Certificate #6613.01

FCC TEST REPORT

(Part 15, Subpart C)

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

Manufacturer or Supplier:	HMD Global Oy
Address:	Bertel Jungin aukio 9 Espoo 02600 Finland
Product:	Mobile Phone
Brand Name:	HMD
Model Name:	TA-1606
FCC ID:	2AJOTTA-1606
Date of tests:	May. 14, 2024 ~ Jun. 13, 2024

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

☒ **FCC Part 15, Subpart C, Section 15.247**

☒ **ANSI C63.10-2013**

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

Prepared by Hanwen Xu Engineer / Mobile Department	Approved by Peibo Sun Manager / Mobile Department
Xu Hanwen Date: Jun. 13, 2024	Sun Peibo Date: Jun. 13, 2024

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSU-NQN2405090215RF06	Original release	Jun. 13, 2024

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**TEST LAB**
15.207	AC Power Conducted Emission	Compliance	A
15.205 15.209	Radiated Emissions	Compliance	A
15.247(d)	Out of band Emission Measurement	Compliance	A
15.247(a)(2)	6dB bandwidth	Compliance	A
15.247(b)	Conducted Output power	Compliance	A
15.247(e)	Power Spectral Density	Compliance	A
15.203	Antenna Requirement	Compliance	A

Note：1. Except RSE, other data please refer to Appendix 1 (for WIFI-2.4G) and Appendix 2 (for BLE).

***Test Lab Information Reference**

Lab A:

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

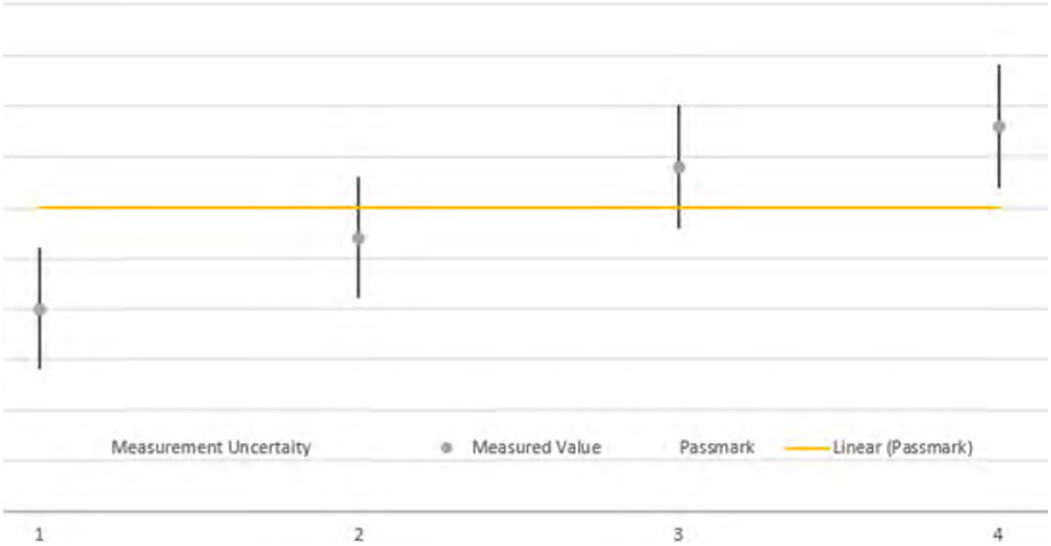
The FCC Site Registration No. is 434559; The Designation No. is CN1325.

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.



The verdicts in this test report are given according the above diagram:

Case	Measured Value	Uncertainty Range	Verdict
1	below pass mark	below pass mark	Passed
2	below pass mark	within pass mark	Passed
3	above pass mark	within pass mark	Failed
4	above pass mark	above pass mark	Failed

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT*	Mobile Phone
BRAND NAME*	HMD
MODEL NAME*	TA-1606
NOMINAL VOLTAGE*	5.0 or 9.0 or 12.0 Vdc (adapter) 3.87Vdc (battery)
MODULATION *	DSSS, OFDM, GFSK
TRANSMISSION RATE	802.11b: 11/ 5.5/ 2.0 / 1.0 Mbps 802.11g: 54/ 48/ 36 / 24 / 18 / 9/ 6 Mbps 802.11n20: up to 144.4 Mbps 802.11n40: up to 300 Mbps BT_LE: 0.125 Mbps /0.5 Mbps /1 Mbps/2 Mbps
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20/40) 2402-2480MHz for BT-LE(GFSK)
MAX. OUTPUT POWER	WLAN: 260.20mW (Maximum) BT-LE: 1.79 mW (Maximum)
ANTENNA TYPE*	PIFA Antenna with 1.44dBi gain for BT/WIFI
HW VERSION*	V00
SW VERSION*	V0.019_A01
I/O PORTS*	Refer to user's manual
CABLE SUPPLIED*	USB cable1: non-shielded cable, with w/o ferrite core, 1.0 meter USB cable2: non-shielded cable, with w/o ferrite core, 1.0 meter USB cable3: non-shielded cable, with w/o ferrite core, 1.0 meter USB cable4: non-shielded cable, with w/o ferrite core, 1.0 meter

NOTE:

1. *Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information , Test Lab is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

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

3. The EUT incorporates a SISO function. Physically, the EUT provides one transmitter and one receiver.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX /1RX
802.11g	1TX /1RX
802.11n (20MHz)	1TX /1RX
802.11n (40MHz)	1TX /1RX
BT_LE(1MHz)	1TX /1RX
BT_LE(2MHz)	1TX /1RX
BT_LE(S2)	1TX /1RX
BT_LE(S8)	1TX /1RX

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

5. For the product of TA-1606 (FCC ID: 2AJOTTA-1606), the following components are different between the first and second supply, other parameters are the same.

Key Component List

No.	Component	Description	First supply		Second supply	
			SUPPLIER	Spec	SUPPLIER	Spec
1	NMOS	PCBA	PRISEMI	PNM3FD20V2	JSCJ	CJBA3134K
2	E-compass		MEMSIC	MMC5603NJ	QST	QMC6308-TR
3	Memory-256GB		FORESEE	FEUDNN256G-C2G07	BIWIN	BWU2ASV46A256G
4	Memory-64GB		FORESEE	FLXC4008G-30	BIWIN	BWMZCX32H2A-64G-X
5	nano-SIM		LCN	CAF99-06033-0305	HRD	S186-1B01F13F
6	T-card		LCN	CAF11-08136-031901	HRD	S186-1B02F13F
7	iron covering		LCN	CAF00-21134-032307	HRD	S186-2B21F13F-1
8	Type C connector		LETCON	15-16815-110	LCN	UAF05-16323-3007
9	headphone socket		LETCON	11-058126A	HRD	PH157-0B12F36M
10	G sensor		slan	2*2 12bit	sensortek	2*2 12bit
11	Proximity light sensor		Liteon	LTR-569ALS-02	sensortek	STK3335-X
12	Backlight driver		AWINIC	dfn2*2-6L	broadchip	dfn2*2-6L
13	Flash driver		AWINIC	2A DCDC	OCS	2A DCDC
14	CKDID baschip		AWINIC	±5V	OCS	±5V
15	overvoltage protection chip		broadchip	6.8V FCQFN12	AWINIC	6.8V FCQFN12
16	CKD BDS/GPS/GAL LNA		SILICONWAVE	LNA 1.5*1.0 6pin	AWINIC	LNA 1.5*1.0 6pin
17	MIC		GETTOP	2.75*1.85*0.9mm	YUTAI	2.75*1.85*0.9mm
18	LCM	LCD	HUAXIAN	incell5.56HD+	DZX	incell5.56HD+
19	Macro cam	camera	CXT	2M CSP	lianhe	2M CSP
20	Finger print	module	SYX	side fingerprint	SHENAO	side fingerprint
21	Battery		GAOYUAN	Rated: 4900mAh Typical: 5000mAh	FENGHUA	Rated: 4900mAh Typical: 5000mAh
22	Receiver		SENNOR	'0809	TUNESS	'0809
23	Vibrator		JX	0830 3.35mm	JD	0830 3.35mm
24	Charger US		BJD	5V 2A	JUWEI	5V 2A
25	Data cable		JUWEI	A-C	FKY	A-C
			JUWEI	C-C	FKY	C-C

List of Accessory:

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Battery 1	HMD	Gaoyuan	HBA5020AA	Power Rating: 3.87 Vdc;18.963 Wh;4900 mAh
Battery 2	HMD	Fenghua	HBA5020AA	Power Rating: 3.87 Vdc;18.963 Wh;4900 mAh
AC Adapter 1	HMD	Shenzhen Baijunda Electronics Co.,Ltd	HAD-020U(US-PD 20W)	I/P: 100-240 V,50~60Hz,0.6A O/P: USB-C Output:5.0V 3.0A or 9.0V 2.22A or 12.0V 1.67A 20.0W Max
AC Adapter 2	HMD	Shenzhen Baijunda Electronics Co.,Ltd	HAD-010U(US)	I/P: 100-240 V,50~60Hz,0.35A O/P: 5V 2A,10W
AC Adapter 3	HMD	Huizhou Juwei Electronics Co., Ltd.	HAD-010U(US)	I/P: 100-240 V,50~60Hz,0.35A O/P: 5V 2A,10W
Earphone	HMD	N/A	JWEP1266-H24H	N/A
USB Cable 1	HMD	JUWEI	JWUB1684-M01H	A to C
USB Cable 2	HMD	JUWEI	JWUB1688-M01H	C to C
USB Cable 3	HMD	FUKANGYUAN	FKY-23-368	A to C
USB Cable 4	HMD	FUKANGYUAN	FKY-23-369	C to C

2.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

7 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422 MHz	7	2442 MHz
4	2427 MHz	8	2447 MHz
5	2432 MHz	9	2452 MHz
6	2437 MHz		

40 channels are provided for BT-LE (GFSK):

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

2.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photographs of the test configuration for reference.

2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.
The worst case was found when positioned on Y axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE MODE	APPLICABLE TO				MODE
	RE<1G	RE≥1G	PLC	APCM	
-	√	√	√	√	-

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

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery.

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n HT40	3 to 9	6	OFDM	MCS0
BT-LE	0 to 39	19	GFSK	0.5

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).

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1.0
BT-LE	1 to 38	1,19, 38	GFSK	2.0

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).

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n 40	3 to 9	3	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).

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1.0
BT-LE	1 to 38	1,19, 38	GFSK	2.0

ANTENNA PORT CONDUCTED MEASUREMENT:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ 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.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0
802.11n HT40	3 to 9	3,6,9	OFDM	MCS0
BT-LE	0 to 39	0,19, 39	GFSK	0.125&0.5&1.0
BT-LE	1 to 38	1,19, 38	GFSK	2.0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	23deg. C, 70%RH	DC 5V By Adapter	Hanwen Xu
RE≥1G	23deg. C, 70%RH	DC 5V By Adapter	Hanwen Xu
PLC	25deg. C, 52%RH	DC 5V By Adapter	Hanwen Xu
APCM	25deg. C, 60%RH	DC 3.87V By Battery	Hanwen Xu

2.3 DUTY CYCLE OF TEST SIGNAL

Please Refer to Appendix1/2 Of this test report.

WORST-CASE DATA:

Measured Duty Cycle		
Mode		Duty Cycle [%]
		ANT
WIFI 2.4GHz	11B	97.85
	11G	88.33
	11N20	96.24
	11N40	73.43
BT LE	BLE_1M	87.43
	BLE_2M	66.04
	BLE-S2	81.25
	BLE_S8	94.61

Note:

Duty cycle of test signal is < 98%, duty factor shall be considered.

2.4 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 C, Section 15.247

KDB 558074 D01 DTS Meas Guidance v05r02

ANSI C63.10-2013

Note：

1. All test items have been performed and recorded as per the above standards.
2. 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.

2.5 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	HRSW00024	N/A
2	Adapter	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A

3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE: 1.The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR3	102749	Feb.25,24	Feb.24,26
ELEKTRA test software	Rohde&Schwarz	ELEKTRA	NA	N/A	N/A
LISN network	Rohde&Schwarz	ENV216	102640	Feb.17,24	Feb.16,26
CABLE	Rohde&Schwarz	W61.01	N/A	Apr.28,24	Apr.27,25
CABLE	Rohde&Schwarz	W601	N/A	Apr.28,24	Apr.27,25

NOTE:

1. The test was performed in CE shielded room.
2. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

3.1.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

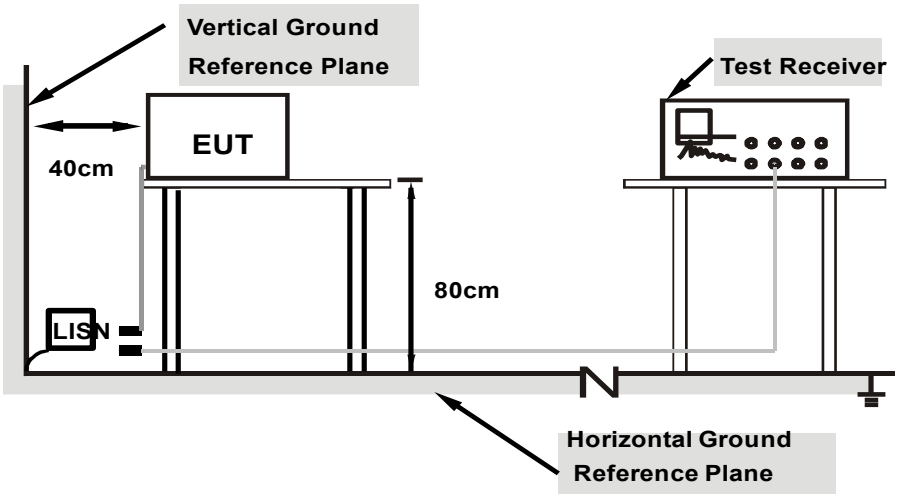
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.

3.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

3.1.6 EUT OPERATING CONDITIONS

a. Turned on the power and connected of all equipment.
b. EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

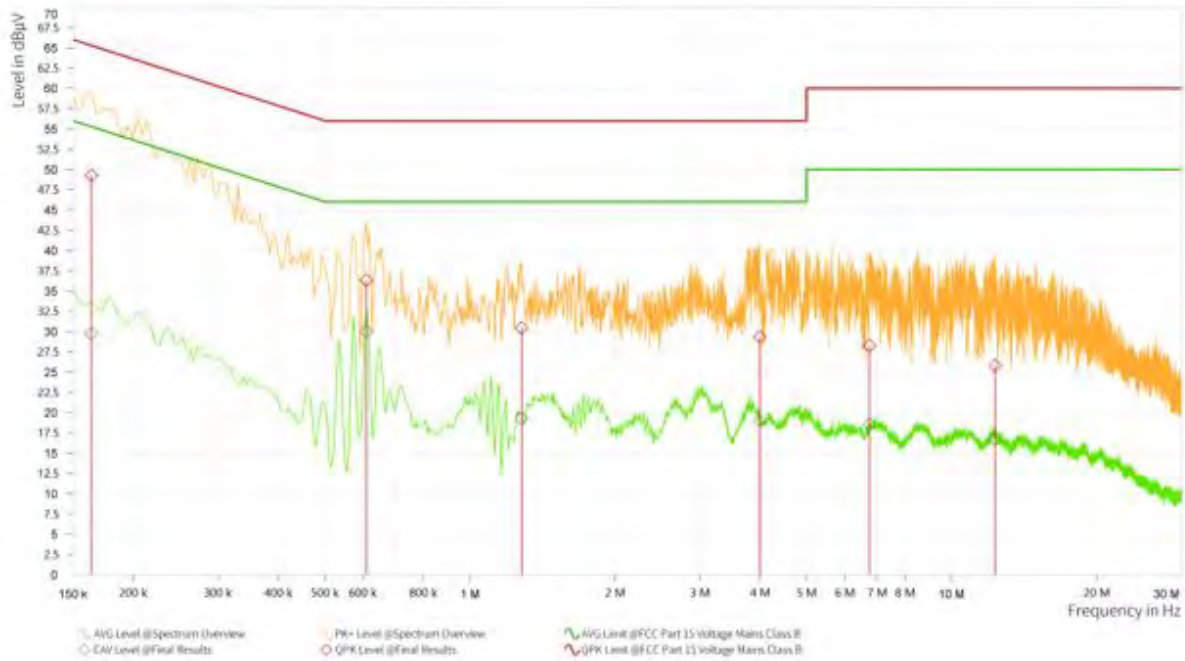
3.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA:

Frequency Range	150KHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	26deg. C, 51%RH
Tested By	Hanwen Xu		

Re	Frequency [MHz]	QPK Level [dBuV]	QPK Limit [dBuV]	QPK Margin [dB]	CAV Level [dBuV]	CAV: AVG Limit [dBuV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]
1	0.164	49.27	65.28	16.01	29.74	55.28	25.54	12.41	L1	9.000
1	0.609	36.32	56.00	19.68	30.06	46.00	15.94	11.74	L1	9.000
1	1.280	30.46	56.00	25.54	19.30	46.00	26.70	11.75	L1	9.000
1	3.998	29.35	56.00	26.65	18.97	46.00	27.03	11.78	L1	9.000
1	6.752	28.24	60.00	31.76	18.52	50.00	31.48	11.80	L1	9.000
1	12.305	25.82	60.00	34.18	16.74	50.00	33.26	11.84	L1	9.000

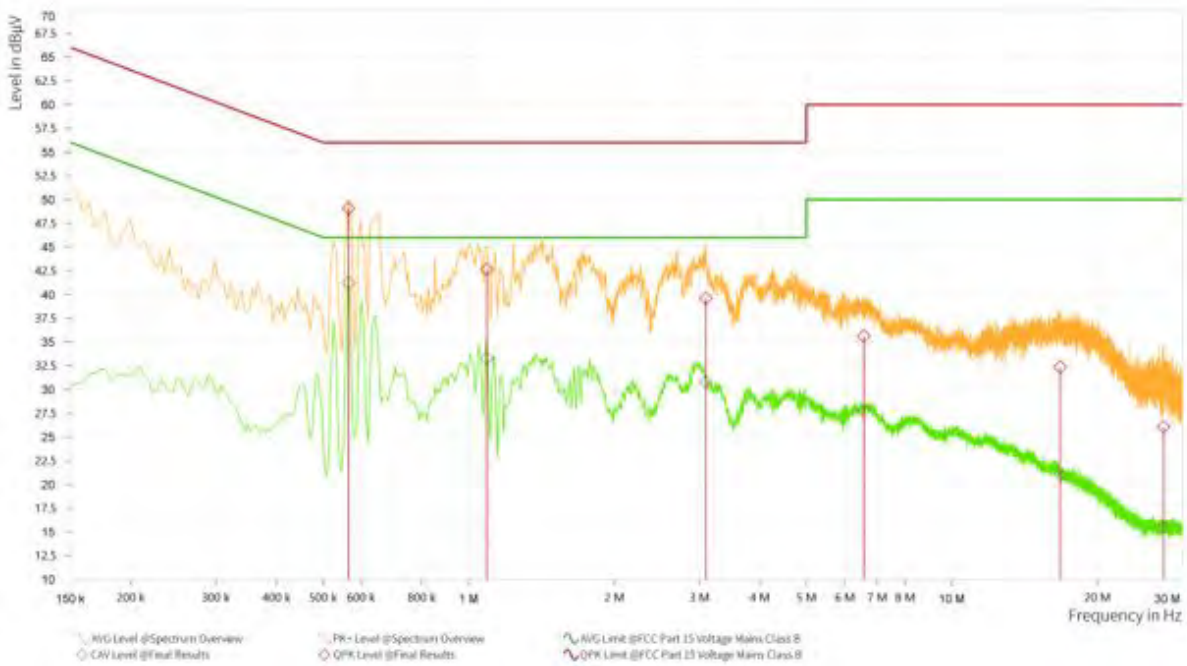
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Limit value -Emission level
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



Frequency Range	150KHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	**Environmental Conditions**	26deg. C, 51%RH
Tested By	Hanwen Xu		

Rg	Frequency [MHz]	QPK Level [dBuV]	QPK Limit [dBuV]	QPK Margin [dB]	CAV Level [dBuV]	CAV: AVG Limit [dBuV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]
1	0.564	49.07	56.00	6.93	41.21	46.00	4.79	12.77	N	9.000
1	1.091	42.66	56.00	13.34	33.30	46.00	12.70	12.73	N	9.000
1	3.098	39.61	56.00	16.39	30.80	46.00	15.20	12.75	N	9.000
1	6.572	35.61	60.00	24.39	27.69	50.00	22.31	12.77	N	9.000
1	16.769	32.36	60.00	27.64	21.05	50.00	28.95	12.83	N	9.000
1	27.447	26.08	60.00	33.92	15.54	50.00	34.46	12.88	N	9.000

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Limit value -Emission level
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

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. As shown in 15.35(b), 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.

3.2.2 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.16,24	Feb.15,26
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.25,24	Feb.24,26
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Feb.28,24	Feb.27,26
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,22	Aug.21,24
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Feb.23,24	Feb.22,26
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,22	Aug.21,24
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.23,24	Feb.22,26
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
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.28,24	Apr.27,25
CABLE	R&S	W12.14	N/A	Apr.28,24	Apr.27,25

NOTE: 1. The calibration interval of the above test instruments is 12 months or 24 months or 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.

3.2.3 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. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

Note:

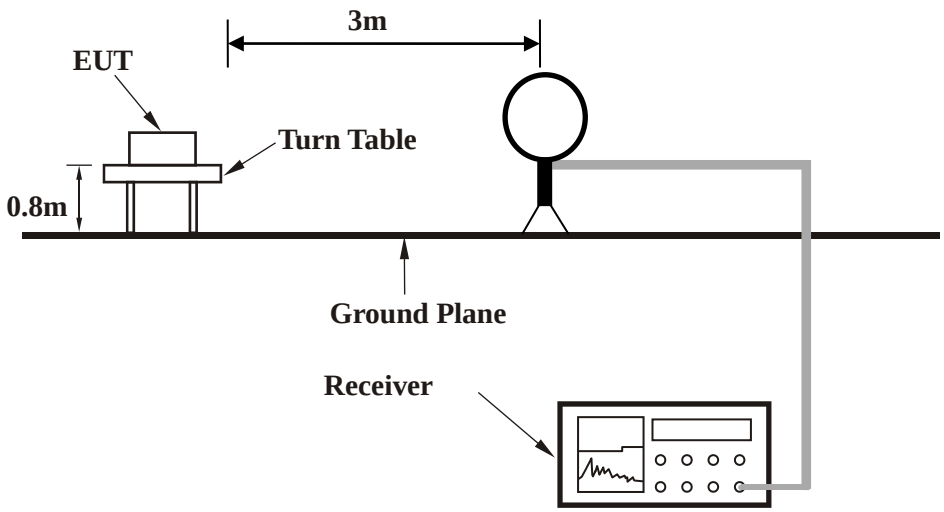
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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.

3.2.4 DEVIATION FROM TEST STANDARD

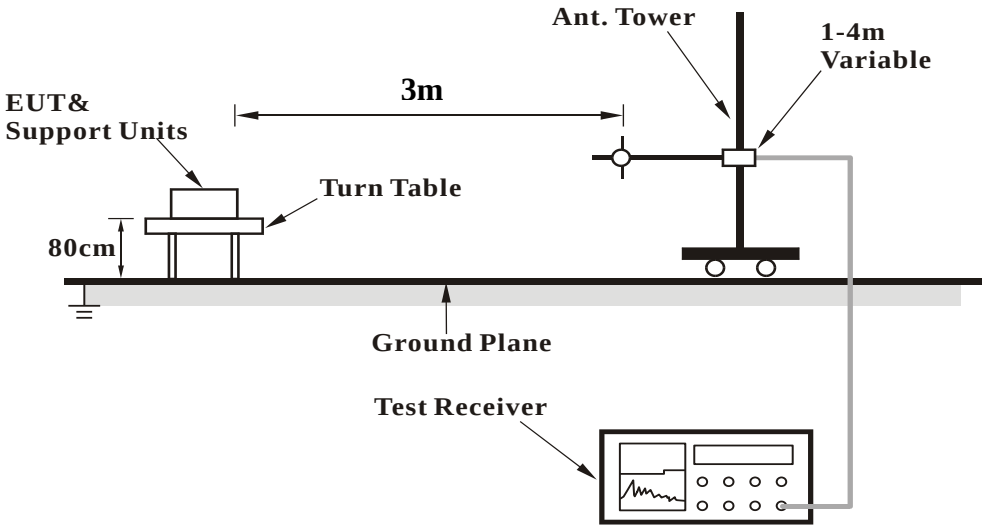
No deviation

3.2.5 TEST SETUP

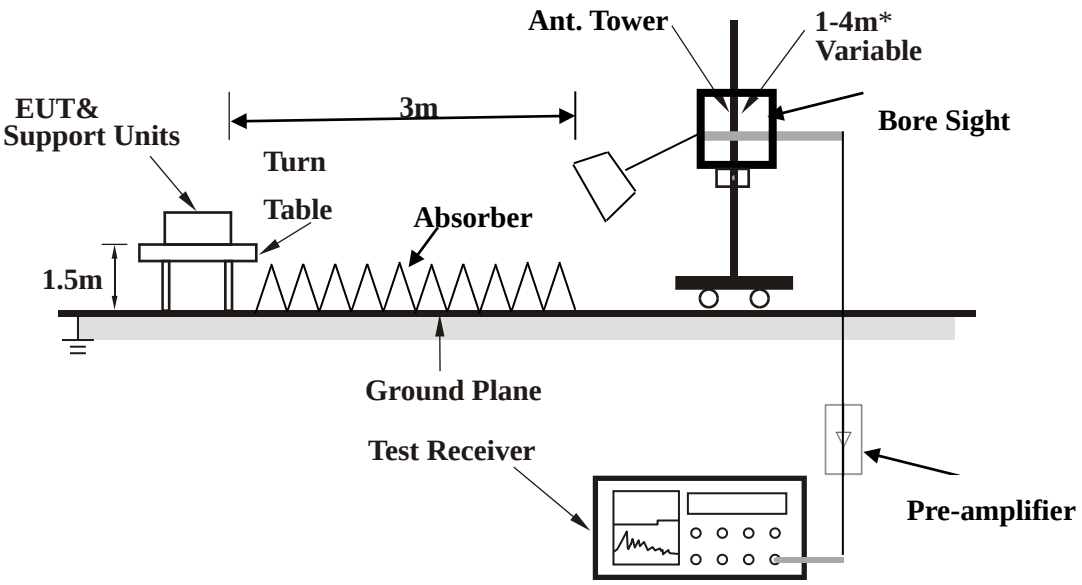
<Frequency Range 9KHz~30MHz >



< 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).

3.2.6 EUT OPERATING CONDITIONS

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.

3.2.7 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.

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

802.11n40:

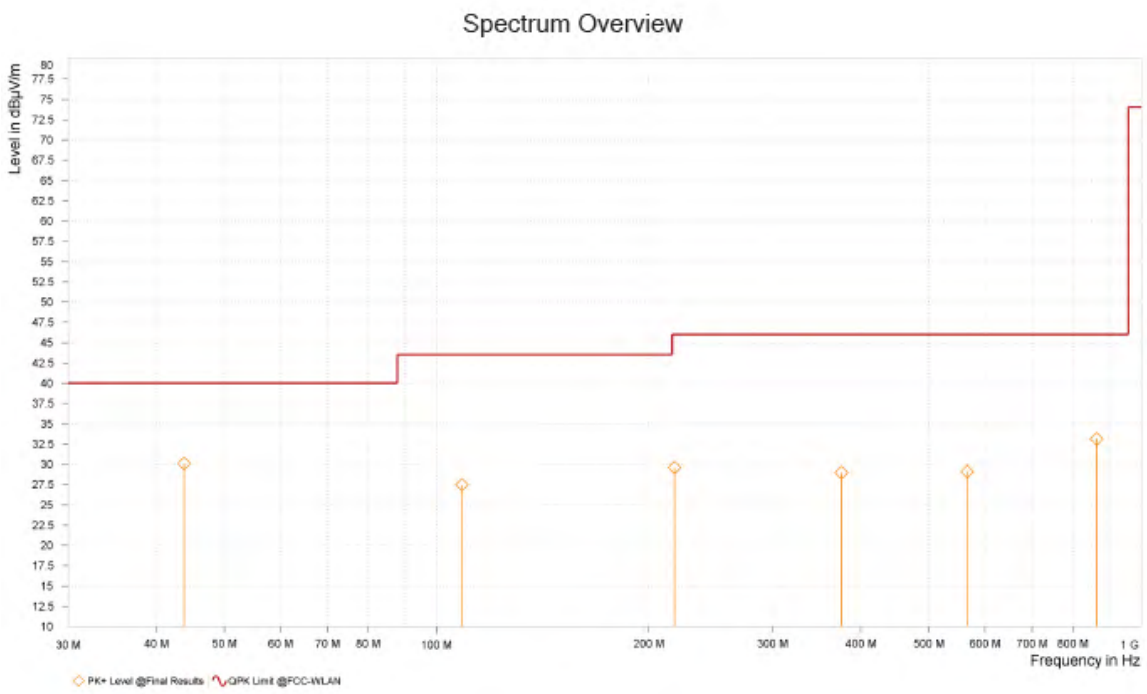
CHANNEL	TX Channel 6	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	43.823	30.08	40.00	9.92	-7.56	H	0.9	2.00
1	108.667	27.45	43.50	16.05	-9.20	H	264.9	1.00
1	217.598	29.58	46.00	16.42	-8.44	H	96.5	2.00
1	375.611	28.95	46.00	17.05	-3.66	H	1	1.00
1	566.119	29.08	46.00	16.92	-2.73	H	96.5	2.00
1	864.831	33.12	46.00	12.88	2.37	H	129.8	1.00

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.



CHANNEL	TX Channel 6	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

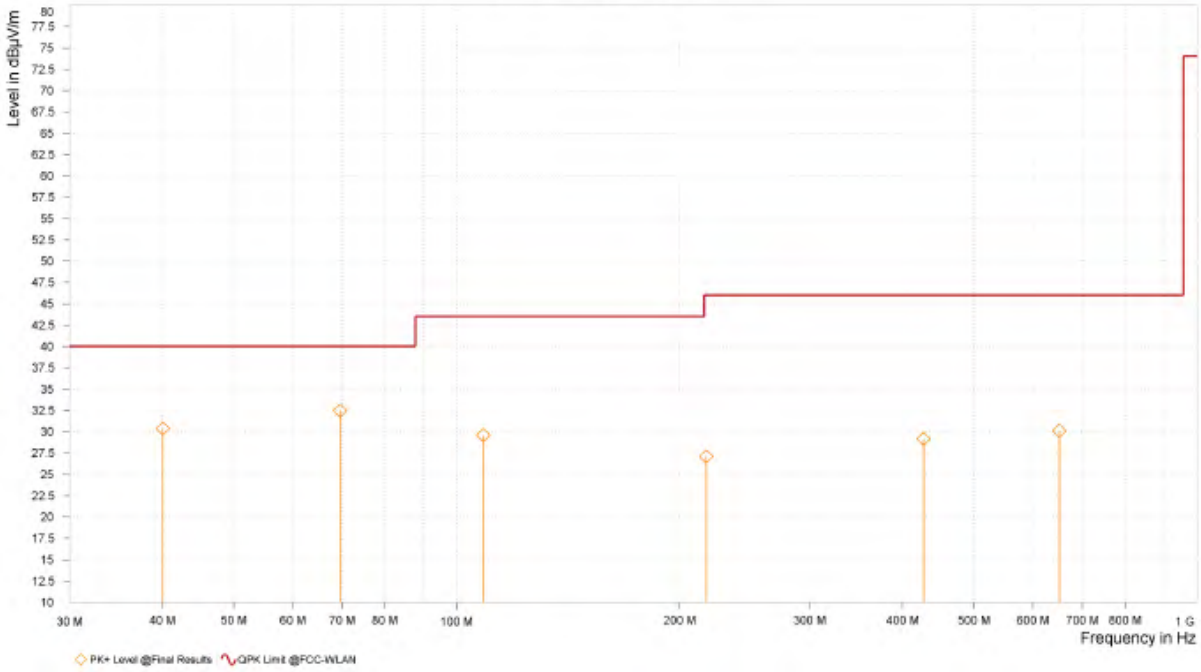
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+: QPK Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	40.088	30.36	40.00	9.64	-8.40	V	358.5	1.00
1	69.576	32.46	40.00	7.54	-11.59	V	96.4	2.00
1	108.667	29.57	43.50	13.93	-9.20	V	229	2.00
1	217.453	27.10	46.00	18.90	-8.45	V	96.4	2.00
1	427.215	29.13	46.00	16.87	-3.44	V	264.8	1.00
1	651.382	30.08	46.00	15.92	-1.12	V	96.4	2.00

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.

Spectrum Overview



ABOVE 1GHz WORST-CASE DATA:

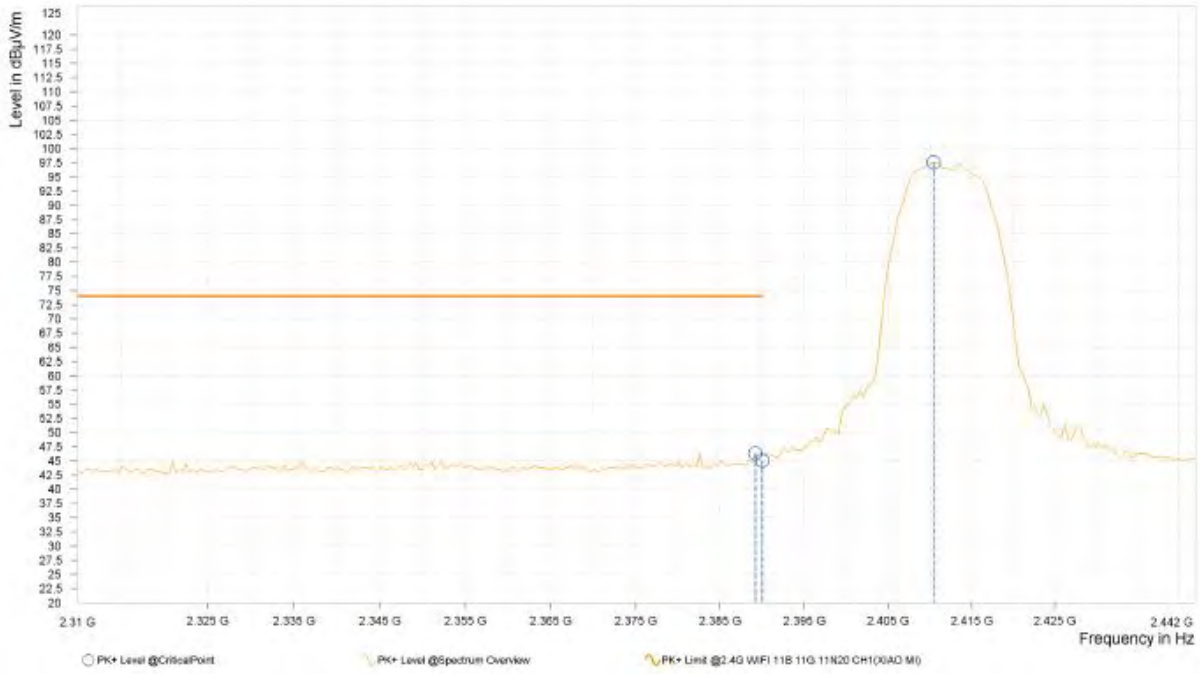
Note: 1. For radiated emissions testing，the full testing range of different modes have been scanned，only the worst case harmonic data is reported in the sheet.

2. All other emissions were greater than 20dB below the limit was not recorded

802.11b:

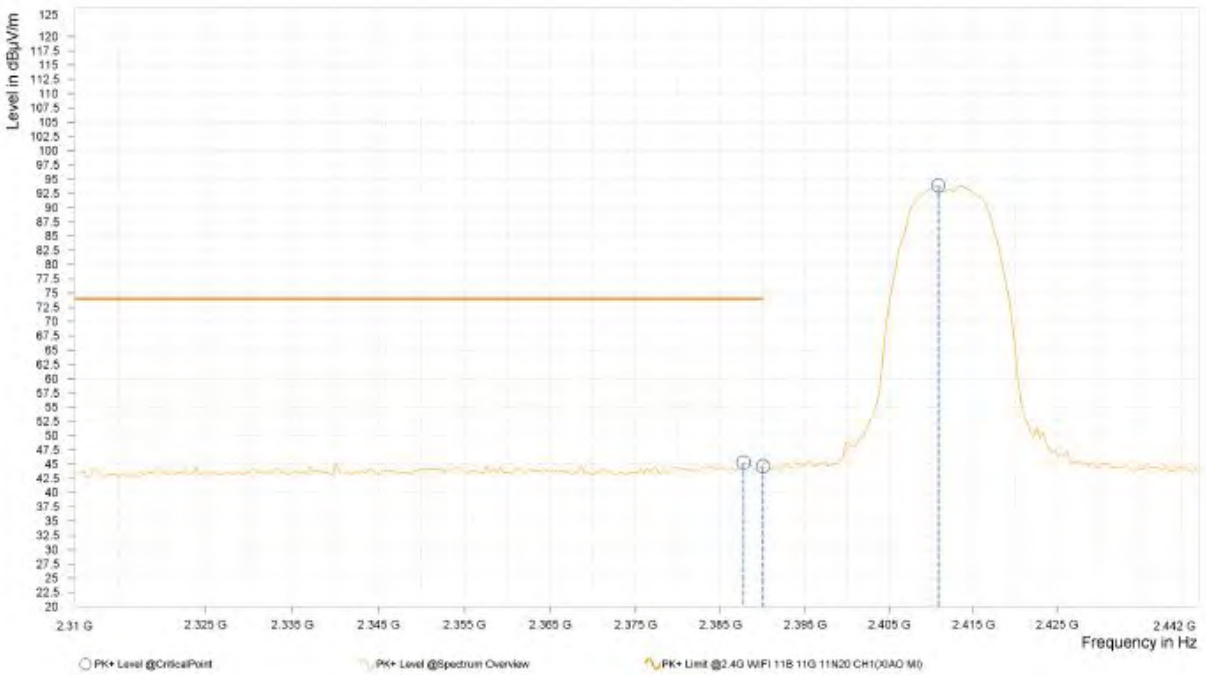
CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	2,388.833	31.93	54.00	22.07	5.76	H	72.2	1.00
1	2,390.000	32.25	54.00	21.75	5.77	H	137.1	2.00
1	2,411.200	92.04			5.92	H	5	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	2,389.200	46.33	74.00	27.67	5.76	H	145.2	1.00
1	2,390.000	45.05	74.00	28.95	5.77	H	208.9	2.00
1	2,410.467	97.57			5.91	H	72.2	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	2,388.467	30.60	54.00	23.40	5.76	V	287.8	2.00
1	2,390.000	30.66	54.00	23.34	5.77	V	359	2.00
1	2,413.033	87.89			5.93	V	5.5	1.00



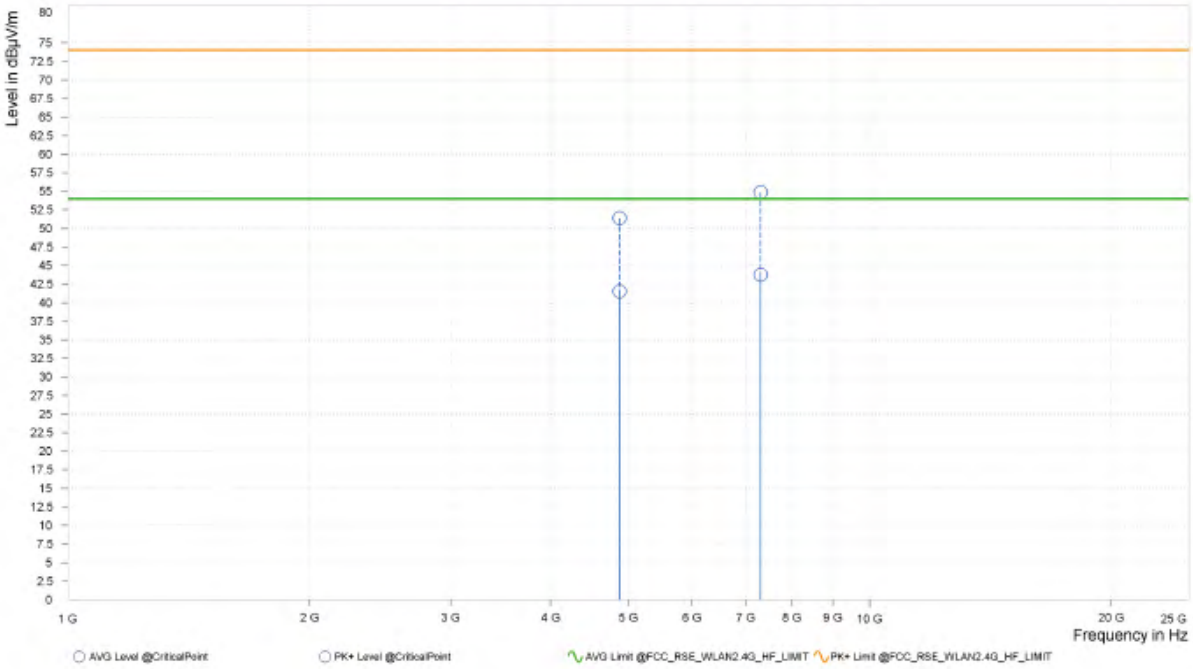
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	2,387.733	45.26	74.00	28.74	5.75	V	81.8	1.00
1	2,390.000	44.62	74.00	29.38	5.77	V	1	1.00
1	2,410.833	93.83			5.91	V	7.1	1.00

REMARKS:

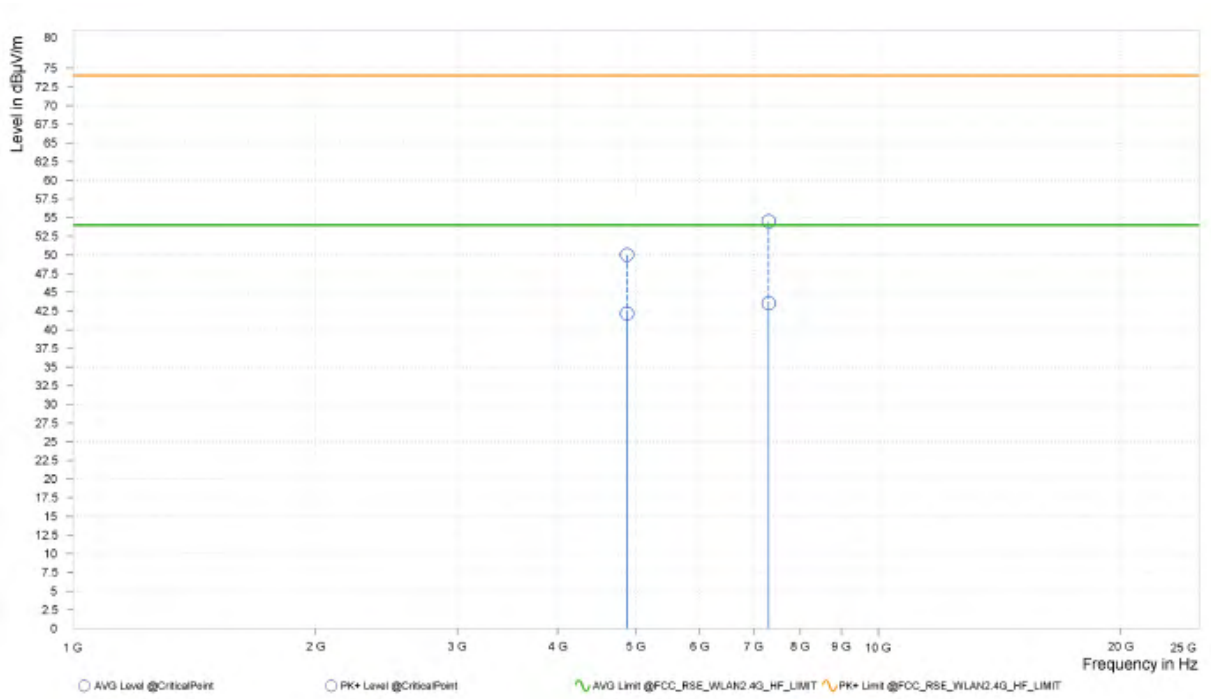
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 2412MHz: Fundamental frequency.

