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CNAS L0095

ACCREDITED
CERTIFICATE #5473.01

Test Report No.:
FCC2021-0035-RF4

RF Test Report

EUT	:	**Quamtum Access Q3**
MODEL	:	**Access Q3**
BRAND NAME	:	**N/A**
CLIENT	:	**QUAMTUM CONNECTIVITY DE MEXICO, S.A. DE C.V.**
Classification Of Test	:	**N/A**

CVC Testing Technology Co., Ltd.

Client	**Name : QUAMTUM CONNECTIVITY DE MEXICO, S.A. DE C.V.** **Address : Torcuato Tasso 245, Despacho 403, Oficina 21Col. Polanco V Sección, C.P. 11560 Alcaldía Miguel Hidalgo, CDMX,México**
Manufacturer	**Name : QUAMTUM CONNECTIVITY DE MEXICO, S.A. DE C.V.** **Address : Torcuato Tasso 245, Despacho 403, Oficina 21Col. Polanco V Sección, C.P. 11560 Alcaldía Miguel Hidalgo, CDMX,México**
Equipment Under Test	**Name : Quamtum Access Q3** **Model/Type: Access Q3** **Trade mark : N/A** **Serial NO.:N/A** **Sampe NO.:3-1**

Date of Receipt.	**2021.11.18**	Date of Testing	**2021.11.18～2021.12.04**

Test Specification	**Test Result**
FCC Part 15, Subpart C, Section 15.247	PASS

Evaluation of Test Result	The equipment under test was found to comply with the requirements of the standards applied. **Issue Date: 2021.12.06**

Tested by:	Reviewed by:	Approved by:
Xu ZhenFei	**Liu YongHai**	**Chen HuaWen**
Name Signature	Name Signature	Name Signature

Other Aspects: NONE.

Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested

TABLE OF CONTENTS

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FCC2021-0034-RF4	Original release	2021.12.06

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

PPLIED STANDARD: FCC Part 15, Subpart C			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit.
15.247(d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Meet the requirement of limit.

1.1 LIST OF TEST AND MEASUREMENT INSTRUMENTS

Refer to Appendix B.

1.2 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:

No.	ITEM	FREQUENCY	UNCERTAINTY
1	Conducted emissions	9kHz~30MHz	±2.66dB
2	Radiated emissions	9KHz ~ 30MHz	±0.769dB
		30MHz ~ 1GMHz	±0.877dB
		1GHz ~ 18GHz	±0.777dB
		18GHz ~ 40GHz	±1.315dB

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

1.3 TEST LOCATION

The tests and measurements refer to this report were performed by EMC testing Lab. of CVC Testing Technology Co., Ltd.

Address: No.3,TiantaiyiRoad,KaitaiAvenue,ScienceCity,Guangzhou,China
Post Code：510663 Tel：020-32293888
FAX：020-32293889 E-mail：office@cvc.org.cn
Test Firm Registration Number: 937273
CN Number：26239 Wireless Test Site Registration Number：CN0103

2 GENERAL INFORMATION

2.1 GENERAL PRODUCT INFORMATION

PRODUCT	Quamtum Access Q3
BRAND	N/A
MODEL	Access Q3
ADDITIONAL MODEL	N/A
FCC ID	2A3WD-ACCESS-Q3
POWER SUPPLY	DC 12V From Adapter
MODULATIONTECHNOLOGY	DSSS, OFDM
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
OPERATING FREQUENCY	2412MHz ~ 2462MHz for 11b/g/n(HT20)
NUMBER OF CHANNEL	802.11b/g/n (HT20): 11
PEAK OUTPUT POWER	WLAN: 24.40dBm (Maximum)
ANTENNA TYPE	WLAN: PCB Antenna, 2dBi Gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

Remark:

1. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
3. Please refer to the EUT photo document for detailed product photo.
4. The EUT have SISO function, provides 2 completed transmitter and 2 receiver.

