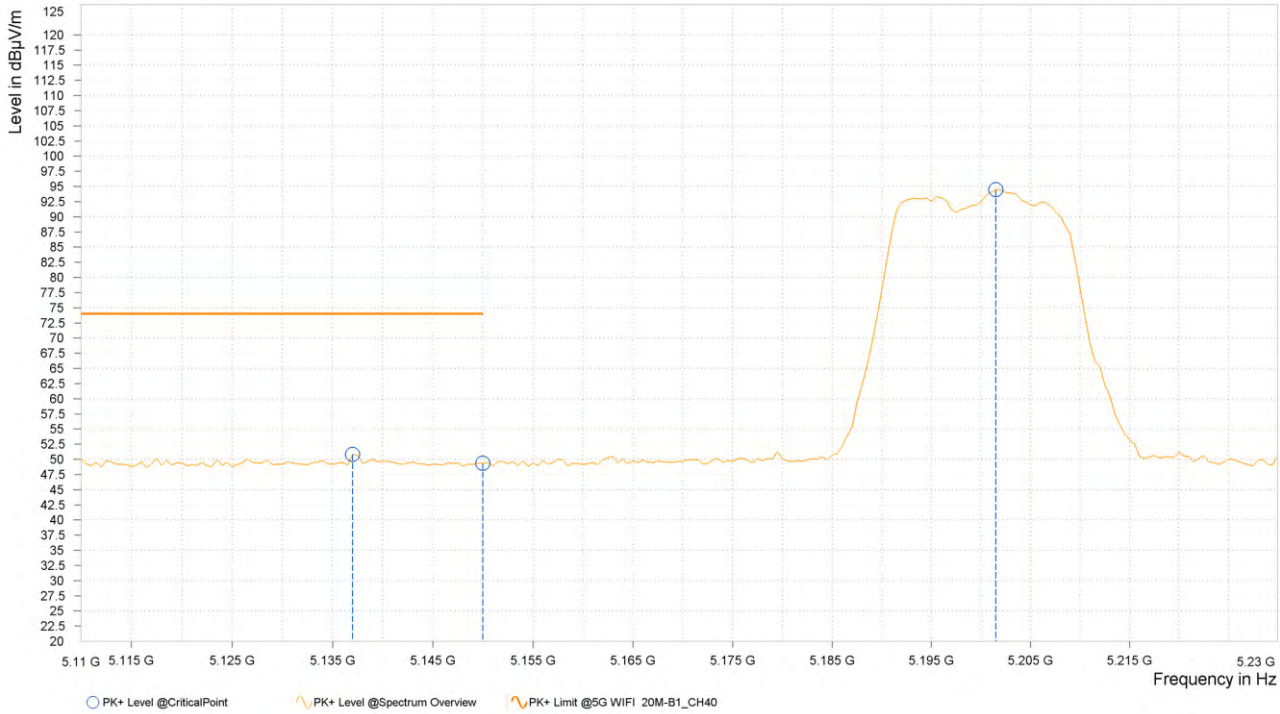
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 5180MHz: Fundamental frequency.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,137.000	50.82	74.00	23.18	10.75	H	205.4	2.00
2	5,150.000	49.35	74.00	24.65	10.77	H	102.2	1.00
2	5,201.500	94.45			10.93	H	313.7	1.00



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,142.500	35.59	54.00	18.41	10.76	H	207.7	2.00
2	5,150.000	35.54	54.00	18.46	10.77	H	6.2	2.00
2	5,202.500	79.02			10.93	H	359	2.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,140.500	50.66	74.00	23.34	10.75	V	1	1.00
2	5,150.000	49.29	74.00	24.71	10.77	V	359.1	1.00
2	5,204.000	95.02			10.93	V	207.3	1.00

Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,144.000	35.64	54.00	18.36	10.76	V	149.2	2.00
2	5,150.000	35.63	54.00	18.37	10.77	V	309.3	2.00
2	5,203.500	80.72			10.93	V	209.7	1.00

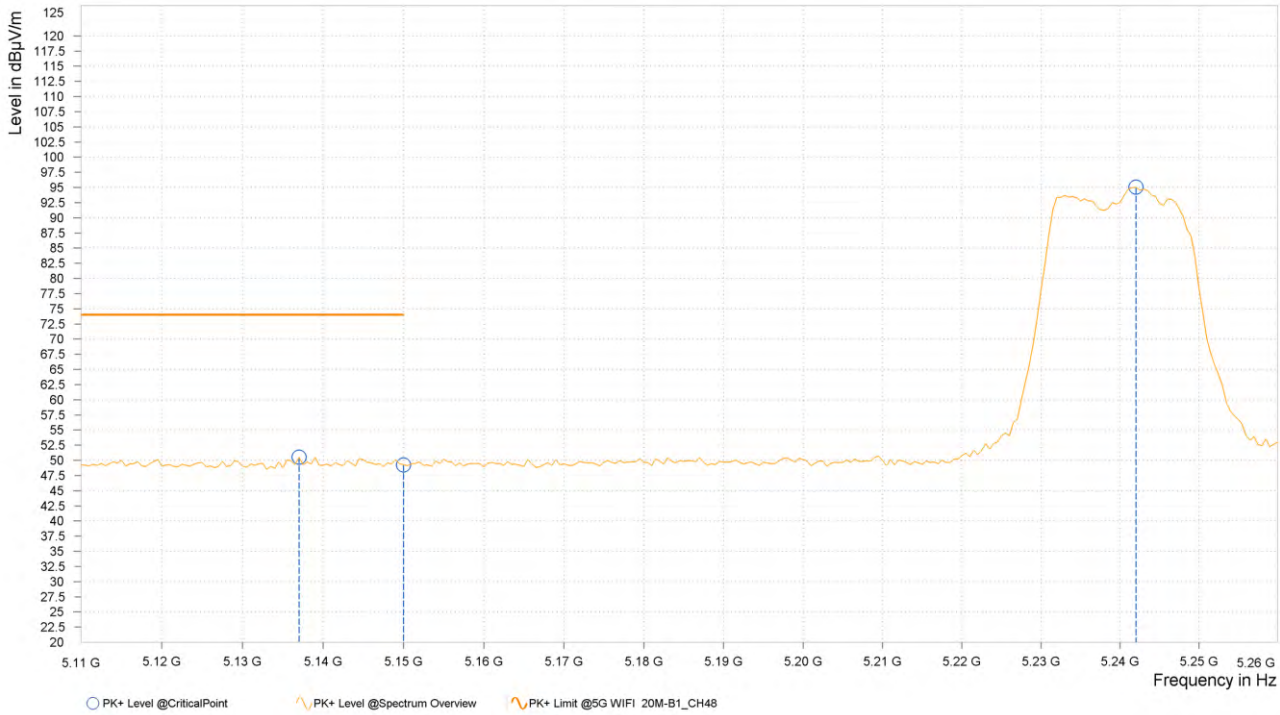
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 5200MHz: Fundamental frequency.

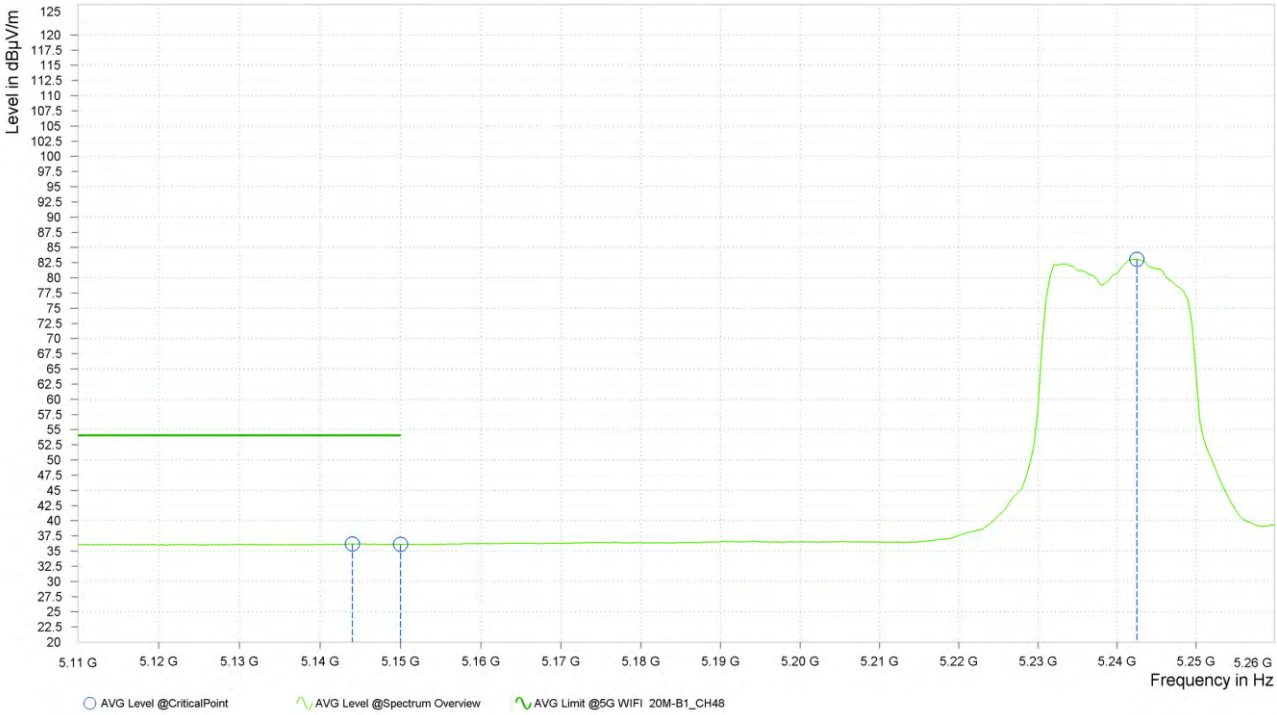
CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	5,137.000	50.53	74.00	23.47	10.75	H	351.7	1.00
3	5,150.000	49.27	74.00	24.73	10.77	H	359	2.00
3	5,242.000	95.04			10.90	H	303	1.00