CHANNEL	TX Channel 6	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,874.000	51.39	74.00	22.61	41.52	54.00	12.48	13.53	H	1	1.00
2	7,311.000	54.86	74.00	19.14	43.78	54.00	10.22	18.89	H	330.4	1.00



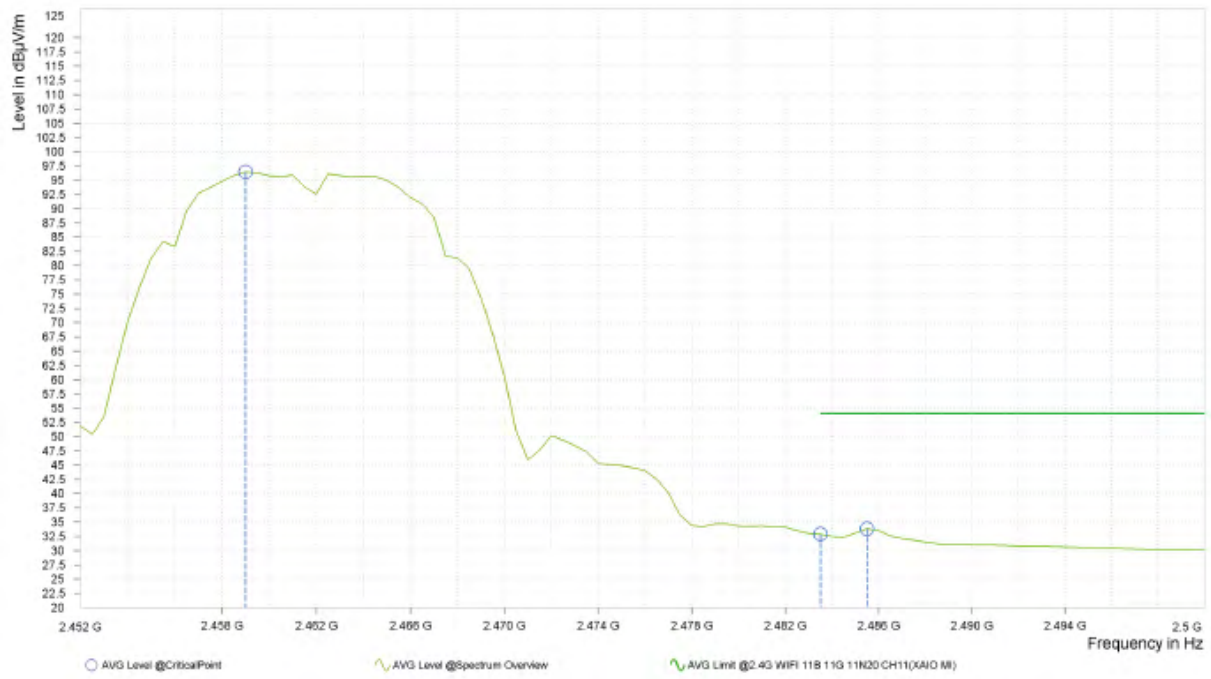
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,874.000	50.01	74.00	23.99	42.16	54.00	11.84	13.53	V	359.1	1.00
2	7,311.000	54.52	74.00	19.48	43.54	54.00	10.46	18.89	V	29.6	2.00



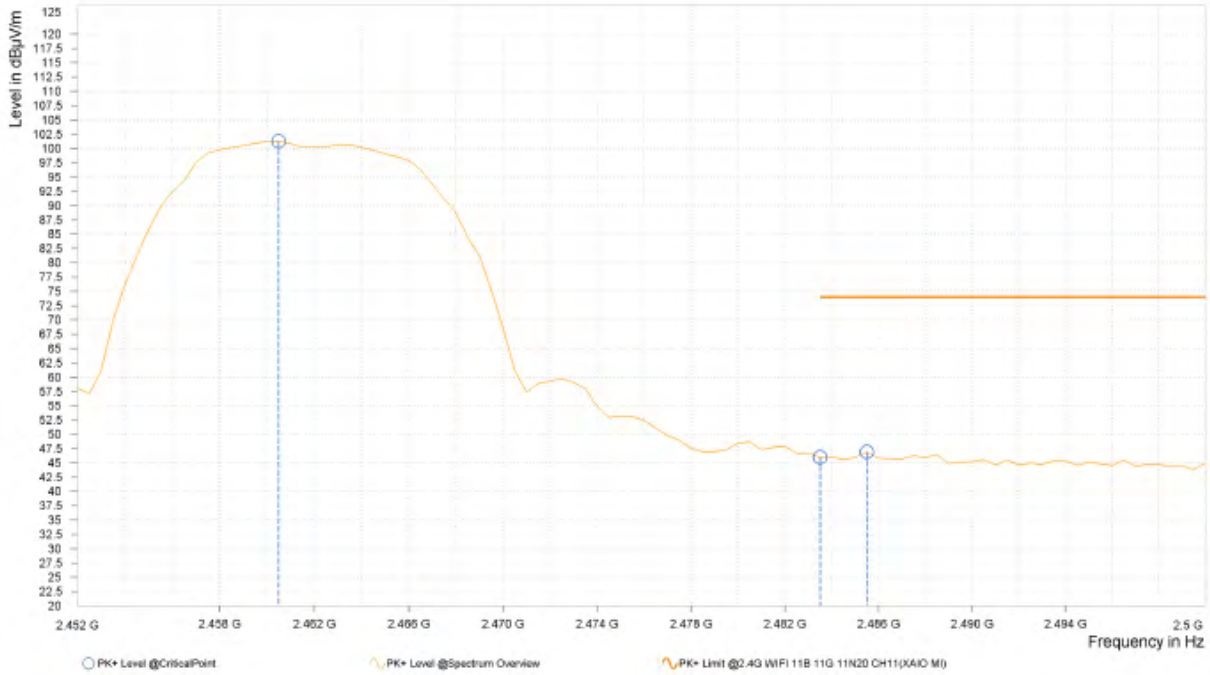
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 2437MHz: Fundamental frequency.

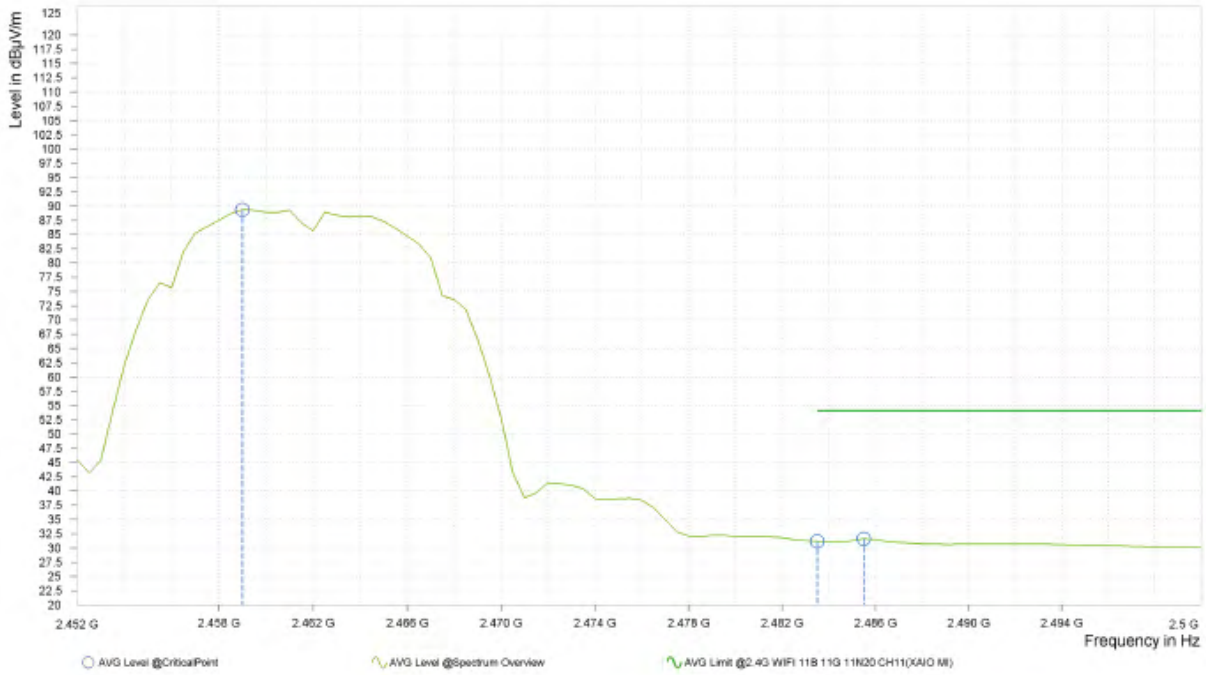
CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



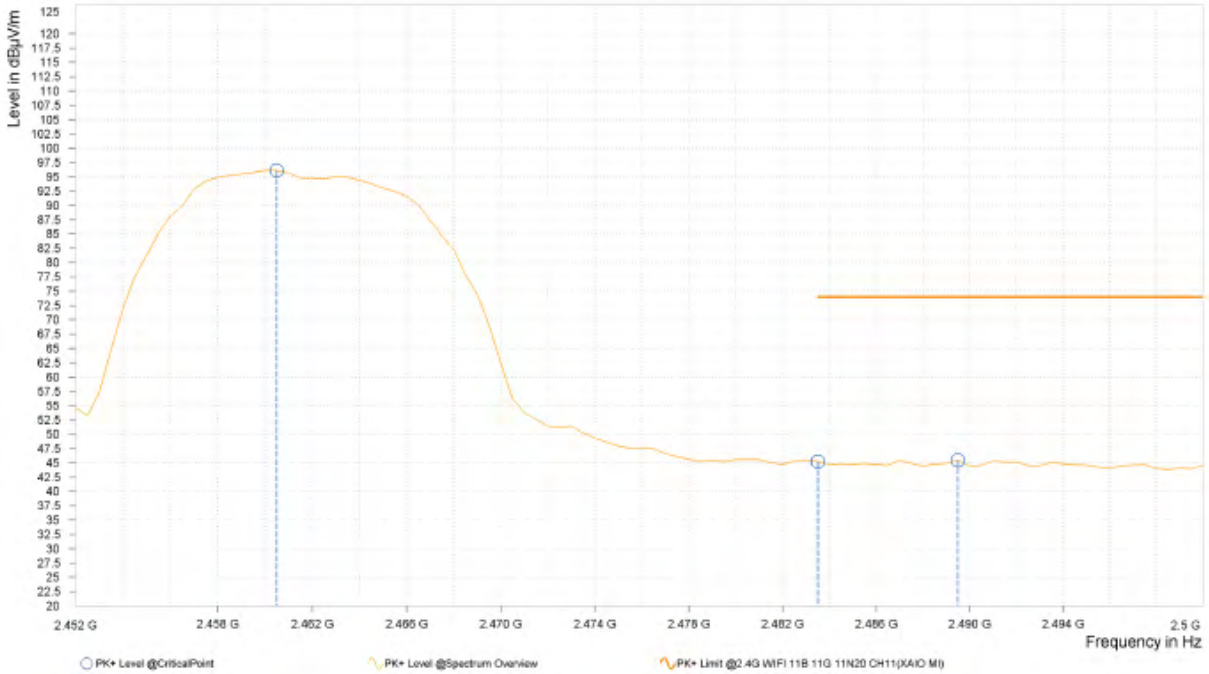
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	2,459.000	96.44			5.84	H	72.2	1.00
2	2,483.500	32.89	54.00	21.11	5.91	H	131.2	2.00
2	2,485.500	33.85	54.00	20.15	5.93	H	131.2	2.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	2,460.500	101.23			5.83	H	63	2.00
2	2,483.500	45.96	74.00	28.04	5.91	H	4.3	2.00
2	2,485.500	46.89	74.00	27.11	5.93	H	84.2	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	2,459.000	89.35			5.84	V	59	1.00
2	2,483.500	31.17	54.00	22.83	5.91	V	127.2	1.00
2	2,485.500	31.63	54.00	22.37	5.93	V	127.2	1.00



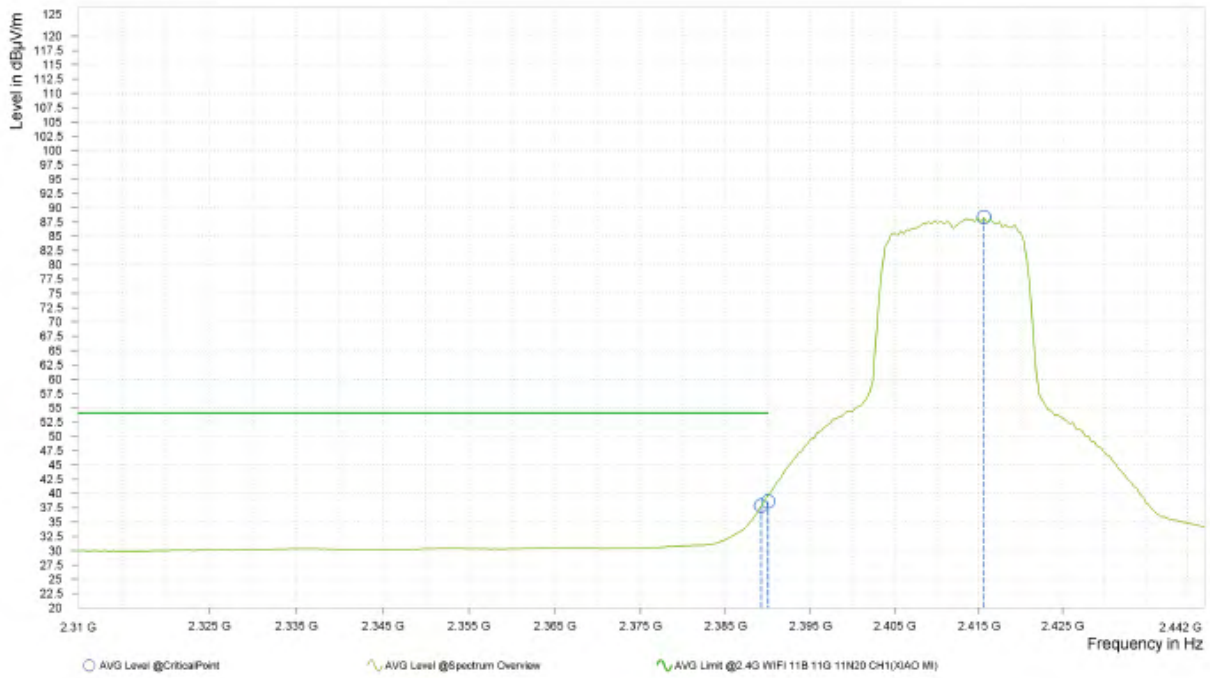
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	2,460.500	96.11			5.83	V	78.2	1.00
2	2,483.500	45.22	74.00	28.78	5.91	V	1	1.00
2	2,489.500	45.46	74.00	28.54	5.95	V	5.6	1.00

REMARKS:

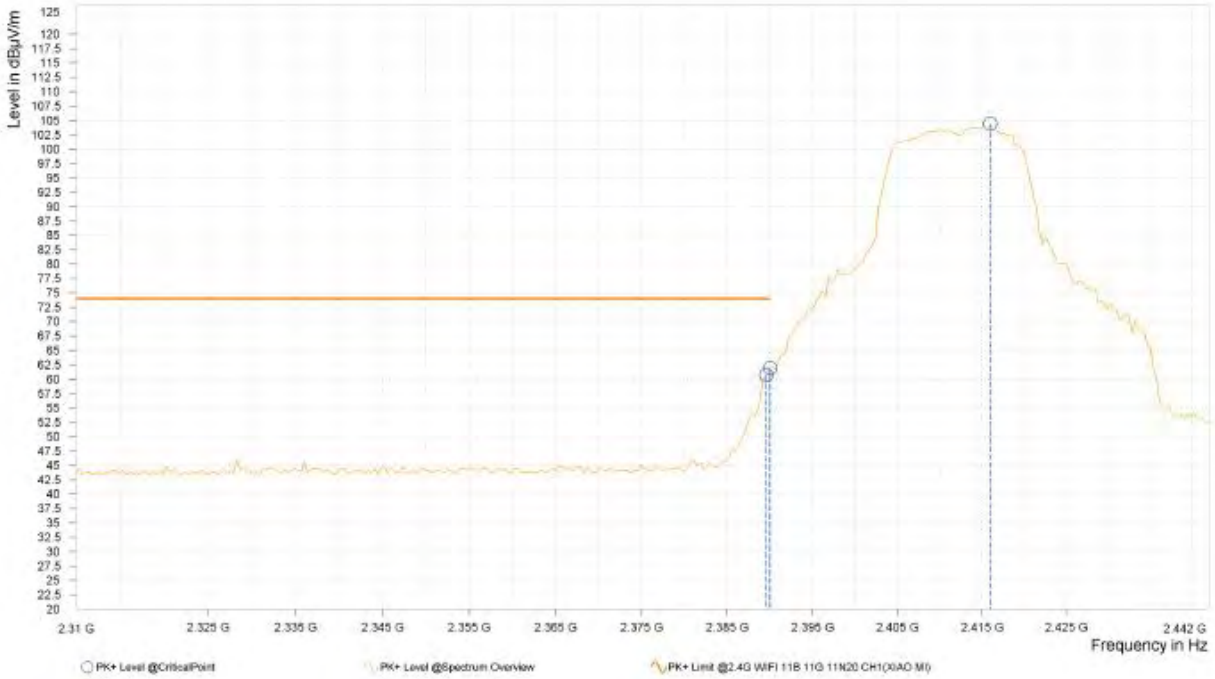
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 2462MHz: Fundamental frequency.

802.11g

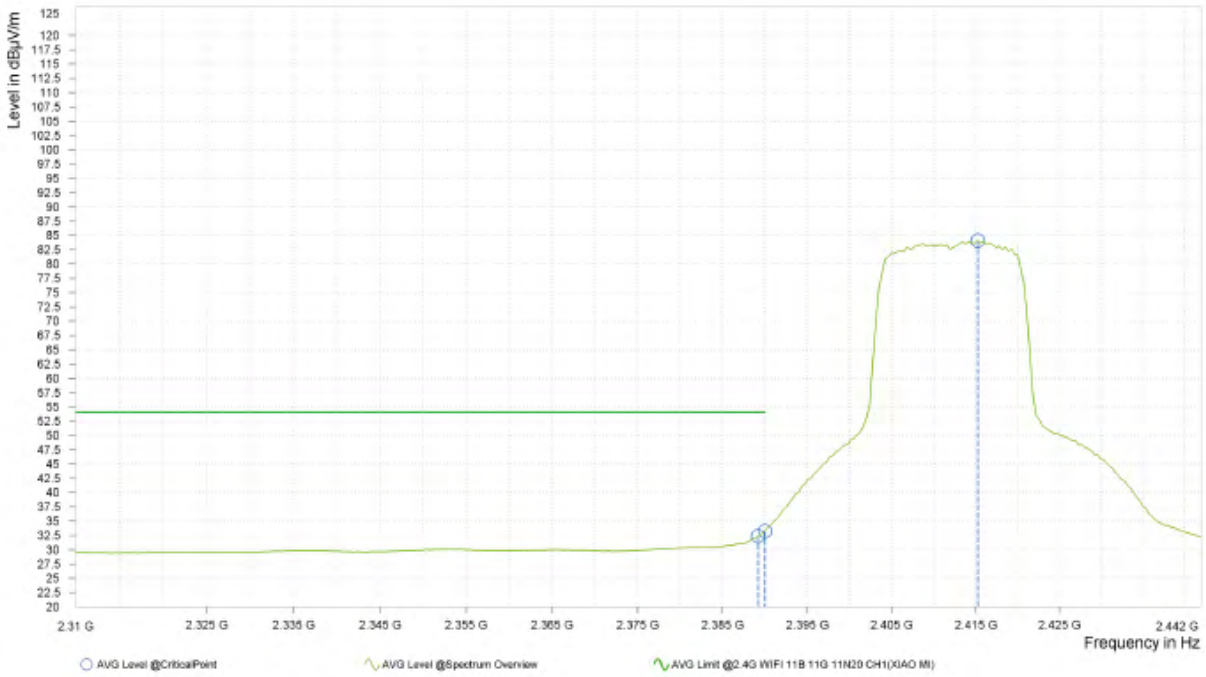
CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



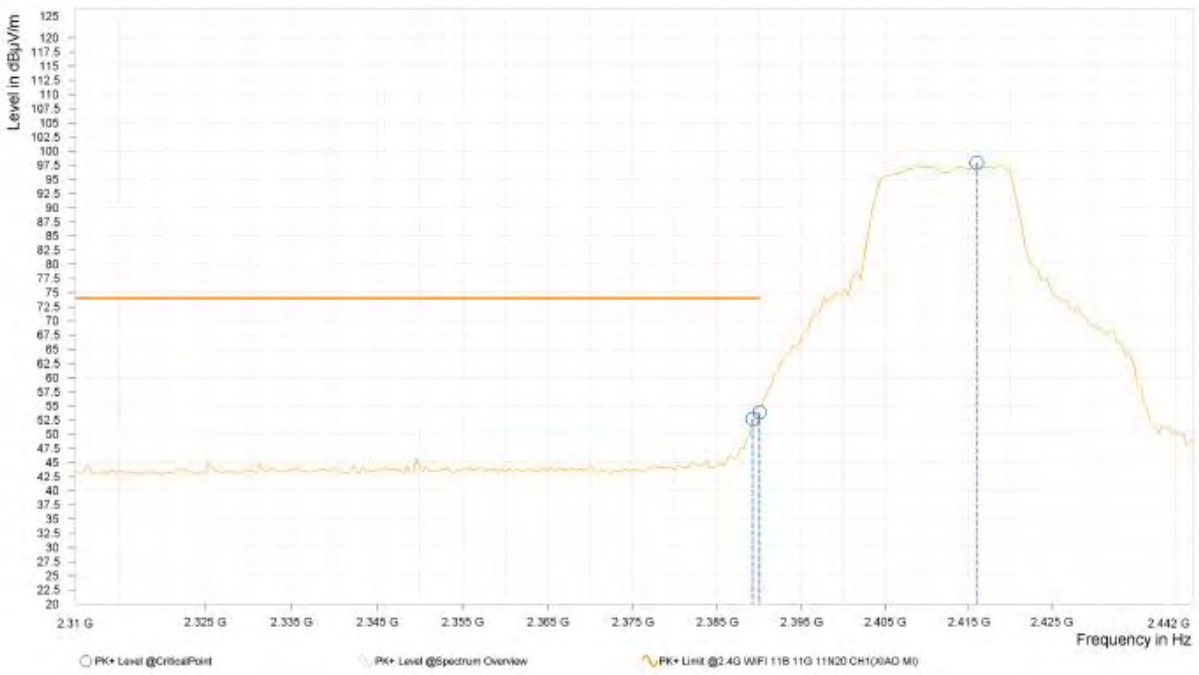
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	2,389.200	37.86	54.00	16.14	5.76	H	137.2	2.00
1	2,390.000	38.62	54.00	15.38	5.77	H	137.2	2.00
1	2,415.600	88.33			5.95	H	137.2	2.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	2,389.567	60.73	74.00	13.27	5.77	H	136	2.00
1	2,390.000	61.89	74.00	12.11	5.77	H	136	2.00
1	2,415.970	104.42			5.95	H	136	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	2,389.200	32.38	54.00	21.62	5.76	V	354.5	2.00
1	2,390.000	33.23	54.00	20.77	5.77	V	153.5	1.00
1	2,415.233	84.09			5.94	V	204.2	2.00



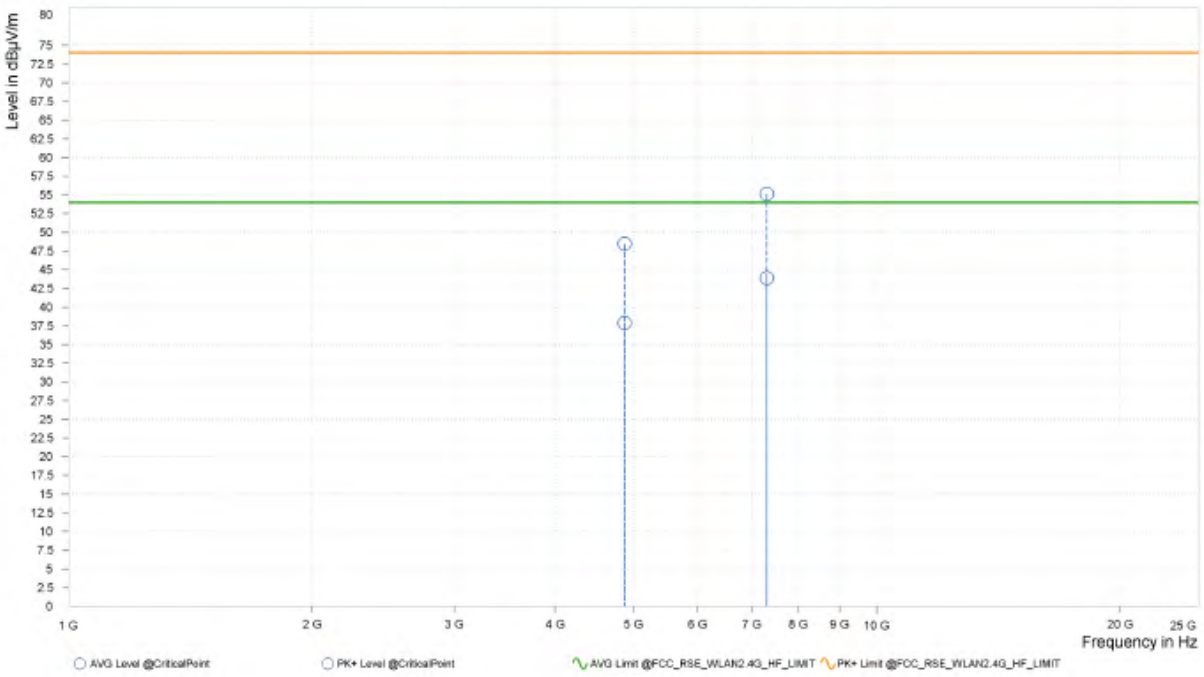
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	2,389.200	52.69	74.00	21.31	5.76	V	57.1	2.00
1	2,390.000	53.83	74.00	20.17	5.77	V	57.1	2.00
1	2,415.967	97.92			5.95	V	71	1.00

REMARKS:

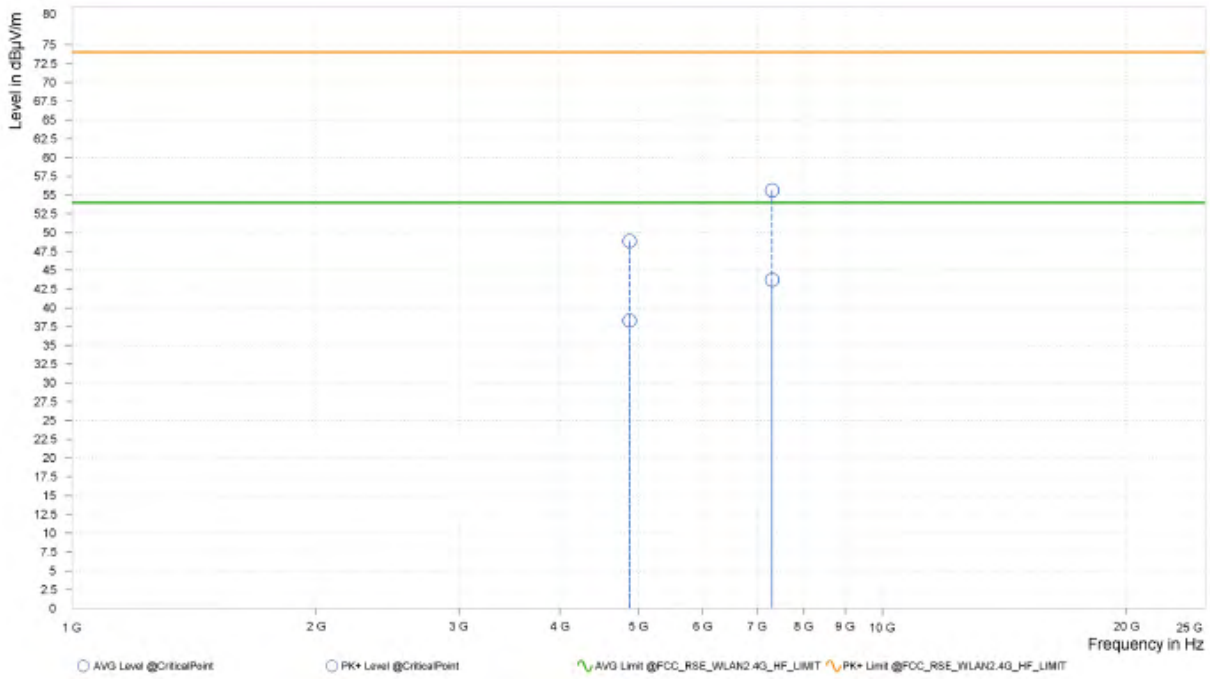
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 2412MHz: Fundamental frequency.

CHANNEL	TX Channel 6	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,874.000	48.45	74.00	25.55	37.89	54.00	16.11	13.53	H	28.4	2.00
2	7,311.000	55.14	74.00	18.86	43.88	54.00	10.12	18.89	H	359.1	1.00



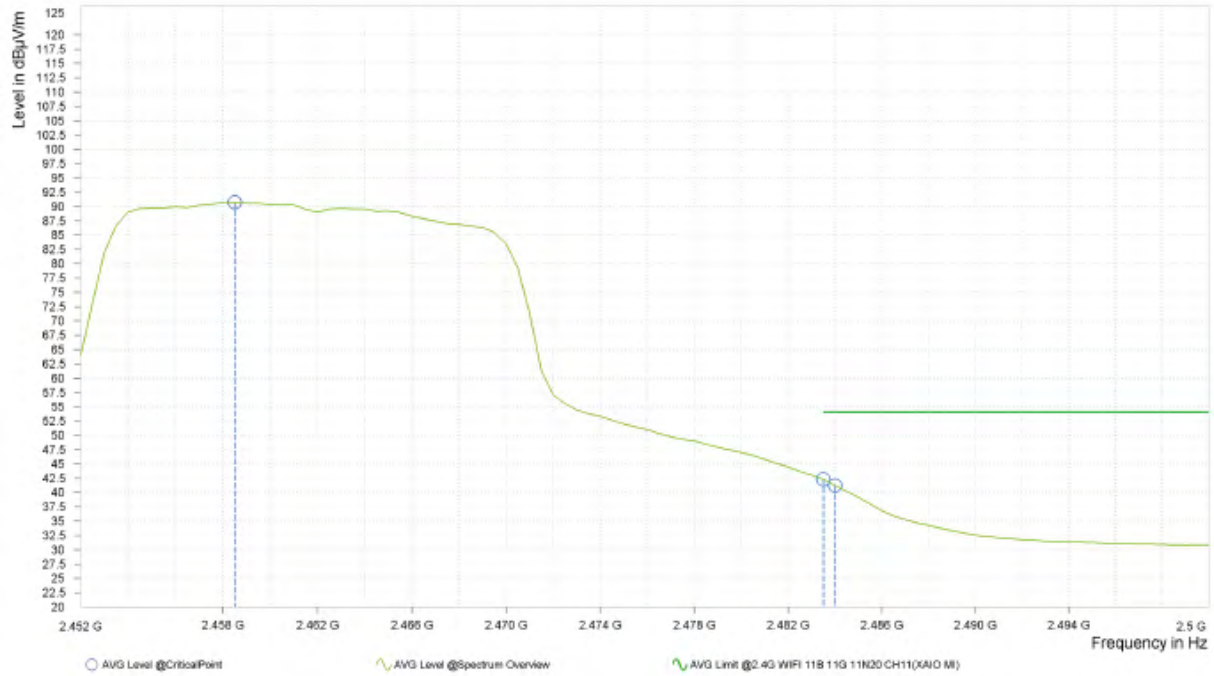
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,874.000	48.85	74.00	25.15	38.31	54.00	15.69	13.53	V	0.9	2.00
2	7,311.000	55.63	74.00	18.37	43.69	54.00	10.31	18.89	V	359	1.00



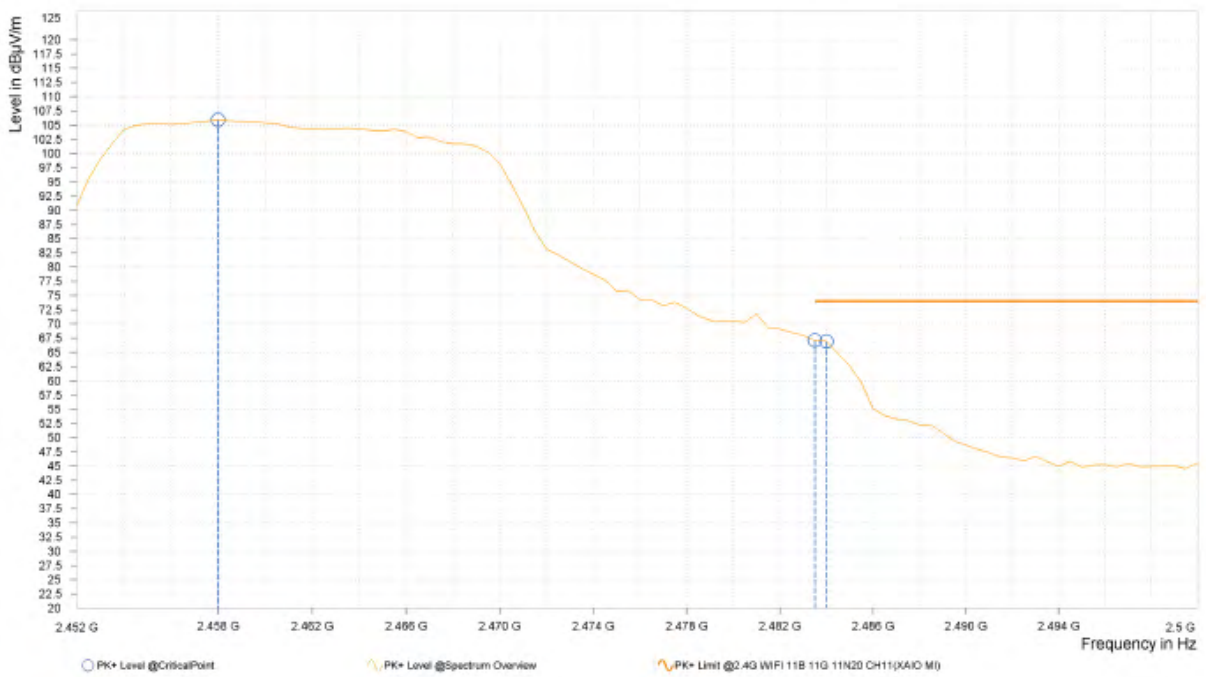
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
   2. 2437MHz: Fundamental frequency.