MODULATION MODE	TX FUNCTION
802.11b	2TX/2RX
802.11g	2TX/2RX
802.11n (HT20)	2TX/2RX

2.2 Description of Accessories

Adapter	
BRAND	Quamtum
Model No.:	ZL-A012W1201000
Input:	100-240 V~50/60 Hz 0.5 A Max
Output:	12.0 V ⎓ 1 A
AC Cable:	N/A
DC Cable:	1.50 Meter, Unshielded without ferrite

2.3 OTHER INFORMATION

Operating frequency of each channel

2.4G WIFI					
802.11b/g/n (HT20)					
CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
1	**2412**	5	2432	9	2452
2	2417	**6**	**2437**	10	2457
3	2422	7	2442	**11**	**2462**
4	2427	8	2447		

Note: The channels which were indicated in bold type of the above channel list were selected as representative test channel. Therefore only the data of the test channels were recorded in this report.

2.4 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

EUT CONFIGURE MODE	APPLICABLE TEST ITEMS				DESCRIPTION
	RE<1G	RE≥1G	PLC	APCM	
A	√	√	√	√	2.4G WIFI Function

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

RADIATED EMISSION TEST (BELOW 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.

☒ The worst case was found when positioned on x axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	6	DSSS	DBPSK	6.0

For the test results, only the worst case was shown in test report.

RADIATED EMISSION TEST (ABOVE 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.

☒ The worst case was found when positioned on x axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n(HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
A	802.11n HT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5

POWER LINE CONDUCTED EMISSION TEST:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.

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

EUT CONFIGURE MODE	TESTED CONDITION
-	WIFI (2.4G) Link

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, antenna ports (if EUT with antenna diversity architecture), and packet types.

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n(HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
A	802.11n HT40	3 to 9	3, 6, 9	OFDM	BPSK	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE (SYSTEM)	TESTED BY
RE<1G	24deg. C, 55%RH	AC 120V/60Hz	Li JiaLing
RE≥1G	24deg. C, 55%RH	AC 120V/60Hz	Li JiaLing
PLC	24deg. C, 55%RH	AC 120V/60Hz	Li JiaLing
APCM	25deg. C, 58%RH	AC 120V/60Hz	Li JiaLing

2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC PART 15, Subpart C. Section 15.247
KDB 558074 D01 15.247 Meas Guidance v05r02
ANSI C63.10-2020

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

2.6 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.

Support Equipment					
NO	Description	Brand	Model No.	Serial Number	Supplied by
N/A	N/A	N/A	N/A	N/A	N/A

Support Cable							
NO	Description	Quantity (Number)	Length (cm)	Detachable (Yes/ No)	Shielded (Yes/ No)	Cores (Number)	Supplied by
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 Limit

Frequency (MHz)	Conducted Limits(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. NOTE: 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.		

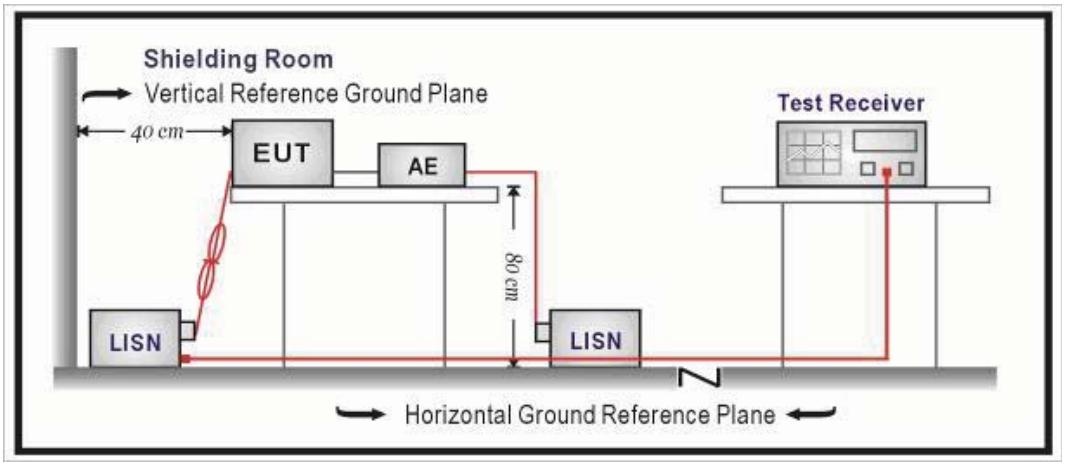
3.1.2 Measurement procedure

a. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the Test photographs) Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.The equipment under test shall be placed on a support of non-metallic material, the height of which shall be1.5m above the ground,

b. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

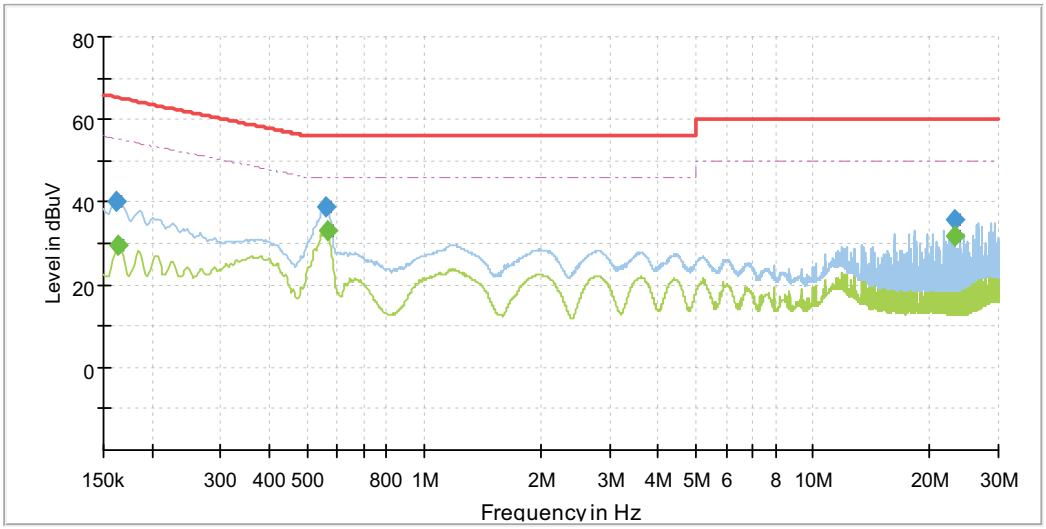
c. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

3.1.3 Test setup



3.1.4 Test results

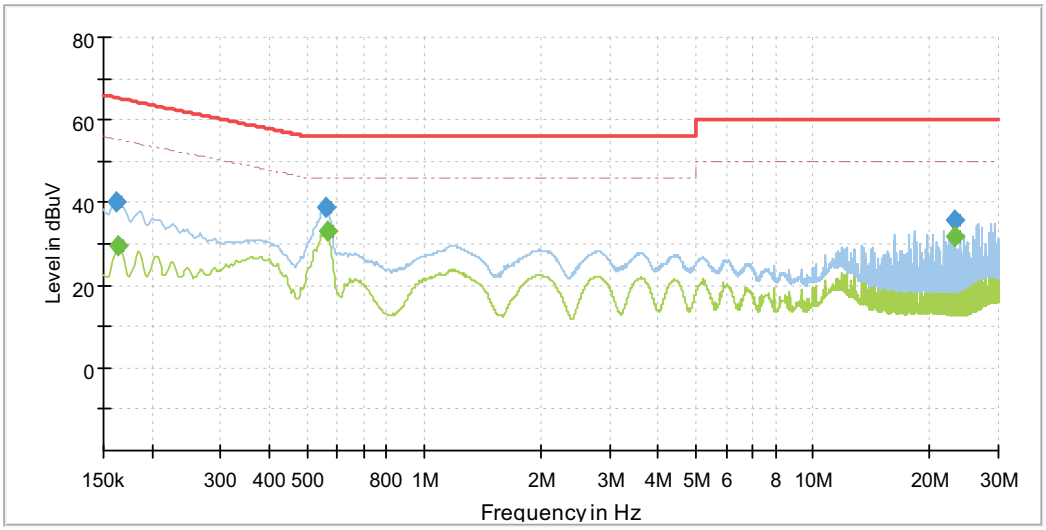
Test Mode	Charging+ WIFI (2.4G) Link		
Frequency Range	150KHz ~ 30MHz	PHASE	Line (L)