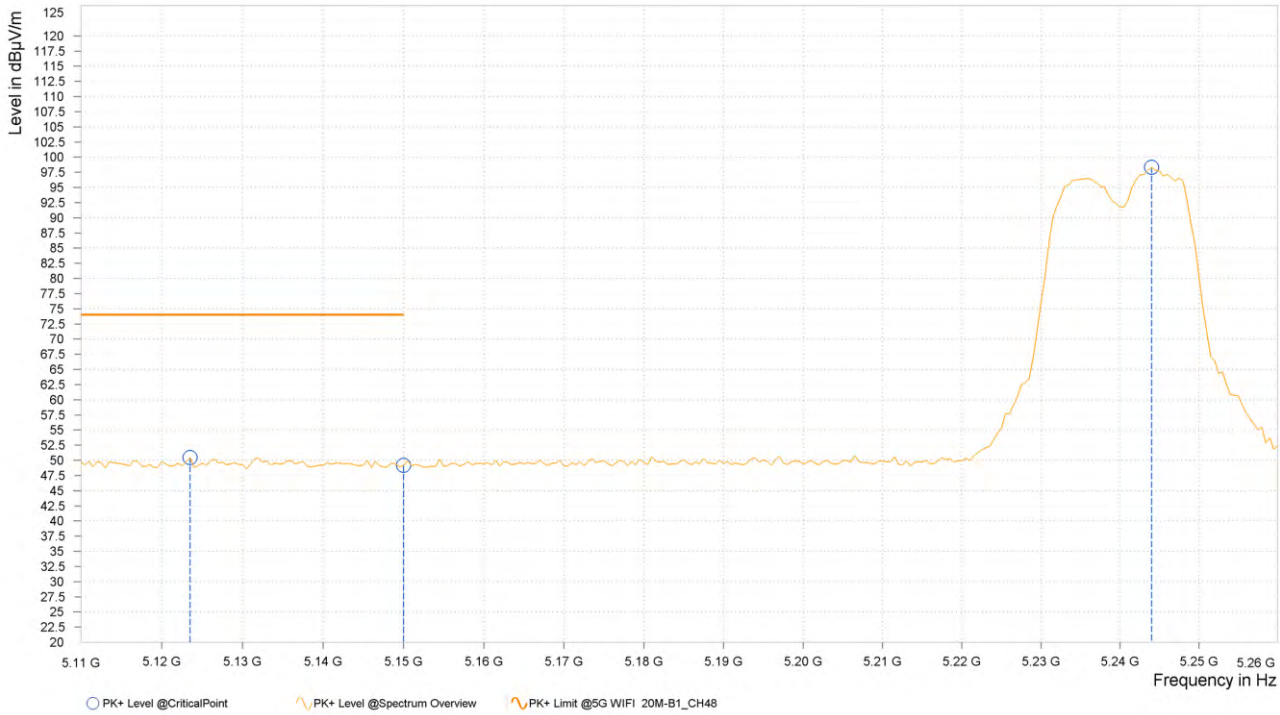


Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	5,144.000	36.18	54.00	17.82	10.76	H	1.4	2.00
3	5,150.000	36.09	54.00	17.91	10.77	H	359	2.00
3	5,242.500	83.06			10.90	H	359	2.00

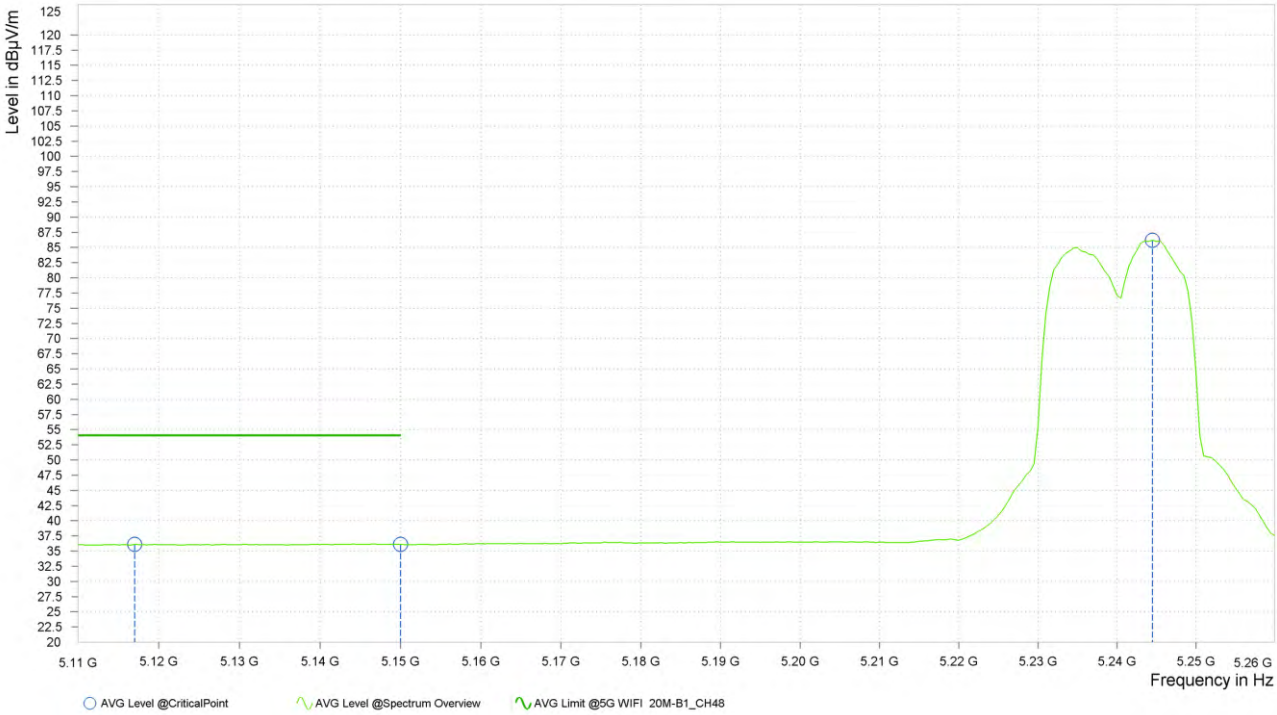


ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	5,123.500	50.48	74.00	23.52	10.73	V	102.2	1.00
3	5,150.000	49.16	74.00	24.84	10.77	V	316.1	1.00
3	5,244.000	98.33			10.90	V	210.9	1.00



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	5,117.000	36.11	54.00	17.89	10.72	V	1	1.00
3	5,150.000	36.10	54.00	17.90	10.77	V	359.1	1.00
3	5,244.500	86.19			10.90	V	209.7	1.00



REMARKS:

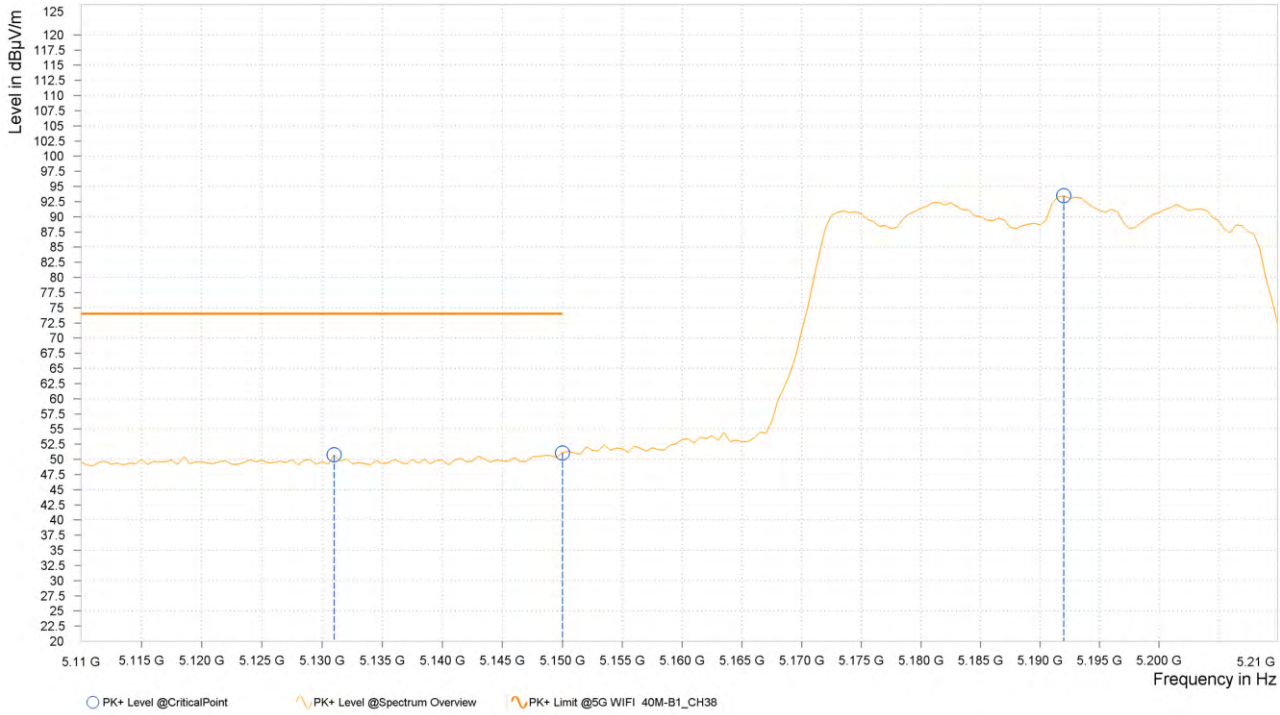
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 5240MHz: Fundamental frequency.