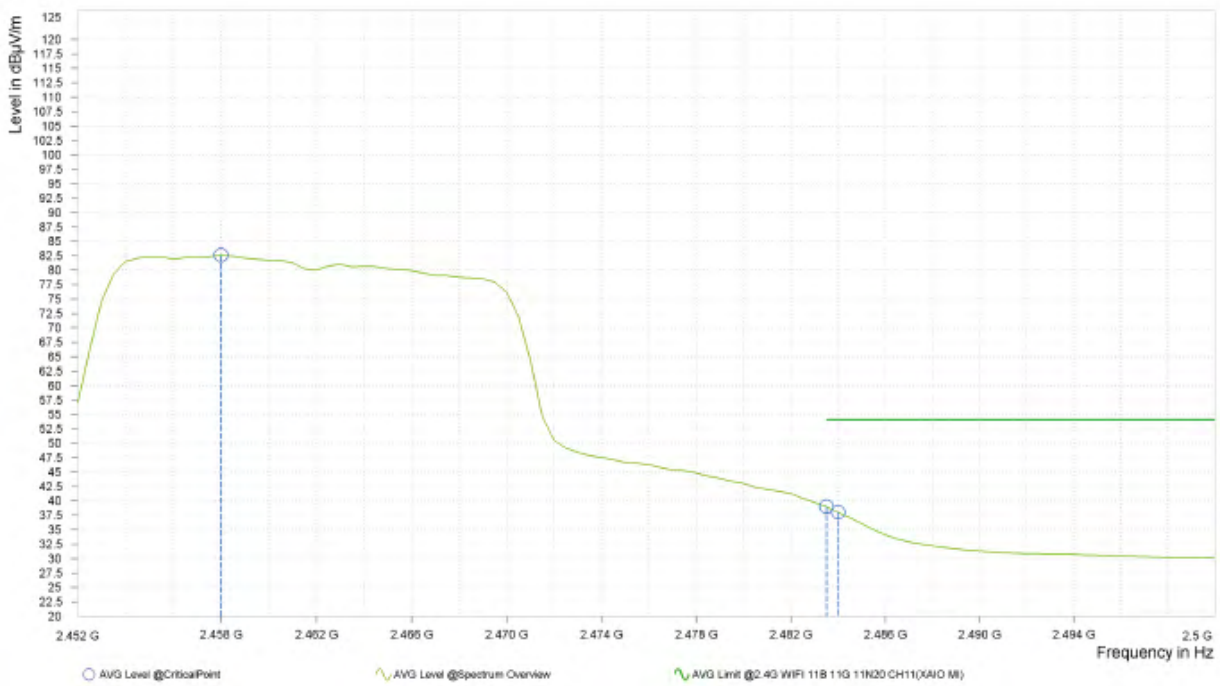
CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



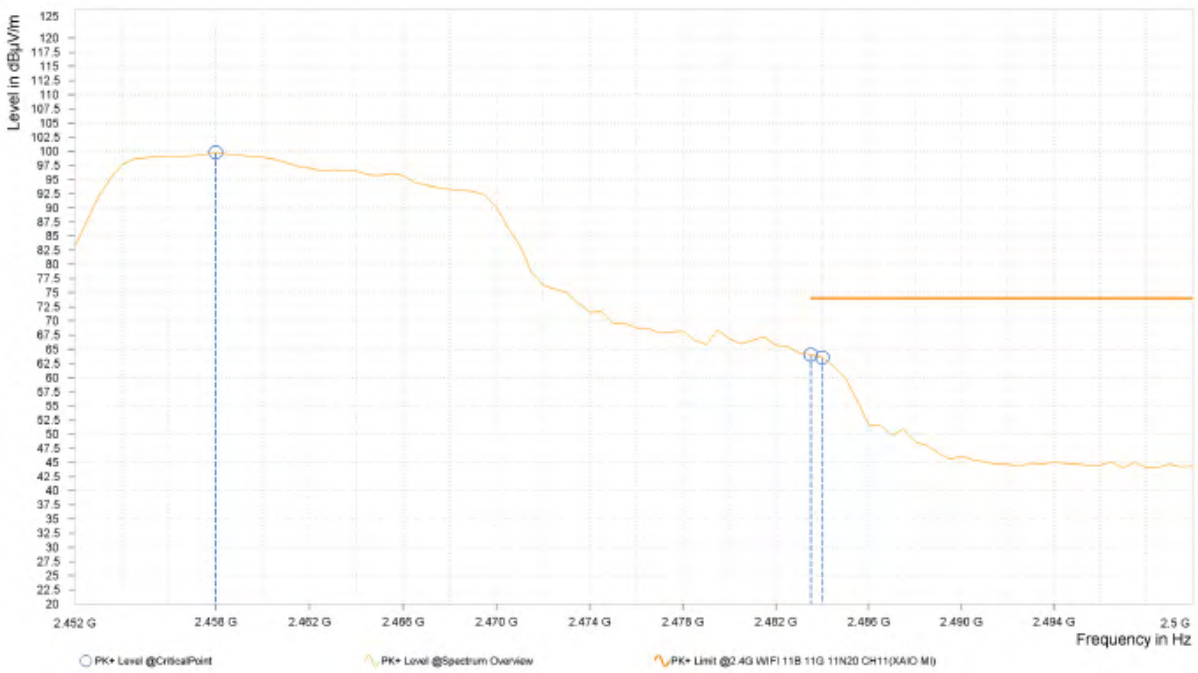
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	2,458.500	90.74			5.84	H	58.3	2.00
2	2,483.500	42.32	54.00	11.68	5.91	H	134.8	2.00
2	2,484.000	41.24	54.00	12.76	5.92	H	134.8	2.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	2,458.000	105.91			5.85	H	60.6	2.00
2	2,483.500	67.08	74.00	6.92	5.91	H	134.8	2.00
2	2,484.000	66.94	74.00	7.06	5.92	H	134.8	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	2,458.000	82.60			5.85	V	359	2.00
2	2,483.500	39.01	54.00	14.99	5.91	V	74.6	1.00
2	2,484.000	38.02	54.00	15.98	5.92	V	74.6	1.00



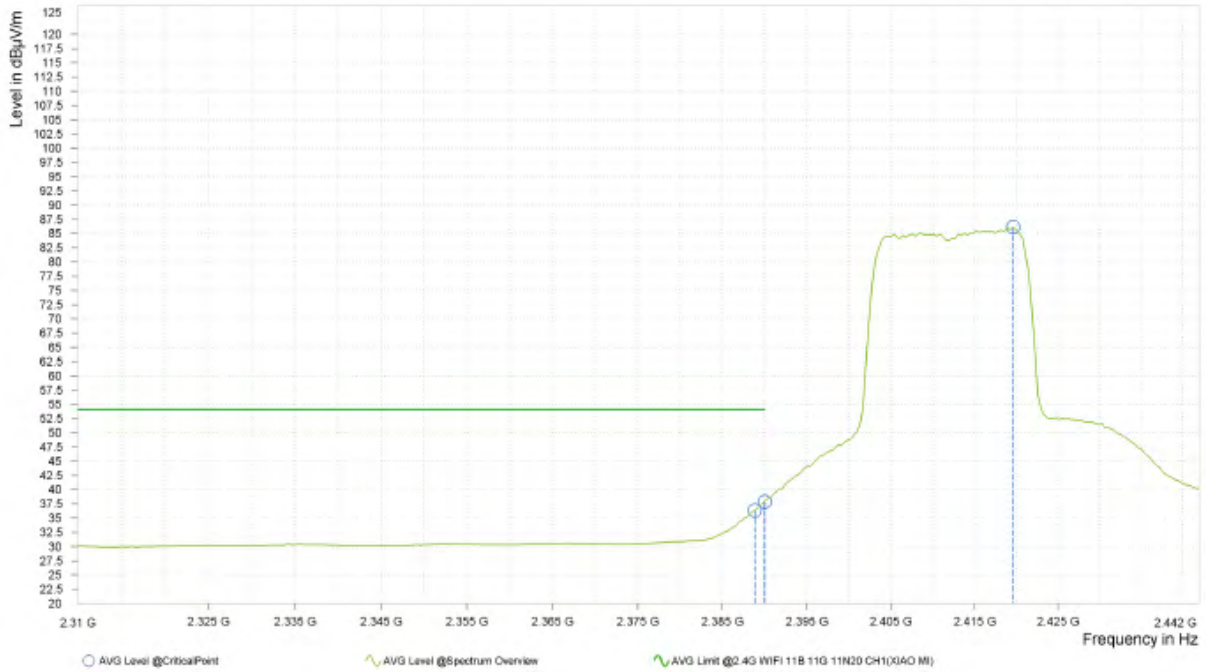
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	2,458.000	99.79			5.85	V	157	1.00
2	2,483.500	64.02	74.00	9.98	5.91	V	286.6	2.00
2	2,484.000	63.55	74.00	10.45	5.92	V	286.6	2.00

REMARKS:

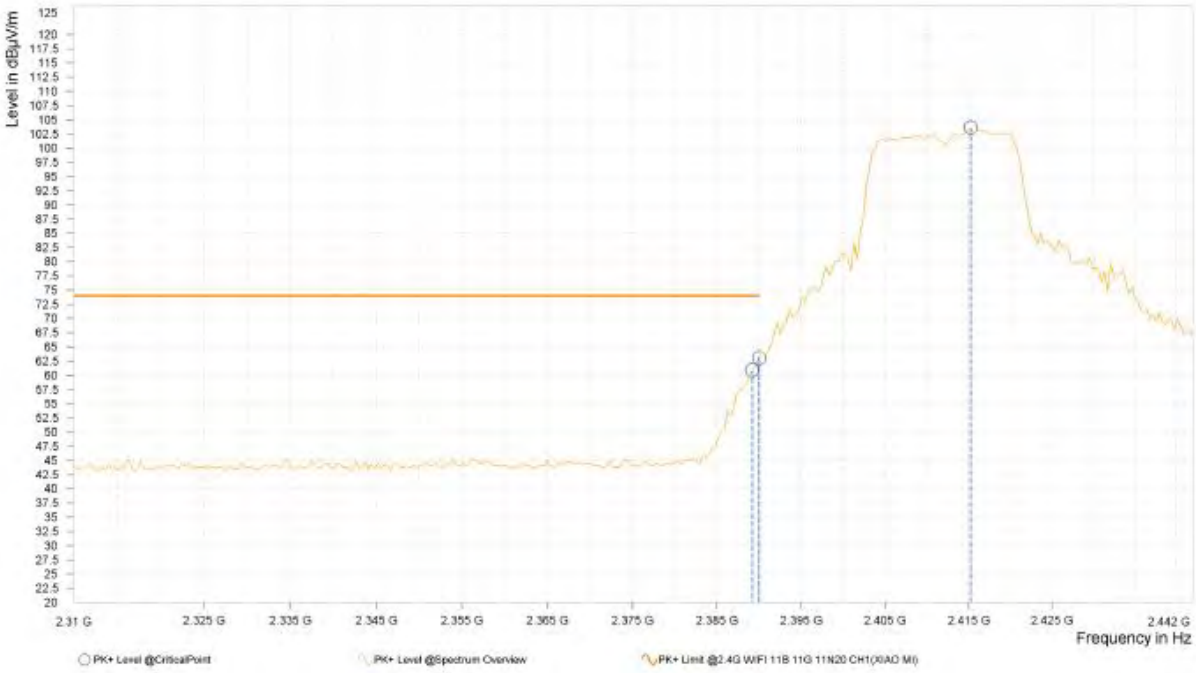
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 2462MHz: Fundamental frequency.

802.11n (20MHz)

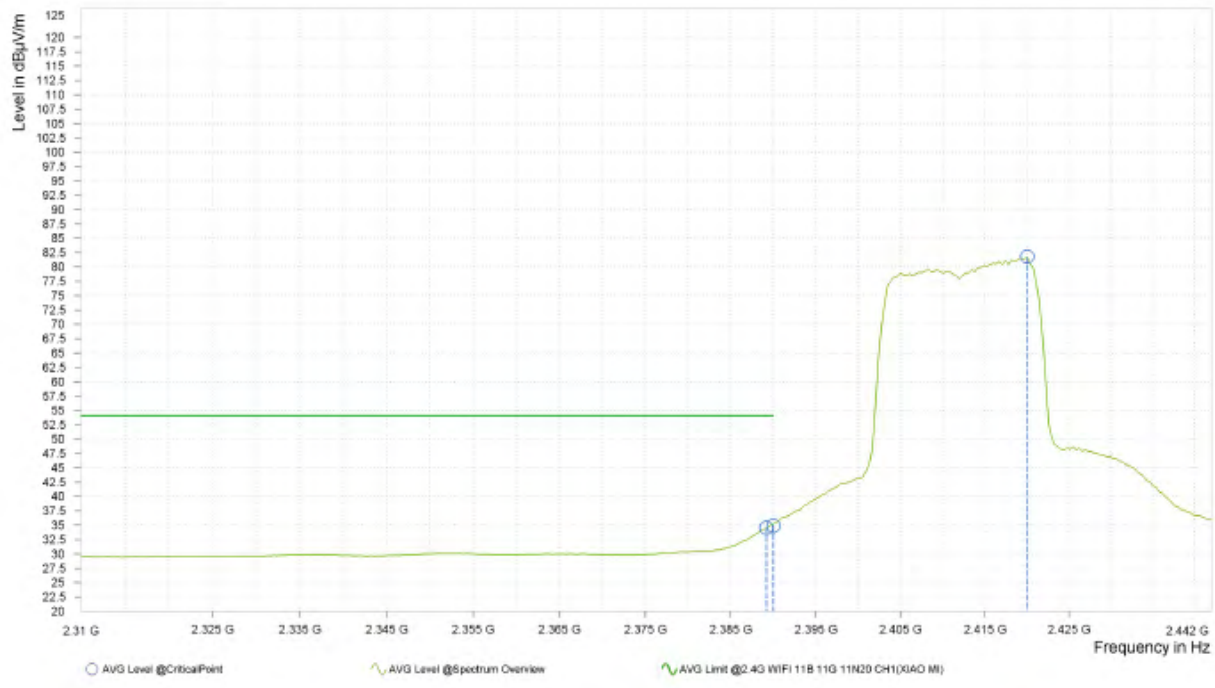
CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



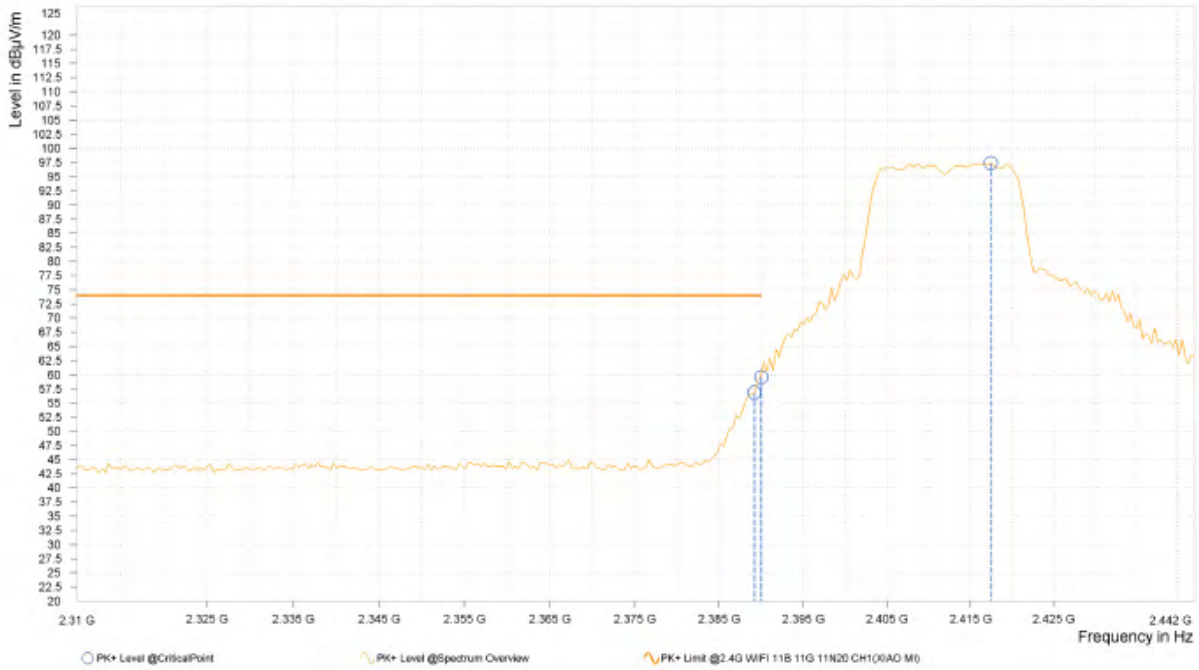
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	2,388.833	36.37	54.00	17.63	5.76	H	132.5	2.00
1	2,390.000	37.86	54.00	16.14	5.77	H	132.5	2.00
1	2,419.633	86.13			5.96	H	5.5	1.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	2,389.200	60.92	74.00	13.08	5.76	H	351.2	1.00
1	2,390.000	63.03	74.00	10.97	5.77	H	359.1	1.00
1	2,415.233	103.62			5.94	H	131.2	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	2,389.200	34.53	54.00	19.47	5.76	V	0.9	2.00
1	2,390.000	34.88	54.00	19.12	5.77	V	50	2.00
1	2,420.000	81.79			5.95	V	5.6	1.00



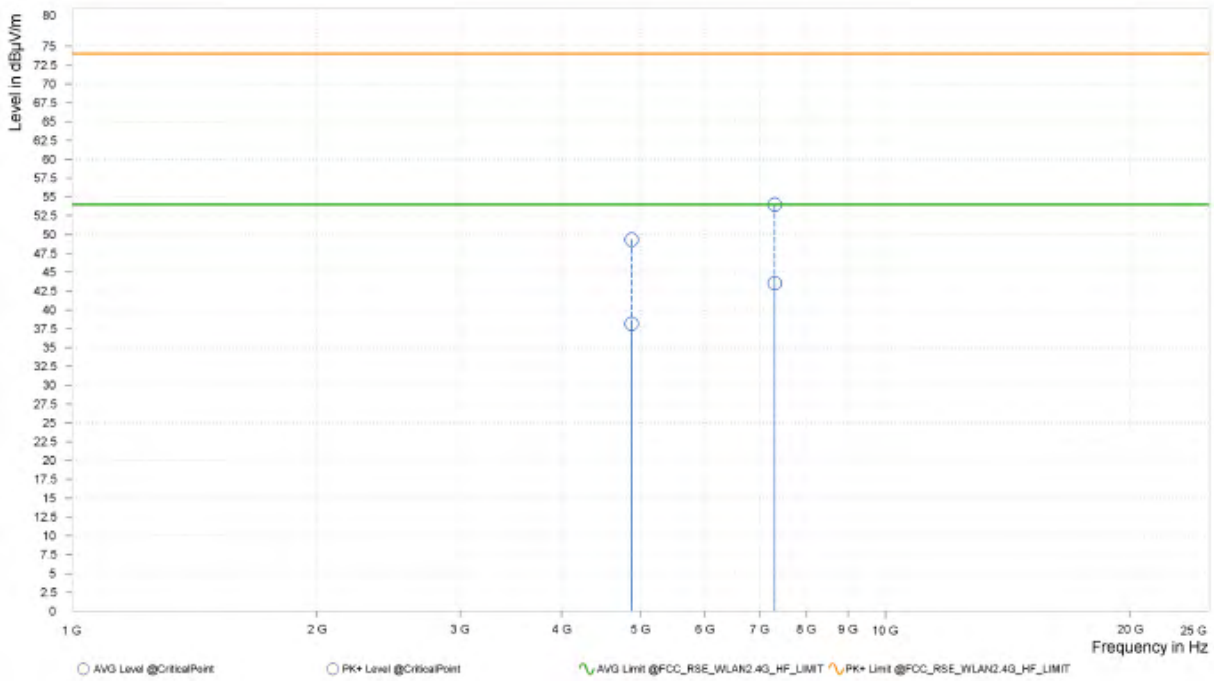
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	2,389.200	56.83	74.00	17.17	5.76	V	22	1.00
1	2,390.000	59.58	74.00	14.42	5.77	V	2.6	2.00
1	2,417.433	97.42			5.96	V	93.7	1.00

REMARKS:

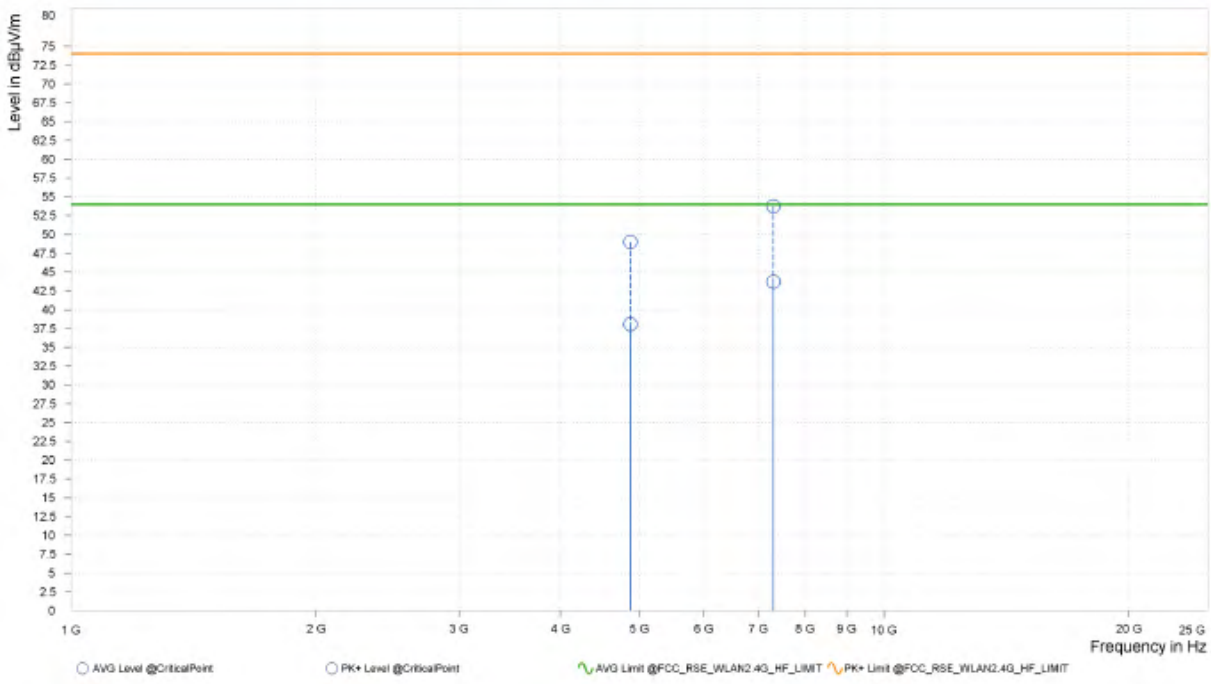
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value- Emission level.
2. 2412MHz: Fundamental frequency.

CHANNEL	TX Channel 6	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,874.000	49.33	74.00	24.67	38.17	54.00	15.83	13.53	H	271	2.00
2	7,311.000	53.98	74.00	20.02	43.53	54.00	10.47	18.89	H	27.1	2.00



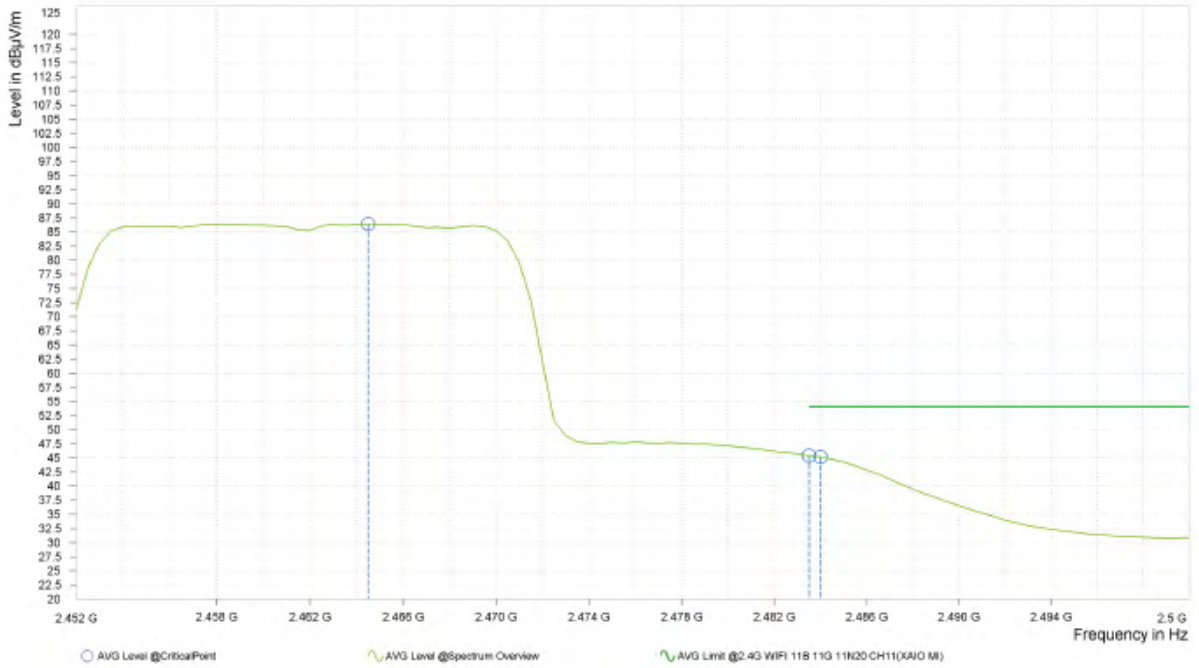
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,874.000	48.98	74.00	25.02	38.05	54.00	15.95	13.53	V	359.1	1.00
2	7,311.000	53.77	74.00	20.23	43.71	54.00	10.29	18.89	V	271.1	2.00



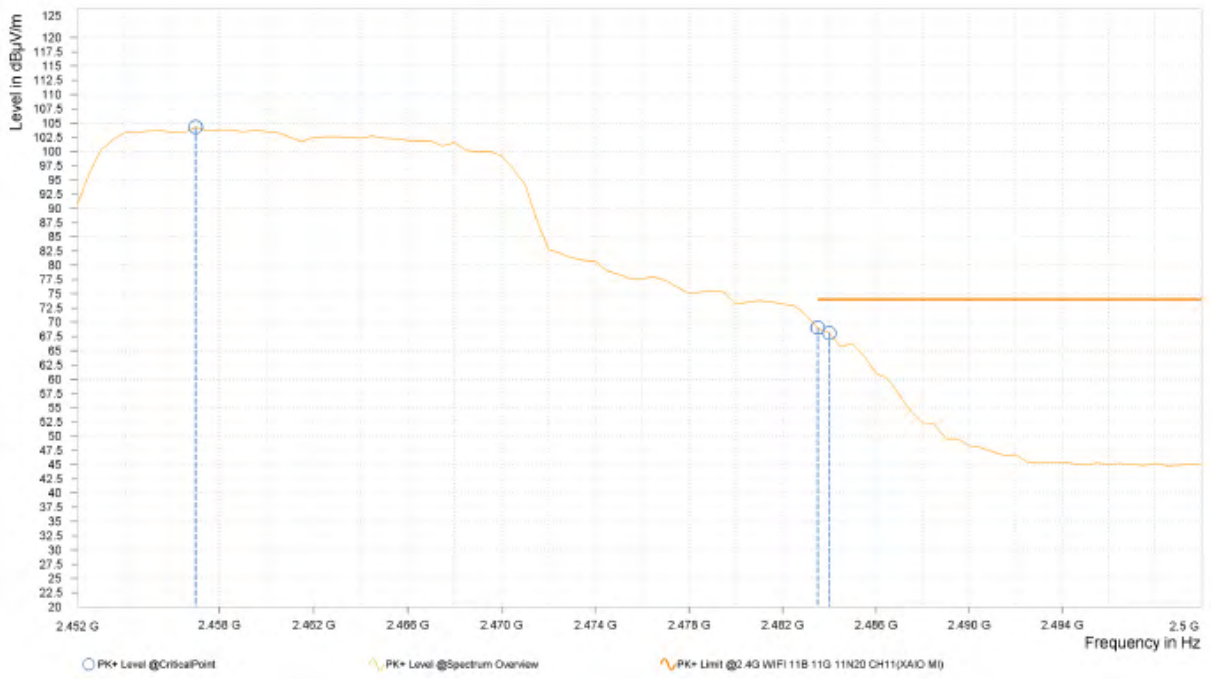
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2437MHz: Fundamental frequency.

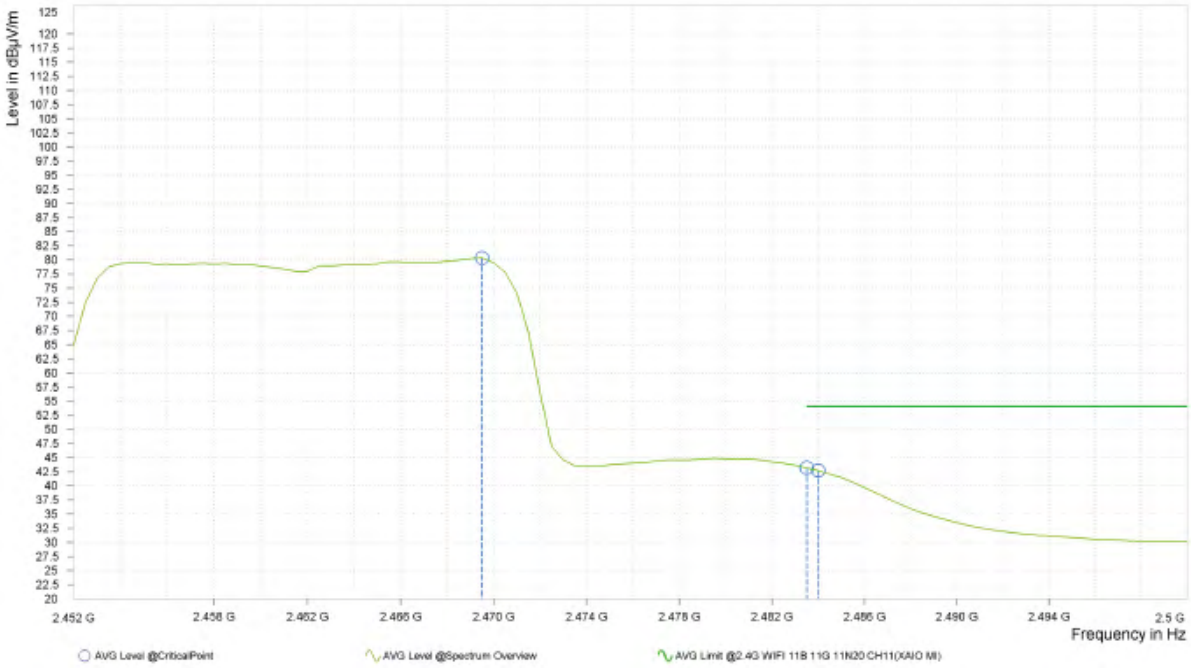
CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



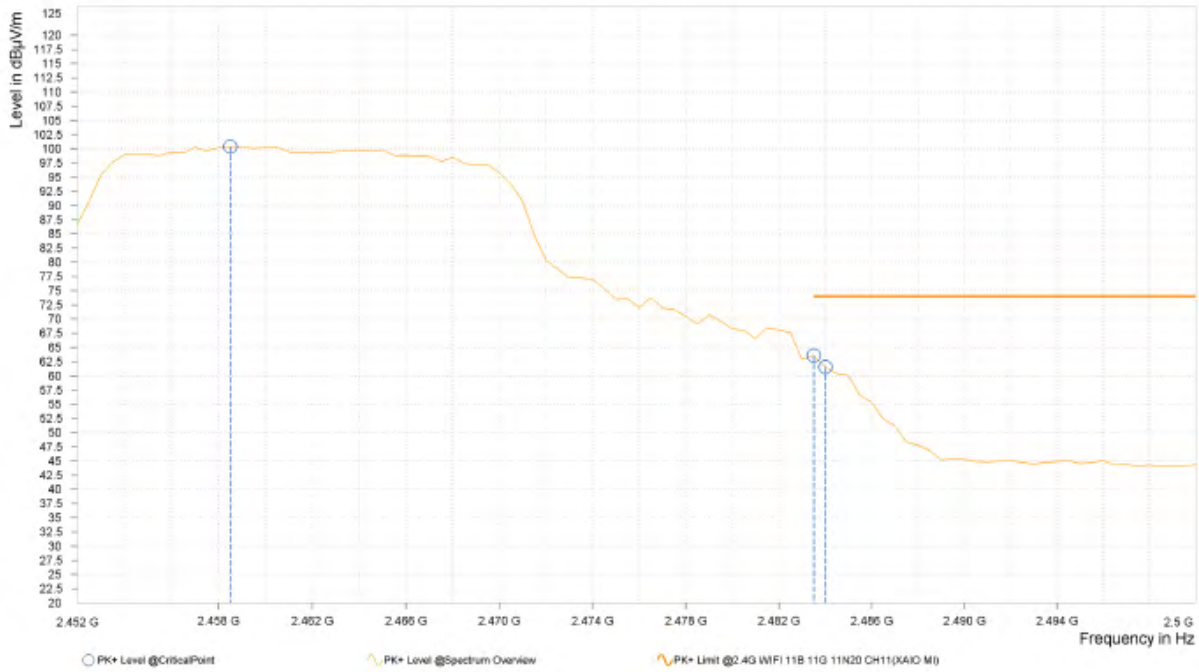
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	2,464.500	86.45			5.81	H	52.3	2.00
2	2,483.500	45.41	54.00	8.59	5.91	H	126.4	2.00
2	2,484.000	45.15	54.00	8.85	5.92	H	126.4	2.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	2,457.000	104.25			5.85	H	151	1.00
2	2,483.500	69.01	74.00	4.99	5.91	H	206.5	2.00
2	2,484.000	68.10	74.00	5.90	5.92	H	4.2	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	2,469.500	80.36			5.83	V	91.4	1.00
2	2,483.500	43.16	54.00	10.84	5.91	V	91.4	1.00
2	2,484.000	42.70	54.00	11.30	5.92	V	91.4	1.00



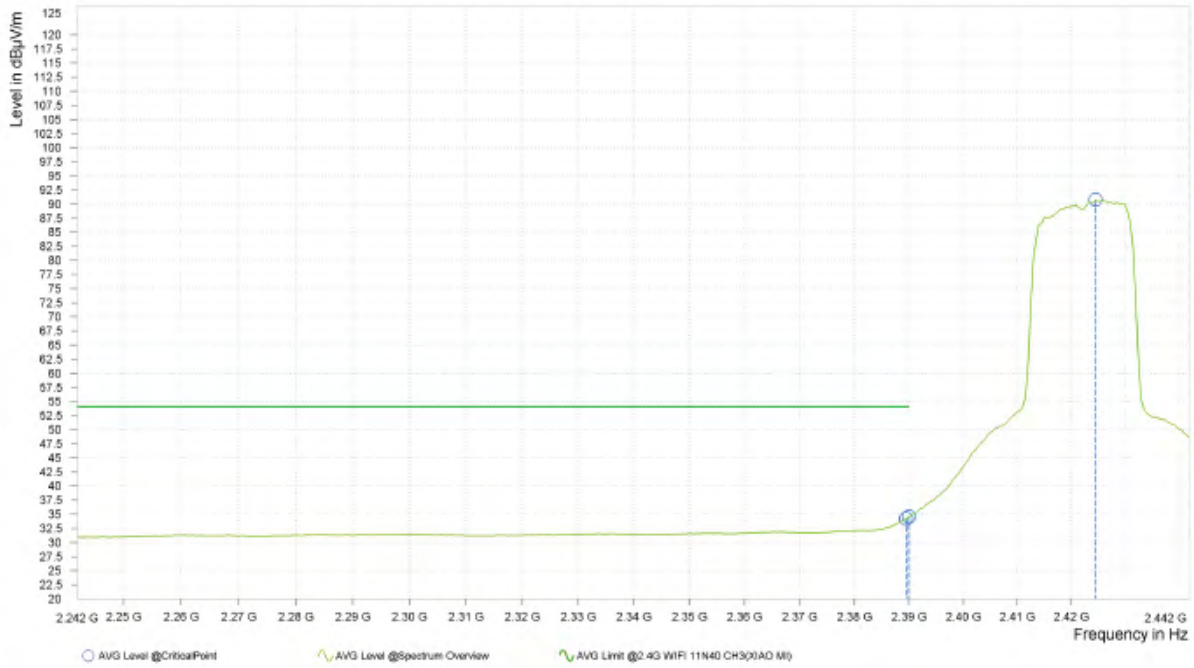
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	2,458.500	100.40			5.84	V	75.8	1.00
2	2,483.500	63.58	74.00	10.42	5.91	V	75.8	1.00
2	2,484.000	61.57	74.00	12.43	5.92	V	75.8	1.00

REMARKS:

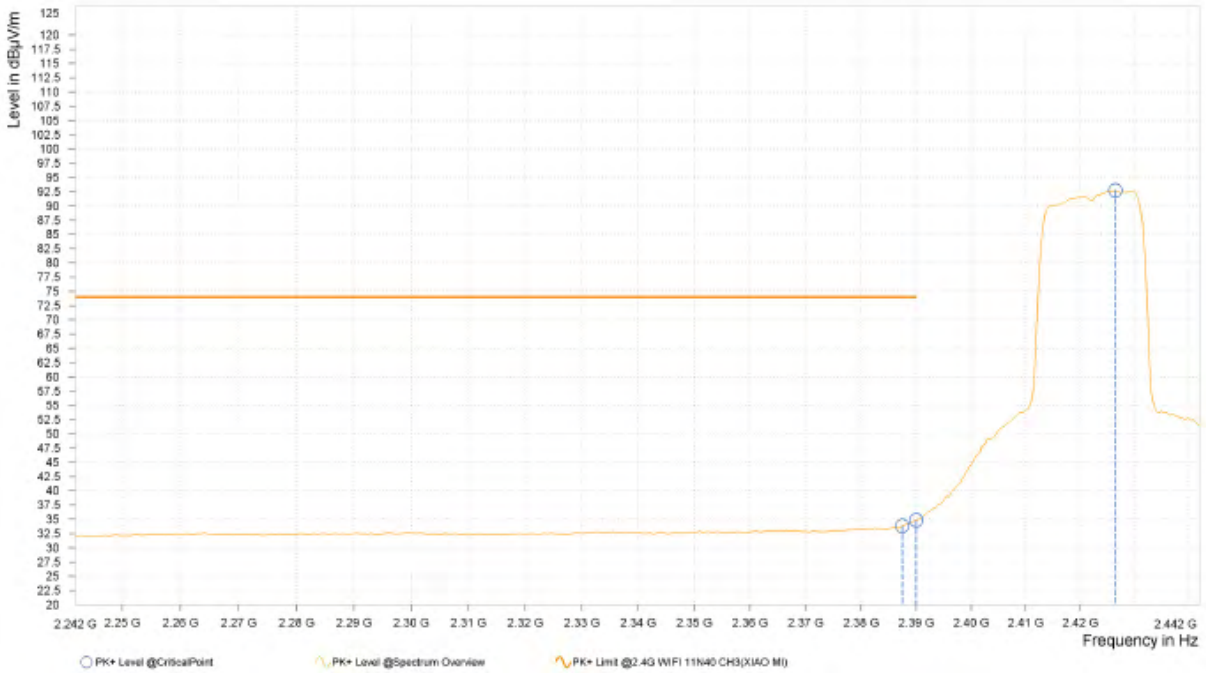
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level .
2. 2462MHz: Fundamental frequency.

802.11n (40MHz)

CHANNEL	TX Channel 3	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	2,389.500	34.25	54.00	19.75	5.77	H	80.6	1.00
3	2,390.000	34.56	54.00	19.44	5.77	H	80.6	1.00
3	2,424.500	90.78			5.95	H	120.4	2.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	2,387.500	33.84	74.00	40.16	5.75	H	124.1	2.00
3	2,390.000	34.80	74.00	39.20	5.77	H	124.1	2.00
3	2,426.500	92.75			5.94	H	11.6	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	2,387.000	32.19	54.00	21.81	5.75	V	359	2.00
3	2,390.000	32.50	54.00	21.50	5.77	V	75.8	1.00
3	2,429.500	82.46			5.94	V	75.8	1.00

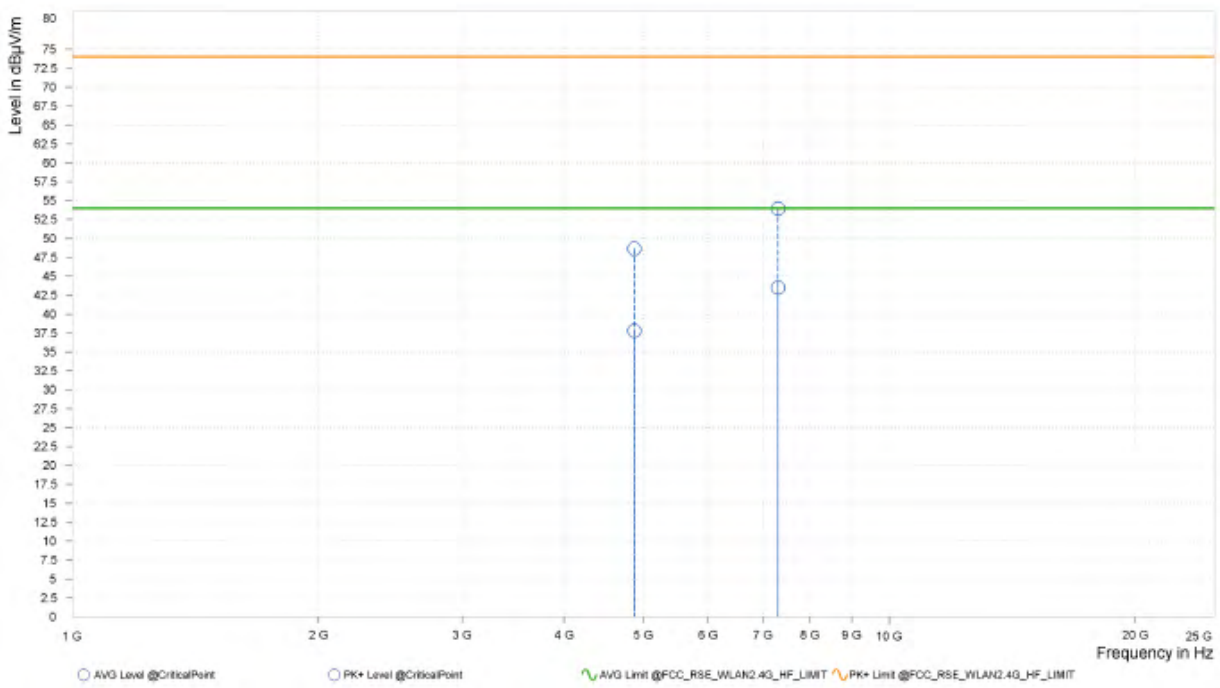
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
3	2,384.000	47.32	74.00	26.68	5.73	V	204.2	2.00
3	2,390.000	46.69	74.00	27.31	5.77	V	74.6	1.00
3	2,428.500	98.17			5.94	V	74.6	1.00

REMARKS:

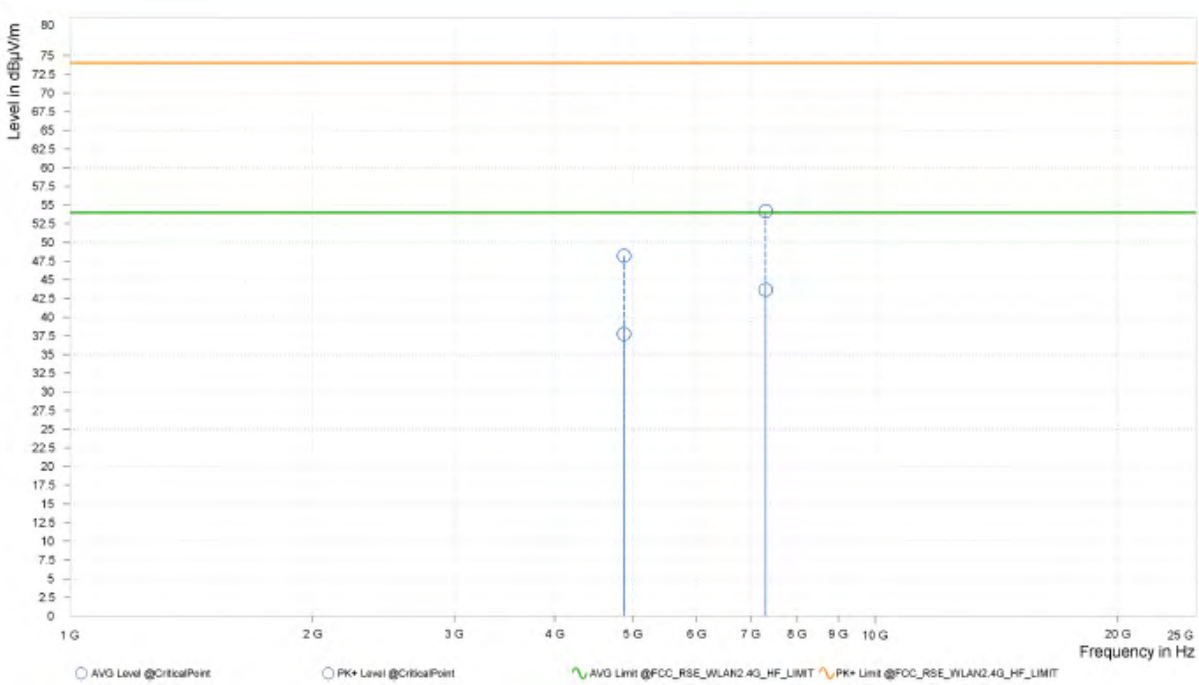
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2422MHz: Fundamental frequency.

CHANNEL	TX Channel 6	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,874.000	48.66	74.00	25.34	37.82	54.00	16.18	13.53	H	359	2.00
2	7,311.000	53.93	74.00	20.07	43.47	54.00	10.53	18.89	H	0.9	2.00



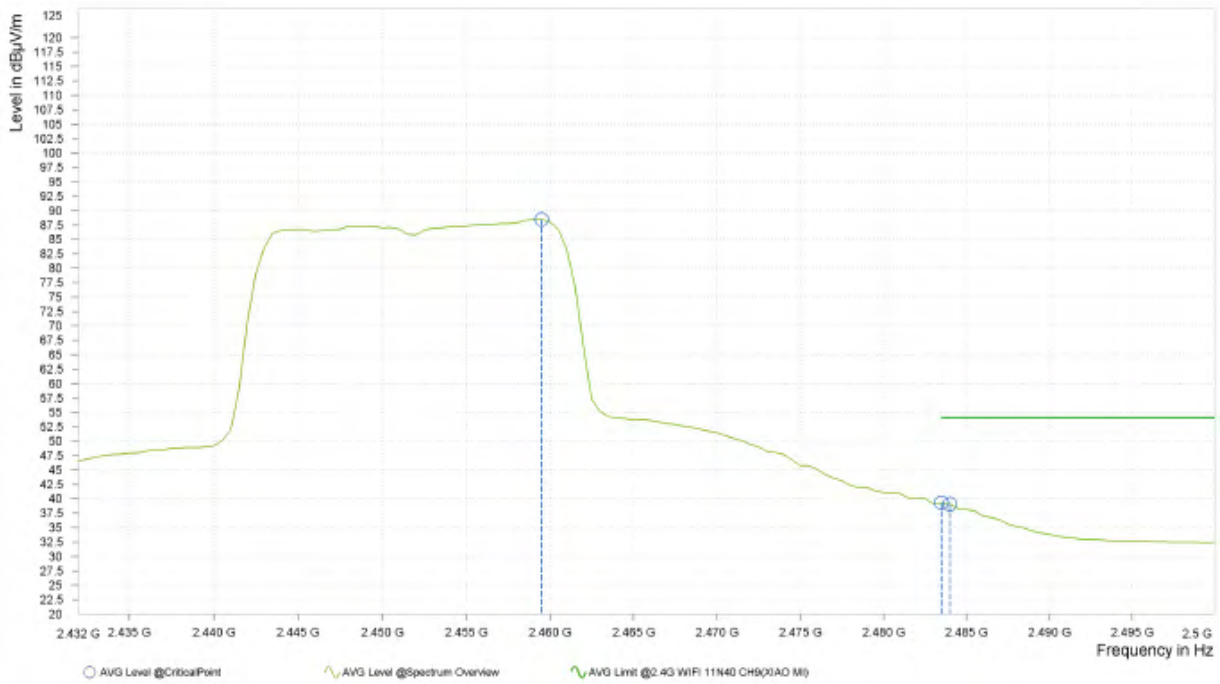
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,874.000	48.19	74.00	25.81	37.74	54.00	16.26	13.53	V	332.8	1.00
2	7,311.000	54.16	74.00	19.84	43.68	54.00	10.32	18.89	V	1	2.00



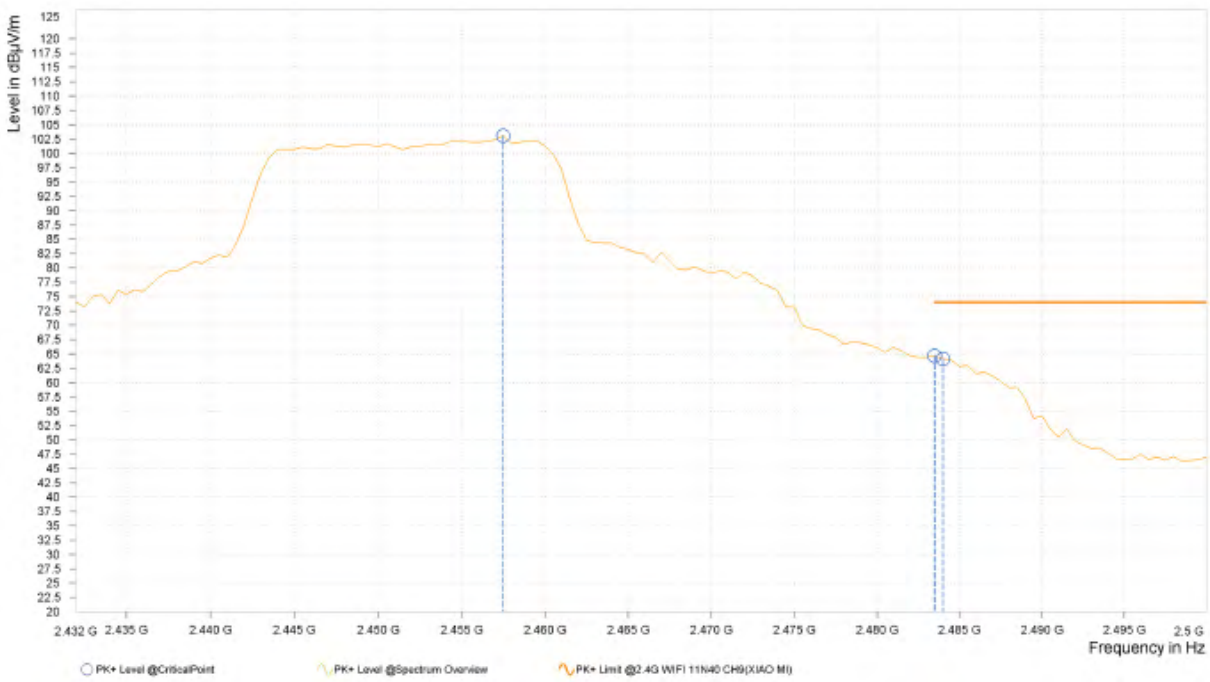
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
   2. 2437MHz: Fundamental frequency.

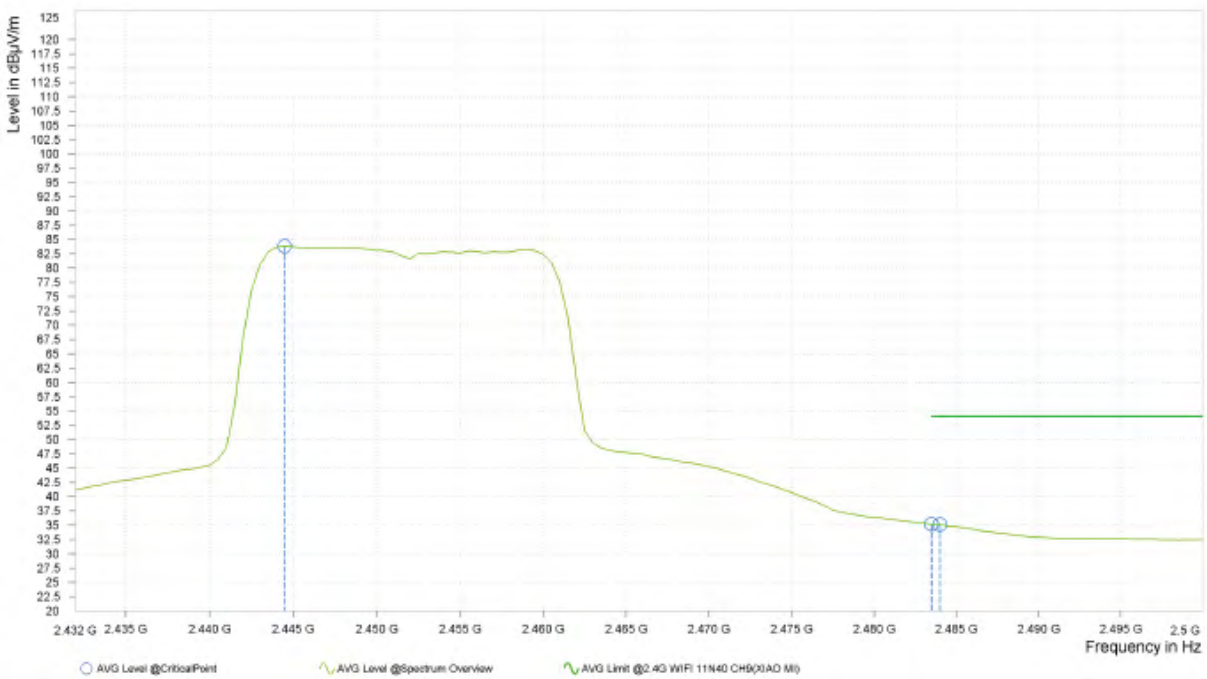
CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



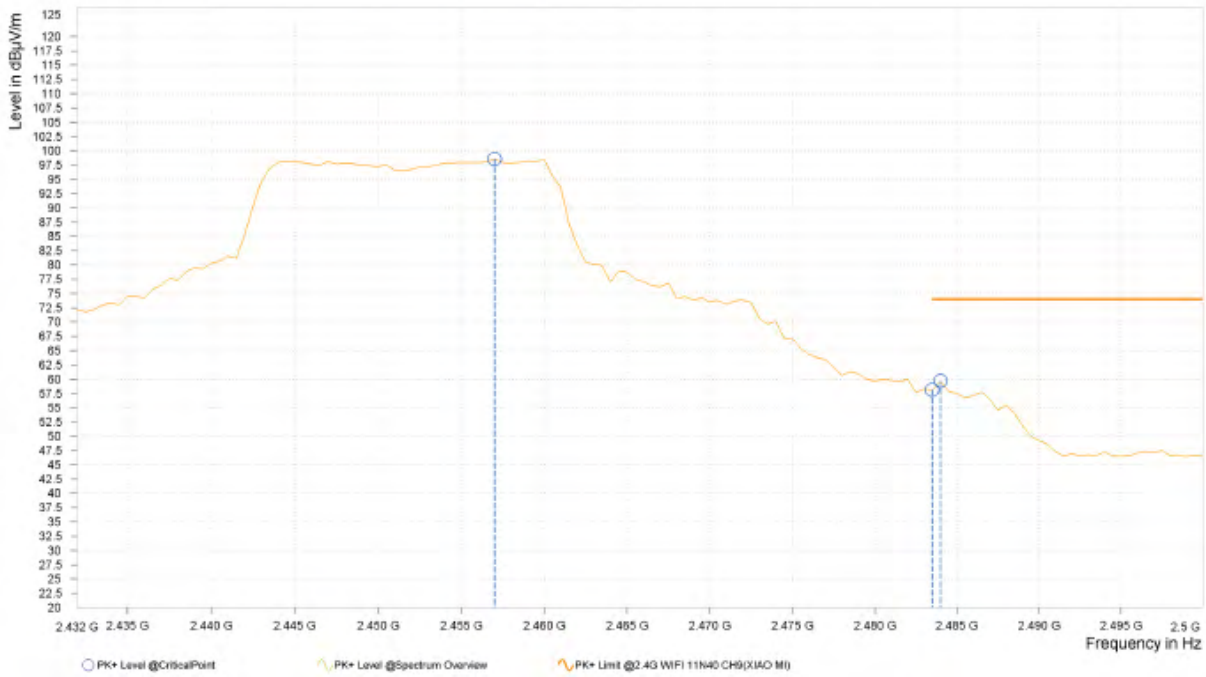
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	2,459.500	88.48			5.84	H	84.1	1.00
4	2,483.500	39.30	54.00	14.70	5.91	H	121.6	2.00
4	2,484.000	39.07	54.00	14.93	5.92	H	121.6	2.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	2,457.500	103.08			5.85	H	85.7	2.00
4	2,483.500	64.65	74.00	9.35	5.91	H	5.6	1.00
4	2,484.000	64.14	74.00	9.86	5.92	H	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]
4	2,444.500	83.84			5.90	V	74.6	1.00
4	2,483.500	35.17	54.00	18.83	5.91	V	74.6	1.00
4	2,484.000	35.09	54.00	18.91	5.92	V	74.6	1.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	2,457.000	98.59			5.85	V	77	1.00
4	2,483.500	58.11	74.00	15.89	5.91	V	77	1.00
4	2,484.000	59.66	74.00	14.34	5.92	V	77	1.00

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2452MHz: Fundamental frequency.

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

BT-LE _S2

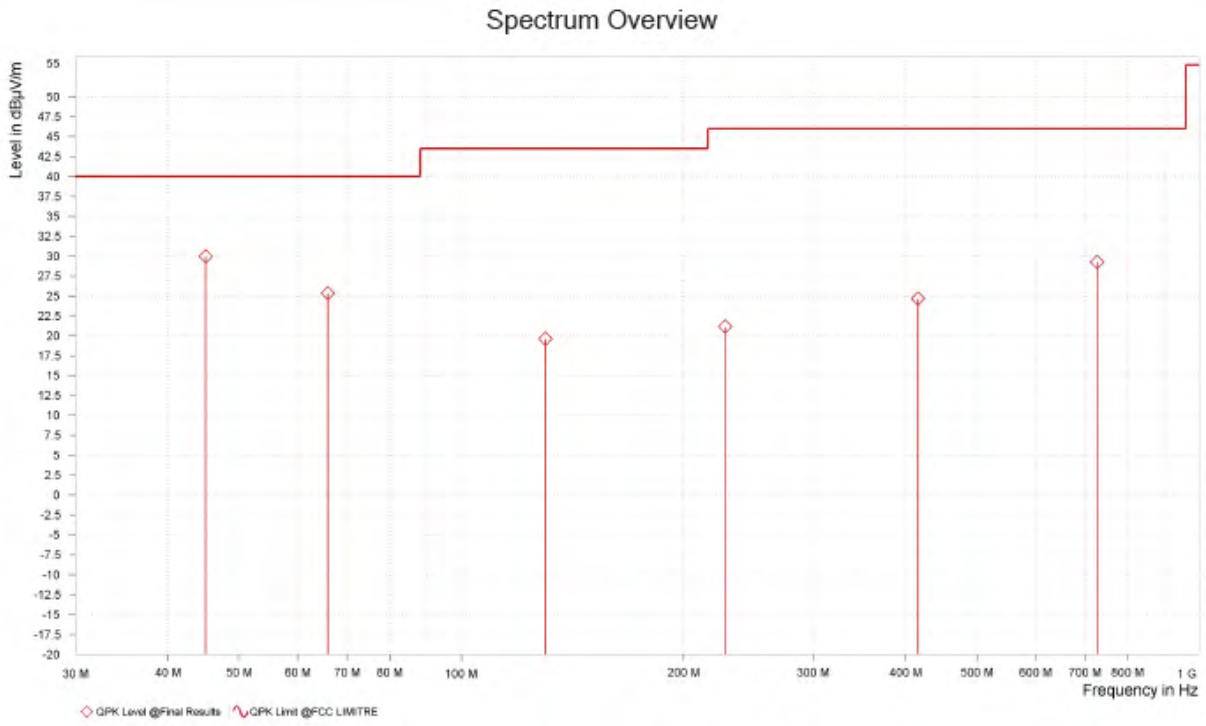
CHANNEL	TX Channel 19	**0DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	45.035	29.95	40.00	10.05	-3.75	H	166.6	1.00	120.000
1	65.890	25.32	40.00	14.68	-6.86	H	166.6	1.00	120.000
1	130.007	19.59	43.50	23.91	-8.79	H	335.2	1.00	120.000
1	227.880	21.13	46.00	24.87	-3.90	H	335.2	1.00	120.000
1	416.012	24.64	46.00	21.36	3.06	H	359.1	1.00	120.000
1	727.964	29.24	46.00	16.76	4.07	H	335.2	1.00	120.000

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



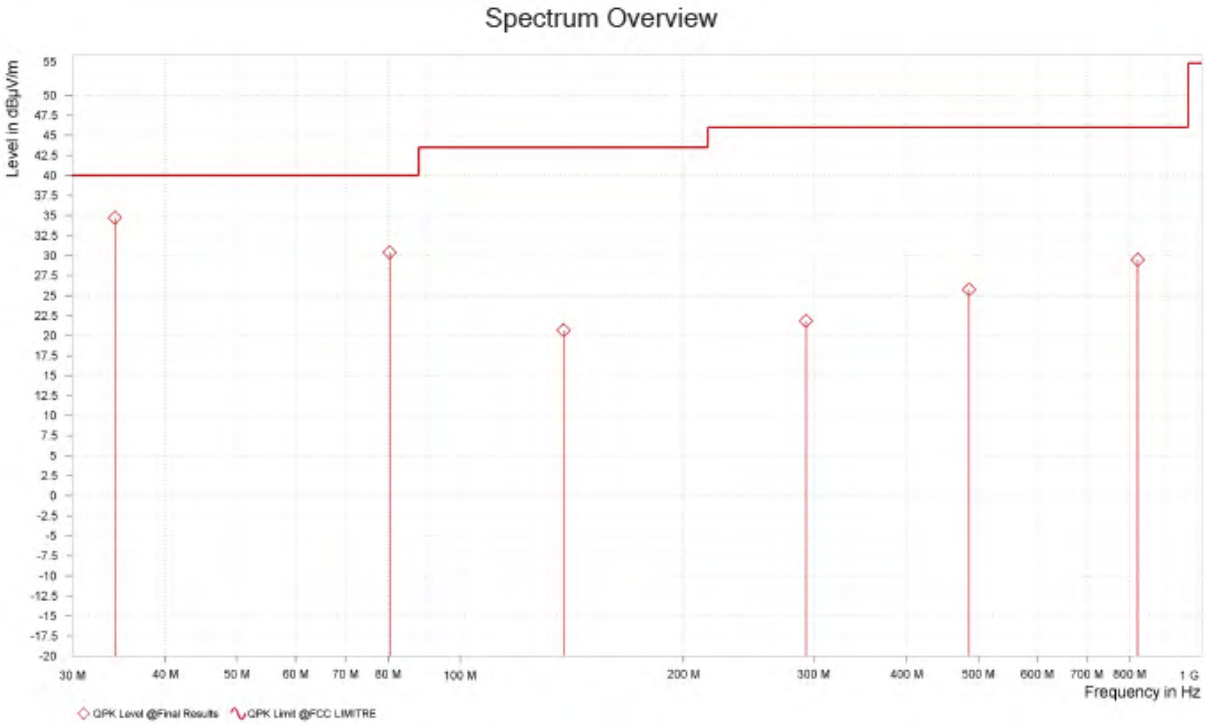
CHANNEL	TX Channel 19	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

Rg	Frequency [MHz]	QPK Level [dBµV/m]	QPK Limit [dBµV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	34.220	34.68	40.00	5.32	-8.35	V	1	1.00	120.000
1	80.343	30.38	40.00	9.62	-10.77	V	337.4	1.00	120.000
1	137.864	20.63	43.50	22.87	-8.64	V	1	1.00	120.000
1	292.870	21.82	46.00	24.18	-1.44	V	337.4	1.00	120.000
1	486.046	25.74	46.00	20.26	2.28	V	4.9	1.00	120.000
1	820.744	29.44	46.00	16.56	5.18	V	1	2.00	120.000

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



ABOVE 1GHz TEST DATA

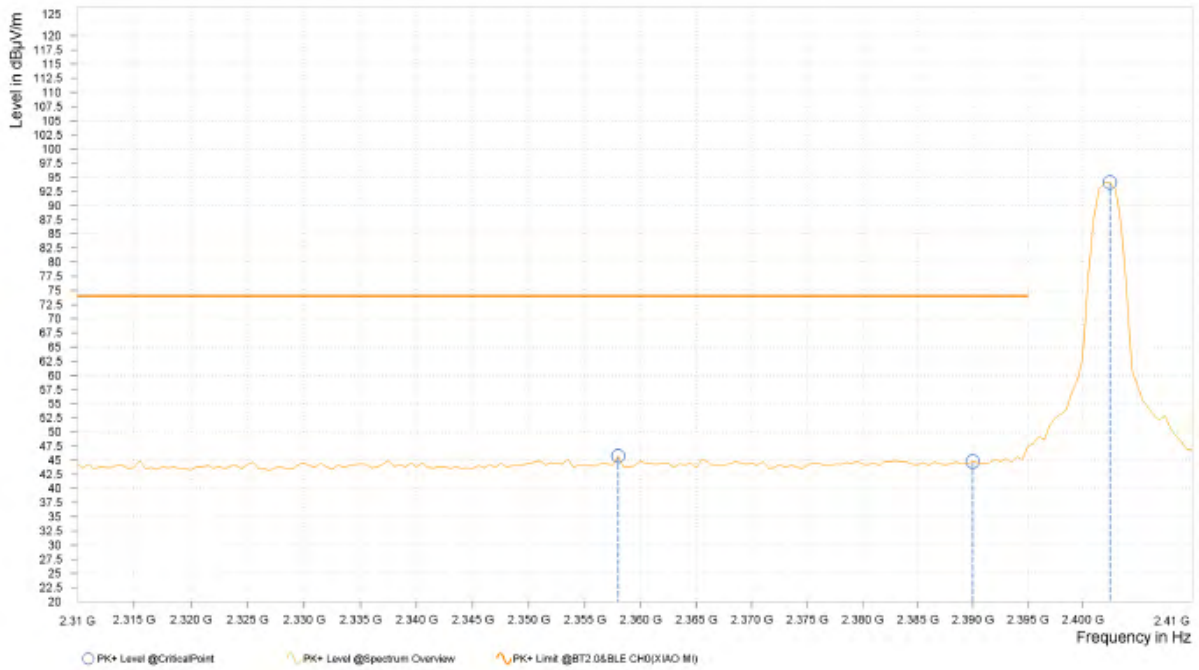
Note: 1. For radiated emissions testing，the full testing range of different modes have been scanned，only the worst case harmonic data is reported in the sheet.

2. All other emissions were greater than 20dB below the limit was not recorded

BT-LE _1M

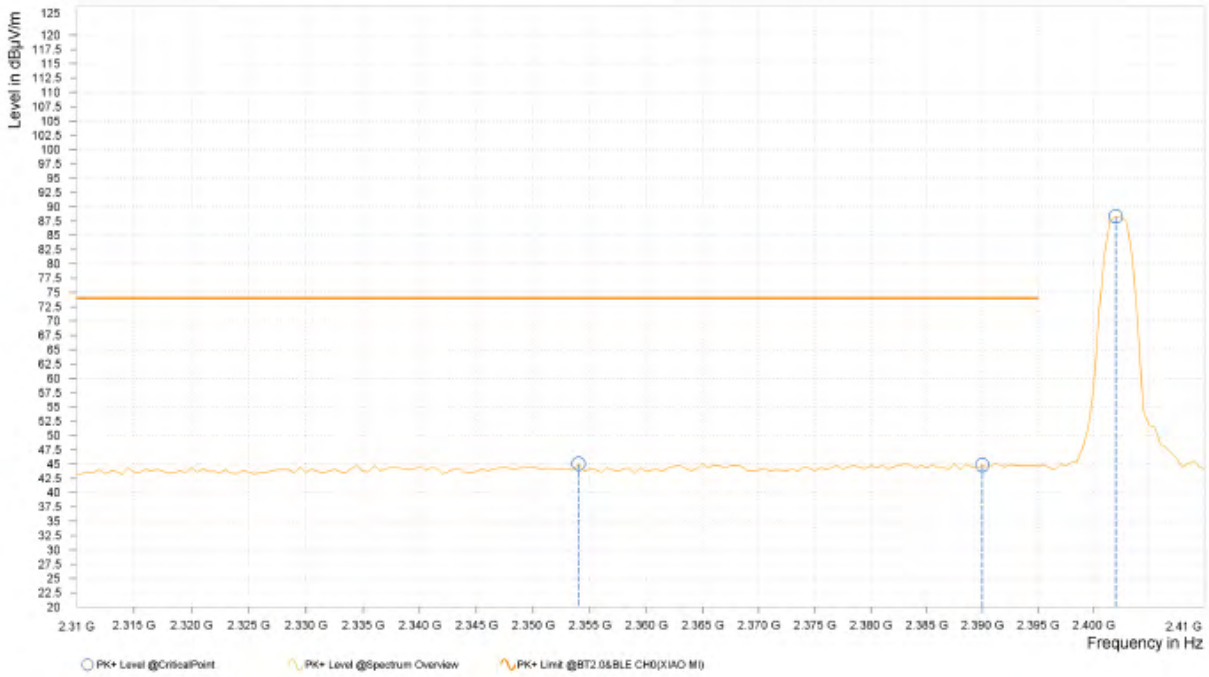
CHANNEL	TX Channel 0	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,382.000	30.62	54.00	23.38	5.71	H	229.2	2.00
5	2,390.000	30.59	54.00	23.41	5.77	H	331.6	1.00
5	2,402.000	87.65			5.85	H	196.6	1.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,358.000	45.73	74.00	28.27	5.61	H	1	1.00
5	2,390.000	44.76	74.00	29.24	5.77	H	359	1.00
5	2,402.500	94.07			5.86	H	197.8	1.00

Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,383.000	30.62	54.00	23.38	5.72	V	210	2.00
5	2,390.000	30.54	54.00	23.46	5.77	V	356.8	1.00
5	2,402.000	82.67			5.85	V	283.8	1.00



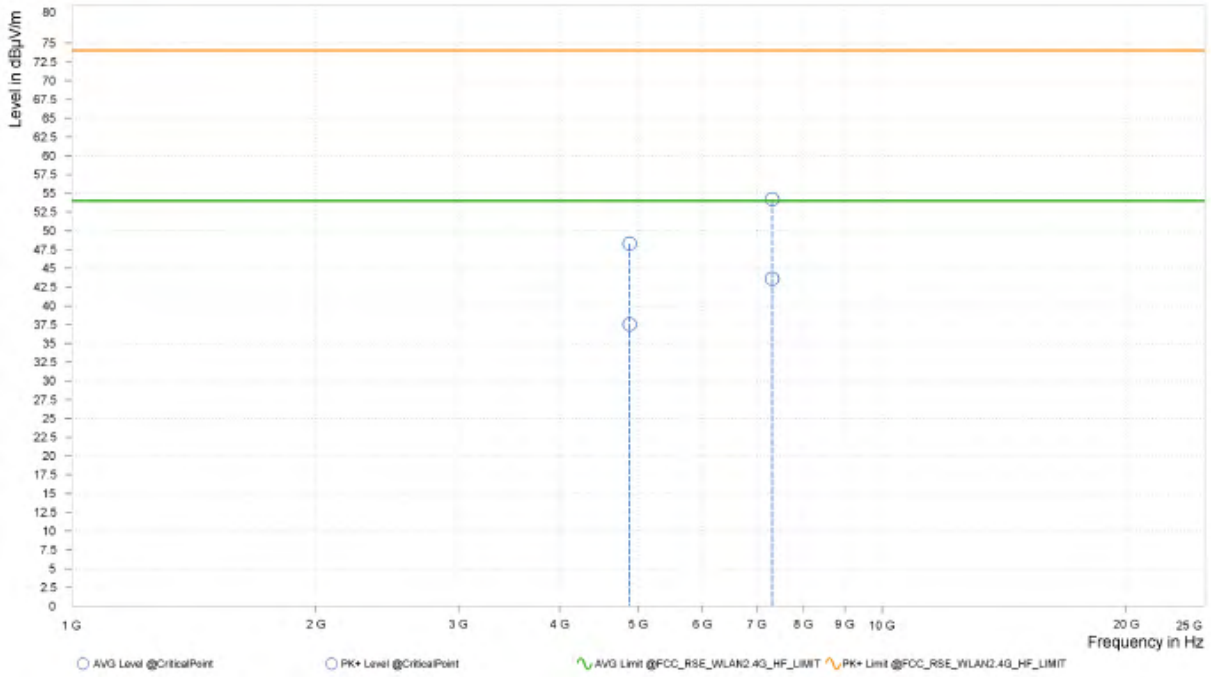
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,354.000	45.07	74.00	28.93	5.60	V	61.4	1.00
5	2,390.000	44.78	74.00	29.22	5.77	V	296.2	2.00
5	2,402.000	88.28			5.85	V	358.2	1.00

REMARKS:

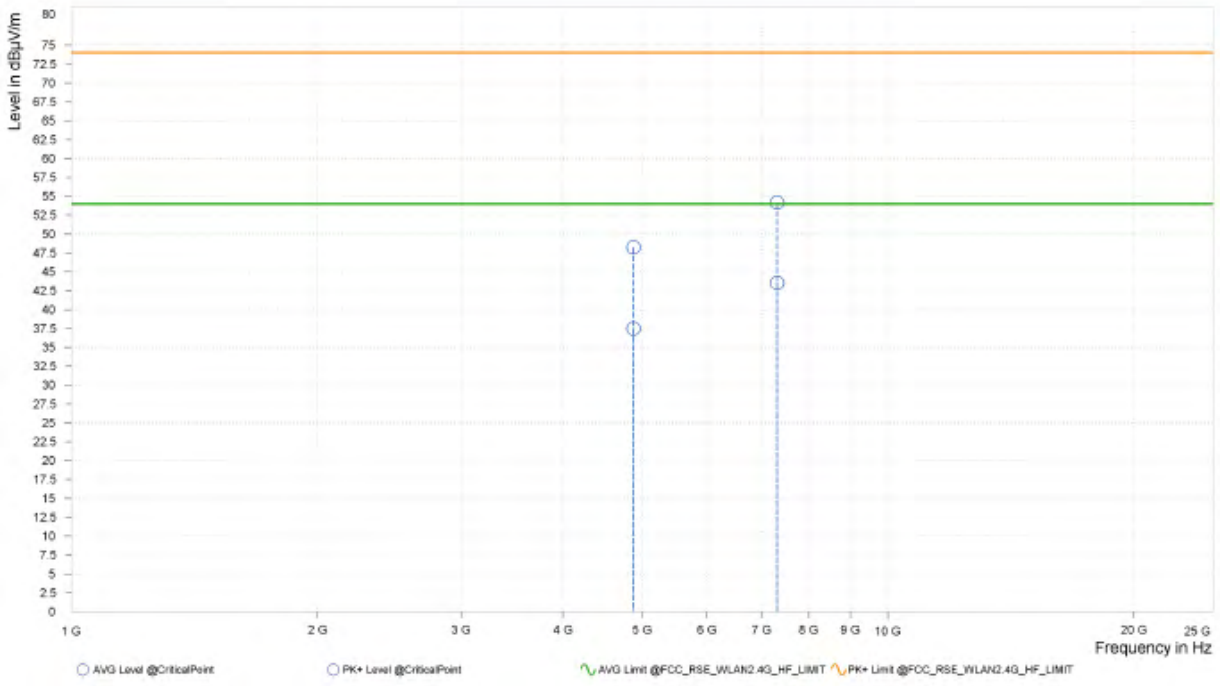
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2402MHz: Fundamental frequency.

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,880.000	48.28	74.00	25.72	37.54	54.00	16.46	13.54	H	359	2.00
2	7,320.000	54.19	74.00	19.81	43.61	54.00	10.39	18.90	H	359	2.00



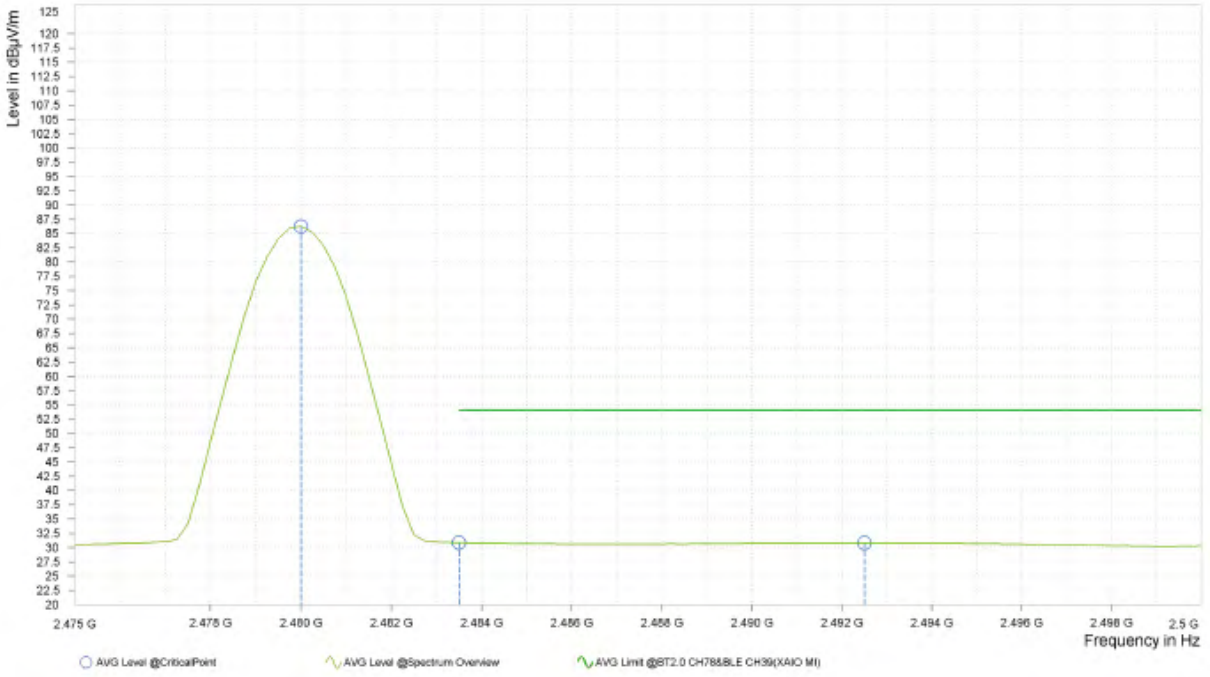
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,880.000	48.24	74.00	25.76	37.47	54.00	16.53	13.54	V	9.4	2.00
2	7,320.000	54.16	74.00	19.84	43.56	54.00	10.44	18.90	V	268.7	2.00



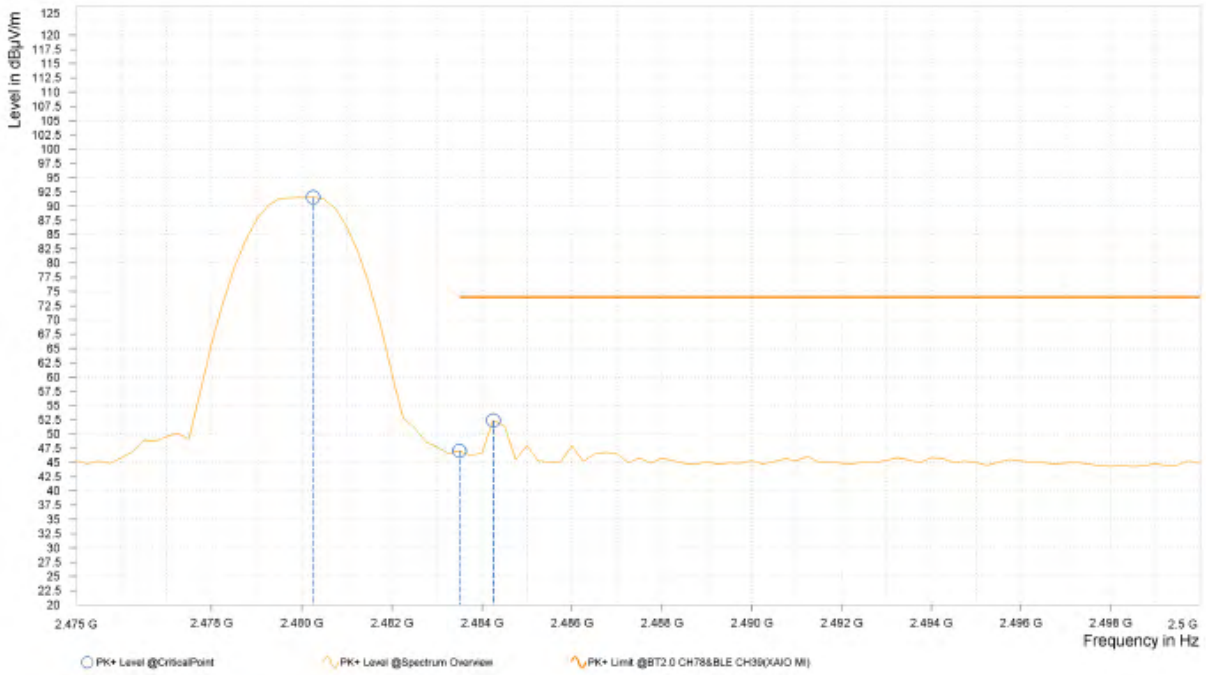
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2440MHz: Fundamental frequency.

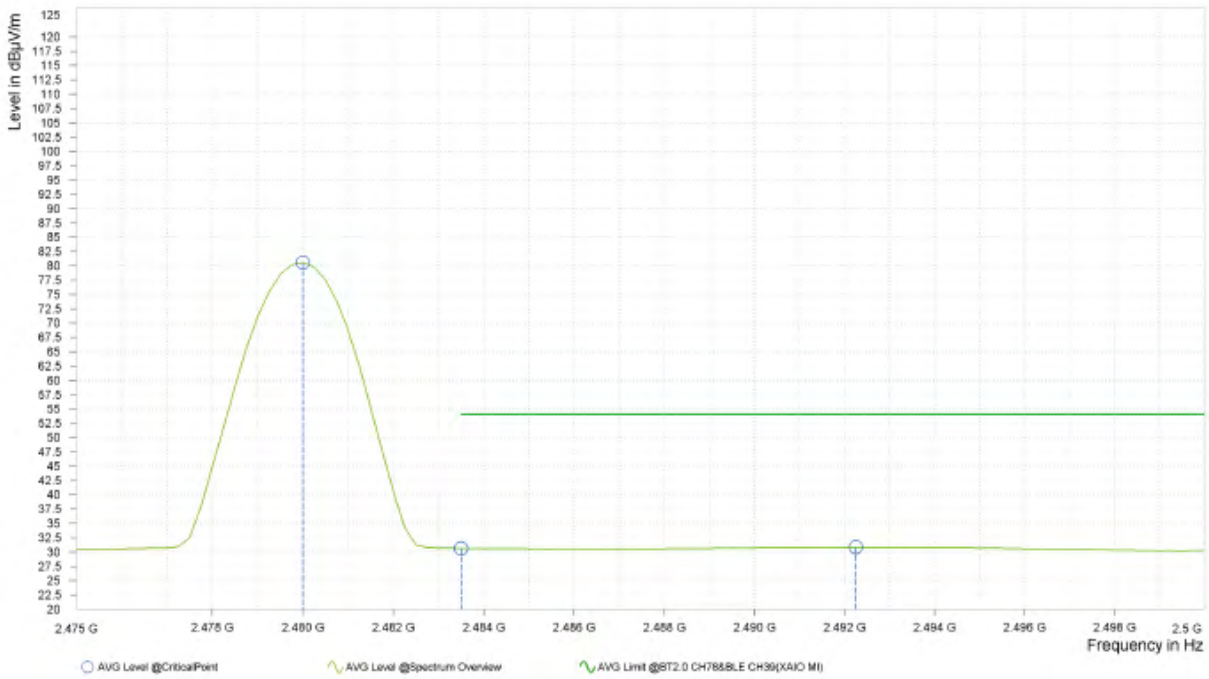
CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



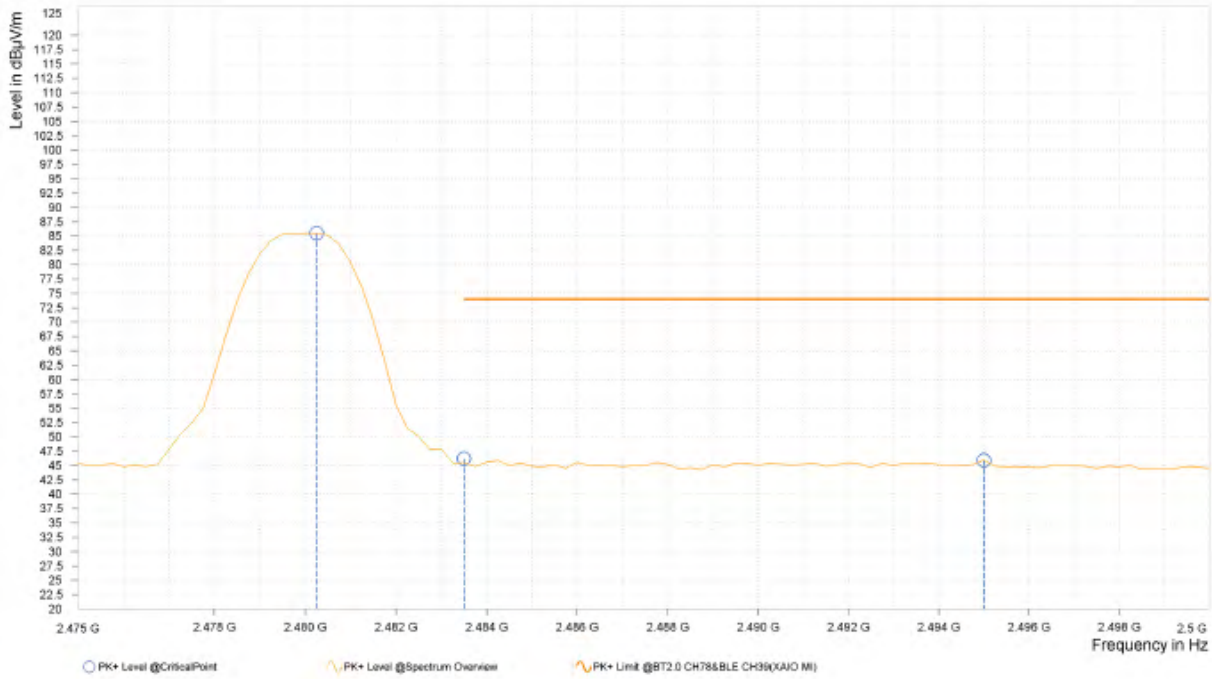
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.000	86.26			5.89	H	180.9	1.00
6	2,483.500	30.86	54.00	23.14	5.91	H	180.9	1.00
6	2,492.500	30.82	54.00	23.18	5.97	H	180.9	1.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.250	91.57			5.89	H	178.6	1.00
6	2,483.500	47.03	74.00	26.97	5.91	H	270.6	1.00
6	2,484.250	52.39	74.00	21.61	5.92	H	178.6	1.00



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.000	80.59			5.89	V	274.2	1.00
6	2,483.500	30.63	54.00	23.37	5.91	V	274.2	1.00
6	2,492.250	30.83	54.00	23.17	5.97	V	88.9	1.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.250	85.51			5.89	V	273	1.00
6	2,483.500	46.21	74.00	27.79	5.91	V	0.9	2.00
6	2,495.000	45.94	74.00	28.06	5.99	V	176.6	2.00

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2480MHz: Fundamental frequency.