802.11n (40MHz)

CHANNEL	TX Channel 38	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

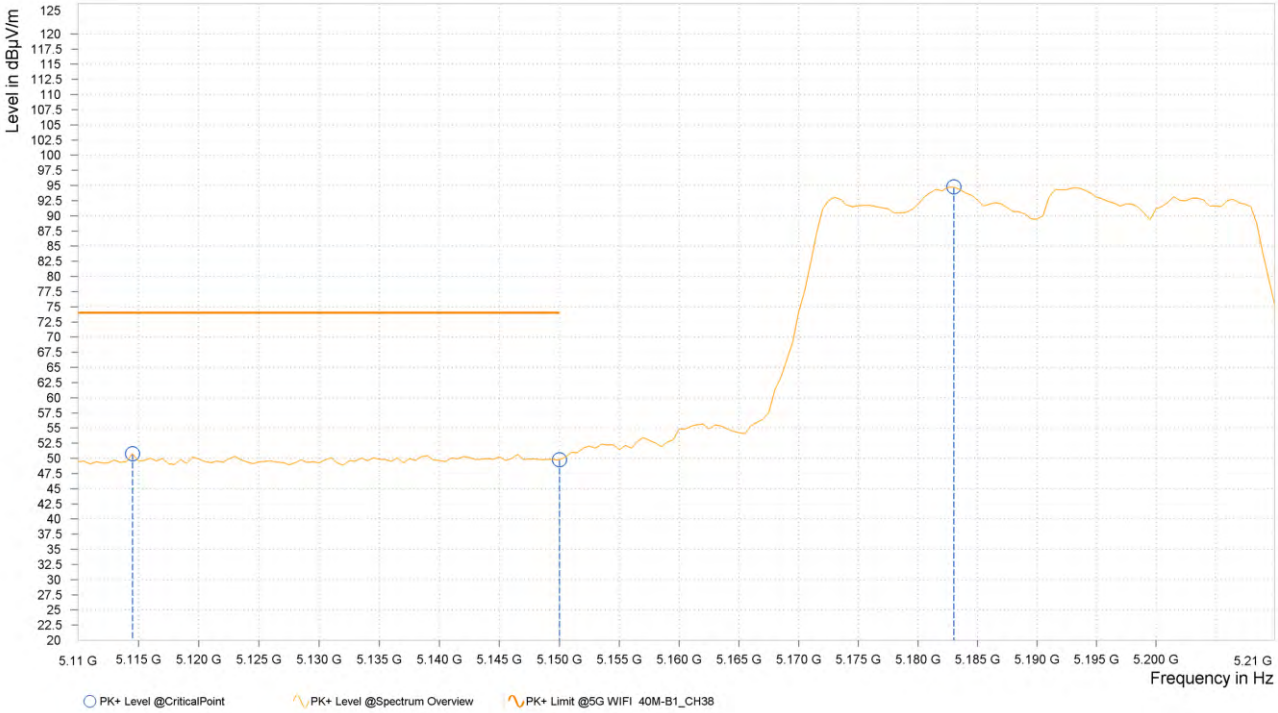
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,131.000	50.74	74.00	23.26	10.74	H	357.6	1.00
1	5,150.000	51.08	74.00	22.92	10.77	H	359.1	1.00
1	5,192.000	93.46			10.90	H	318.5	1.00



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,148.000	35.91	54.00	18.09	10.76	H	1	2.00
1	5,150.000	36.29	54.00	17.71	10.77	H	355.8	2.00
1	5,192.000	79.05			10.90	H	322.1	1.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,114.500	50.77	74.00	23.23	10.72	V	124.9	1.00
1	5,150.000	49.77	74.00	24.23	10.77	V	169.4	2.00
1	5,183.000	94.74			10.87	V	169.4	2.00



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,145.000	35.94	54.00	18.06	10.76	V	232.4	1.00
1	5,150.000	36.33	54.00	17.67	10.77	V	169.4	2.00
1	5,184.500	80.87			10.88	V	232.4	1.00

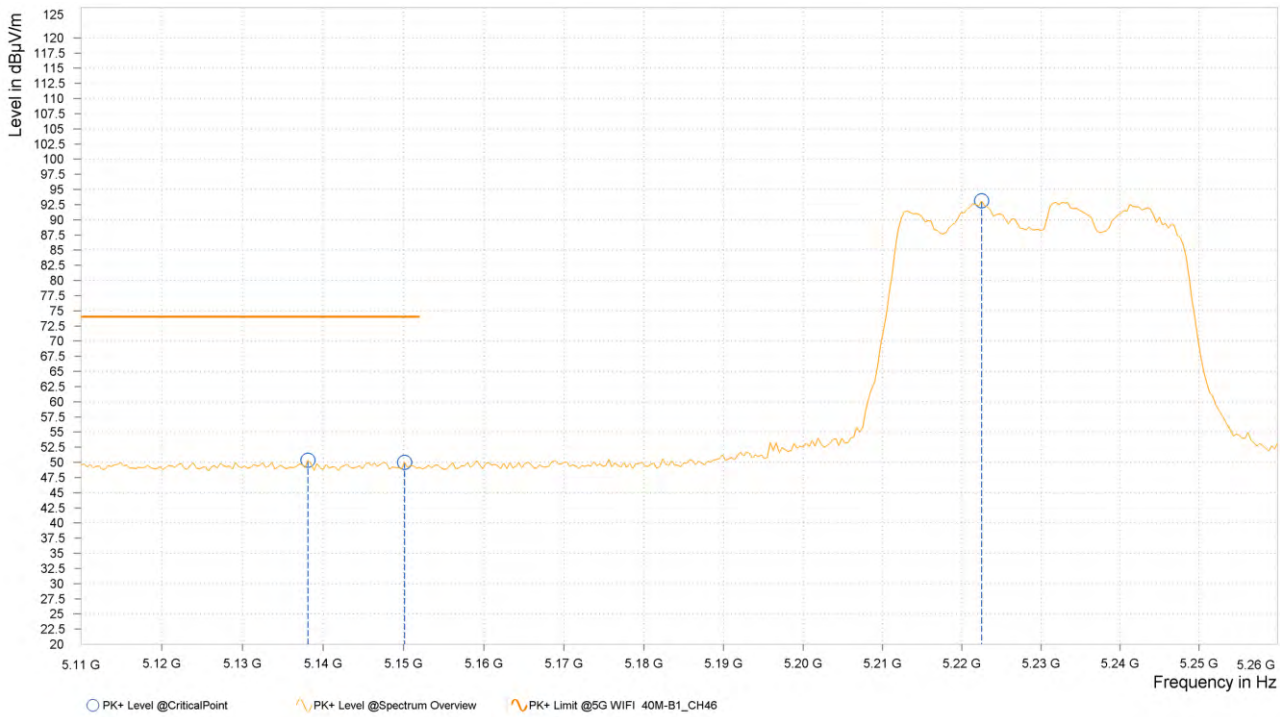
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 5190MHz: Fundamental frequency.

CHANNEL	TX Channel 46	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

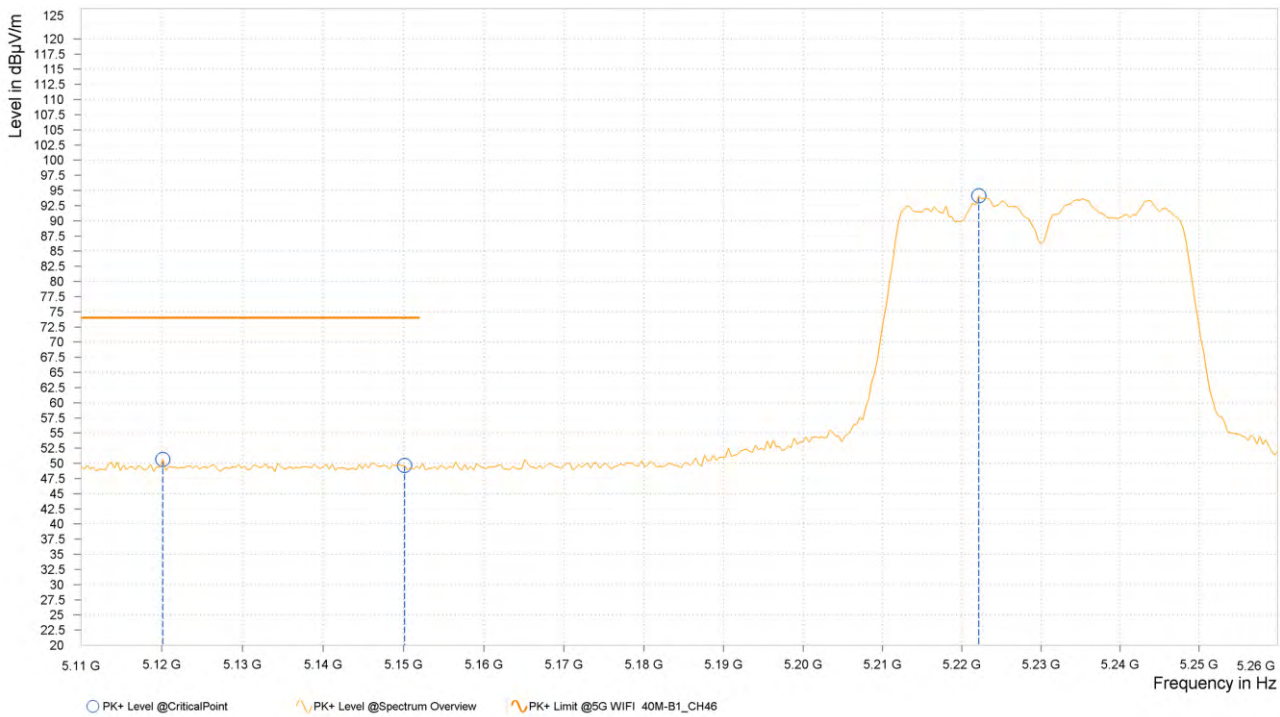
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,138.125	50.37	74.00	23.63	10.75	H	65.4	2.00
2	5,150.125	50.02	74.00	23.98	10.77	H	188.2	1.00
2	5,222.500	93.13			10.92	H	1	1.00