BT-LE _2M

CHANNEL	TX Channel 1	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,382.500	30.58	54.00	23.42	5.72	H	359	2.00
5	2,390.000	30.53	54.00	23.47	5.77	H	72.6	2.00
5	2,402.000	81.73			5.85	H	332.7	1.00

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,363.500	46.13	74.00	27.87	5.62	H	355.1	2.00
5	2,390.000	44.49	74.00	29.51	5.77	H	359	2.00
5	2,402.500	93.91			5.86	H	196.5	1.00

Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,381.500	30.63	54.00	23.37	5.71	V	358.6	1.00
5	2,390.000	30.55	54.00	23.45	5.77	V	130.7	1.00
5	2,402.000	77.29			5.85	V	267	1.00

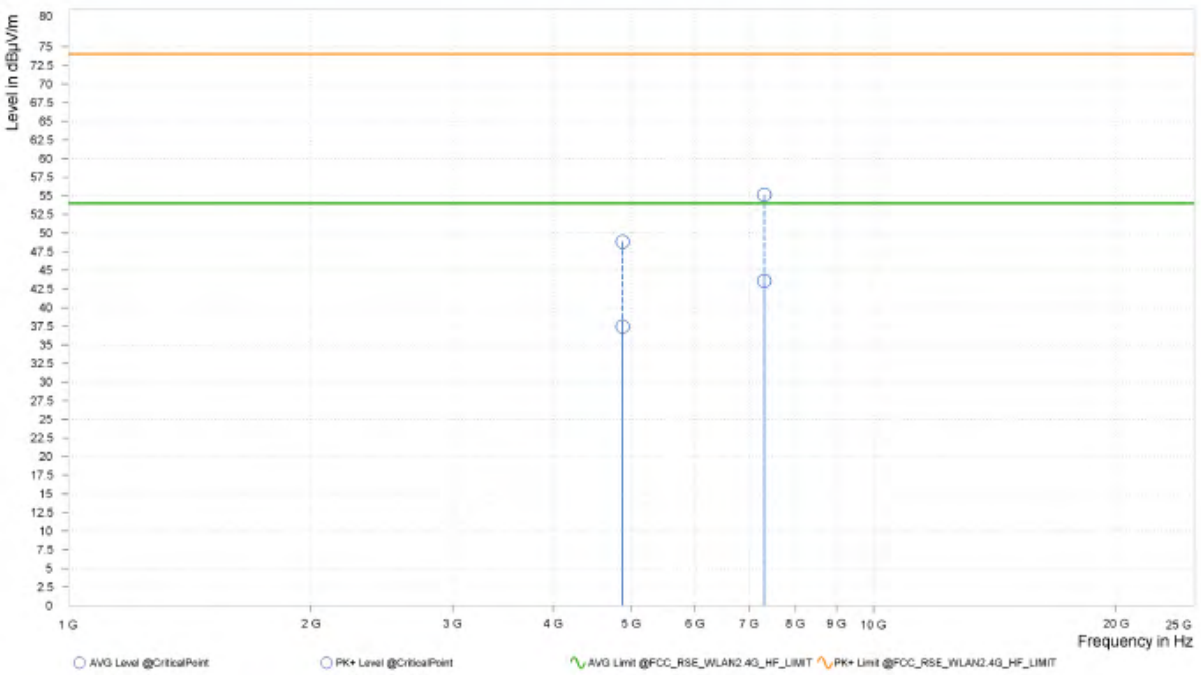
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,350.000	45.51	74.00	28.49	5.59	V	163.4	2.00
5	2,390.000	44.30	74.00	29.70	5.77	V	197.8	1.00
5	2,402.500	88.21			5.86	V	332.8	1.00

REMARKS:

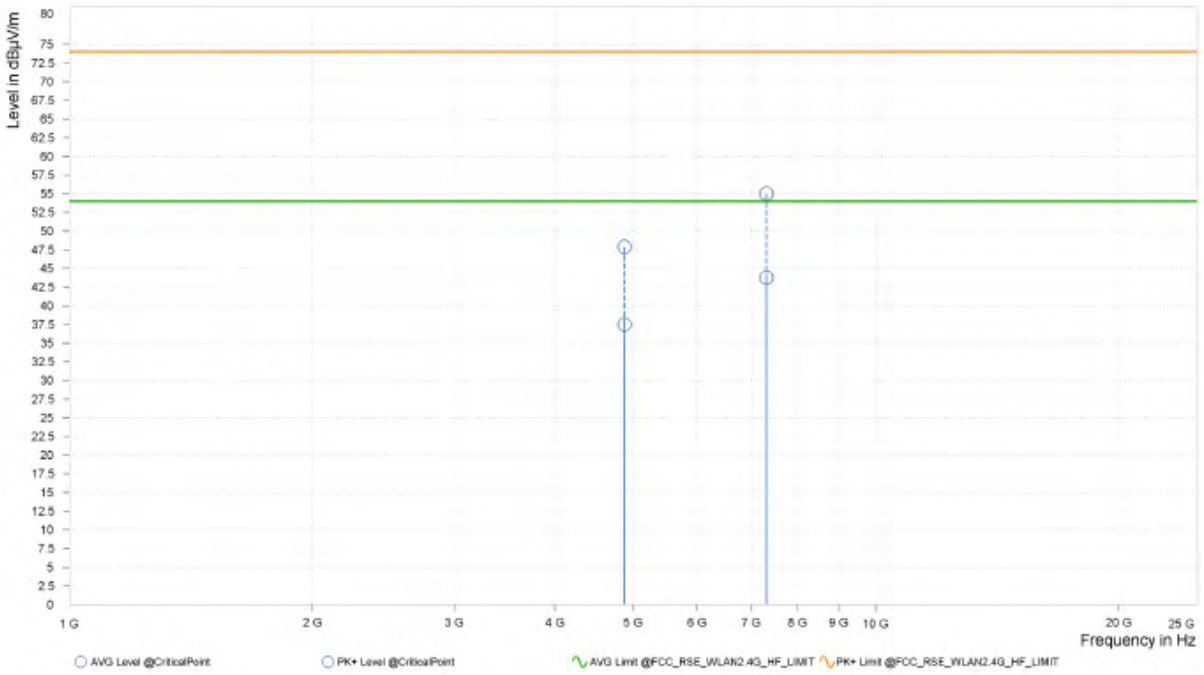
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2402MHz: Fundamental frequency.

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,880.000	48.84	74.00	25.16	37.44	54.00	16.56	13.54	H	359	2.00
2	7,320.000	55.13	74.00	18.87	43.59	54.00	10.41	18.90	H	10.6	2.00



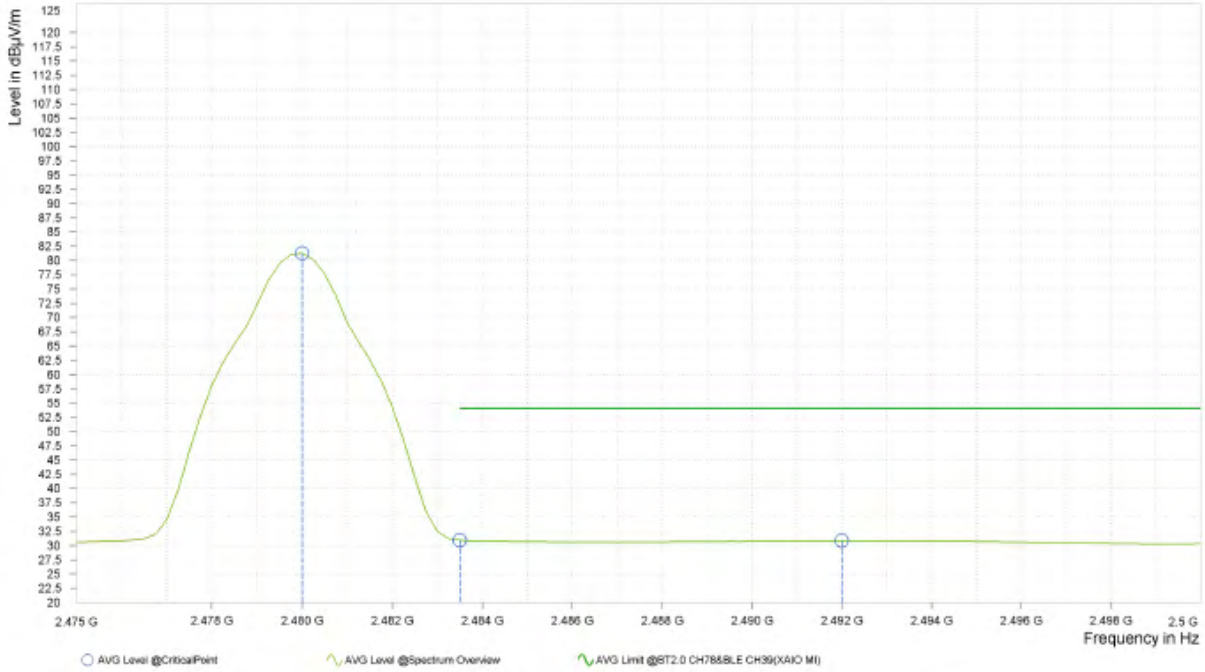
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,880.000	47.89	74.00	26.11	37.47	54.00	16.53	13.54	V	268.7	2.00
2	7,320.000	55.00	74.00	19.00	43.75	54.00	10.25	18.90	V	9.9	2.00



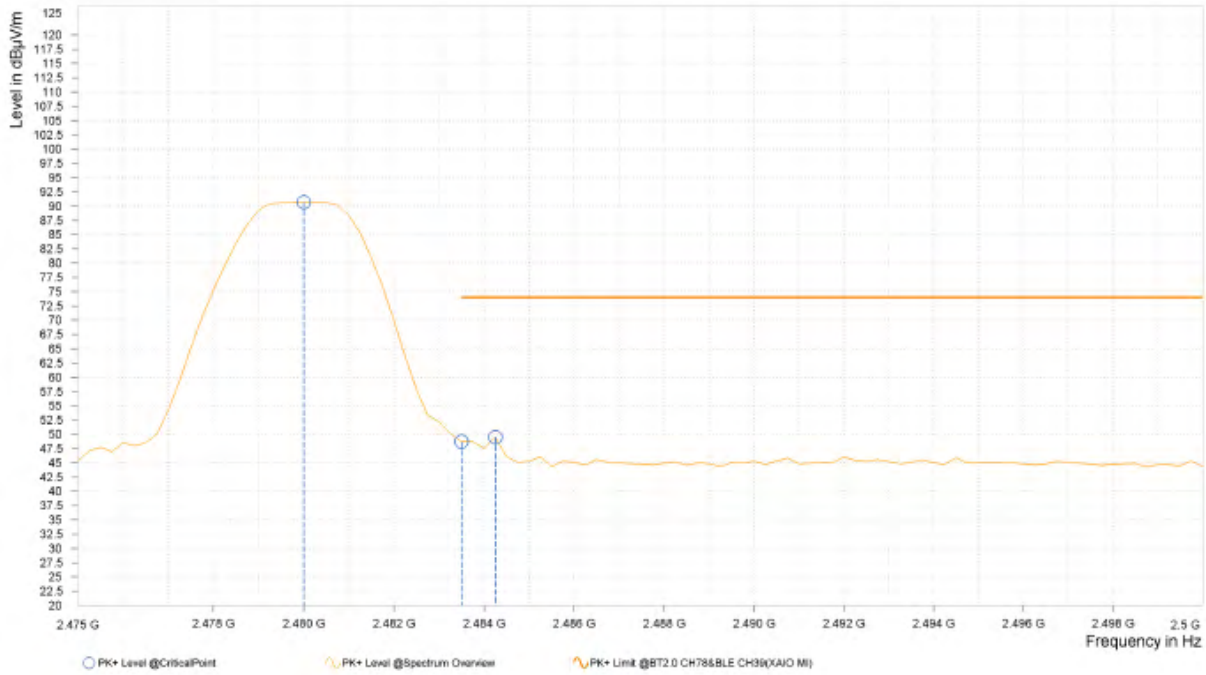
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2440MHz: Fundamental frequency.

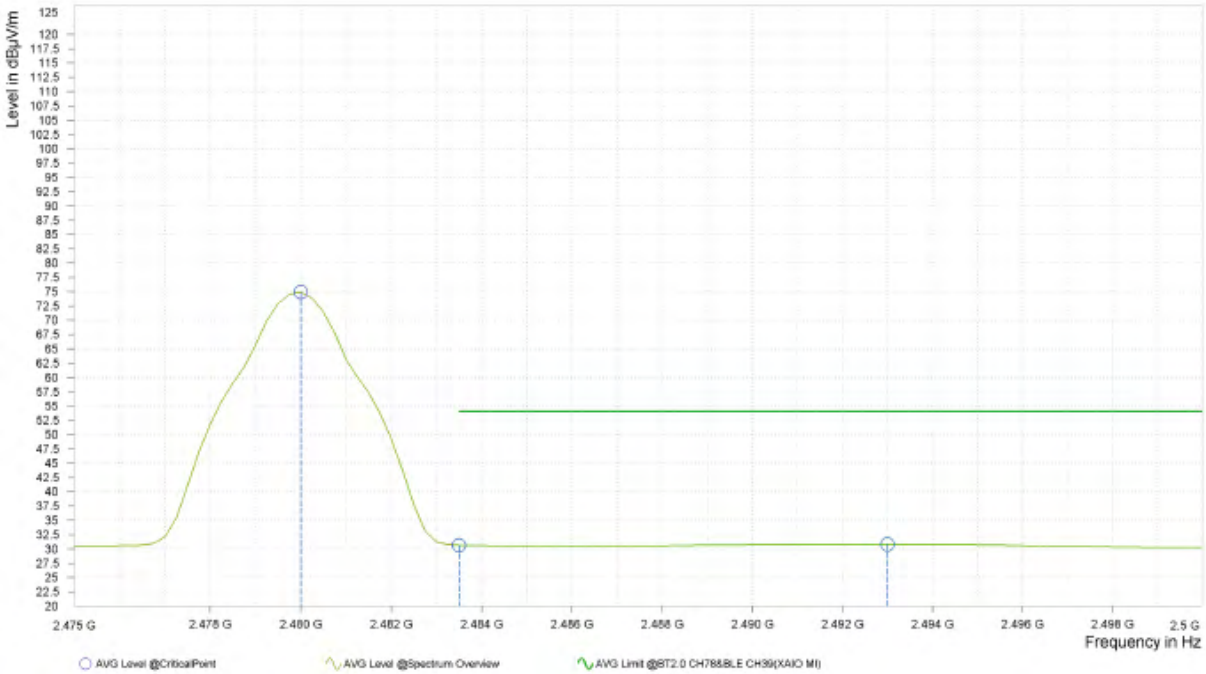
CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



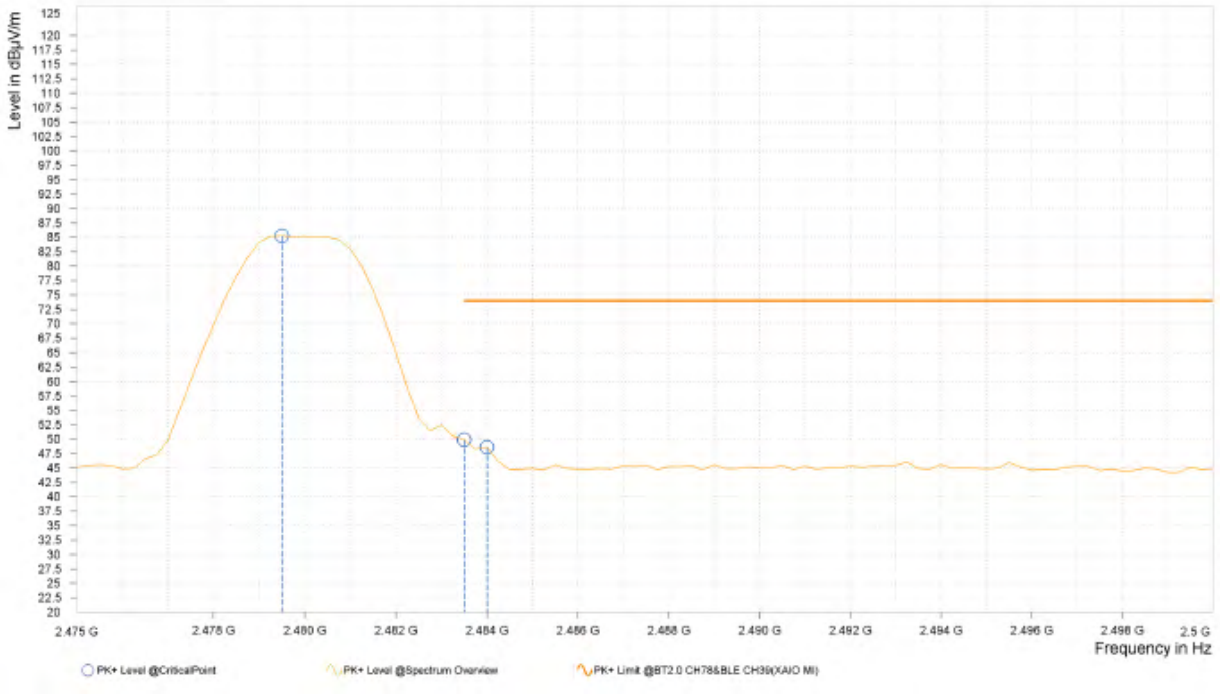
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.000	81.28			5.89	H	194.2	1.00
6	2,483.500	30.93	54.00	23.07	5.91	H	271	2.00
6	2,492.000	30.83	54.00	23.17	5.97	H	271	2.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.000	90.69			5.89	H	272.3	2.00
6	2,483.500	48.71	74.00	25.29	5.91	H	5.5	1.00
6	2,484.250	49.50	74.00	24.50	5.92	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]
6	2,480.000	74.93			5.89	V	1	1.00
6	2,483.500	30.65	54.00	23.35	5.91	V	275.4	1.00
6	2,493.000	30.82	54.00	23.18	5.98	V	1	2.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.500	85.26			5.89	V	177.8	2.00
6	2,483.500	49.89	74.00	24.11	5.91	V	225.1	1.00
6	2,484.000	48.62	74.00	25.38	5.92	V	177.8	2.00

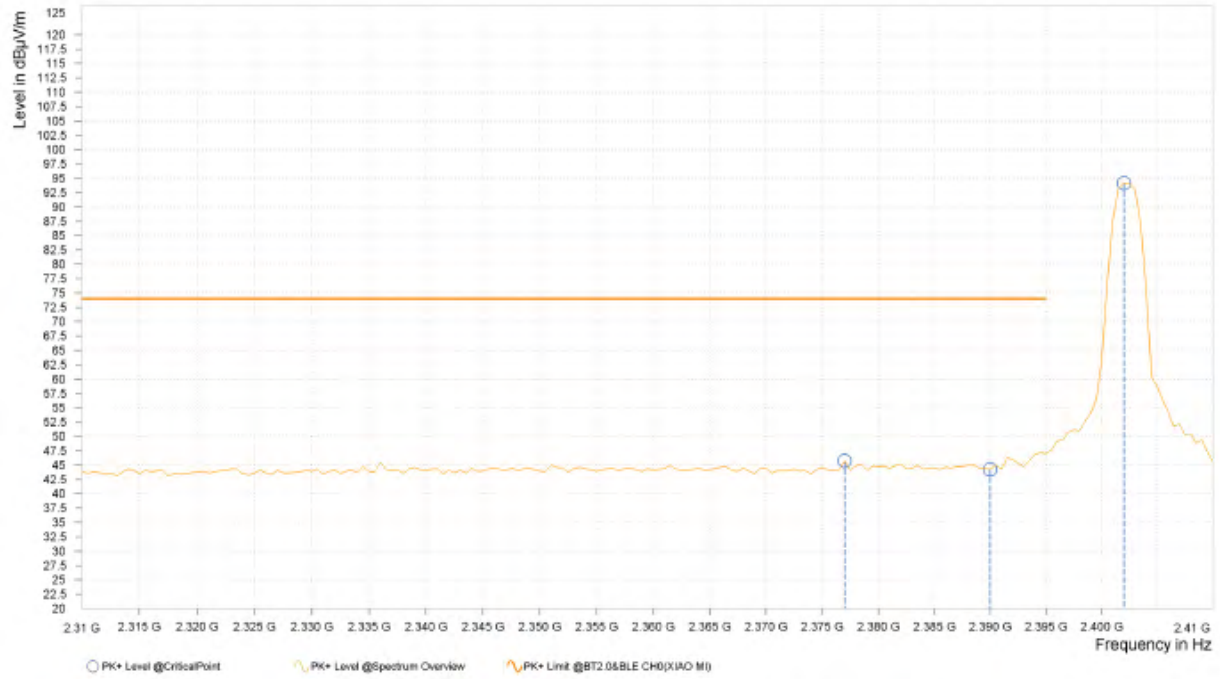
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2480MHz: Fundamental frequency.

BT-LE _S2

CHANNEL	TX Channel 0	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,382.000	30.64	54.00	23.36	5.71	H	359.1	1.00
5	2,390.000	30.56	54.00	23.44	5.77	H	208.5	1.00
5	2,402.000	86.78			5.85	H	208.5	1.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,377.000	45.71	74.00	28.29	5.68	H	359.1	1.00
5	2,390.000	44.25	74.00	29.75	5.77	H	1.1	2.00
5	2,402.000	94.14			5.85	H	200.2	1.00

Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,382.500	30.61	54.00	23.39	5.72	V	4.9	1.00
5	2,390.000	30.54	54.00	23.46	5.77	V	359.1	1.00
5	2,402.000	81.76			5.85	V	359.1	1.00

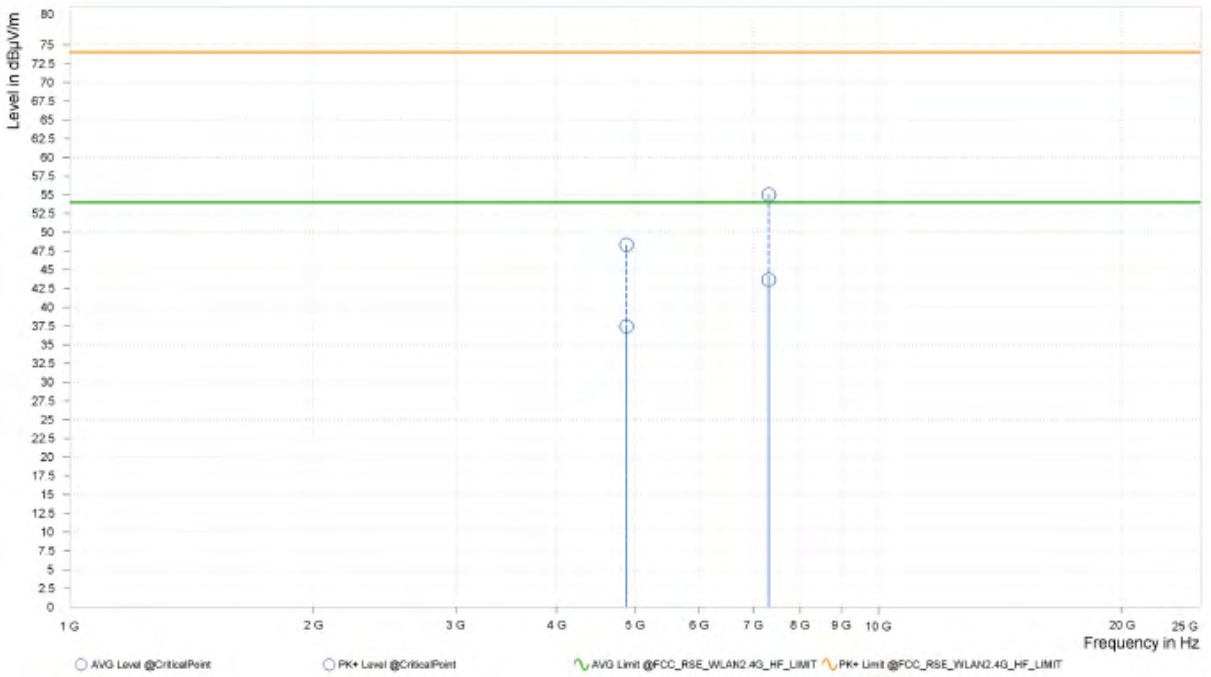
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,380.000	46.23	74.00	27.77	5.70	V	359	2.00
5	2,390.000	44.95	74.00	29.05	5.77	V	201.4	1.00
5	2,402.500	88.17			5.86	V	359.1	1.00

REMARKS:

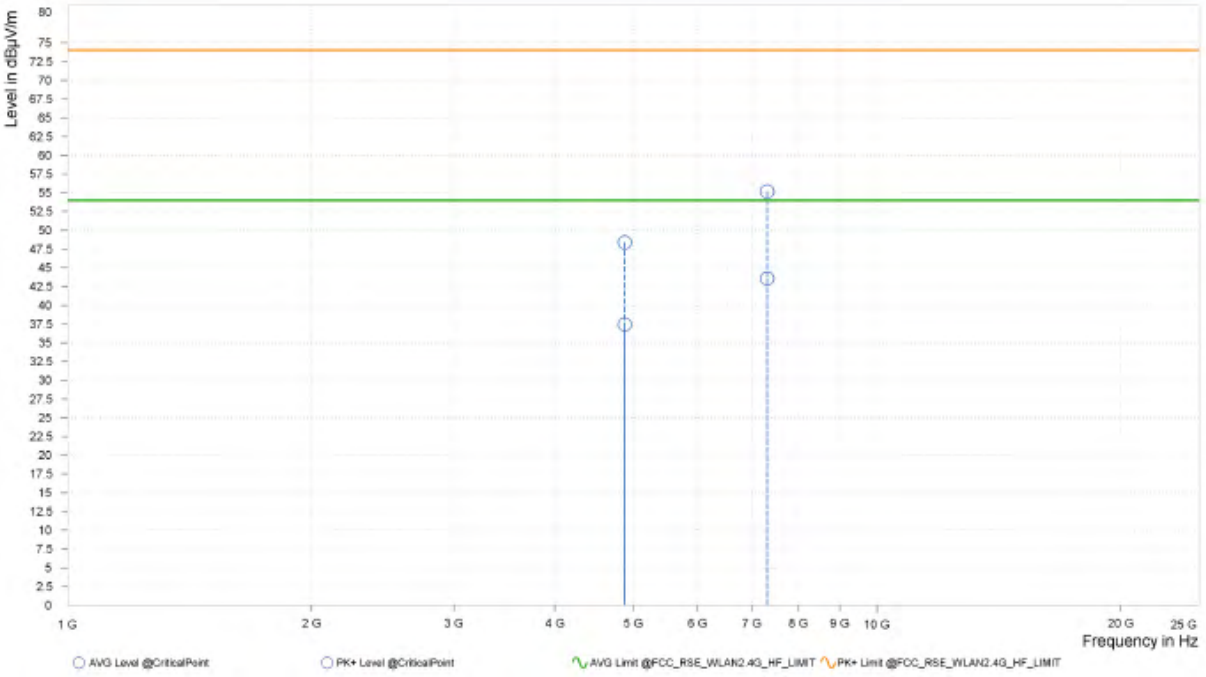
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2402MHz: Fundamental frequency.

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,880.000	48.33	74.00	25.67	37.44	54.00	16.56	13.54	H	0.9	2.00
2	7,320.000	55.01	74.00	18.99	43.69	54.00	10.31	18.90	H	0.9	2.00



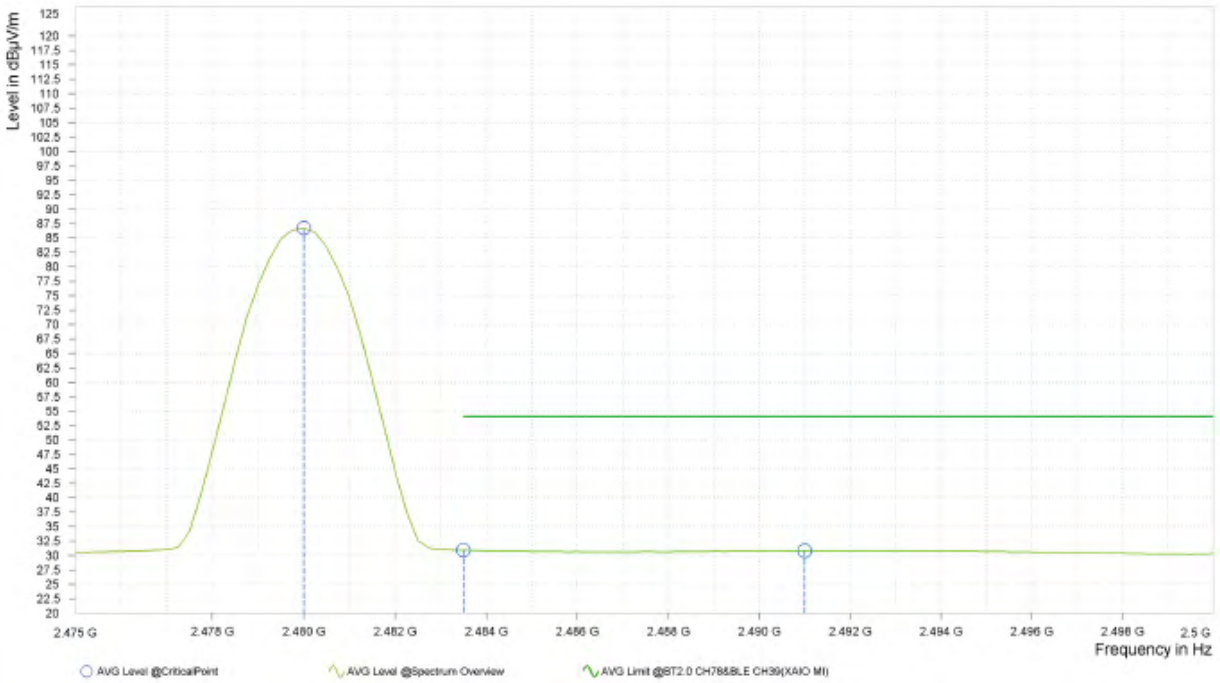
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,880.000	48.40	74.00	25.60	37.44	54.00	16.56	13.54	V	9.9	2.00
2	7,320.000	55.20	74.00	18.80	43.58	54.00	10.42	18.90	V	359	2.00



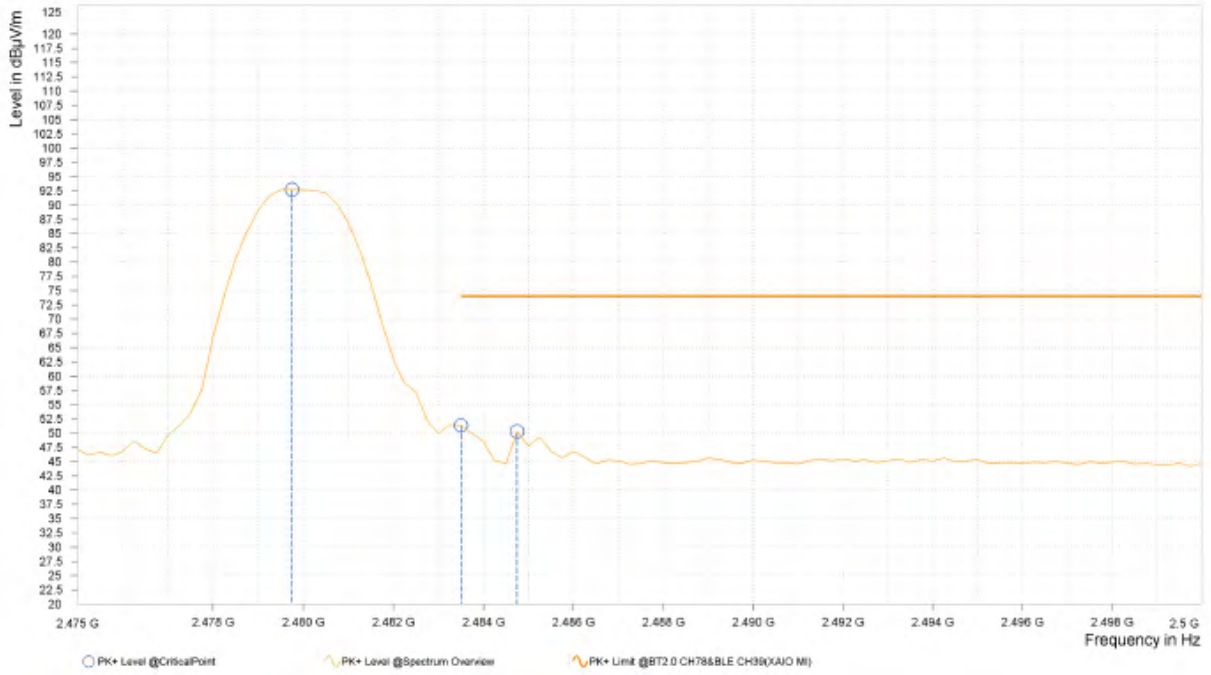
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2440MHz: Fundamental frequency.

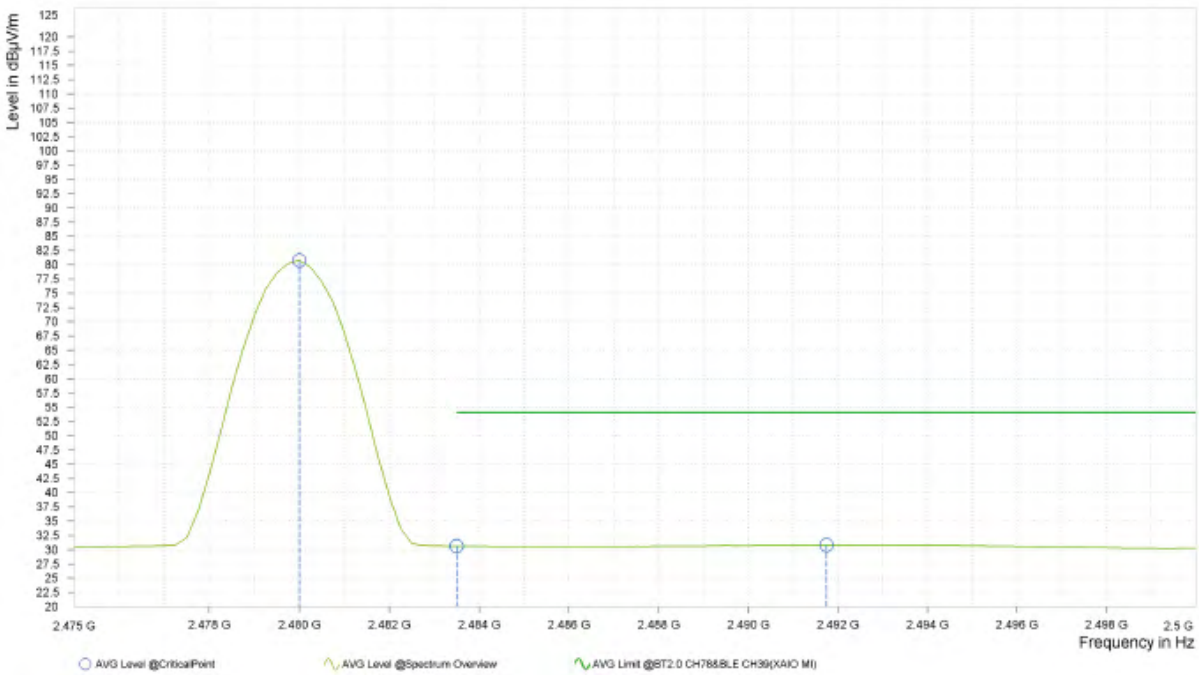
CHANNEL	TX Channel 39	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



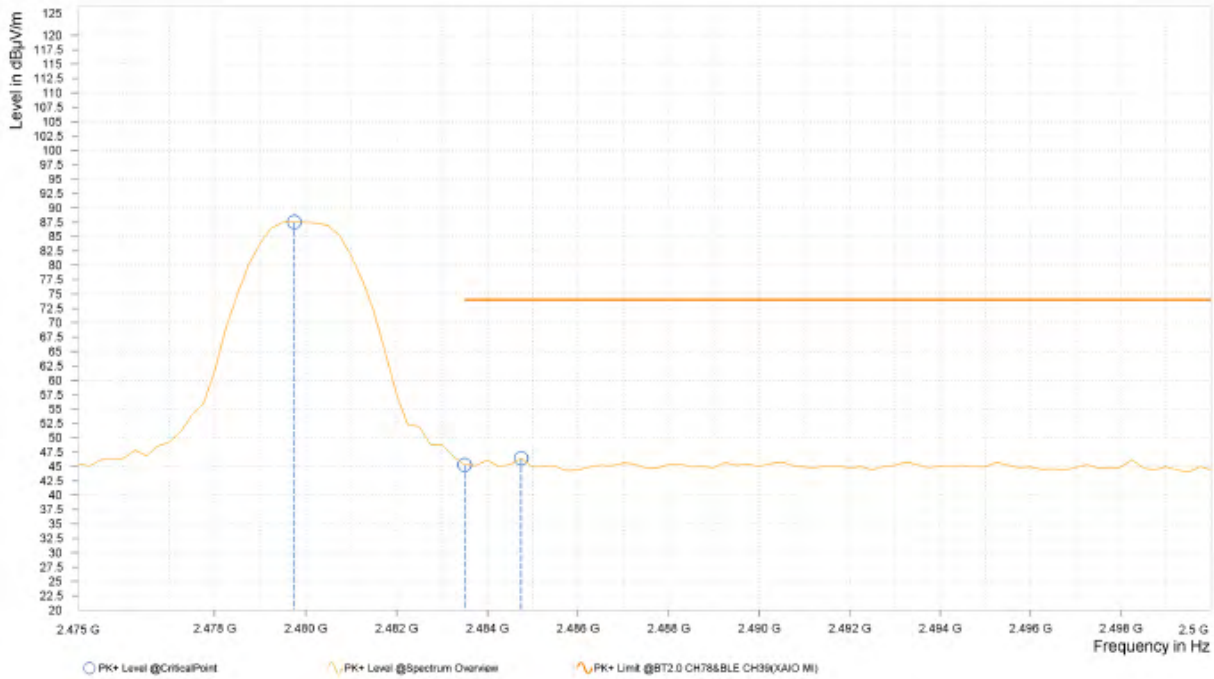
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.000	86.69			5.89	H	183.3	1.00
6	2,483.500	30.93	54.00	23.07	5.91	H	183.3	1.00
6	2,491.000	30.81	54.00	23.19	5.96	H	269.8	2.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.750	92.75			5.89	H	187	1.00
6	2,483.500	51.34	74.00	22.66	5.91	H	176.6	2.00
6	2,484.750	50.27	74.00	23.73	5.92	H	269.8	2.00



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.000	80.79			5.89	V	325.6	1.00
6	2,483.500	30.64	54.00	23.36	5.91	V	227.6	1.00
6	2,491.750	30.81	54.00	23.19	5.97	V	269.9	2.00



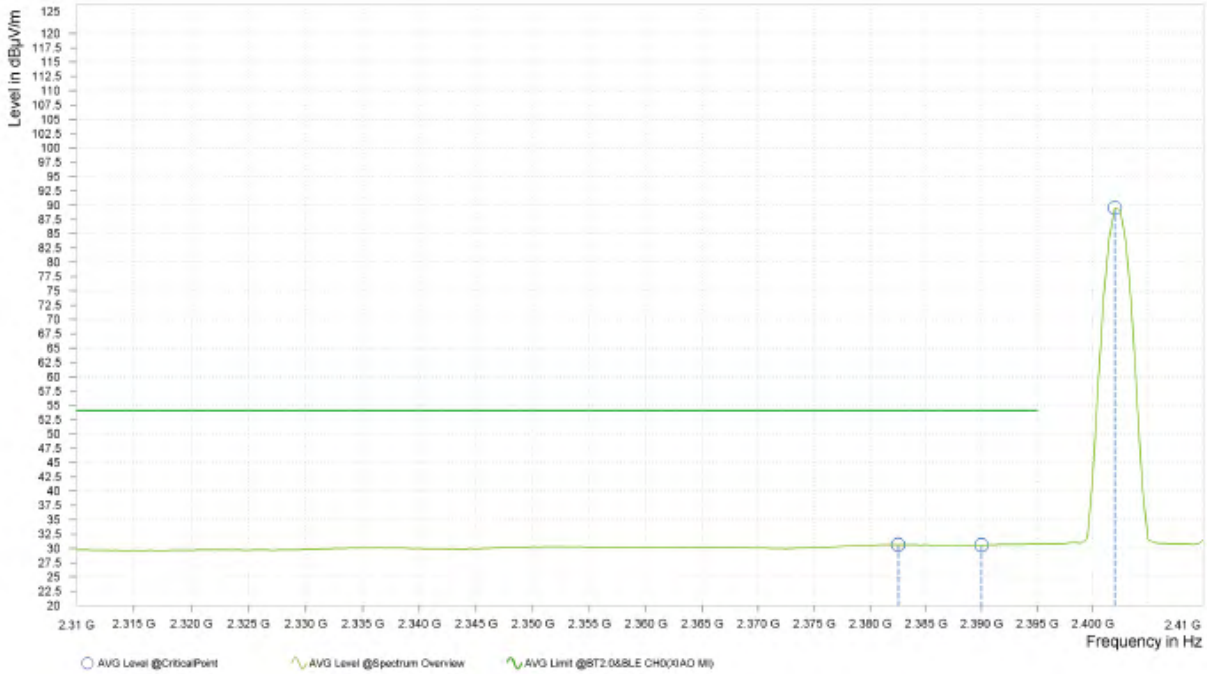
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.750	87.53			5.89	V	286.2	1.00
6	2,483.500	45.30	74.00	28.70	5.91	V	286.2	1.00
6	2,484.750	46.41	74.00	27.59	5.92	V	286.2	1.00

REMARKS:

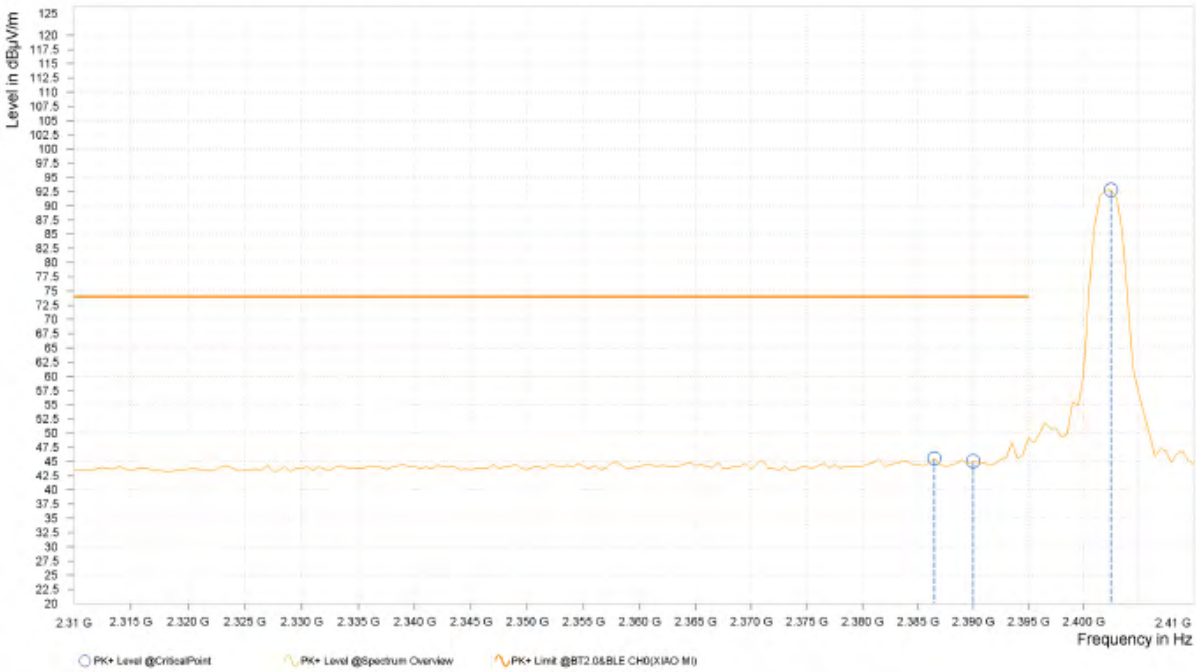
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2480MHz: Fundamental frequency.

BT-LE _S8

CHANNEL	TX Channel 0	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

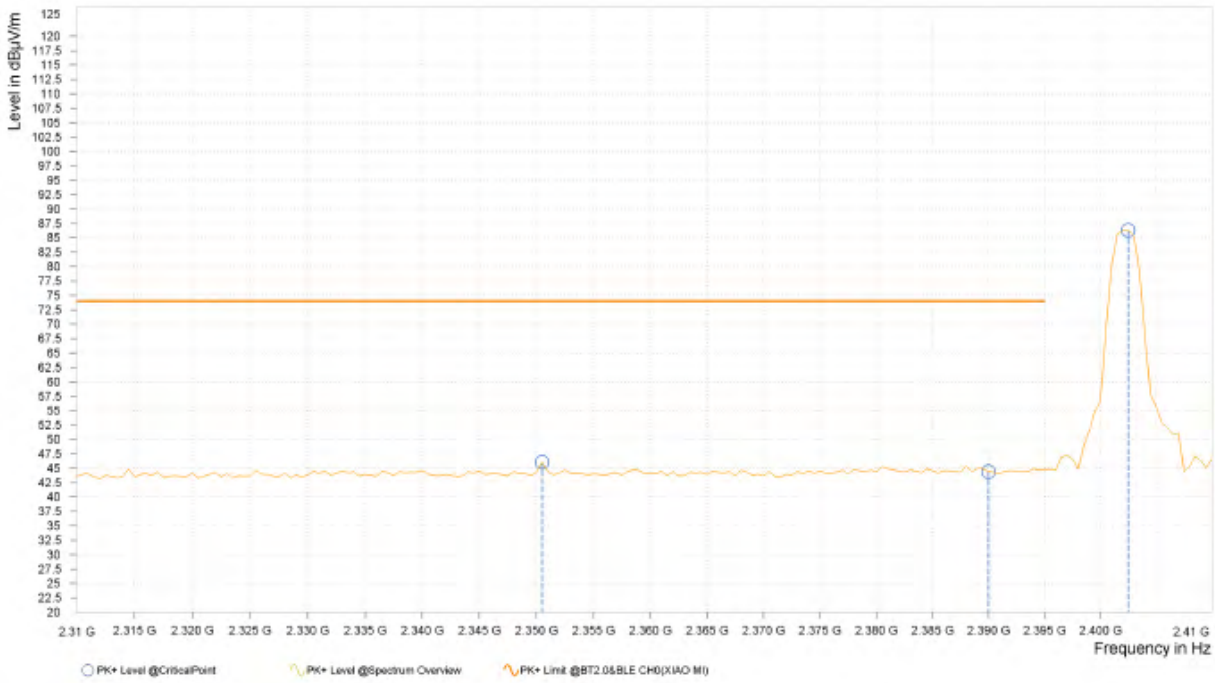


Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,382.500	30.63	54.00	23.37	5.72	H	359	2.00
5	2,390.000	30.56	54.00	23.44	5.77	H	136.7	1.00
5	2,402.000	89.53			5.85	H	317.3	1.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,386.500	45.56	74.00	28.44	5.75	H	134.4	1.00
5	2,390.000	45.03	74.00	28.97	5.77	H	17	2.00
5	2,402.500	92.76			5.86	H	359.1	1.00

Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,383.500	30.64	54.00	23.36	5.73	V	277.8	1.00
5	2,390.000	30.60	54.00	23.40	5.77	V	75	2.00
5	2,402.000	84.51			5.85	V	277.8	1.00



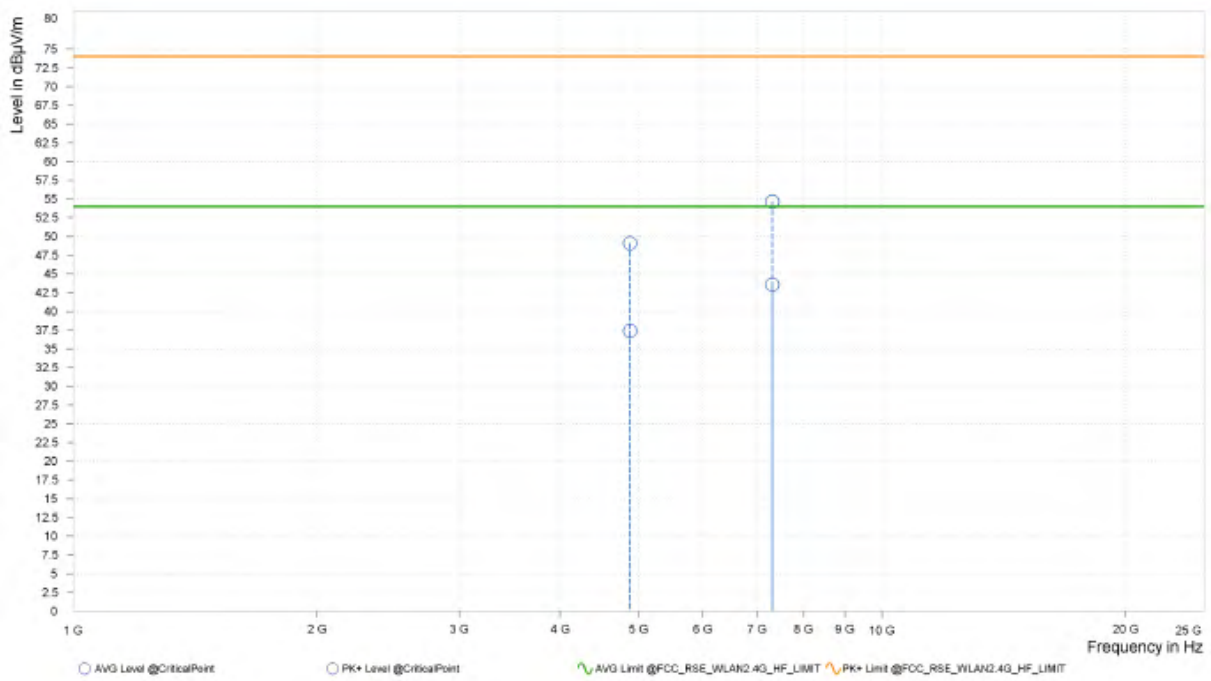
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
5	2,350.500	46.04	74.00	27.96	5.59	V	204.9	1.00
5	2,390.000	44.42	74.00	29.58	5.77	V	359	2.00
5	2,402.500	86.29			5.86	V	204.9	1.00

REMARKS:

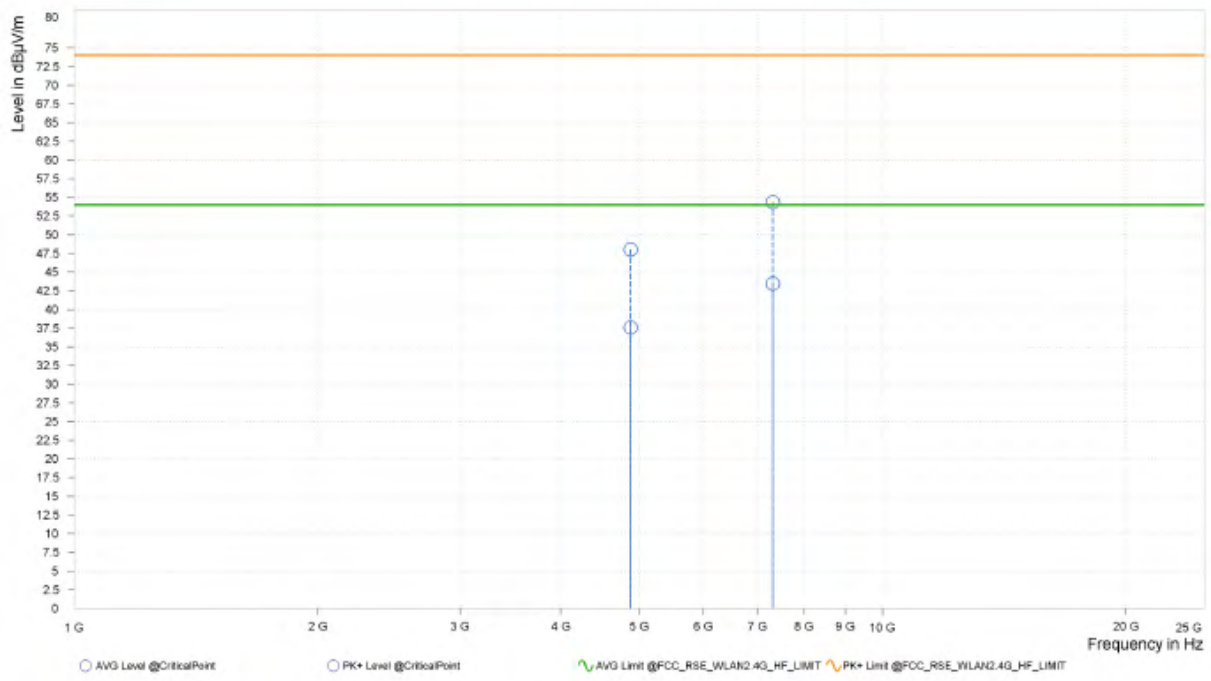
1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2402MHz: Fundamental frequency.

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,880.000	49.10	74.00	24.90	37.40	54.00	16.60	13.54	H	9.3	2.00
2	7,320.000	54.66	74.00	19.34	43.58	54.00	10.42	18.90	H	9.3	2.00



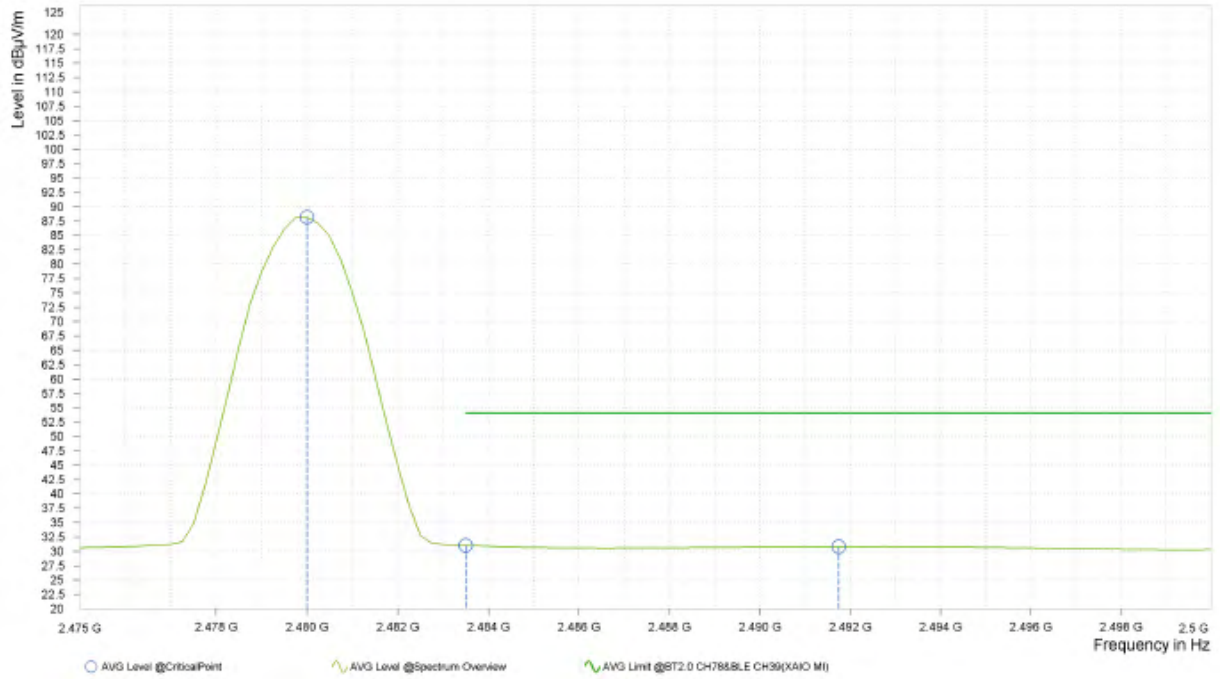
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	4,880.000	48.03	74.00	25.97	37.59	54.00	16.41	13.54	V	2.6	2.00
2	7,320.000	54.35	74.00	19.65	43.46	54.00	10.54	18.90	V	1	2.00



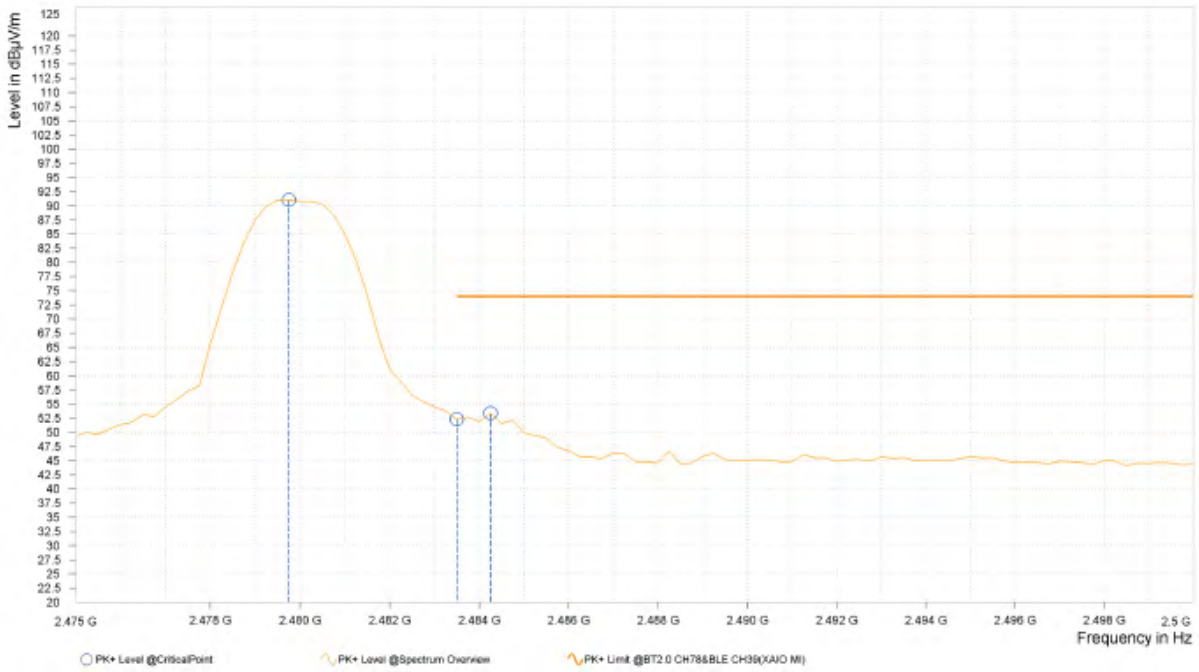
REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2440MHz: Fundamental frequency.

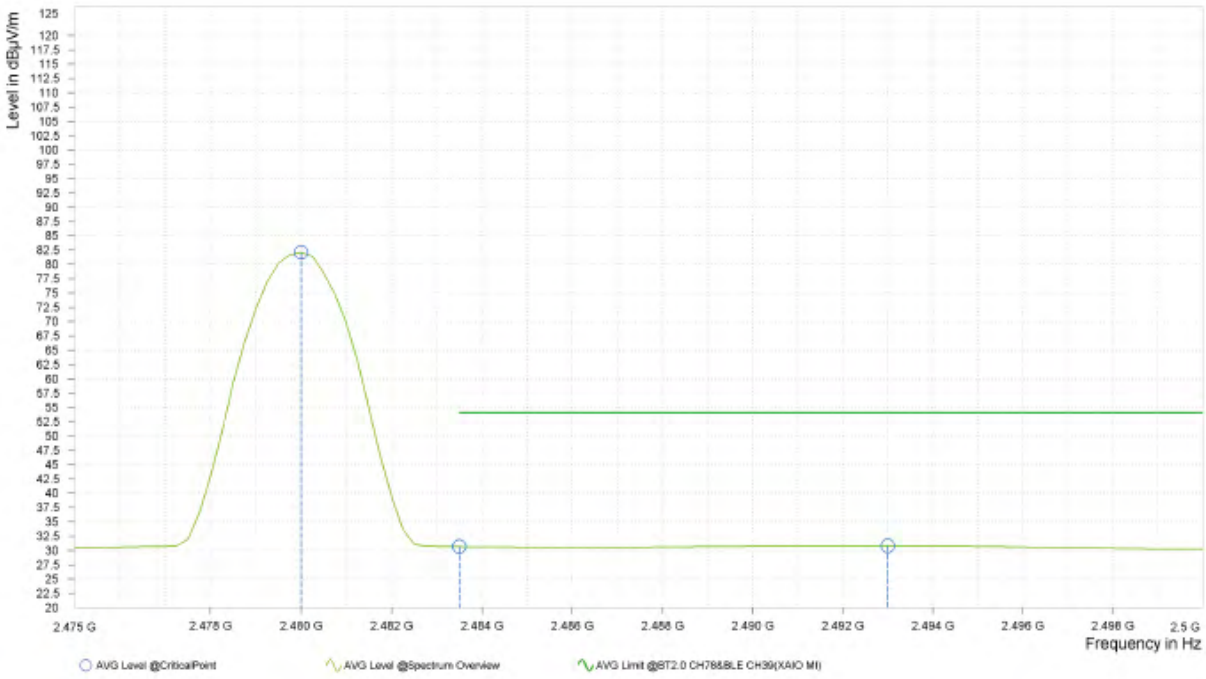
CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		



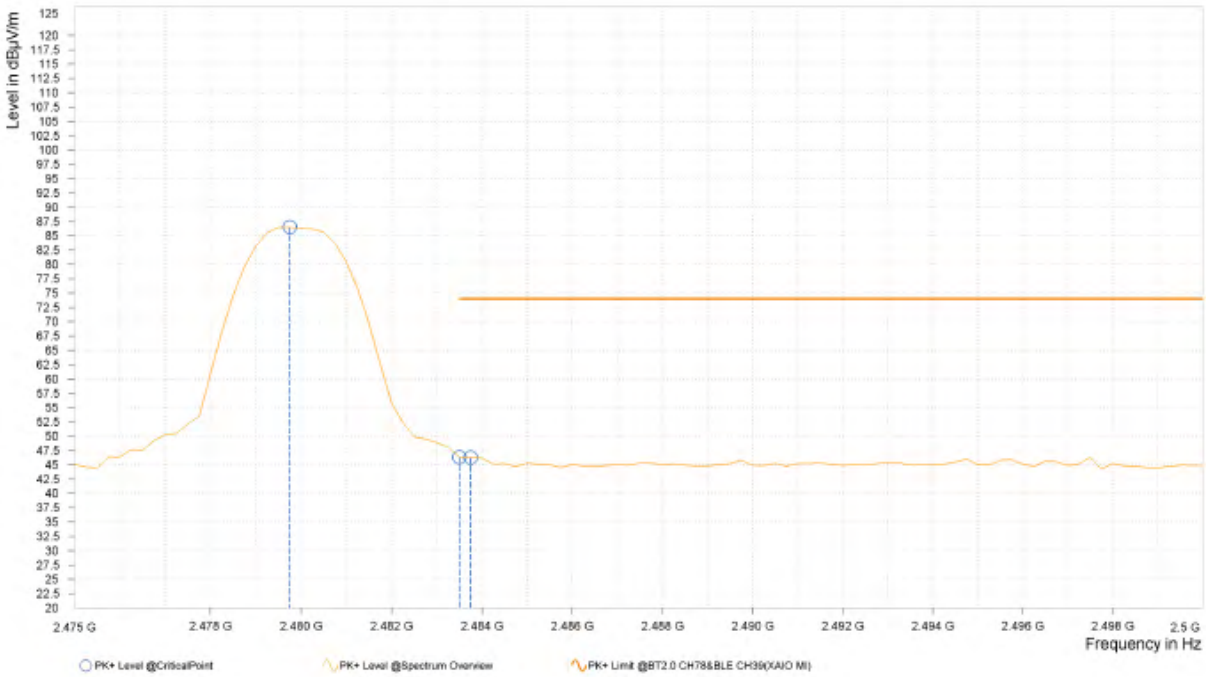
Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.000	88.15			5.89	H	171.8	2.00
6	2,483.500	31.01	54.00	22.99	5.91	H	76.2	2.00
6	2,491.750	30.82	54.00	23.18	5.97	H	91.3	1.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.750	91.03			5.89	H	174.2	2.00
6	2,483.500	52.32	74.00	21.68	5.91	H	0.9	2.00
6	2,484.250	53.37	74.00	20.63	5.92	H	4.2	1.00



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,480.000	82.10			5.89	V	225.3	1.00
6	2,483.500	30.66	54.00	23.34	5.91	V	0.9	2.00
6	2,493.000	30.82	54.00	23.18	5.98	V	169.4	2.00



Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
6	2,479.750	86.51			5.89	V	98.4	1.00
6	2,483.500	46.34	74.00	27.66	5.91	V	0.9	2.00
6	2,483.750	46.25	74.00	27.75	5.92	V	359.1	1.00

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
   Margin value = Limit value–Emission level.
2. 2480MHz: Fundamental frequency.

3.3 6 dB BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

3.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	R&S	ESW 44	101973	Feb.25,24	Feb.24,26
Open Switch and Control Unit	R&S	OSP-B157W 8	100836	N/A	N/A
Vector Signal Generator	R&S	SMBV100B	102176	Feb.16,24	Feb.15,26
Signal Generator	R&S	SMB100A03	182185	Feb.16,24	Feb.15,26
Wideband Radio Communication	R&S	CMW500	169399	Jun.26,22	Jun.25,24
Hygrothermograph	DELI	20210528	SZ015	Sep.06,22	Sep.05,24
PC	LENOVO	E14	HRSW0024	N/A	N/A
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.28,24	Apr.27,25
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.28,24	Apr.27,25
Test Software	EMC32	EMC32	N/A	N/A	N/A
Temperature Chamber	votsch	VT4002	58566078100050	May.31,22	May.30,24
Temperature Chamber	votsch	VT4002	58566078100050	May.30,24	May.29,26

NOTE:

1. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in RF Oven room.

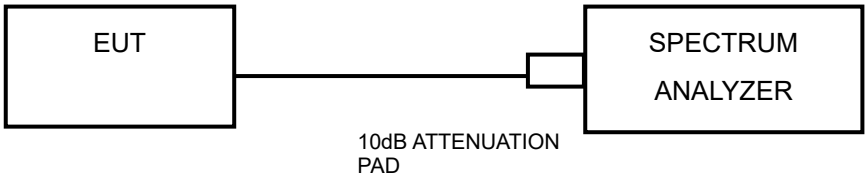
3.3.3 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

3.3.4 DEVIATION FROM TEST STANDARD

No deviation.

3.3.5 TEST SETUP



3.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.3.7 TEST RESULTS

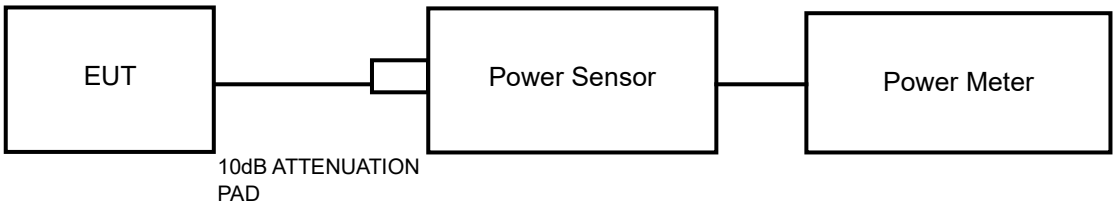
Please Refer to Appendix1/2 Of this test report.

3.4 CONDUCTED OUTPUT POWER

3.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

3.4.2 TEST SETUP



3.4.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.4.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.4.7 TEST RESULTS

3.4.7.1 MAXIMUM PEAK OUTPUT POWER

Please Refer to Appendix1/2 Of this test report.

3.4.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)

The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

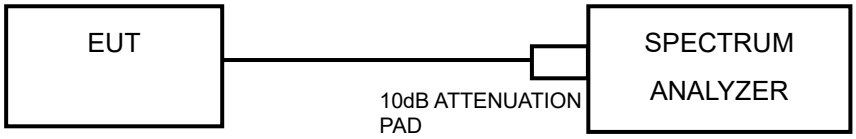
Please Refer to Appendix1/2 Of this test report.

3.5 POWER SPECTRAL DENSITY MEASUREMENT

3.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm/3KHz.

3.5.2 TEST SETUP



3.5.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.5.4 TEST PROCEDURE

1. Set the span to 1.5 times the DTS bandwidth
2. Set the RBW = 3 kHz, VBW ≥ 3 x RBW, Detector = peak.
3. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

3.5.5 DEVIATION FROM TEST STANDARD

No deviation.

3.5.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.5.7 TEST RESULTS

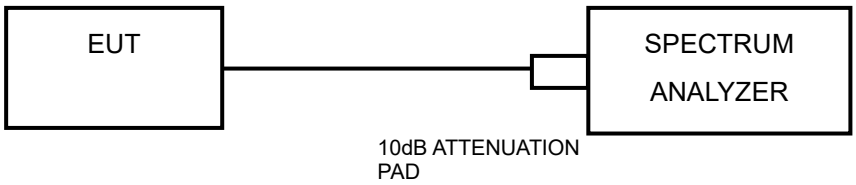
Please Refer to Appendix1/2 Of this test report.

3.6 OUT OF BAND EMISSION MEASUREMENT

3.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

3.6.2 TEST SETUP



3.6.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

3.6.5 DEVIATION FROM TEST STANDARD

No deviation.

3.6.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.6.7 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level. D2 line indicates the 20dB offset below D1. It shows compliance to the requirement.

Please Refer to Appendix1/2 Of this test report.

3.7 ANTENNA REQUIREMENTS

3.7.1 STANDARD APPLICABLE

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.7.2 ANTENNA CONNECTED CONSTRUCTION

An embedded-in antenna design is used.

3.7.3 ANTENNA GAIN

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit and PSD limit.

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

6 APPENDIX 1 WLAN

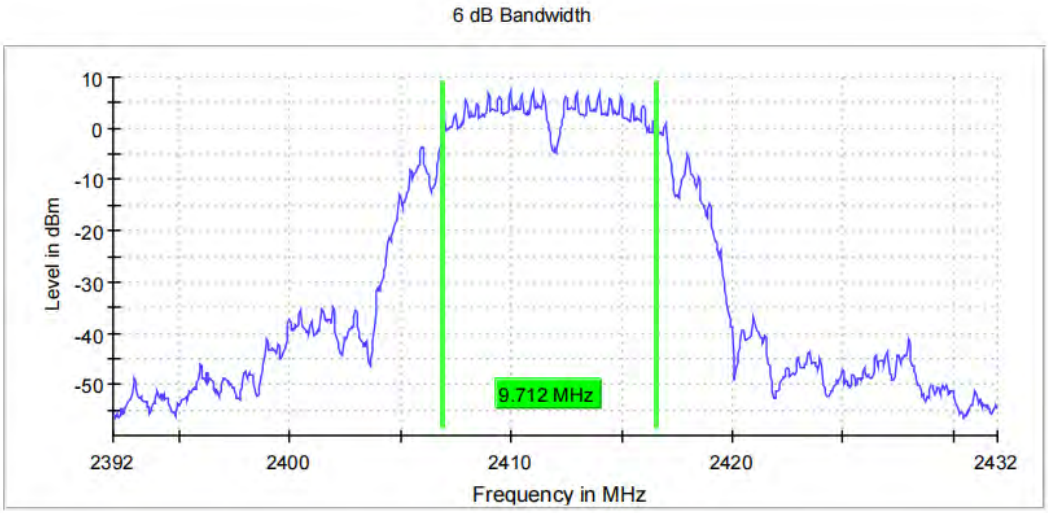
DTS BANDWIDTH

TEST RESULT

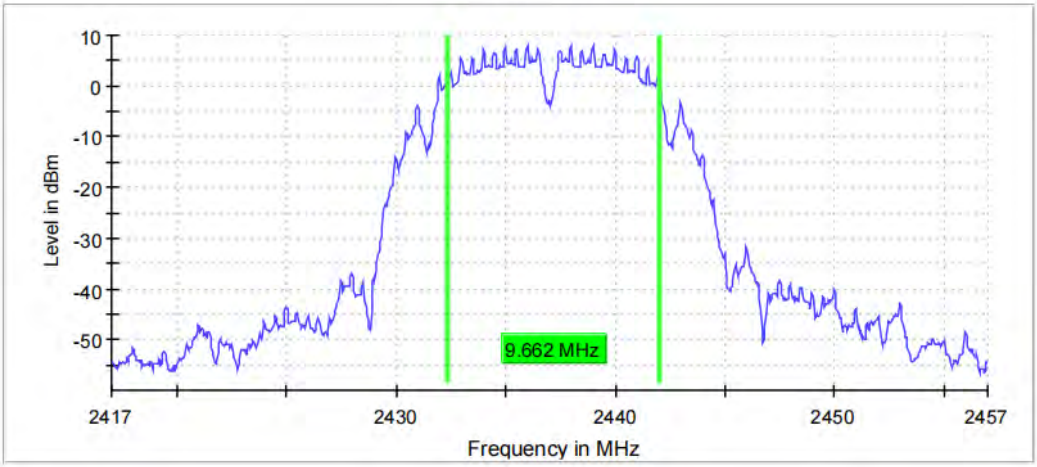
TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant0	2412	9.712	2406.869	2416.581	0.5	PASS
	Ant0	2437	9.662	2432.369	2442.031	0.5	PASS
	Ant0	2462	9.662	2456.919	2466.581	0.5	PASS
11G	Ant0	2412	16.170	2403.765	2419.935	0.5	PASS
	Ant0	2437	16.170	2429.015	2445.185	0.5	PASS
	Ant0	2462	16.020	2453.765	2469.785	0.5	PASS
11N20	Ant0	2412	16.421	2404.365	2420.786	0.5	PASS
	Ant0	2437	17.522	2428.164	2445.686	0.5	PASS
	Ant0	2462	17.472	2453.314	2470.786	0.5	PASS
11N40	Ant0	2422	35.872	2404.414	2440.286	0.5	PASS
	Ant0	2437	35.622	2419.014	2454.636	0.5	PASS
	Ant0	2452	35.722	2434.414	2470.136	0.5	PASS