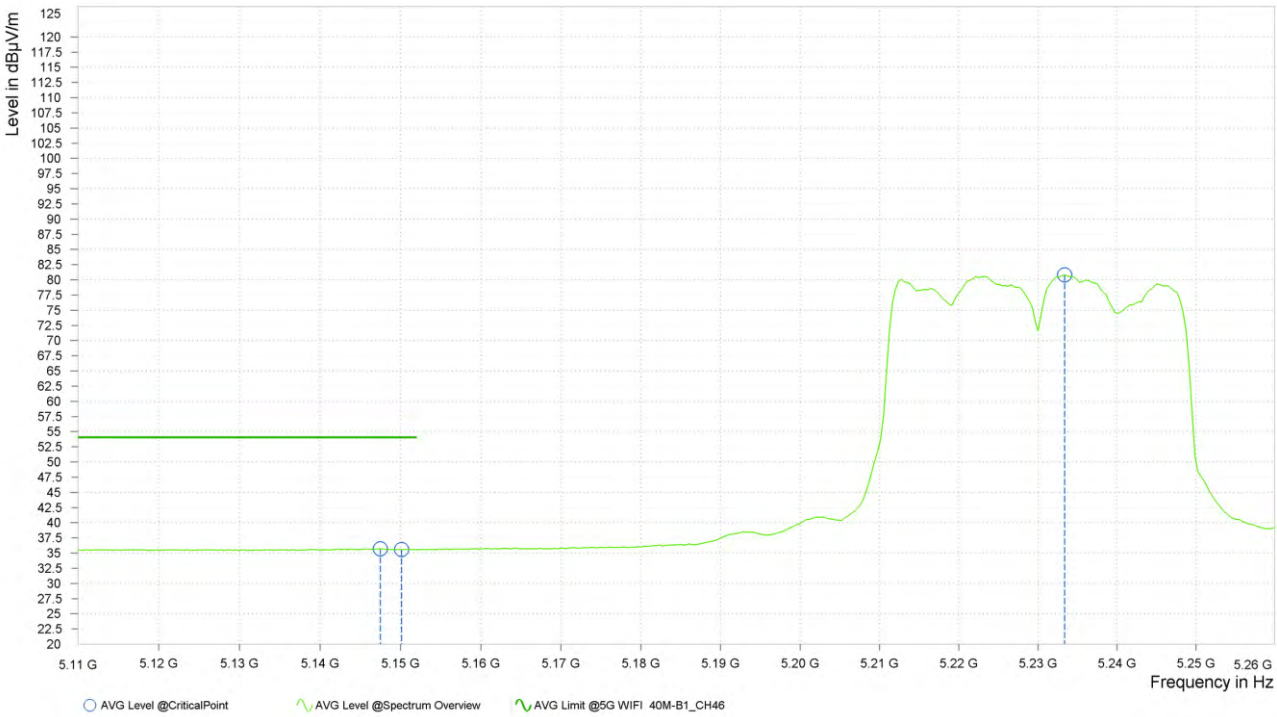
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,144.125	35.71	54.00	18.29	10.76	H	355	2.00
2	5,149.750	35.56	54.00	18.44	10.77	H	325.6	1.00
2	5,231.875	79.29			10.91	H	1	1.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,120.125	50.64	74.00	23.36	10.73	V	359	1.00
2	5,150.125	49.67	74.00	24.33	10.77	V	5.6	1.00
2	5,222.125	94.11			10.92	V	163.4	2.00



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,147.500	35.73	54.00	18.27	10.76	V	258.7	1.00
2	5,150.125	35.56	54.00	18.44	10.77	V	297.4	2.00
2	5,233.375	80.84			10.91	V	167	2.00



REMARKS:

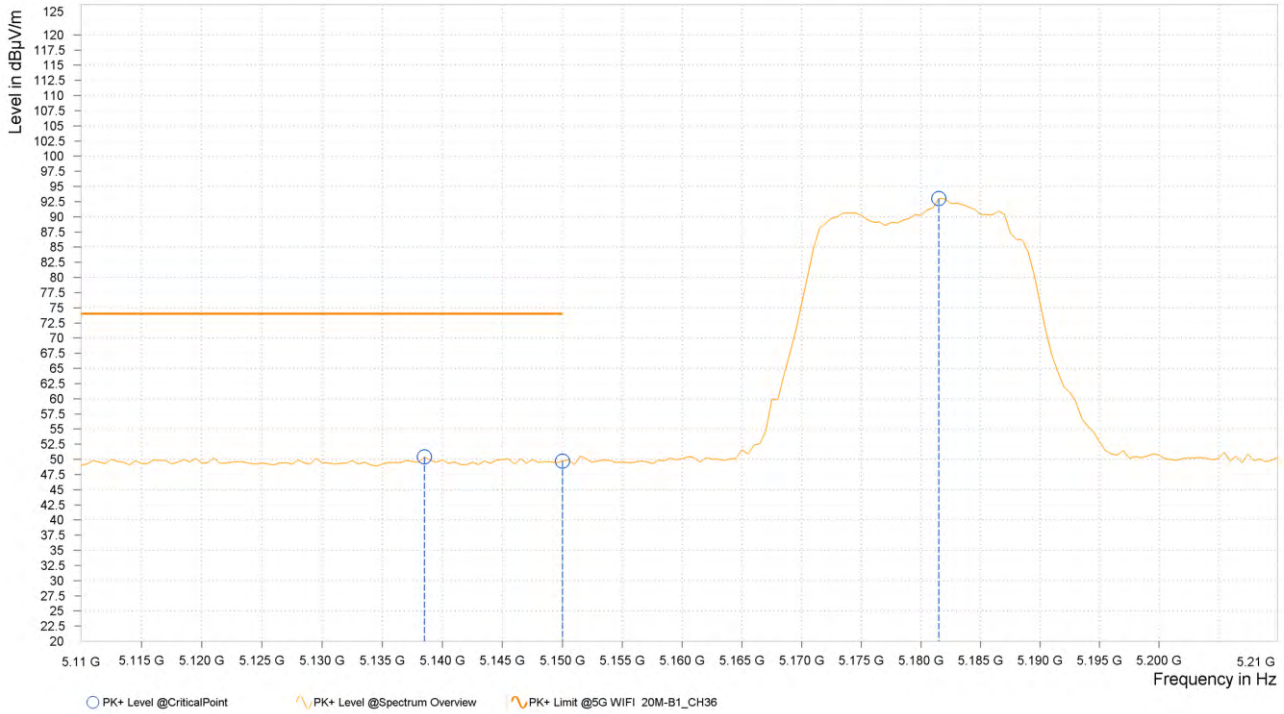
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 5230MHz: Fundamental frequency.

802.11ac (20MHz)

CHANNEL	TX Channel 36	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

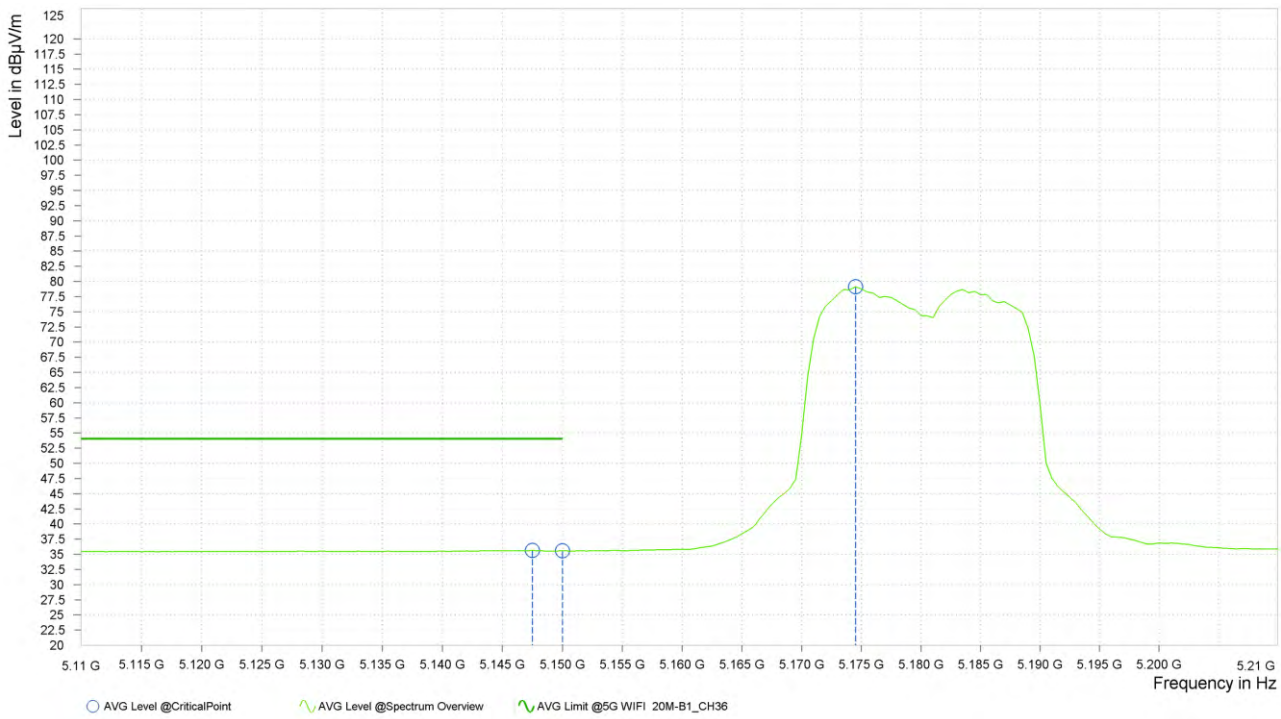
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,138.500	50.39	74.00	23.61	10.75	H	73.8	2.00
1	5,150.000	49.72	74.00	24.28	10.77	H	1.4	2.00
1	5,181.500	93.03			10.87	H	26.7	1.00