TEST GRAPHS

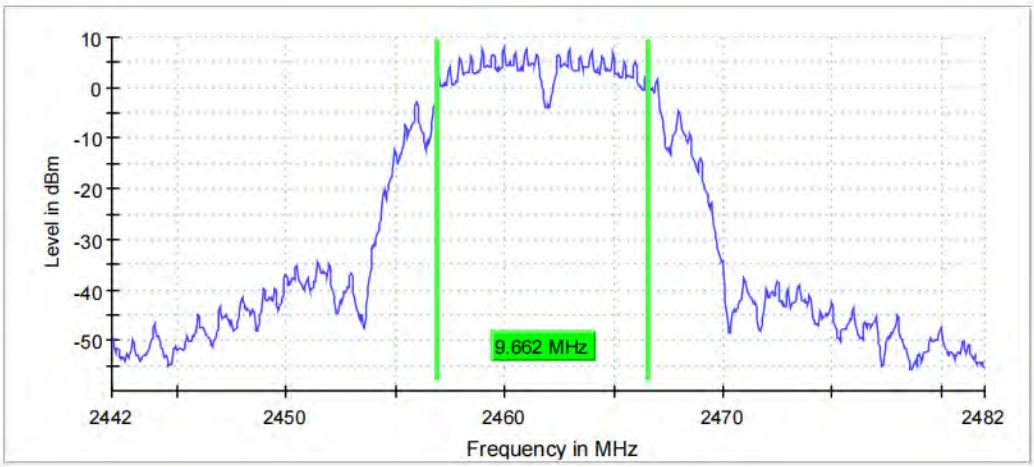
11B-CDD_Ant0_2412



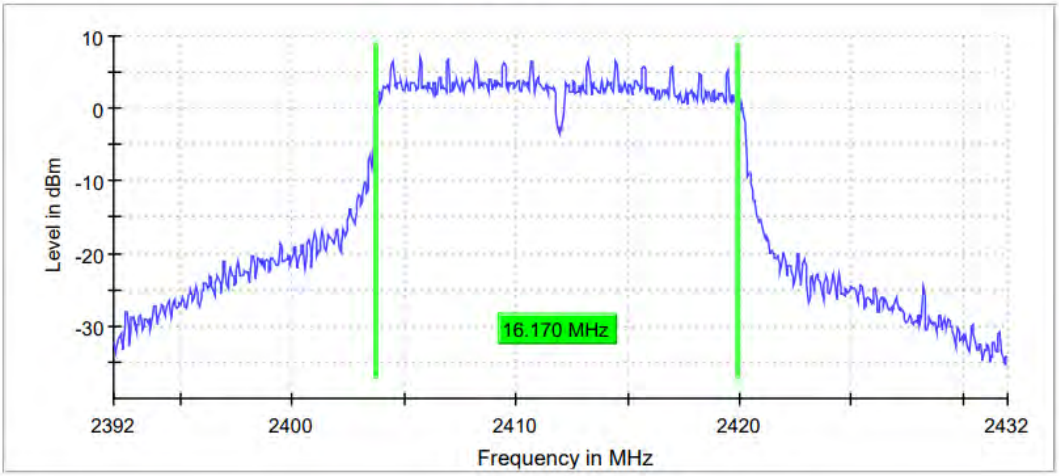
11B_Ant0_2437



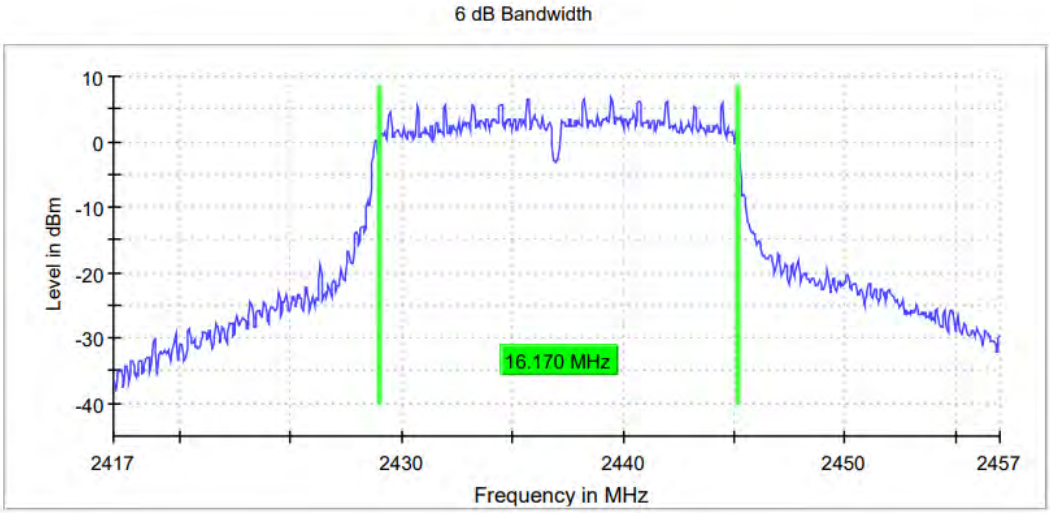
11B_Ant0_2462



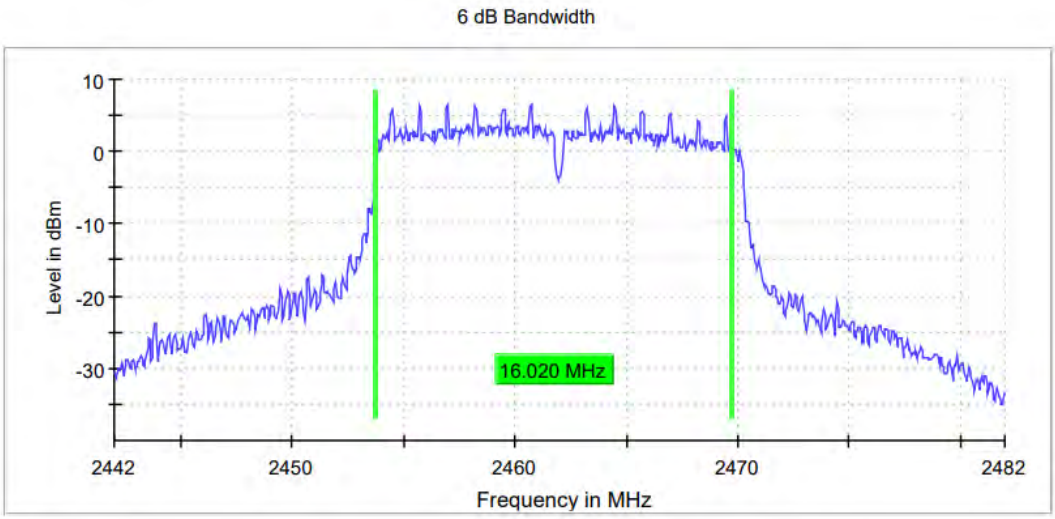
11G_Ant0_2412



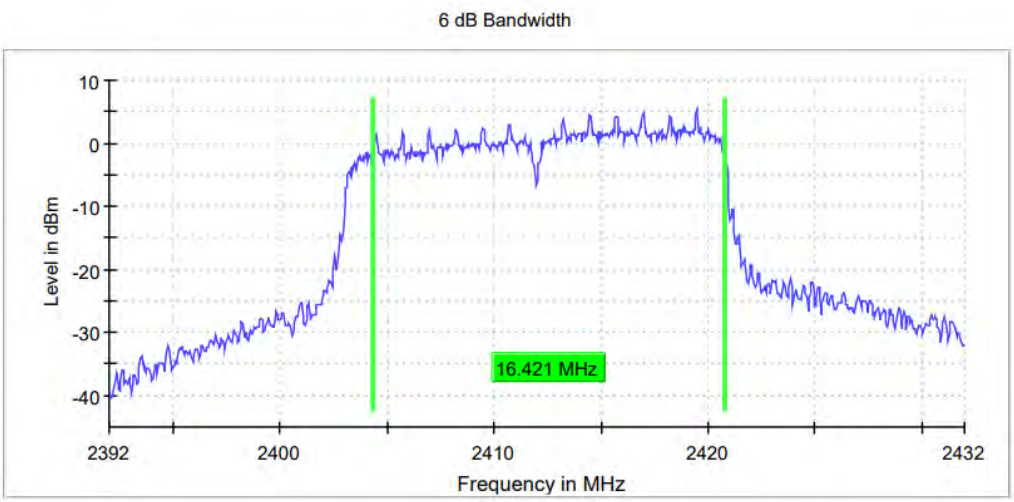
11G_Ant0_2437



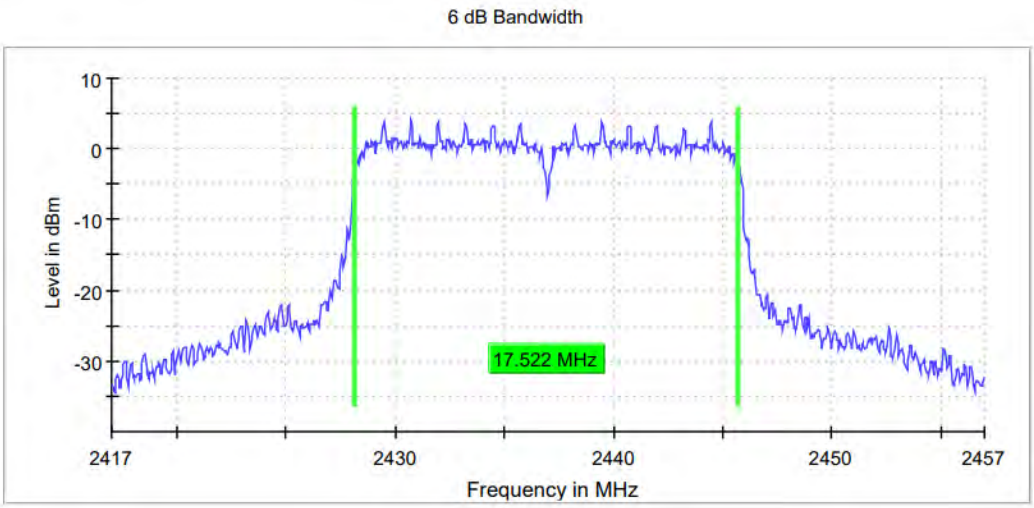
11G_Ant0_2462



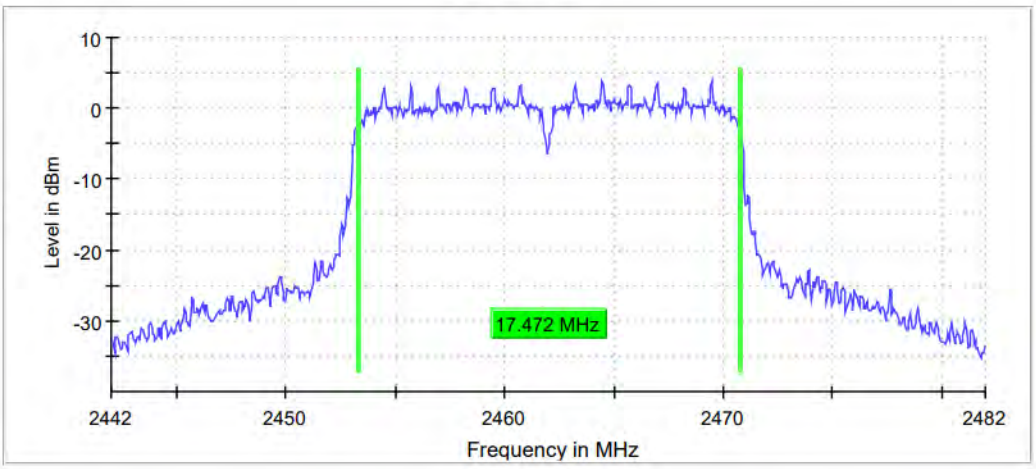
11N20_Ant0_2412



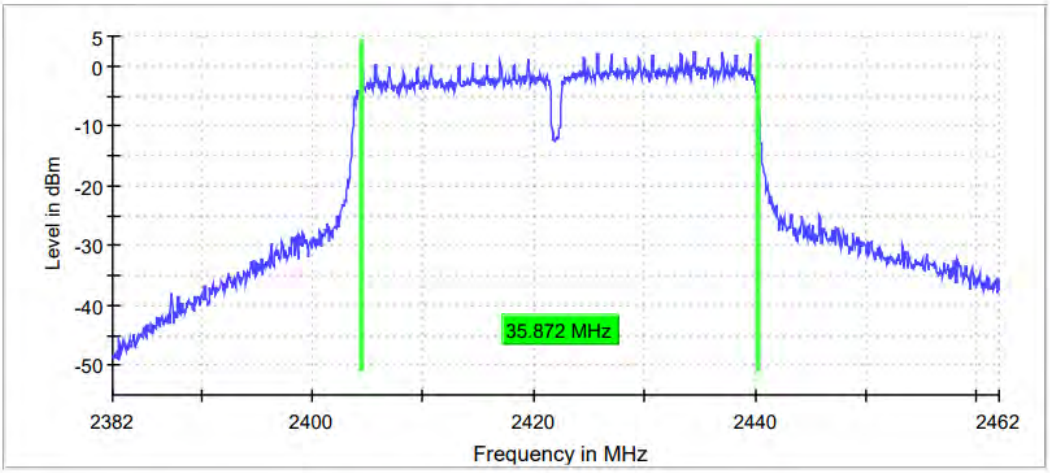
11N20_Ant0_2437



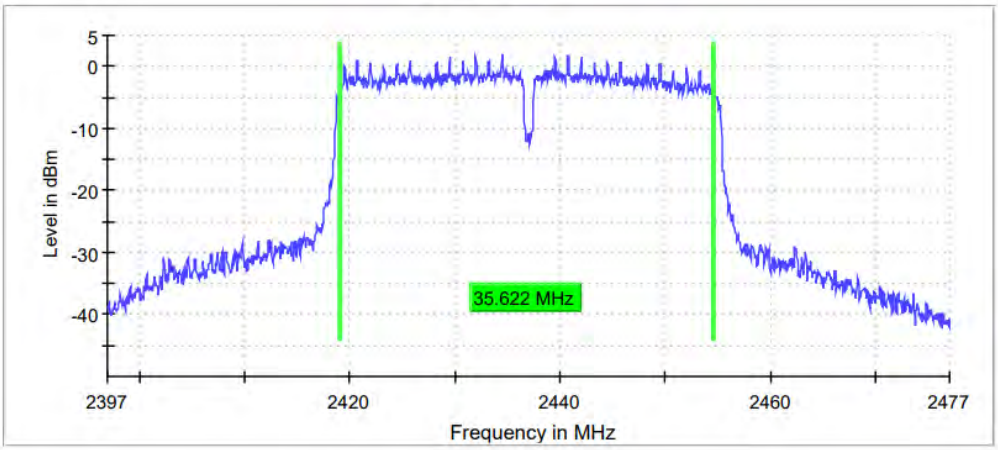
11N20_Ant0_2462



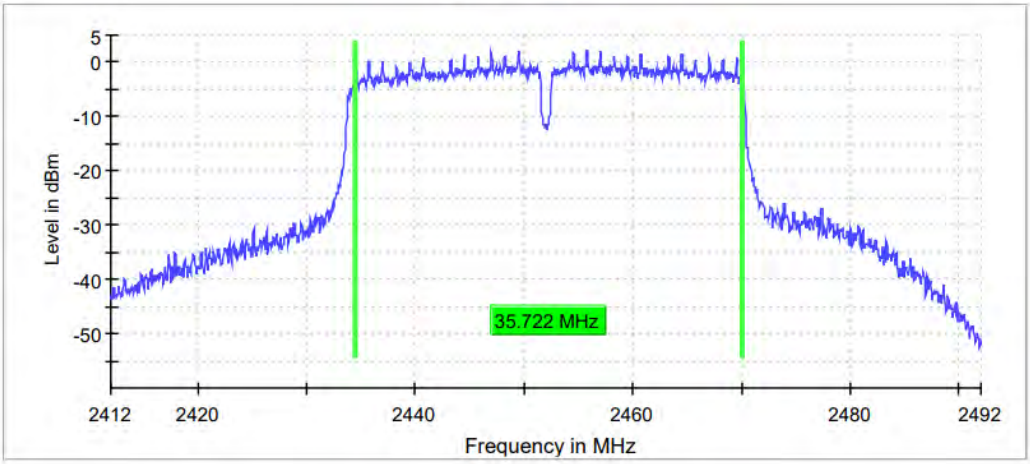
11N40_Ant0_2422



11N40_Ant0_2437



11N40_Ant0_2452



20M

RBW 100.000 kHz

VBW 300.000 kHz

40M

RBW 100.000 kHz

VBW 300.000 kHz

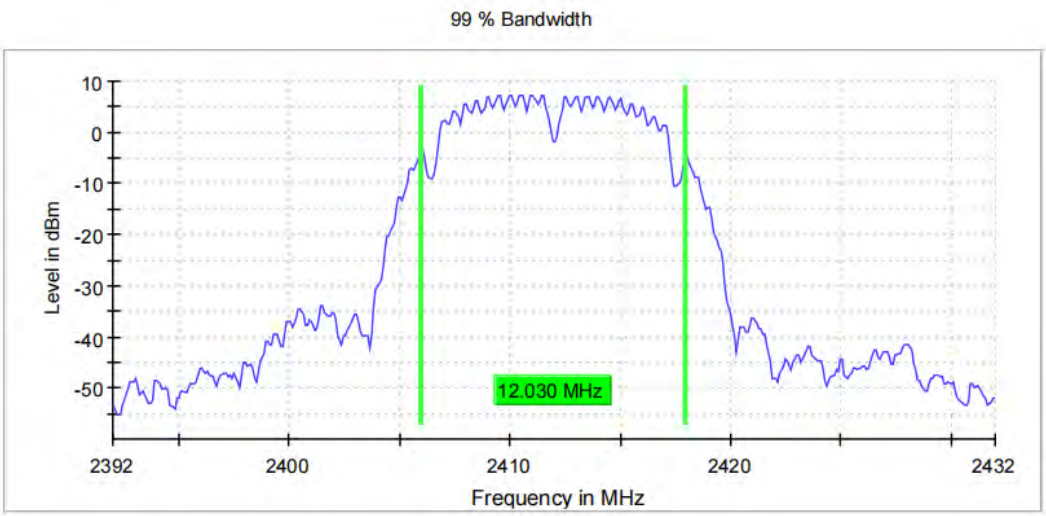
OBW BANDWIDTH

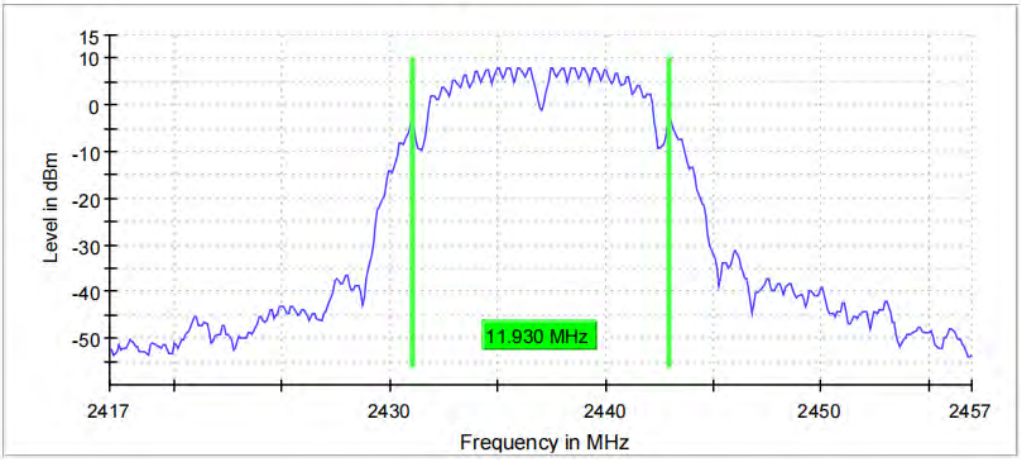
TEST RESULT

TestMode	Antenna	Frequency[MHz]	OBW	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict

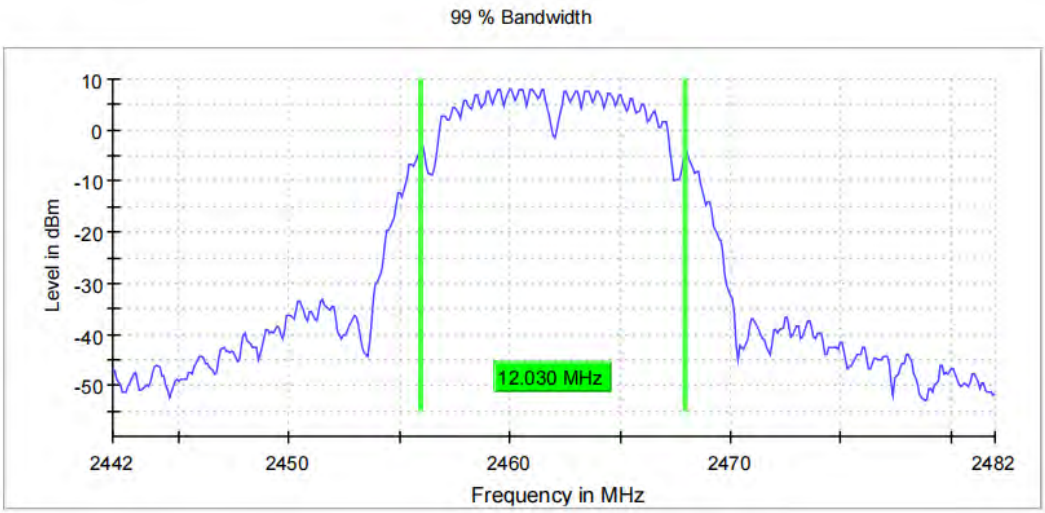
			BW [MHz]				
11B	Ant0	2412	12.030	2405.935	2417.965	---	PASS
	Ant0	2437	11.930	2431.035	2442.965	---	PASS
	Ant0	2462	12.030	2455.935	2467.965	---	PASS
11G	Ant0	2412	16.742	2403.529	2420.271	---	PASS
	Ant0	2437	16.642	2428.729	2445.371	---	PASS
	Ant0	2462	16.642	2453.629	2470.271	---	PASS
11N20	Ant0	2412	17.744	2403.328	2421.072	---	PASS
	Ant0	2437	17.744	2428.128	2445.872	---	PASS
	Ant0	2462	17.744	2453.128	2470.872	---	PASS
11N40	Ant0	2422	36.614	2403.818	2440.432	---	PASS
	Ant0	2437	36.364	2418.818	2455.182	---	PASS
	Ant0	2452	36.113	2434.069	2470.182	---	PASS

TEST GRAPHS

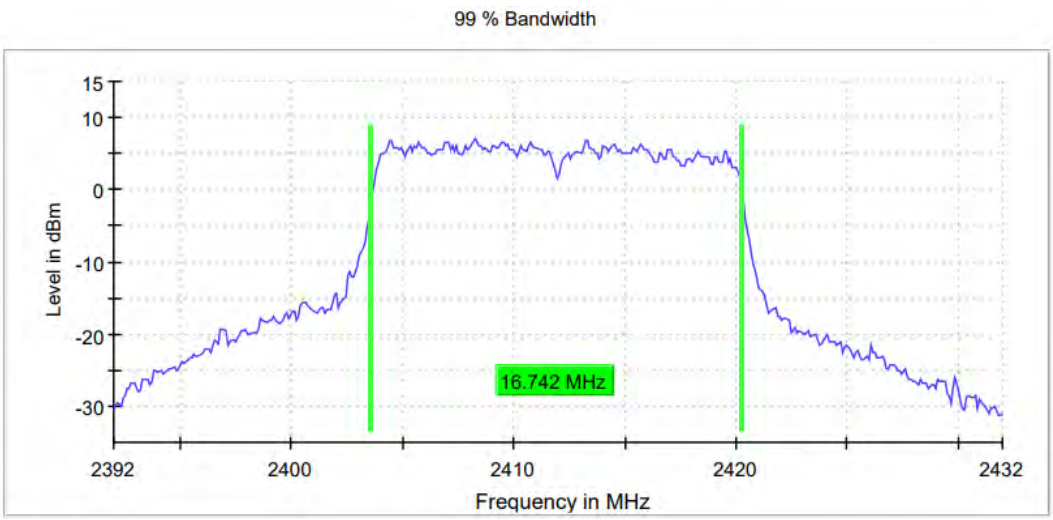
11B-CDD_Ant0_2412


11B_Ant0_2437


11B_Ant0_2462



11G_Ant0_2412



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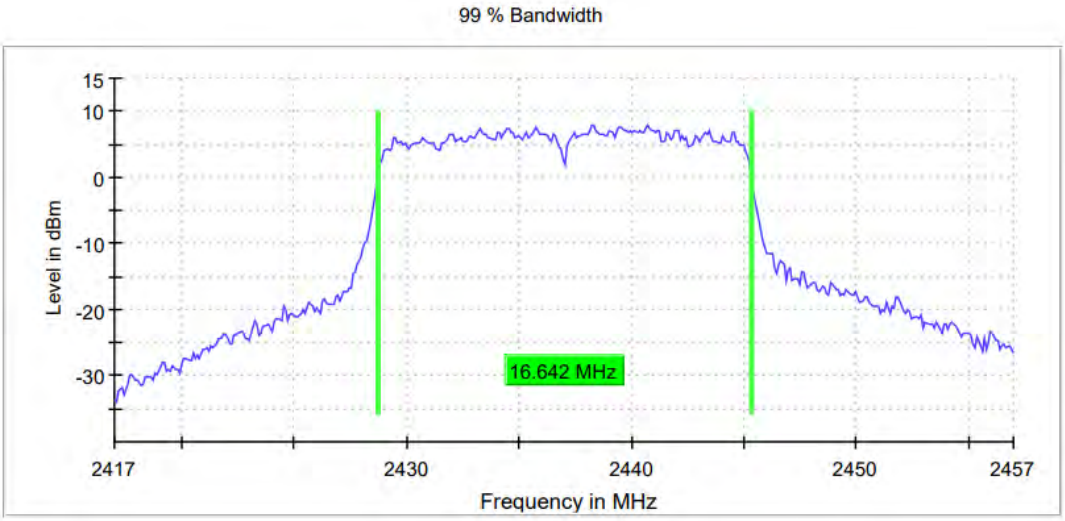
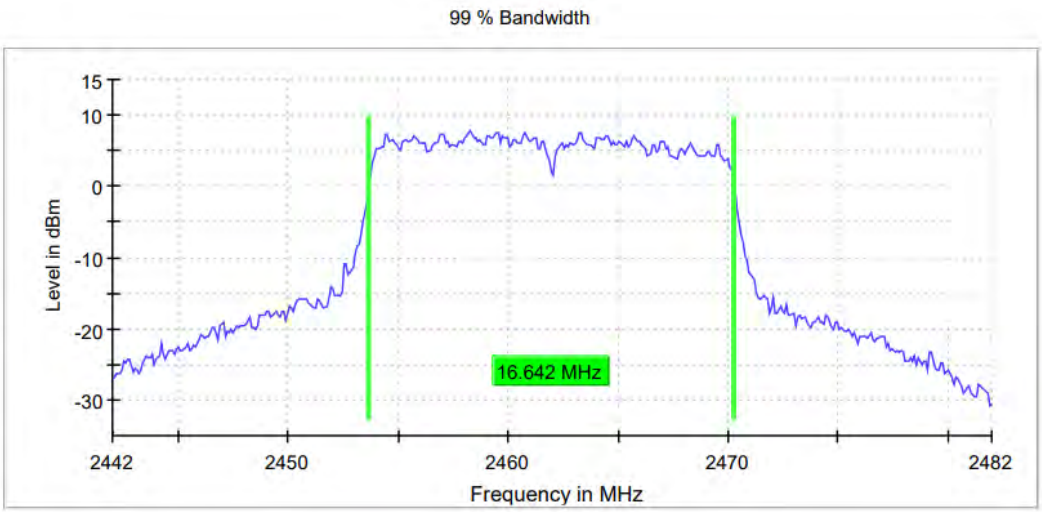
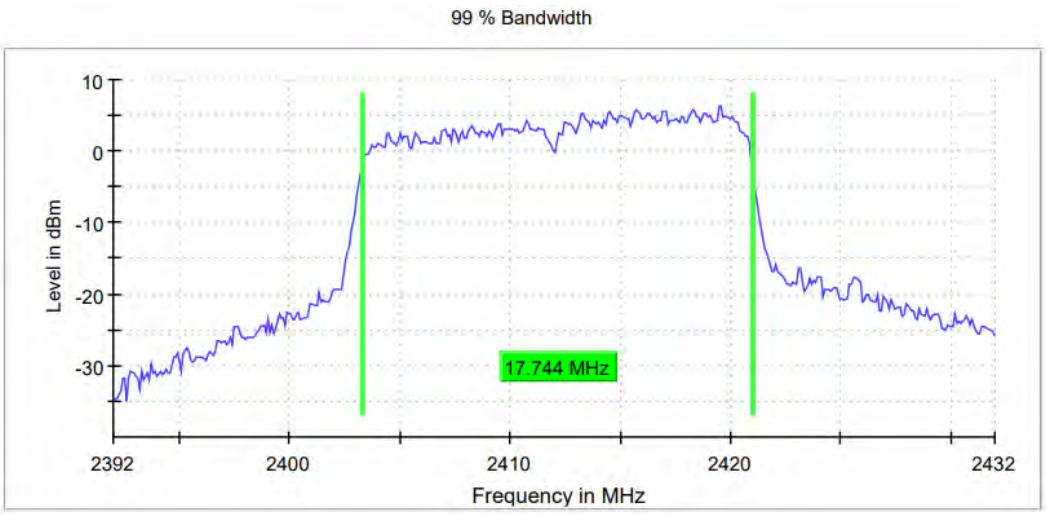


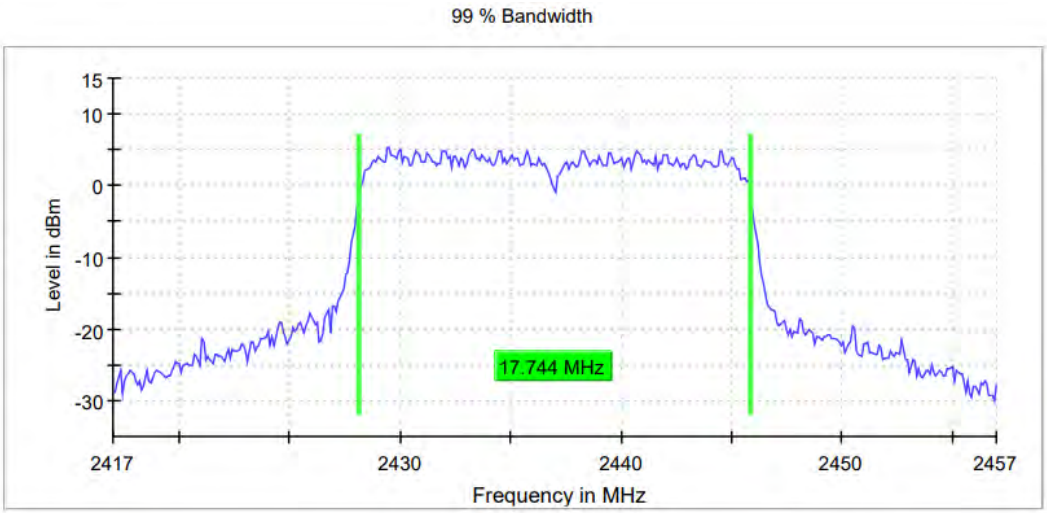
11G_Ant0_2462



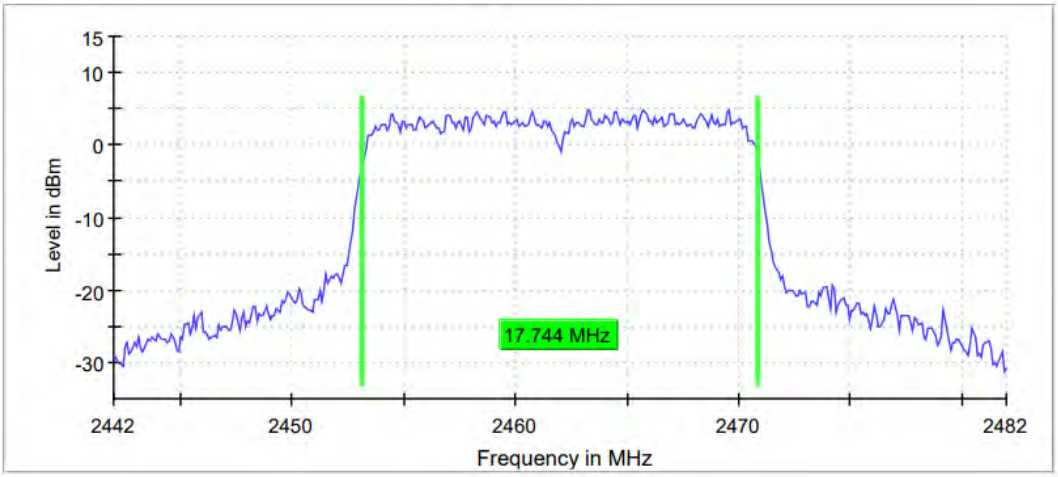
11N20_Ant0_2412



11N20_Ant0_2437



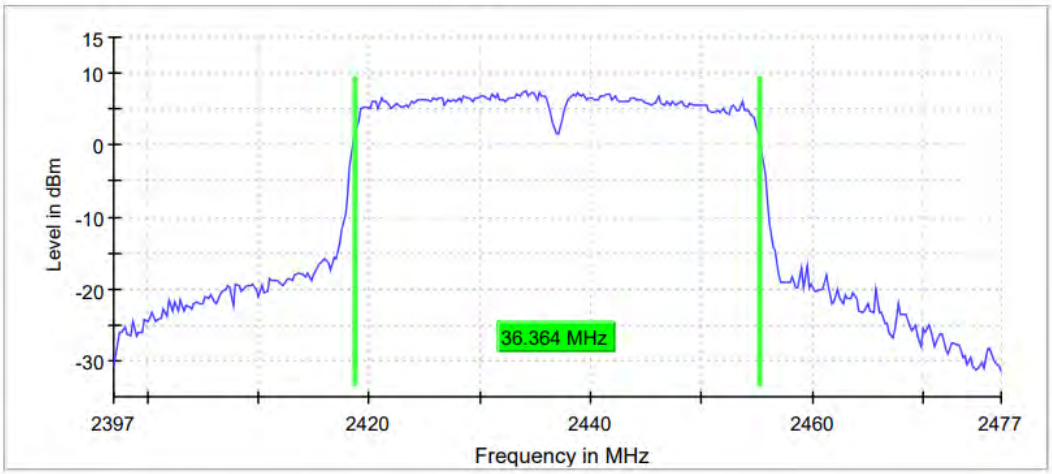
11N20_Ant0_2462



11N40_Ant0_2422

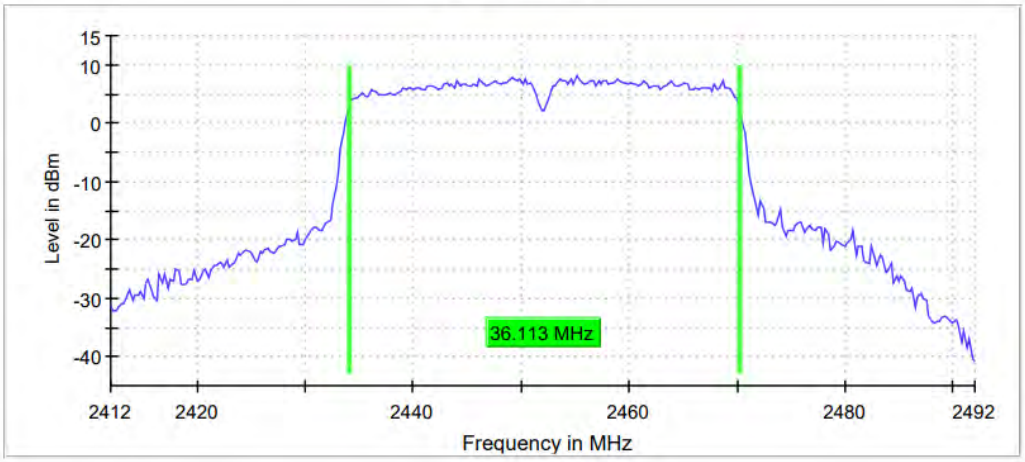
11N40_Ant0_2437

99 % Bandwidth



11N40_Ant0_2452

99 % Bandwidth



20M

RBW 200.000 kHz

VBW 1.000 MHz

40M

RBW 500.000 kHz

VBW 2.000 MHz

MAXIMUM CONDUCTED OUTPUT POWER

TEST RESULT PEAK

TestMode	Antenna	Frequency [MHz]	Peak power [dBm] Ant1	MAX Peak power [mw]	Limit [dBm]	Verdict	Power Setting
11B	Ant0	2412	19.603	91.26	≤30.00	PASS	15
		2437	20.261	106.19	≤30.00	PASS	15
		2462	20.227	105.37	≤30.00	PASS	15
11g	Ant0	2412	22.887	194.40	≤30.00	PASS	15
		2437	23.454	221.51	≤30.00	PASS	15
		2462	23.12	205.12	≤30.00	PASS	15
11N20	Ant0	2412	23.278	212.72	≤30.00	PASS	14
		2437	22.734	187.67	≤30.00	PASS	14
		2462	22.645	183.87	≤30.00	PASS	14
11N40	Ant0	2422	24.153	260.20	≤30.00	PASS	14
		2437	23.159	206.97	≤30.00	PASS	14
		2452	23.248	211.25	≤30.00	PASS	14

TEST RESULT AVERAGE

TestMode	Antenna	Freq. [MHz]	Avg.power [dBm]	Power Setting
			Ant1	
11B	Ant0	2412	15.542	15
		2437	16.201	15
		2462	16.177	15
11g	Ant0	2412	15.62	15
		2437	16.252	15
		2462	16.12	15
11N20	Ant0	2412	14.937	14
		2437	15.125	14
		2462	15.023	14
11N40	Ant0	2422	14.281	14
		2437	13.997	14
		2452	14.22	14

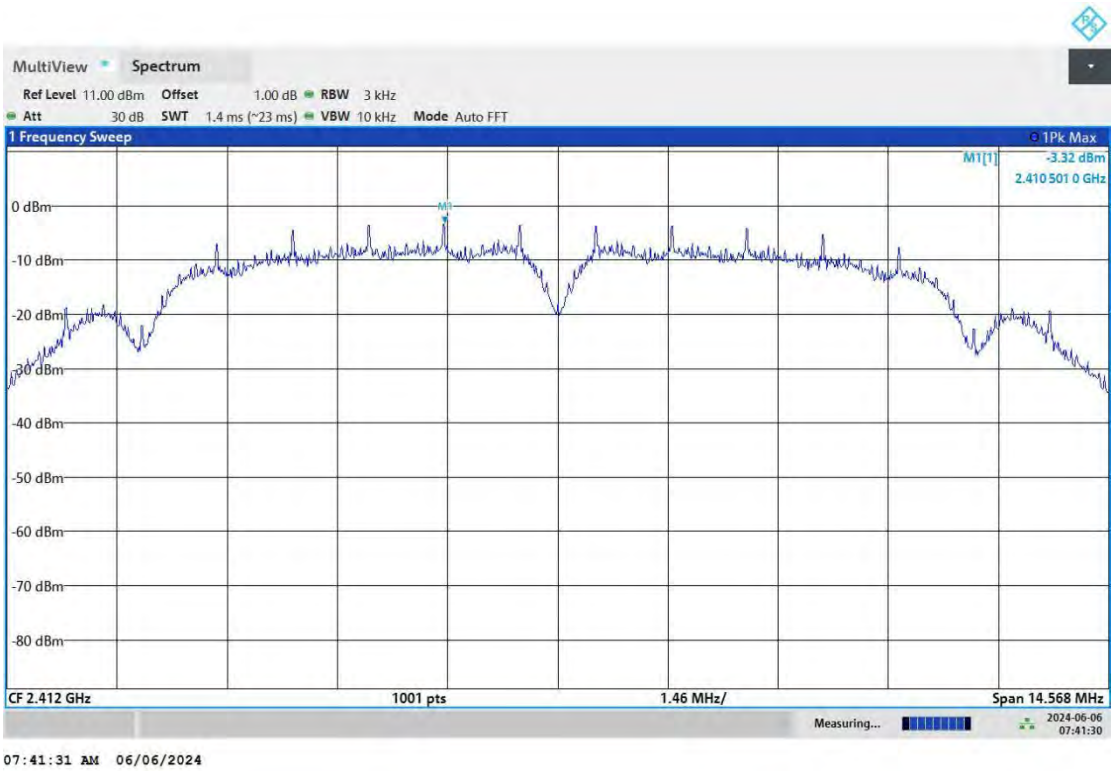
MAXIMUM POWER SPECTRAL DENSITY

TEST RESULT

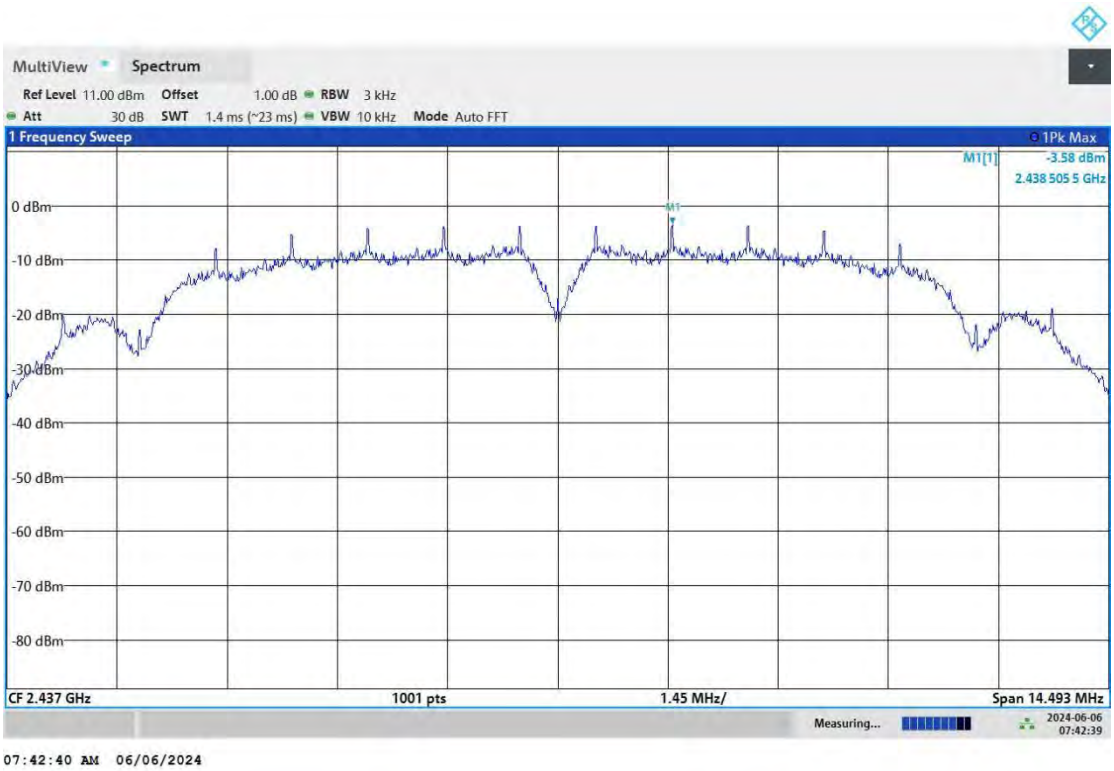
TestMode	Antenna	Frequency [MHz]	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	Ant0	2412	-3.32	≤8.00	PASS
	Ant0	2437	-3.58	≤8.00	PASS
	Ant0	2462	-3.27	≤8.00	PASS
11G	Ant0	2412	-8.44	≤8.00	PASS
	Ant0	2437	-8.20	≤8.00	PASS
	Ant0	2462	-8.53	≤8.00	PASS
11N20	Ant0	2412	-9.60	≤8.00	PASS
	Ant0	2437	-9.67	≤8.00	PASS
	Ant0	2462	-10.23	≤8.00	PASS
11N40	Ant0	2422	-13.37	≤8.00	PASS
	Ant0	2437	-13.83	≤8.00	PASS
	Ant0	2452	-13.12	≤8.00	PASS