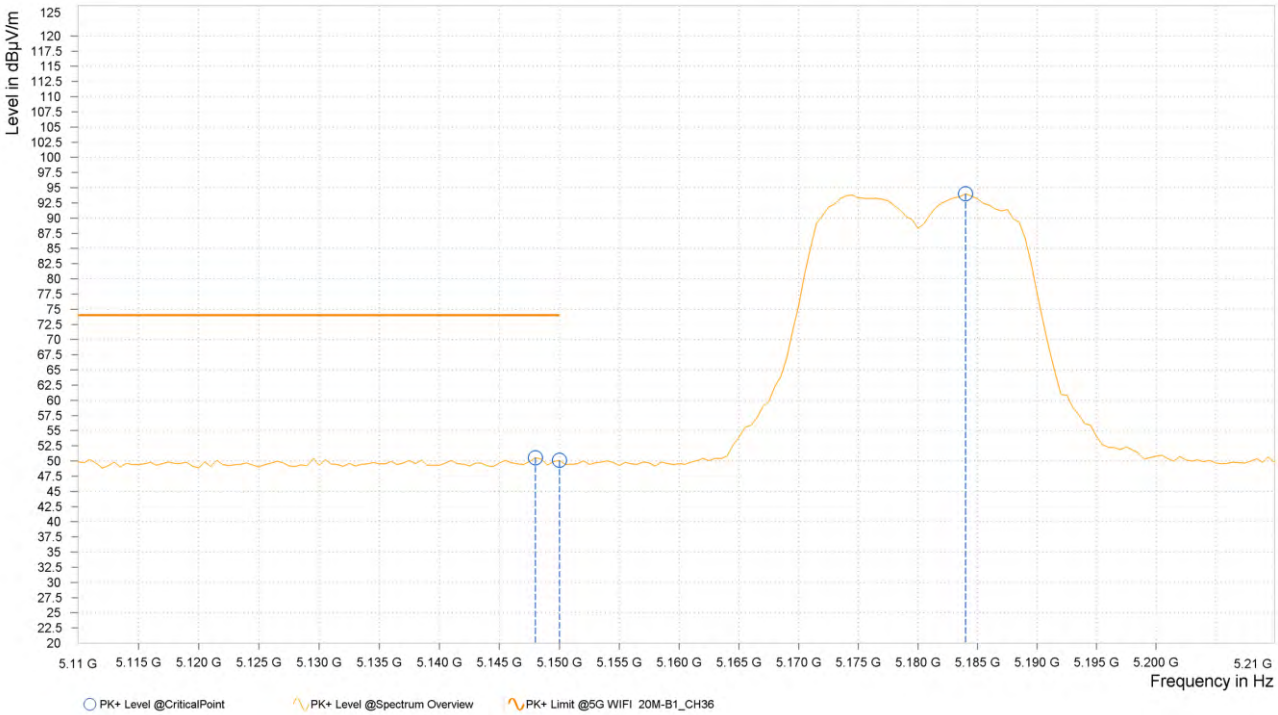
Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,147.000	35.65	54.00	18.35	10.76	H	110.5	1.00
1	5,150.000	35.58	54.00	18.42	10.77	H	110.5	1.00
1	5,183.500	77.31			10.88	H	4.3	1.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,147.500	35.64	54.00	18.36	10.76	V	276.6	1.00
1	5,150.000	35.58	54.00	18.42	10.77	V	359.1	1.00
1	5,174.500	79.12			10.85	V	212.1	1.00



Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,148.000	50.55	74.00	23.45	10.76	V	306.9	2.00
1	5,150.000	50.11	74.00	23.89	10.77	V	358.6	1.00
1	5,184.000	94.01			10.88	V	227.5	1.00



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 5180MHz: Fundamental frequency.

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

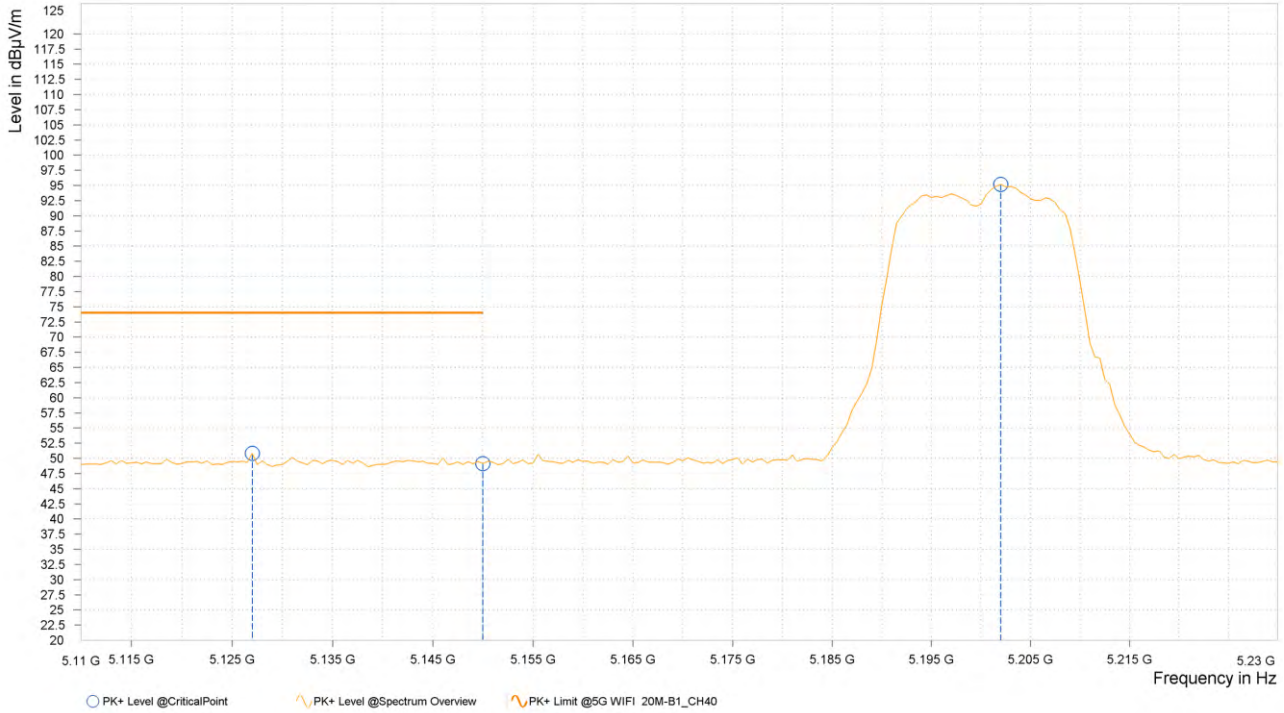
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,116.500	50.35	74.00	23.65	10.72	H	186.2	2.00
2	5,150.000	48.86	74.00	25.14	10.77	H	244.8	2.00
2	5,203.000	91.95			10.93	H	67.8	2.00

Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,144.000	35.58	54.00	18.42	10.76	H	68.6	1.00
2	5,150.000	35.51	54.00	18.49	10.77	H	1.1	2.00
2	5,203.000	78.22			10.93	H	68.6	1.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,127.000	50.82	74.00	23.18	10.74	V	188.6	2.00
2	5,150.000	49.13	74.00	24.87	10.77	V	305.6	2.00
2	5,202.000	95.20			10.93	V	188.6	2.00



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,142.500	35.60	54.00	18.40	10.76	V	359	1.00
2	5,150.000	35.52	54.00	18.48	10.77	V	1	1.00
2	5,204.500	79.47			10.93	V	232.3	1.00

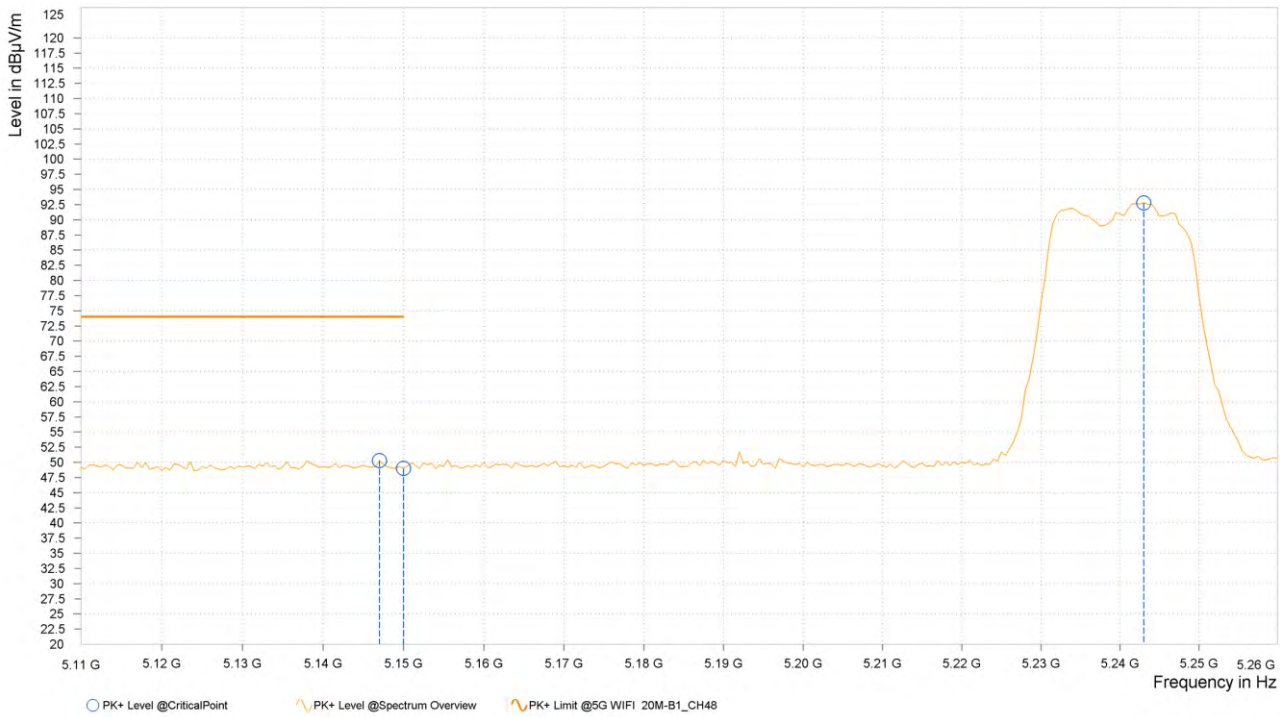
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 5200MHz: Fundamental frequency.

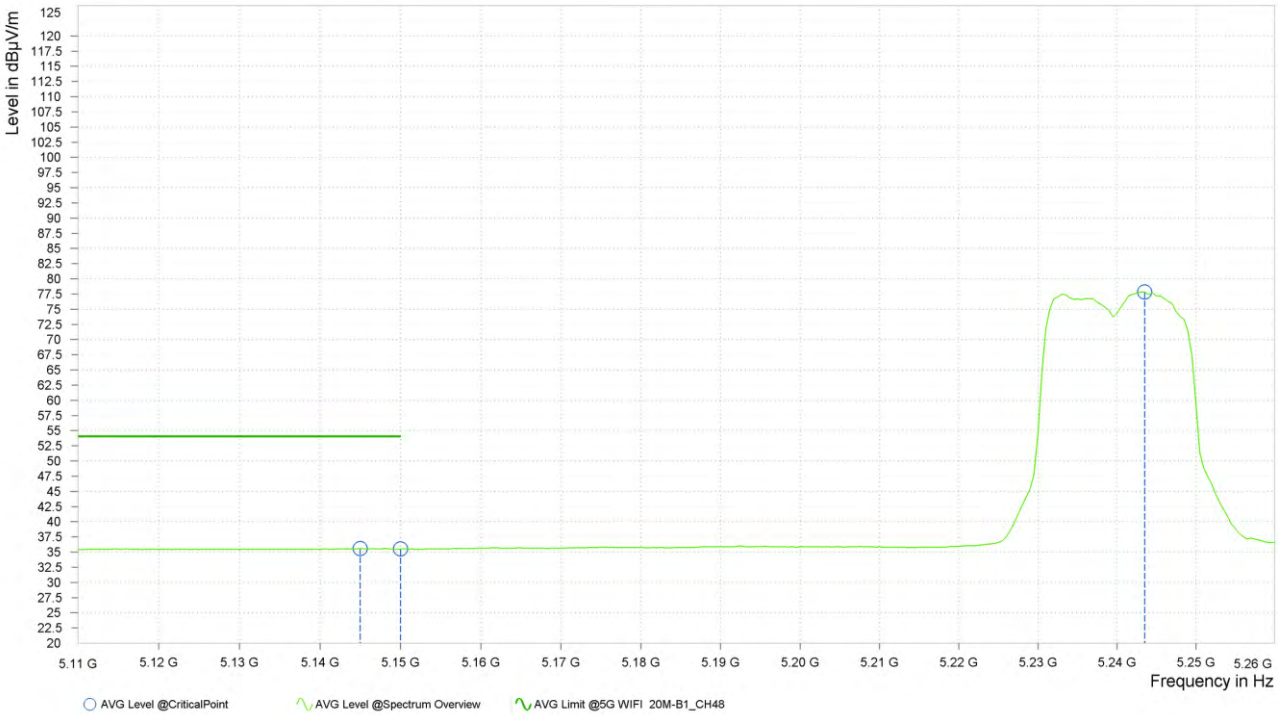
CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	5,147.000	50.30	74.00	23.70	10.76	H	0.9	2.00
3	5,150.000	48.99	74.00	25.01	10.77	H	5.6	1.00
3	5,243.000	92.81			10.90	H	359	2.00

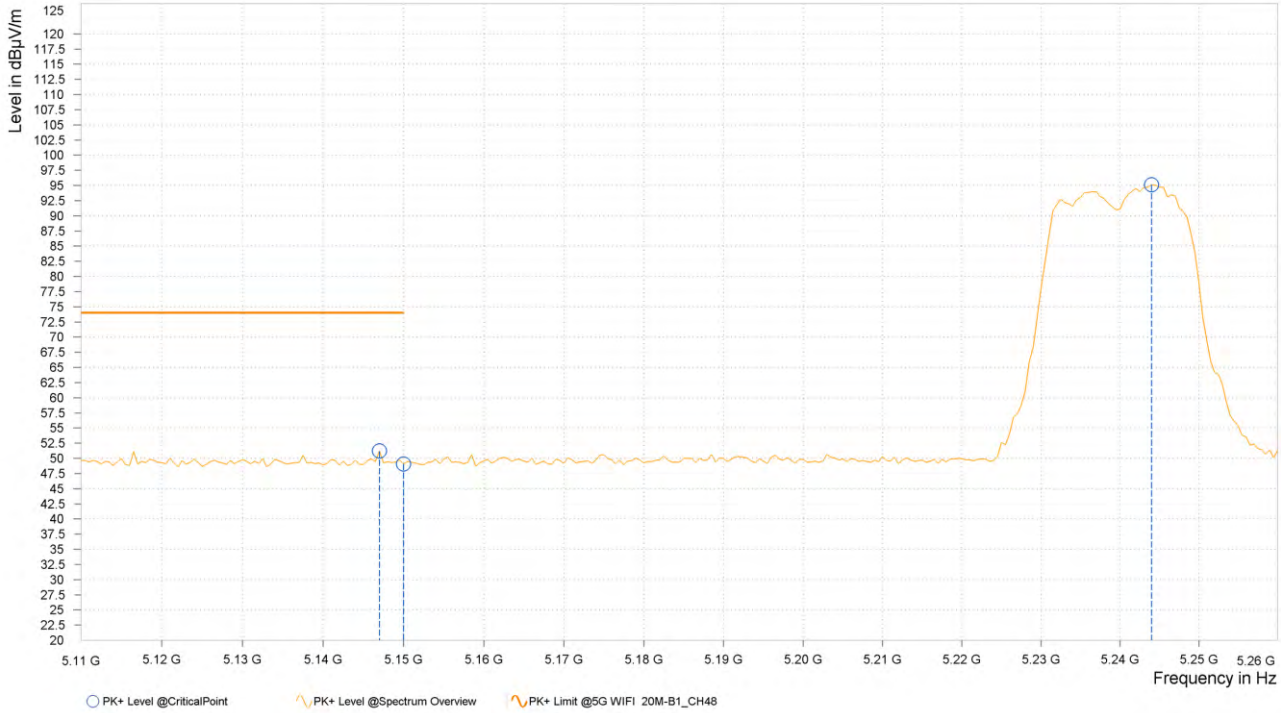


Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	5,145.000	35.61	54.00	18.39	10.76	H	1	2.00
3	5,150.000	35.50	54.00	18.50	10.77	H	237.2	1.00
3	5,243.500	77.81			10.90	H	359	2.00

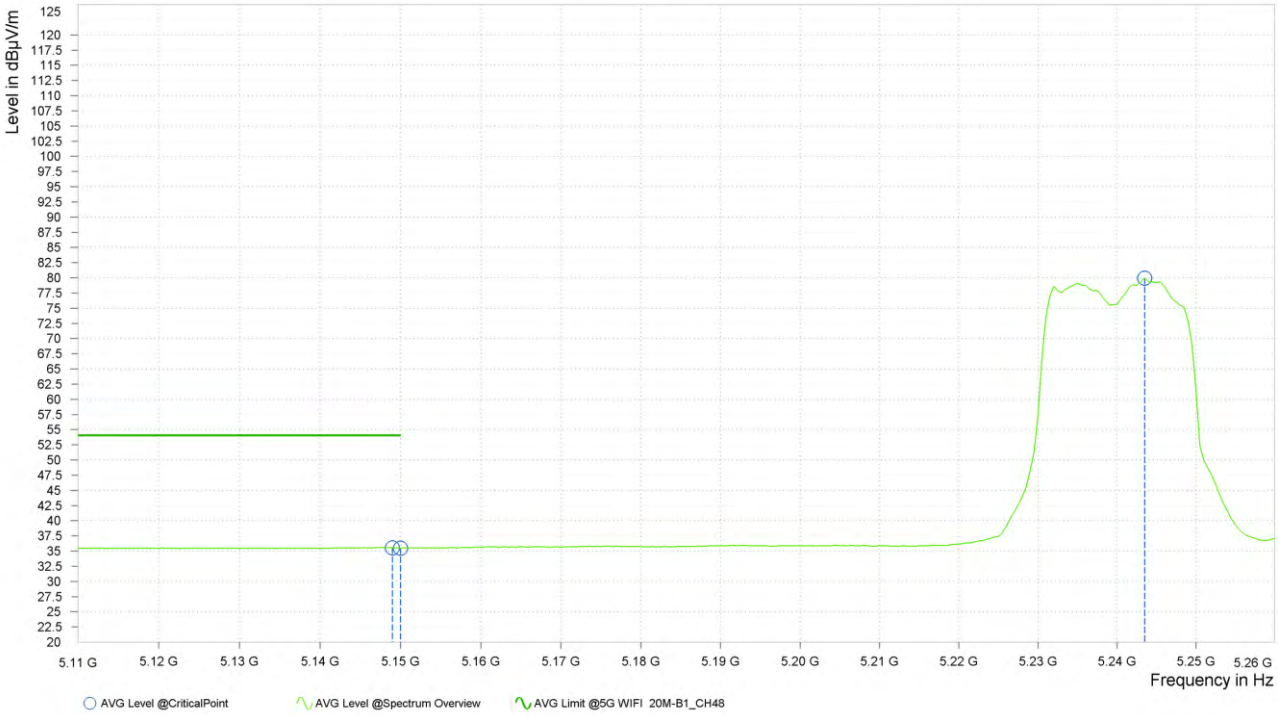


ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	5,147.000	51.22	74.00	22.78	10.76	V	125.2	2.00
3	5,150.000	49.08	74.00	24.92	10.77	V	305.7	2.00
3	5,244.000	95.12			10.90	V	305.7	2.00



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	5,149.000	35.55	54.00	18.45	10.76	V	117.6	1.00
3	5,150.000	35.49	54.00	18.51	10.77	V	359	1.00
3	5,243.500	79.95			10.90	V	305.7	2.00



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 5240MHz: Fundamental frequency.