TEST GRAPHS

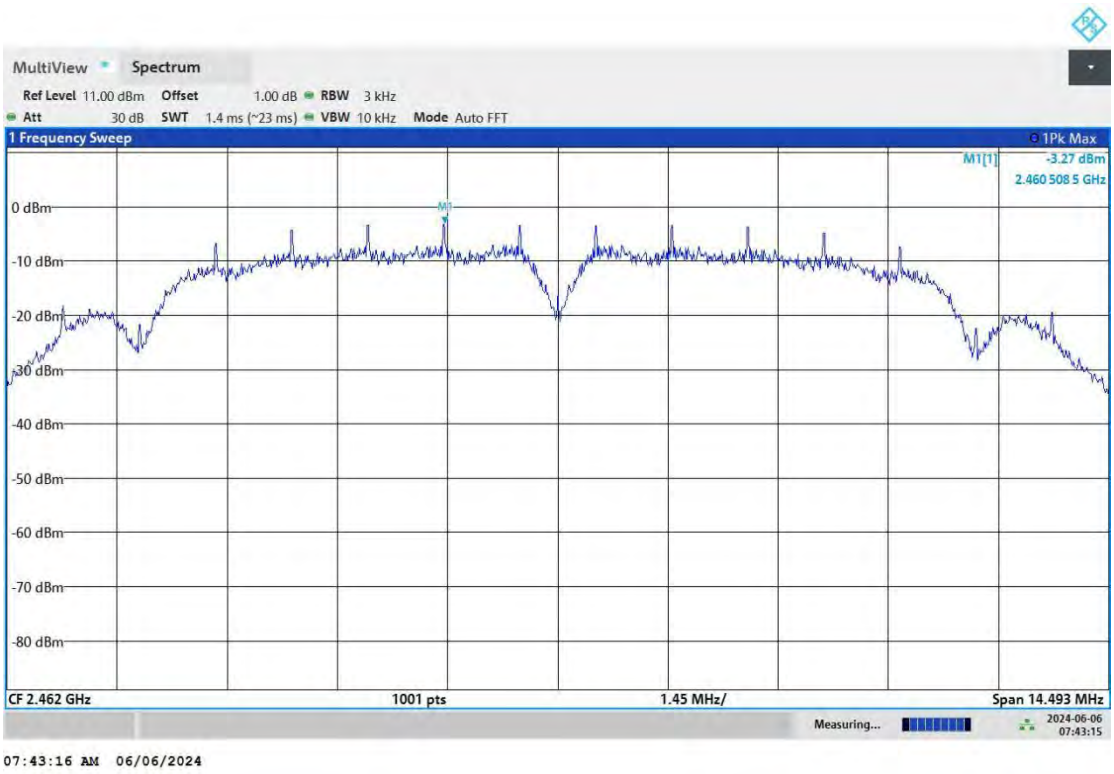
11B_Ant0_2412



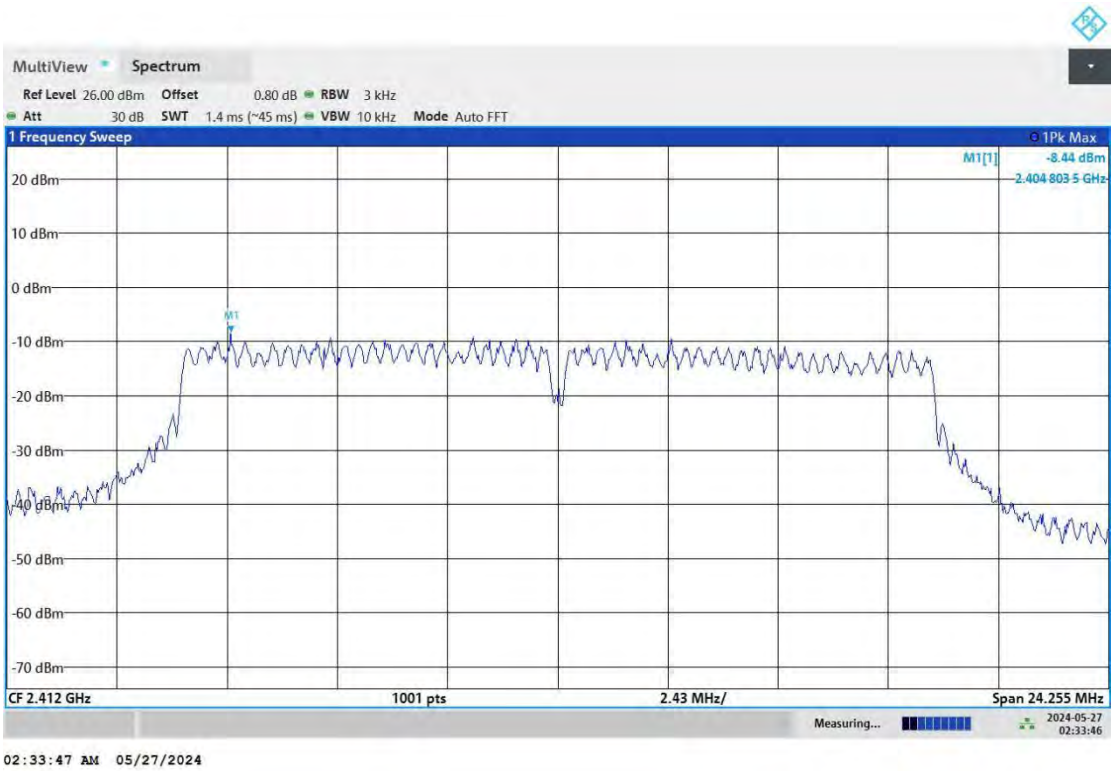
11B_Ant0_2437



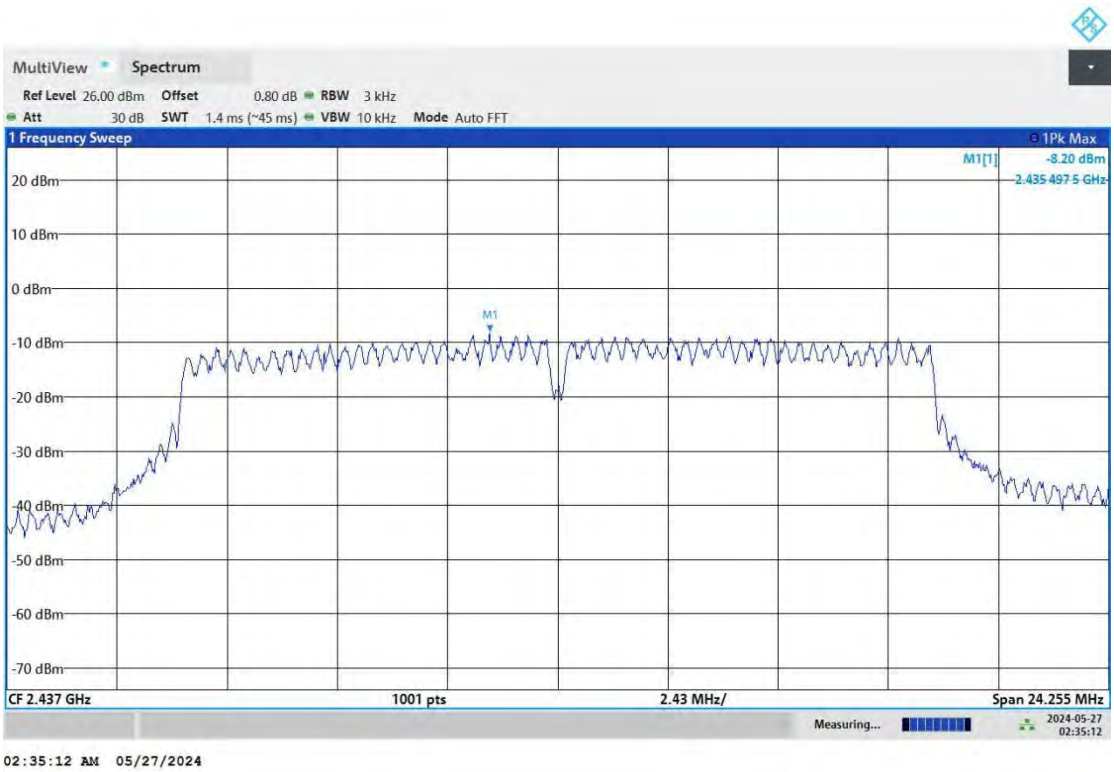
11B_Ant0_2462



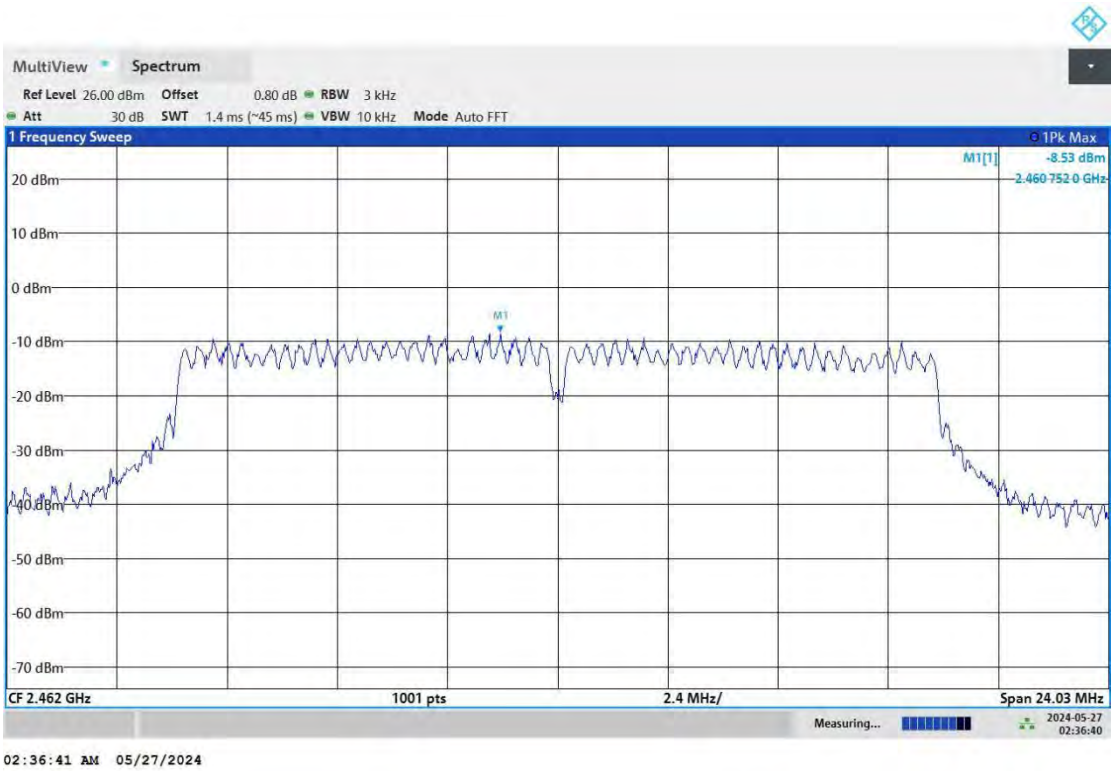
11G_Ant0_2412



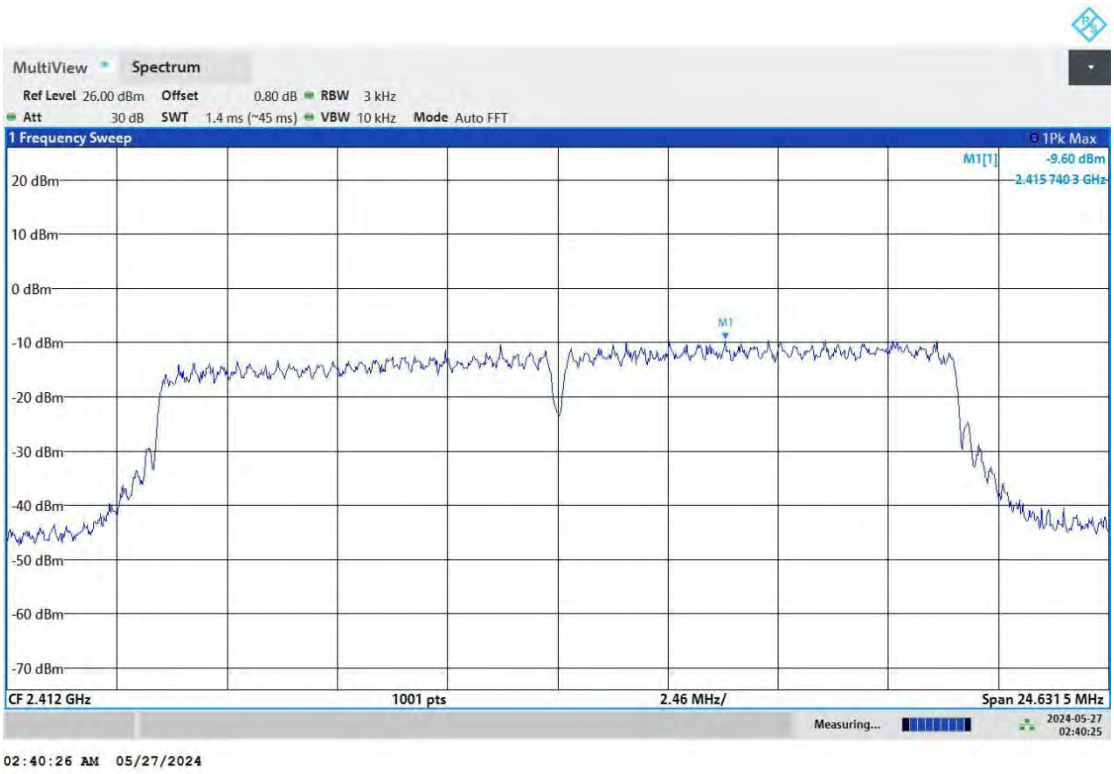
11G_Ant0_2437



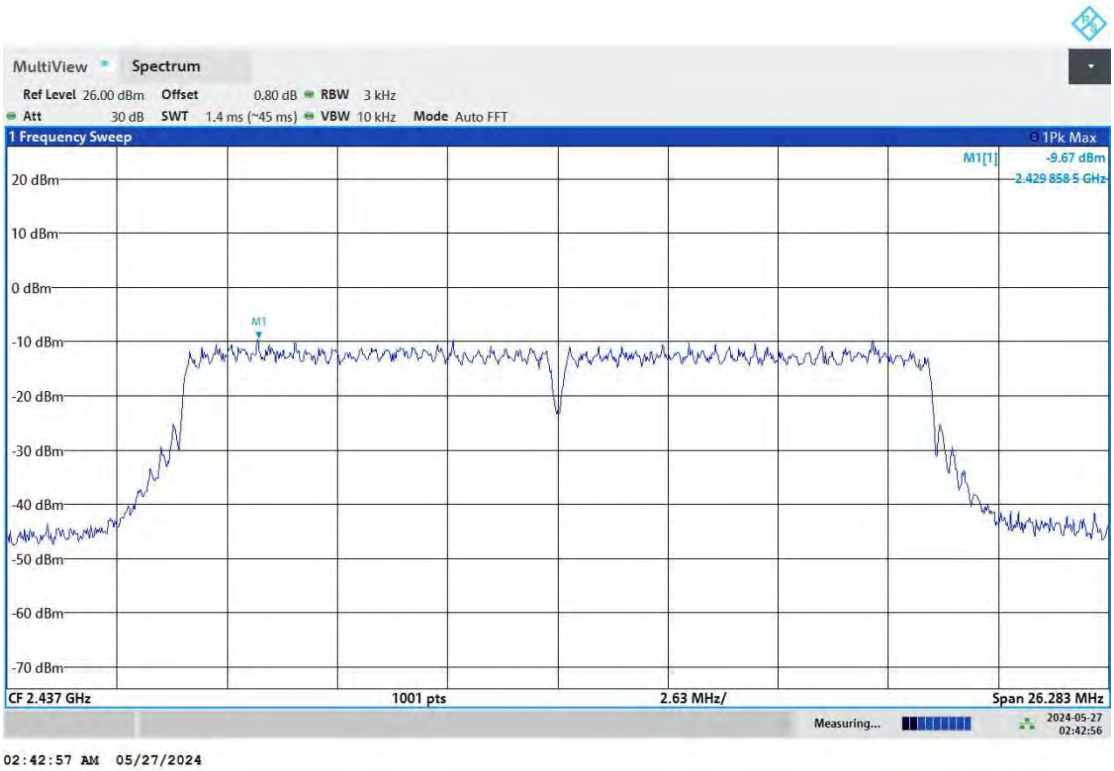
11G_Ant0_2462



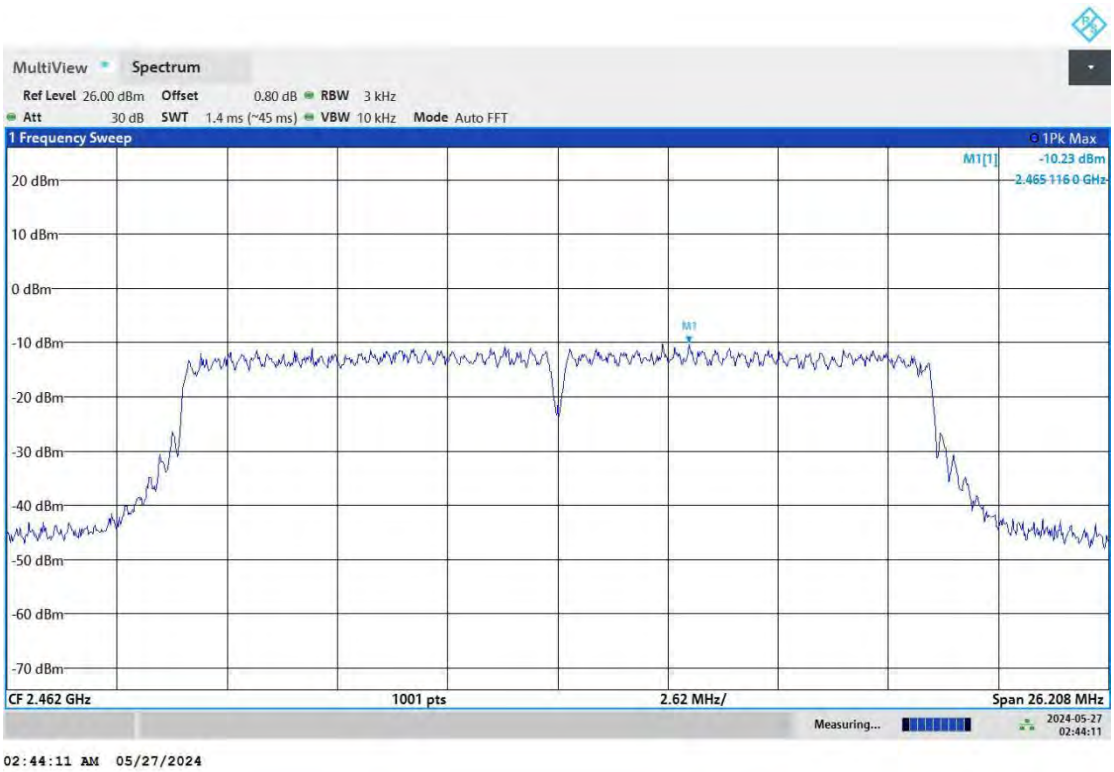
11N20_Ant0_2412



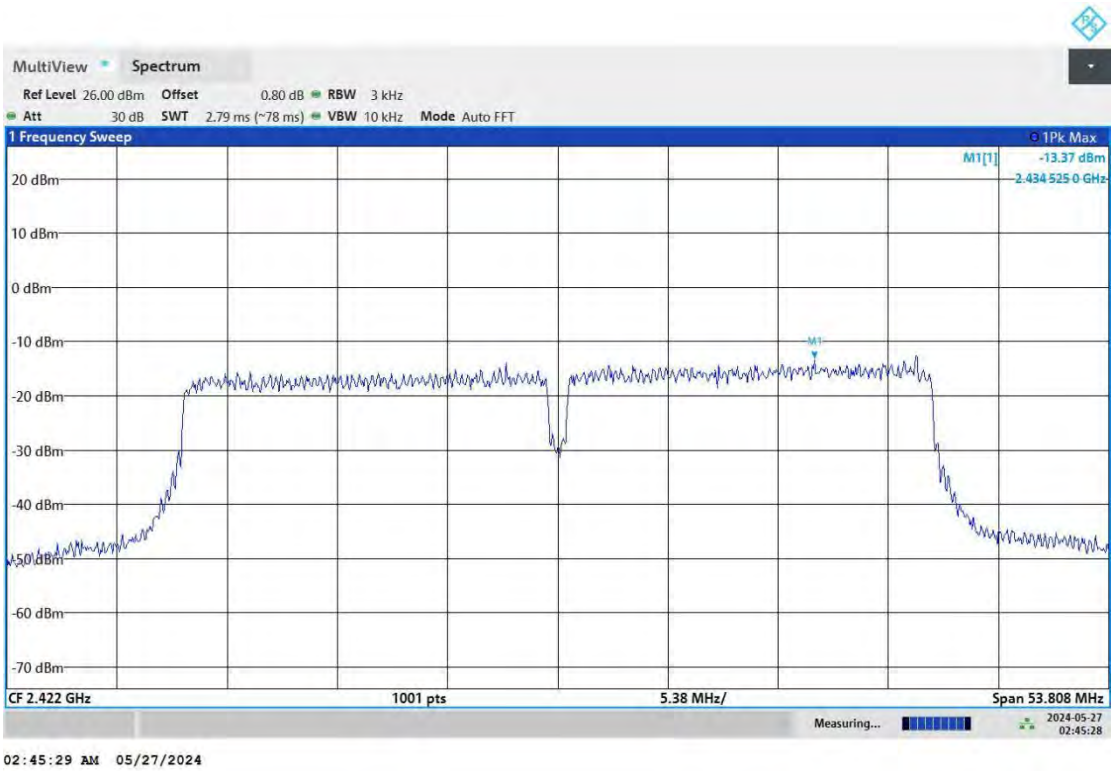
11N20_Ant0_2437



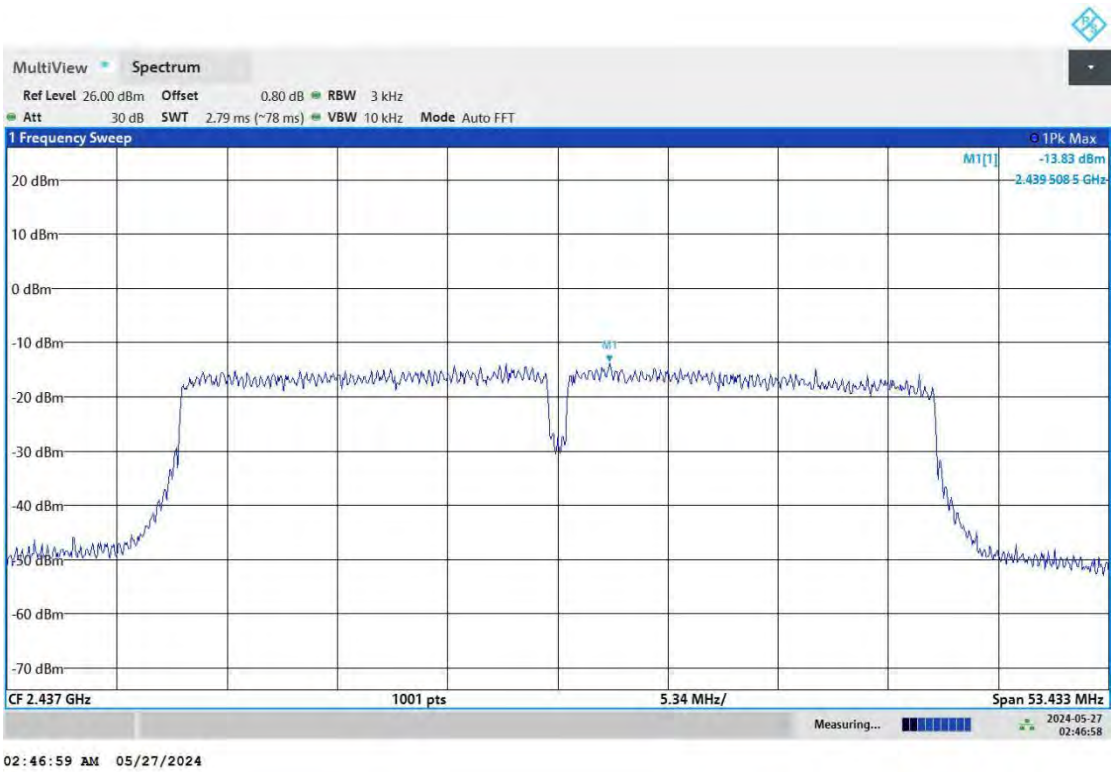
11N20_Ant0_2462



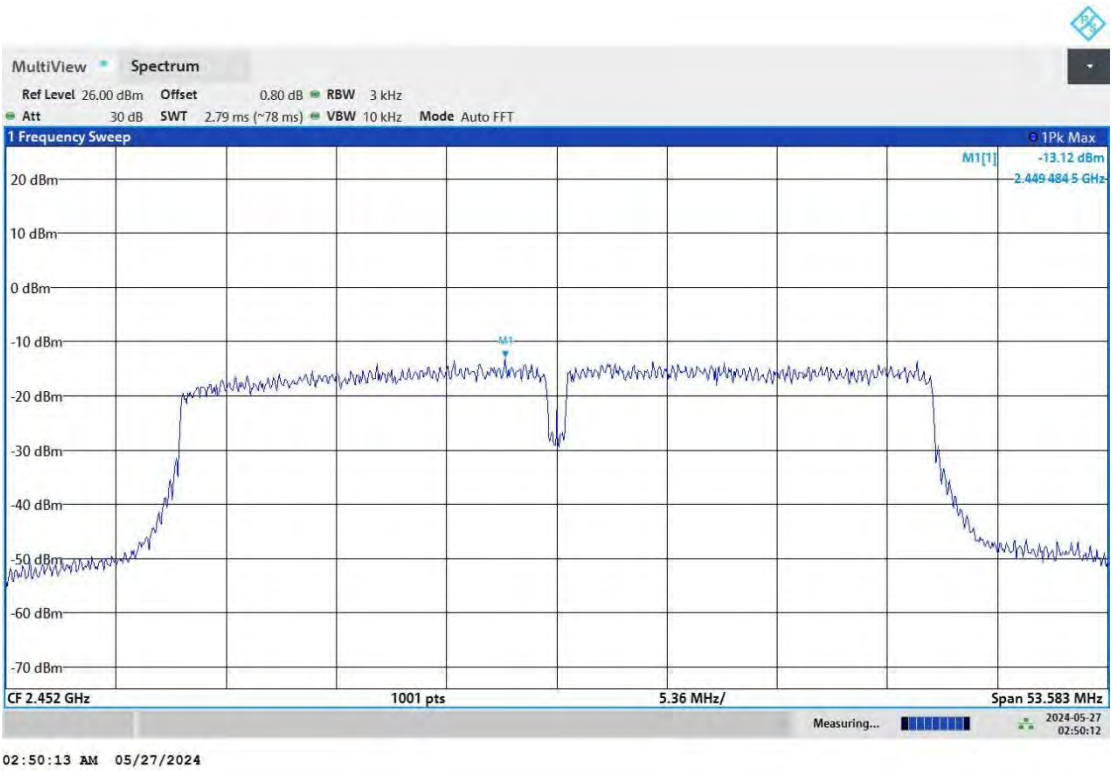
11N40_Ant0_2422



11N40_Ant0_2437



11N40_Ant0_2452


MultiView
Spectrum
Ref Level 26.00 dBm Offset 0.80 dB RBW 3 kHz
Att 30 dB SWT 2.79 ms (~78 ms) VBW 10 kHz Mode Auto FFT
1 Frequency Sweep
1Pk Max
M1[1] -13.12 dBm
2.449 484 5 GHz
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 2.452 GHz
1001 pts
5.36 MHz/
Span 53.583 MHz
Measuring...
2024-05-27
02:50:12
02:50:13 AM 05/27/2024

BAND EDGE MEASUREMENTS

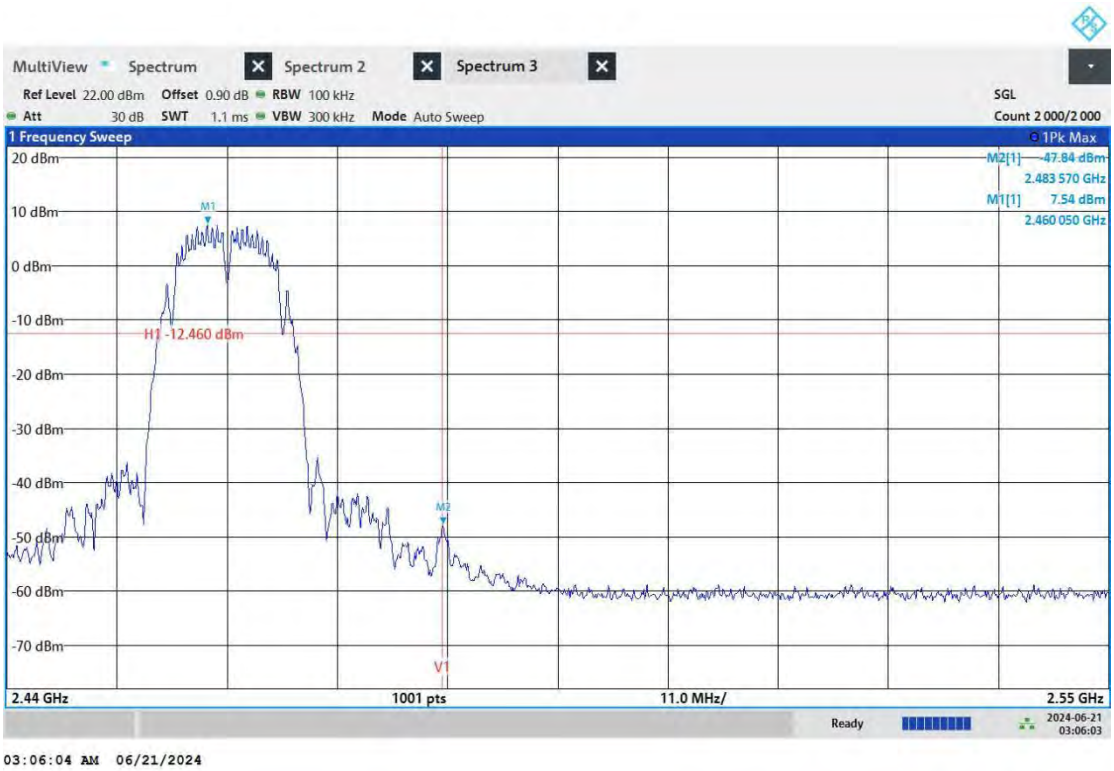
TEST RESULT

TestMode	Antenna	ChName	Frequency [MHz]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant0	Low	2412	See test graph	See test graph	PASS
	Ant0	High	2462	See test graph	See test graph	PASS
11G	Ant0	Low	2412	See test graph	See test graph	PASS
	Ant0	High	2462	See test graph	See test graph	PASS
11N20	Ant0	Low	2412	See test graph	See test graph	PASS
	Ant0	High	2462	See test graph	See test graph	PASS
11N40	Ant0	Low	2422	See test graph	See test graph	PASS
	Ant0	High	2452	See test graph	See test graph	PASS

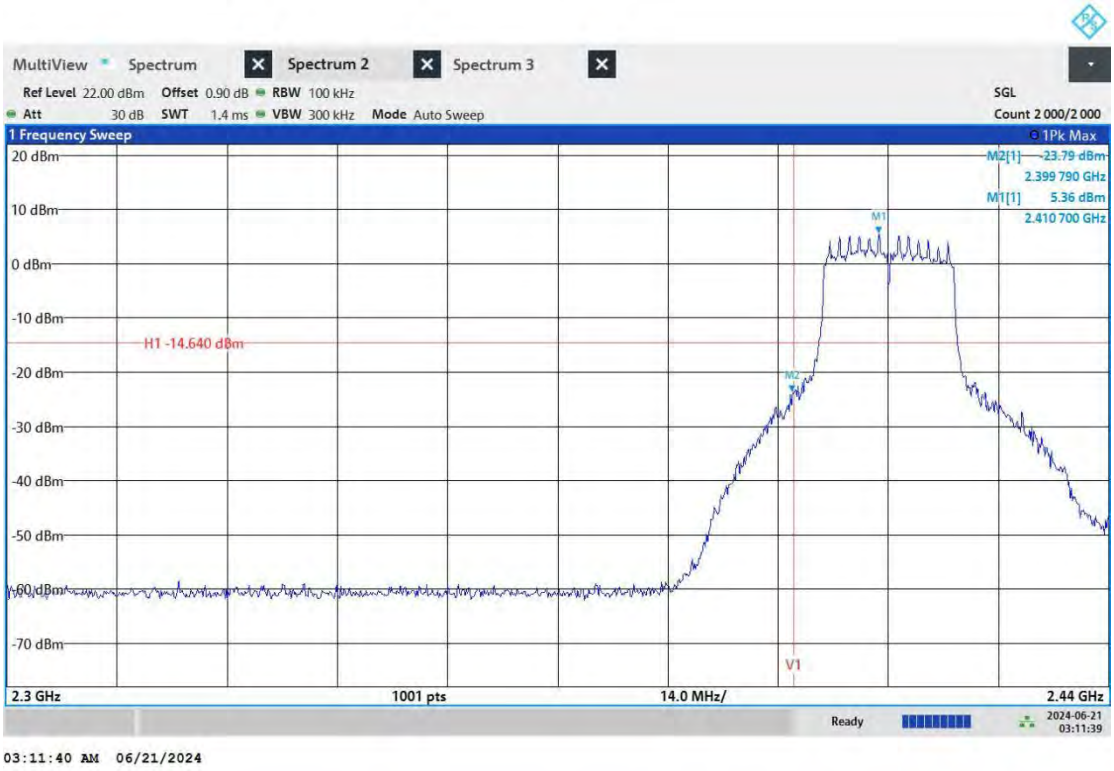
Test Graphs

11B-CDD_Ant0_Low_2412

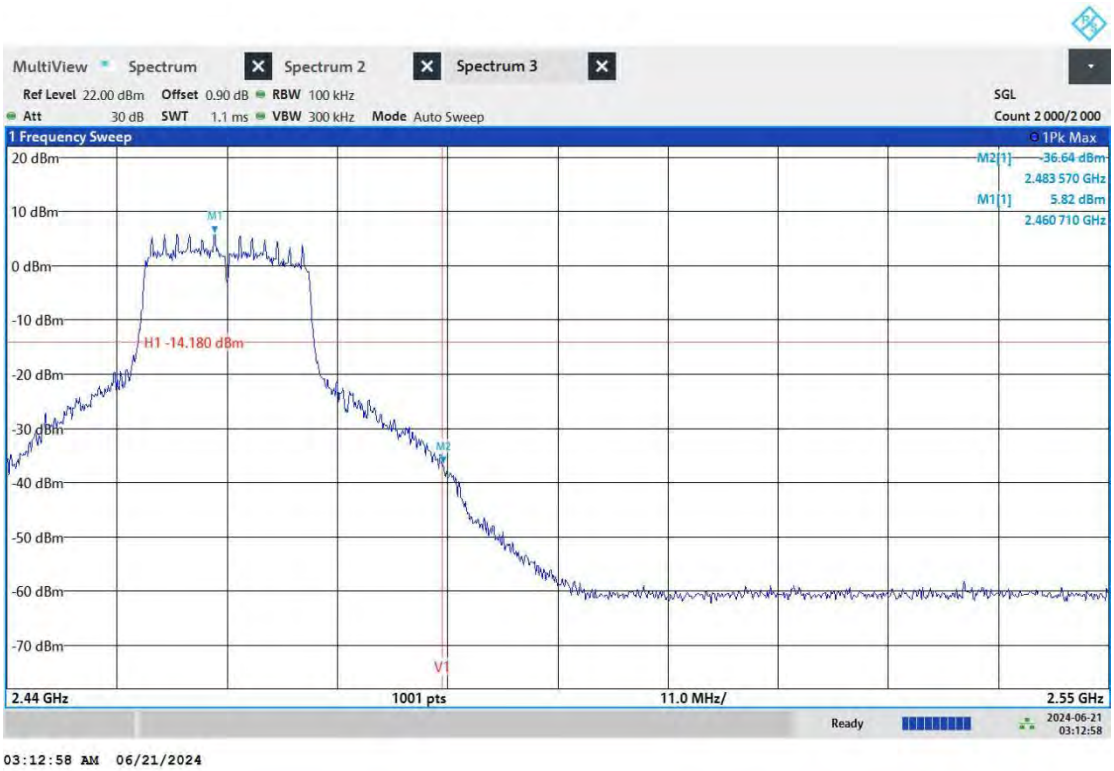
11B-CDD_Ant0_High_2462



11G-CDD_Ant0_Low_2412

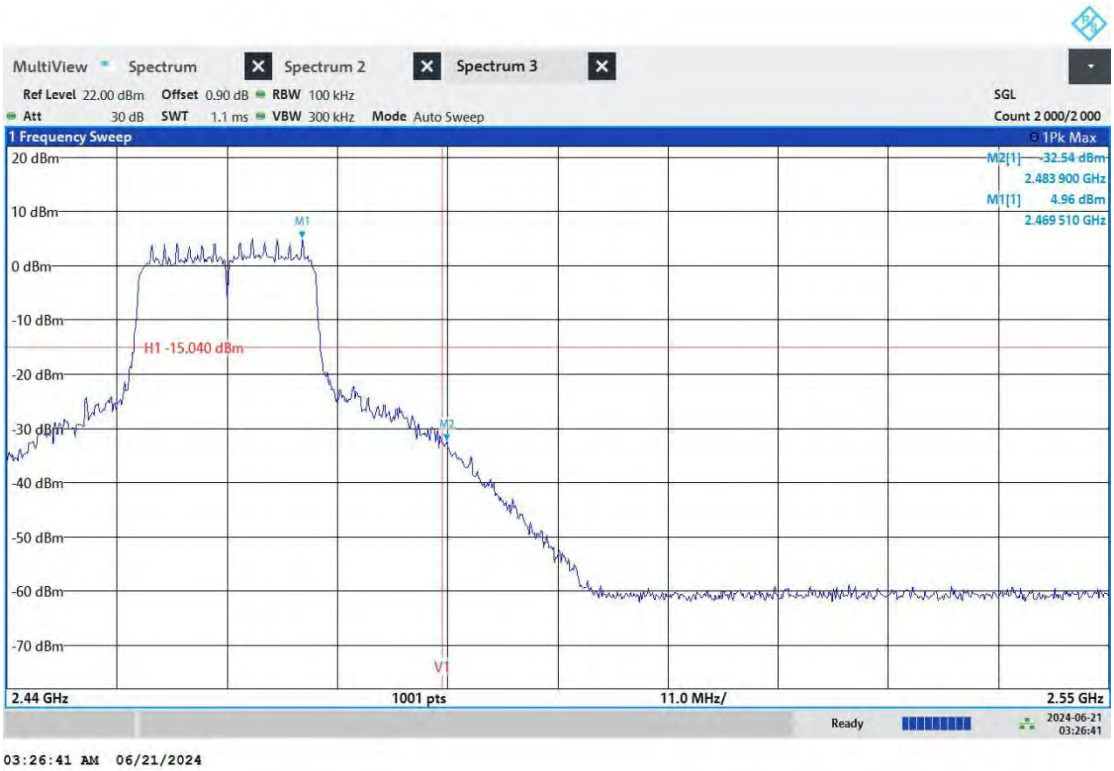


11G-CDD_Ant0_High_2462



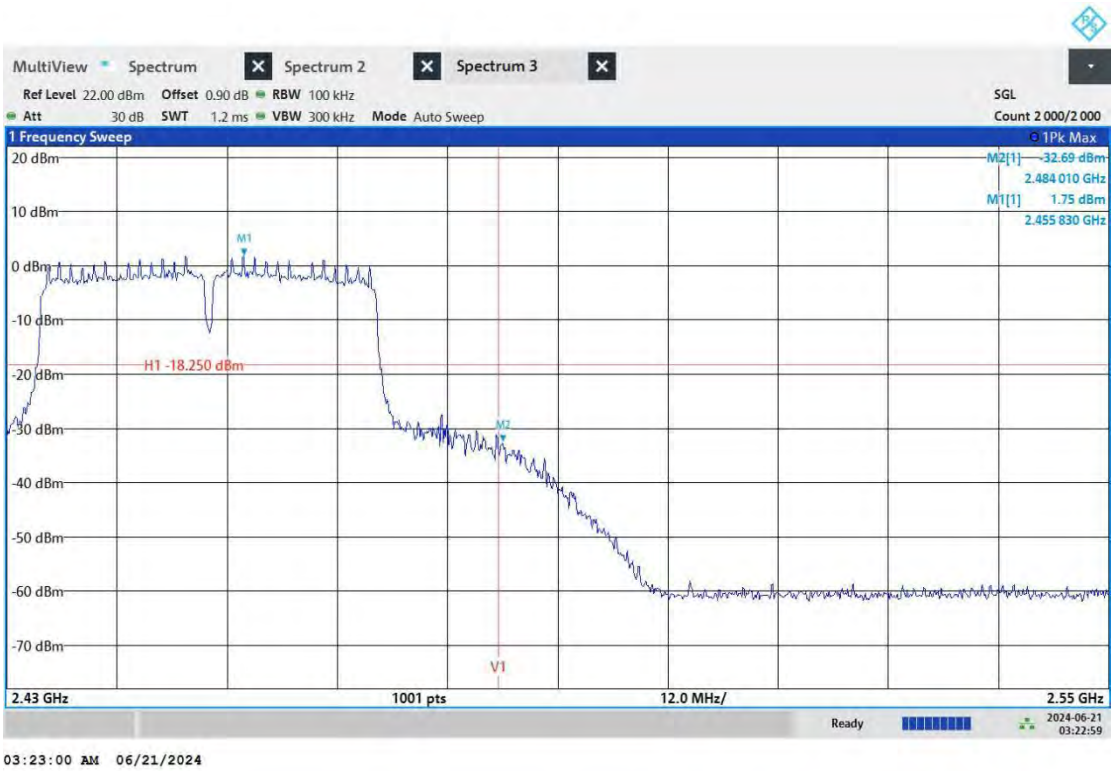
11N20SISO_Ant0_Low_2412

11N20SISO_Ant0_High_2462



11N40SISO_Ant0_Low_2422

11N40SISO_Ant0_High_2452



20M

RBW 100.000 kHz

VBW 300.000 kHz

40M

RBW 100.000 kHz

VBW 300.000 kHz

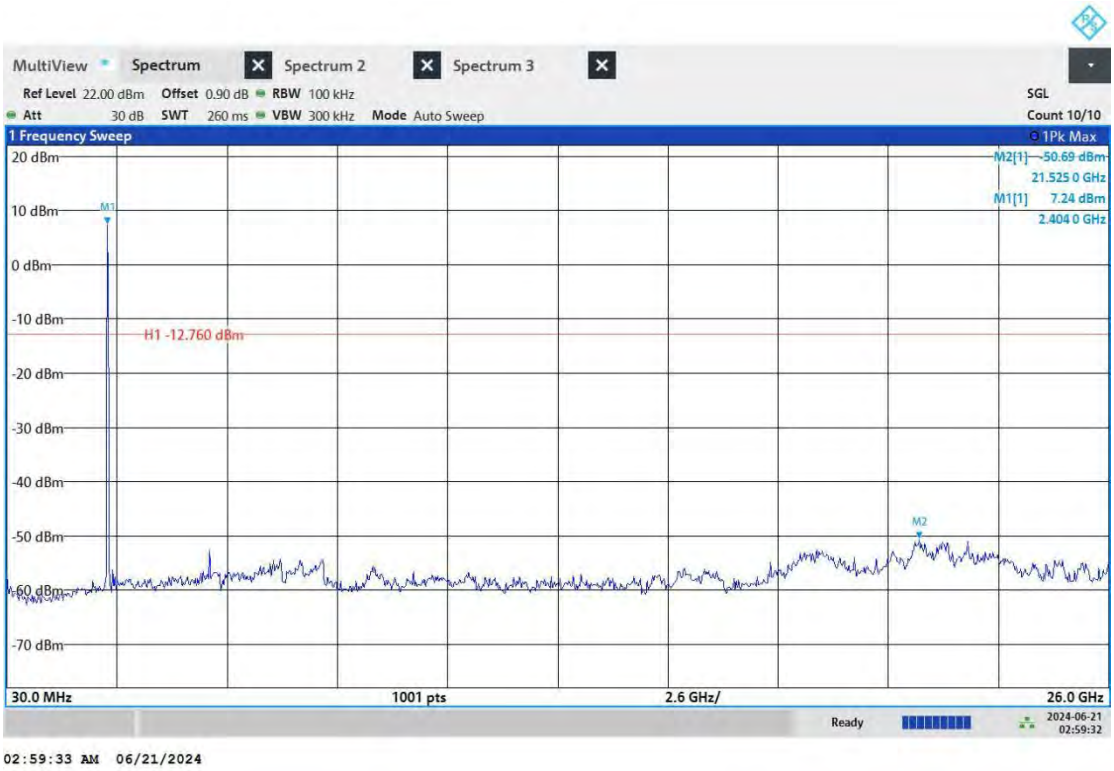
CONDUCTED SPURIOUS EMISSION

TEST RESULT

TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant0	2412	30~260000	See test graph	See test graph	PASS
	Ant0	2437	30~260000	See test graph	See test graph	PASS
	Ant0	2462	30~260000	See test graph	See test graph	PASS
11G	Ant0	2412	30~260000	See test graph	See test graph	PASS
	Ant0	2437	30~260000	See test graph	See test graph	PASS
	Ant0	2462	30~260000	See test graph	See test graph	PASS
11N20	Ant0	2412	30~260000	See test graph	See test graph	PASS
	Ant0	2437	30~260000	See test graph	See test graph	PASS
	Ant0	2462	30~260000	See test graph	See test graph	PASS
11N40	Ant0	2422	30~260000	See test graph	See test graph	PASS
	Ant0	2437	30~260000	See test graph	See test graph	PASS
	Ant0	2452	30~260000	See test graph	See test graph	PASS

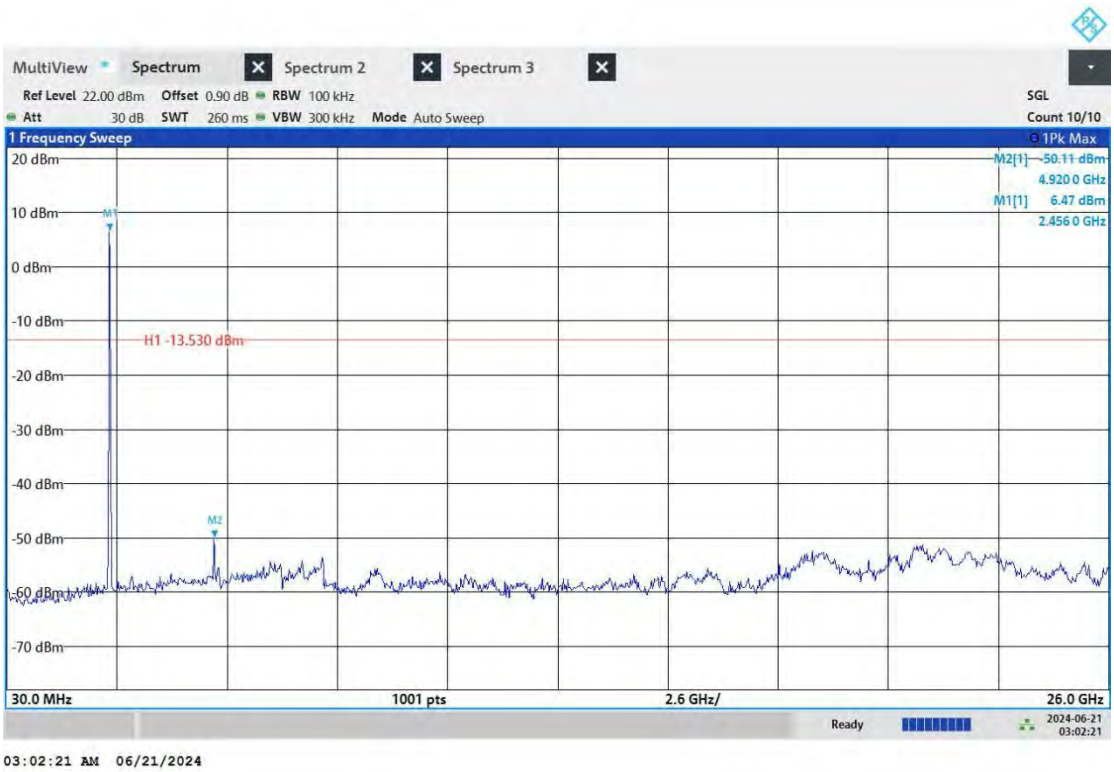
TEST GRAPHS

11B _Ant0_2412_30~260000



11B_Ant0_2437_30~260000

11B_Ant0_2462_30~260000



11G_Ant0_2412_30~260000

11G_Ant0_2437_30~260000

11G_Ant0_2462_30~260000

11N20_Ant0_2412_30~260000

11N20_Ant0_2437_30~260000