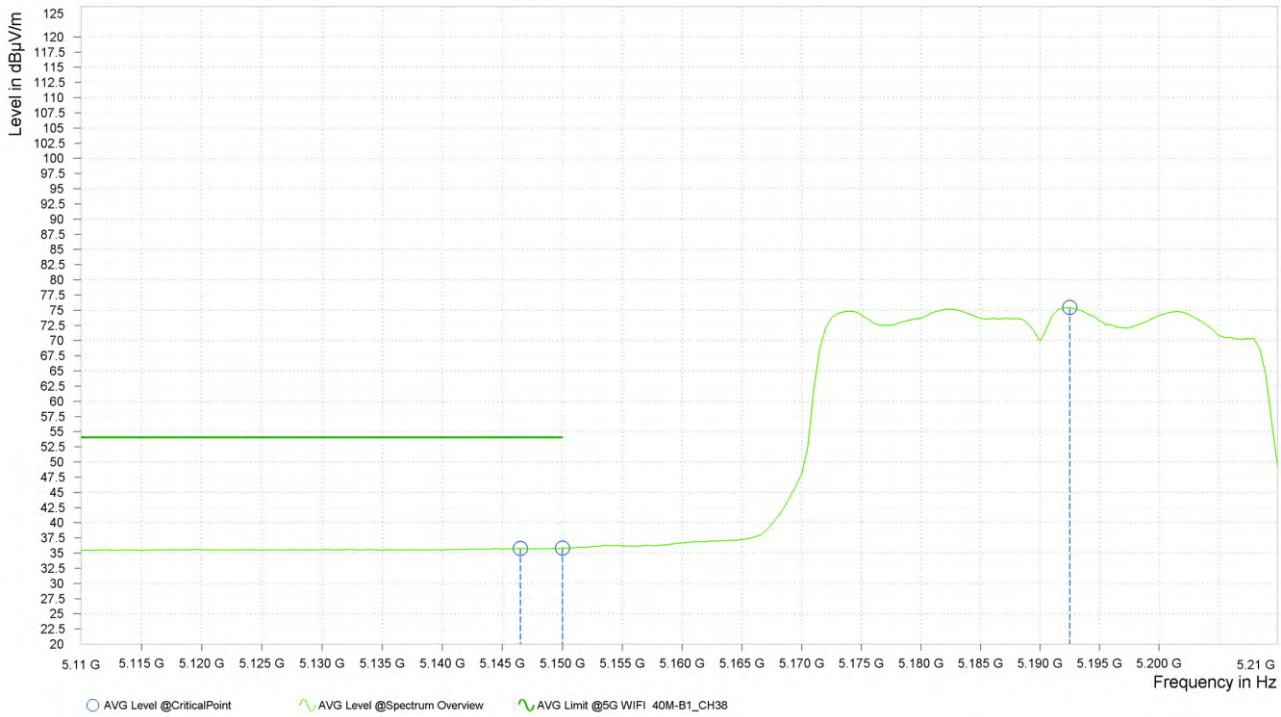
802.11ac (40MHz)

CHANNEL	TX Channel 38	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

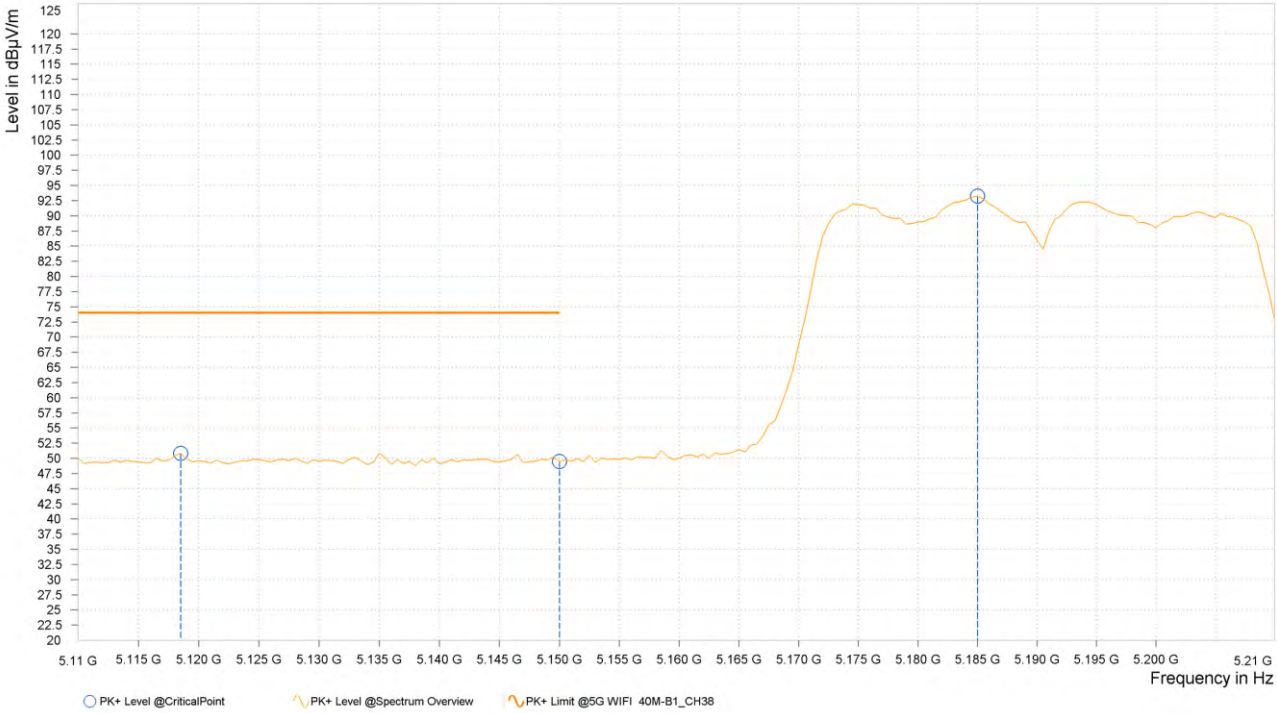
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,138.000	50.81	74.00	23.19	10.75	H	66.2	1.00
1	5,150.000	49.91	74.00	24.09	10.77	H	157.5	2.00
1	5,193.000	91.15			10.91	H	359	2.00

Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,146.500	35.78	54.00	18.22	10.76	H	1	2.00
1	5,150.000	35.83	54.00	18.17	10.77	H	1	2.00
1	5,192.500	75.42			10.91	H	359	2.00



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,118.500	50.83	74.00	23.17	10.73	V	351.8	1.00
1	5,150.000	49.50	74.00	24.50	10.77	V	1	2.00
1	5,185.000	93.23			10.88	V	210.9	1.00



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,146.000	35.91	54.00	18.09	10.76	V	156.2	2.00
1	5,149.500	35.84	54.00	18.16	10.77	V	156.2	2.00
1	5,184.000	76.20			10.88	V	238.4	1.00

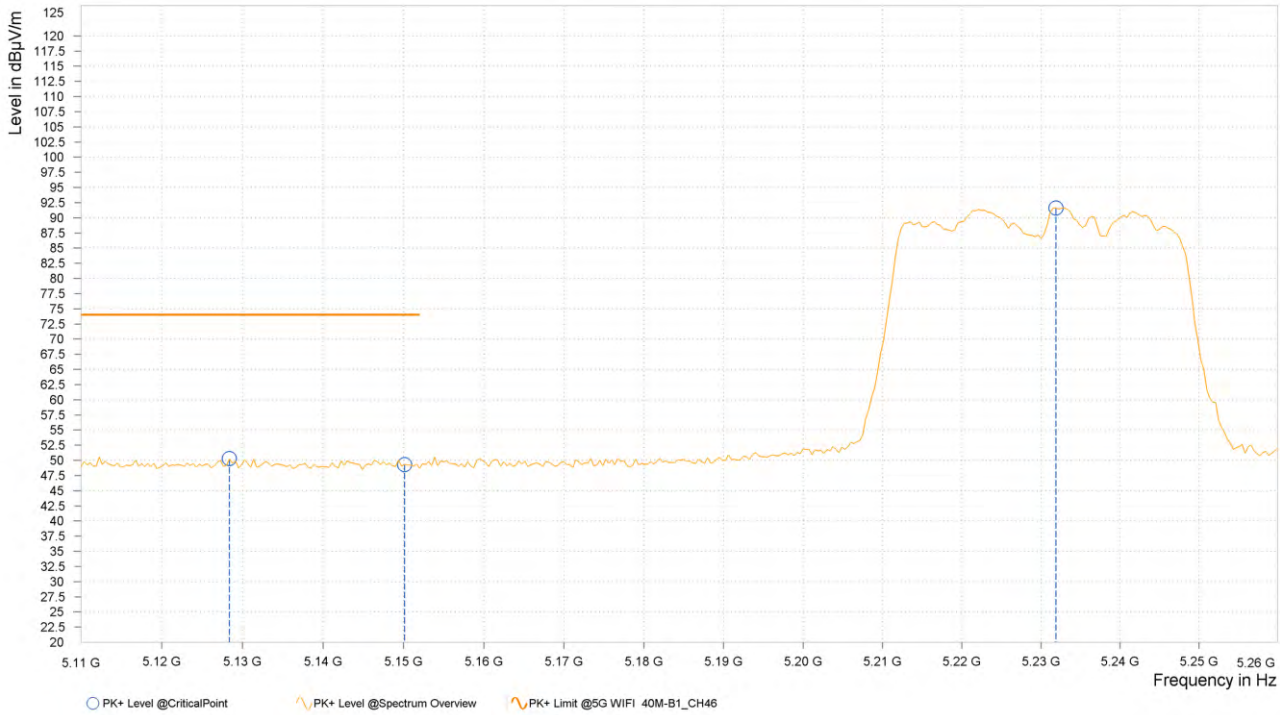
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 5190MHz: Fundamental frequency.

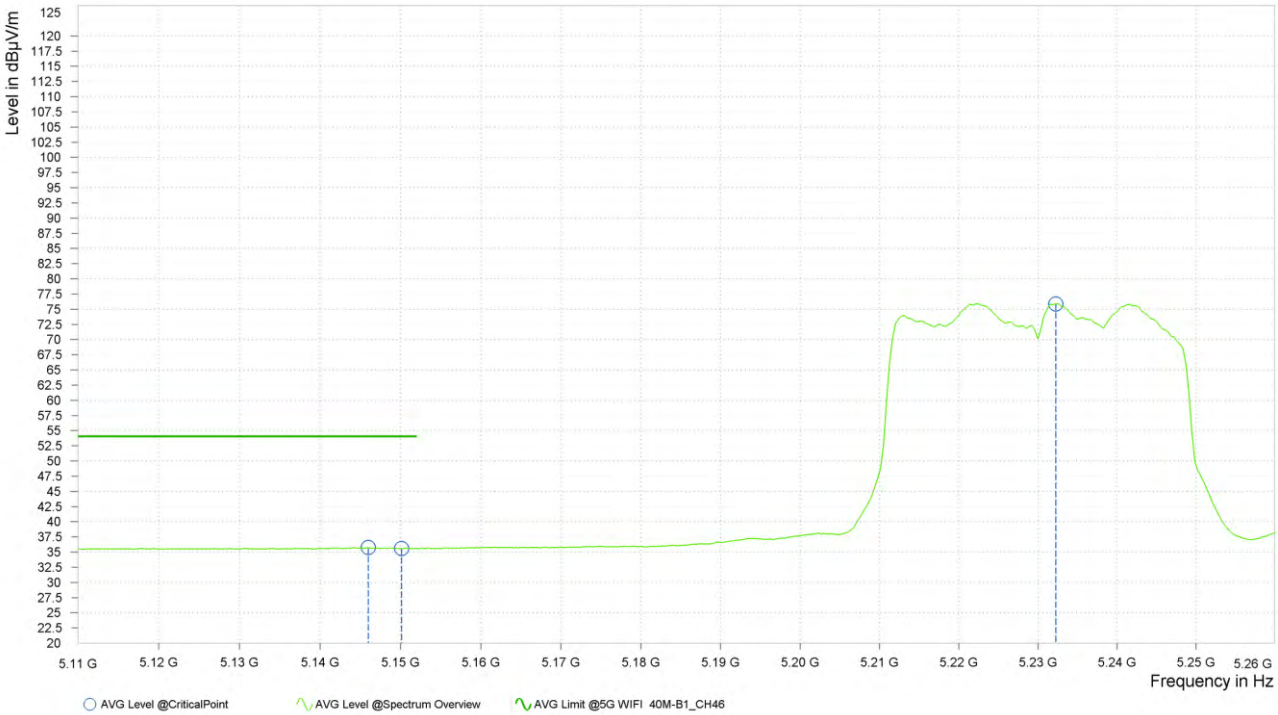
CHANNEL	TX Channel 46	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,128.375	50.27	74.00	23.73	10.74	H	4.9	1.00
2	5,150.125	49.30	74.00	24.70	10.77	H	141.5	1.00
2	5,231.875	91.61			10.91	H	359	2.00

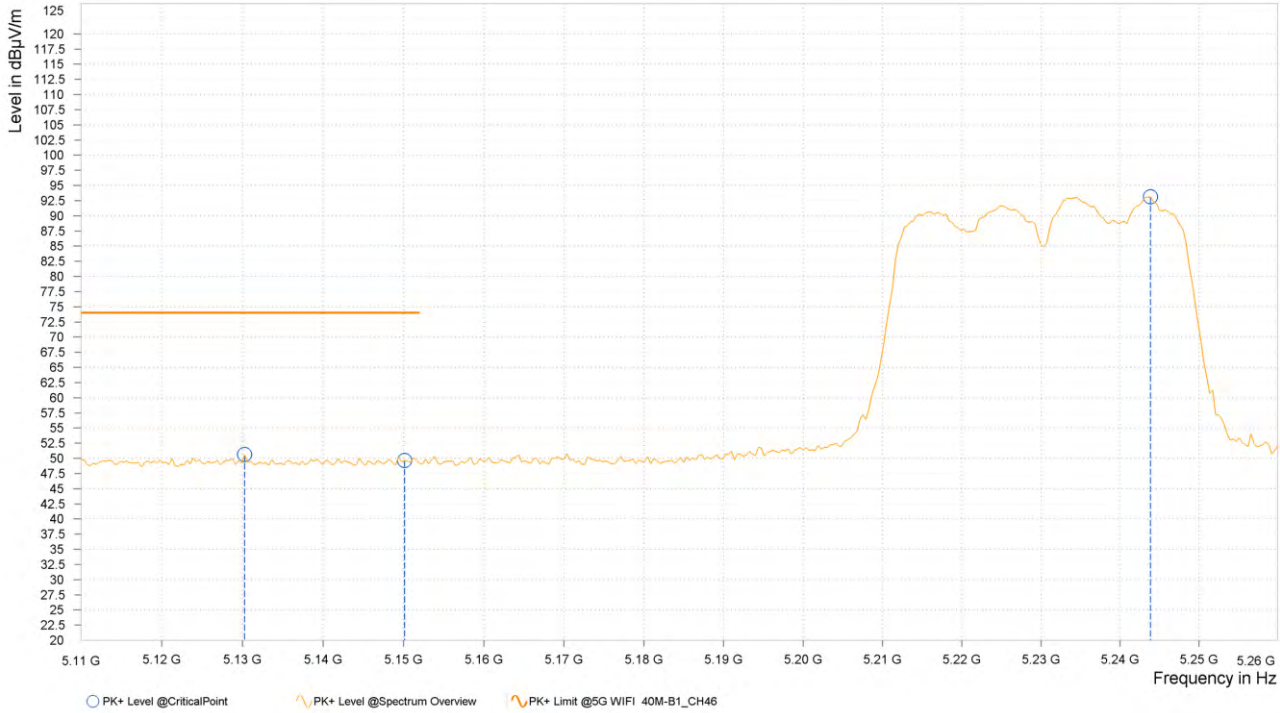


Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,146.000	35.74	54.00	18.26	10.76	H	355	2.00
2	5,150.125	35.57	54.00	18.43	10.77	H	292.6	2.00
2	5,232.250	75.88			10.91	H	359	2.00



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,130.250	50.64	74.00	23.36	10.74	V	359	1.00
2	5,150.125	49.66	74.00	24.34	10.77	V	1	2.00
2	5,243.875	93.11			10.90	V	213.3	1.00



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,147.125	35.76	54.00	18.24	10.76	V	153.9	2.00
2	5,150.125	35.66	54.00	18.34	10.77	V	153.9	2.00
2	5,233.750	77.31			10.91	V	210.9	1.00

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 5230MHz: Fundamental frequency.

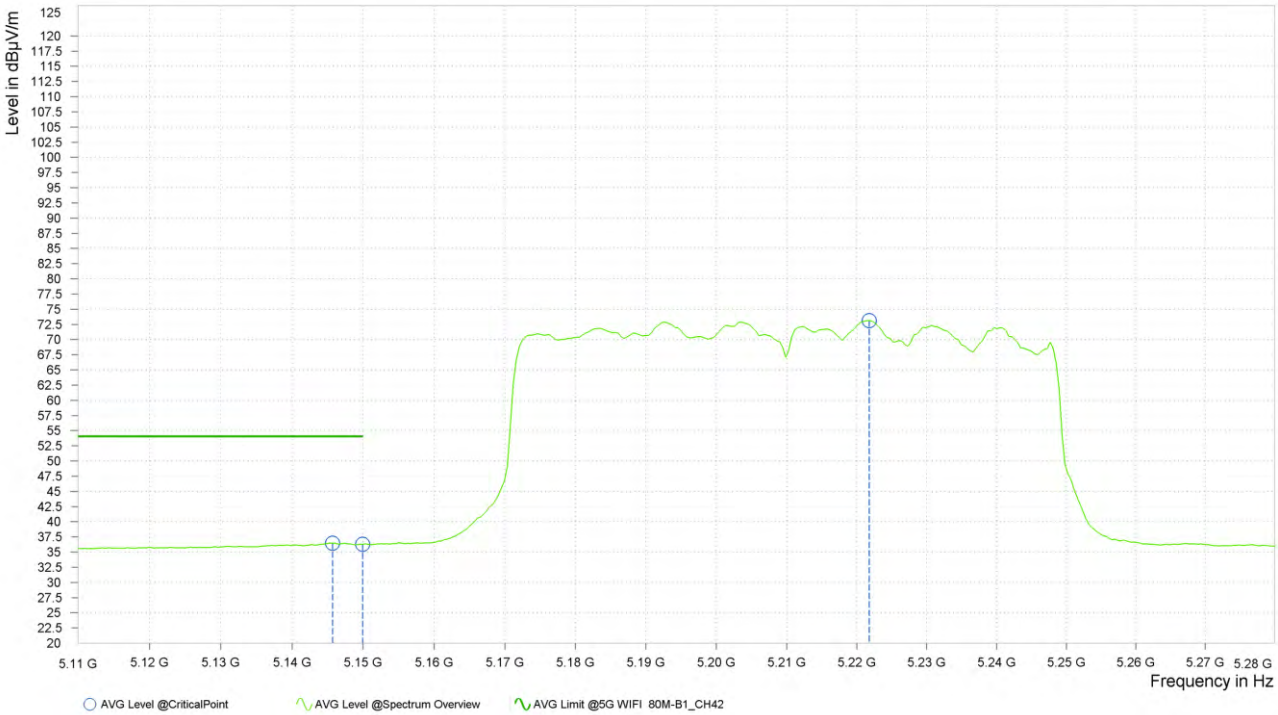
802.11ac (80MHz)

CHANNEL	TX Channel 42	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,143.150	50.40	74.00	23.60	10.76	H	143.9	1.00
1	5,149.950	49.40	74.00	24.60	10.77	H	1	1.00
1	5,221.775	88.41			10.92	H	359	2.00

Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,145.700	36.46	54.00	17.54	10.76	H	355	2.00
1	5,149.950	36.30	54.00	17.70	10.77	H	355	2.00
1	5,221.775	73.13			10.92	H	359	2.00



ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	5,143.150	51.50	74.00	22.50	10.76	V	215	2.00
1	5,149.950	49.63	74.00	24.37	10.77	V	215	2.00
1	5,234.950	89.94			10.91	V	232.4	1.00