NO	Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr.Factor (dB)
1	0.161	40.1	---	65.4	25.3	L1	19.5
2	0.164	---	29.4	55.3	25.8	L1	19.5
3	0.562	38.8	---	56.0	17.2	L1	19.6
4	0.566	---	32.9	46.0	13.1	L1	19.6
5	23.127	35.7	---	60.0	24.3	L1	19.9
6	23.127	---	31.6	50.0	18.4	L1	19.9

Remark: 1.The emission levels of other frequencies were very low against the limit.
2.Margin= Limit - Result
3. Corr.= Insertion loss + Cable loss + LISN Factor
4. Result = Corr. + Reading

Test Mode	Charging+ WIFI (2.4G) Link		
Frequency Range	150KHz ~ 30MHz	PHASE	Line (N)



NO	Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr.Factor (dB)
1	0.161	39.3	---	65.4	26.1	N	19.5
2	0.164	---	21.2	55.3	34.1	N	19.5
3	0.562	28.6	---	56.0	27.4	N	19.6
4	0.564	---	22.3	46.0	23.7	N	19.6
5	23.127	---	30.1	50.0	19.9	N	20.2
6	29.234	36.9	---	60.0	23.1	N	20.3

Remark: 1.The emission levels of other frequencies were very low against the limit.
2.Margin= Limit - Result
3. Corr.= Insertion loss + Cable loss + LISN Factor
4. Result = Corr. + Reading

3.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

3.2.1 Limit

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.
NOTE: 2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
NOTE: 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 Measurement procedure

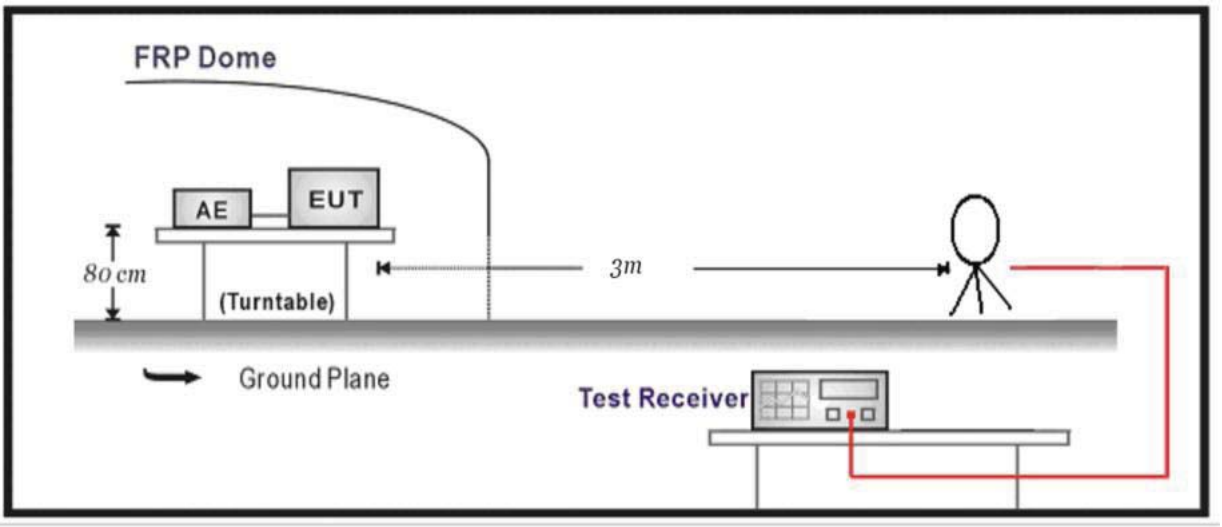
a. The EUT was placed on the top of a rotating table 1.5 meters(above 1GHz) and 0.8 meters(below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. For below 1GHz was used bilog antenna, and above 1GHz was used horn 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. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
g. 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:

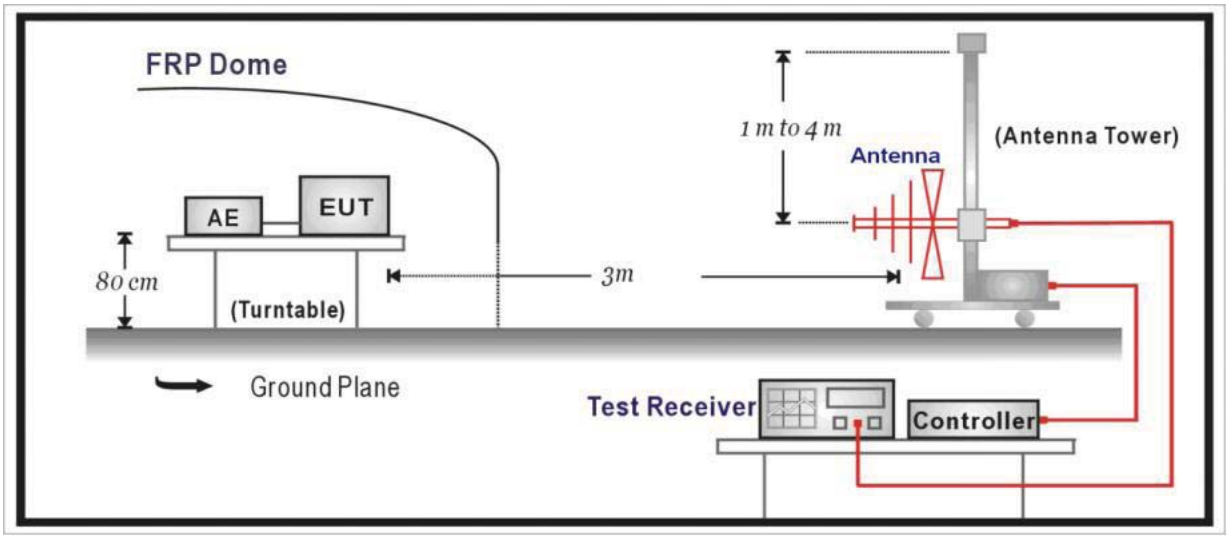
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ⩾ 1/T (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

3.2.3 Test setup

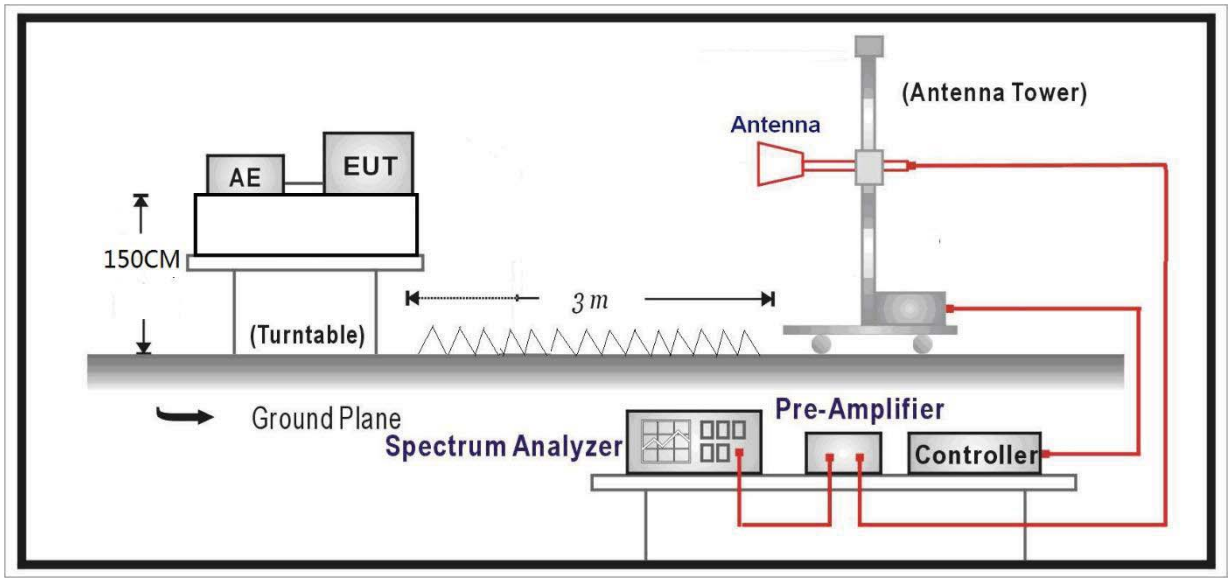
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:

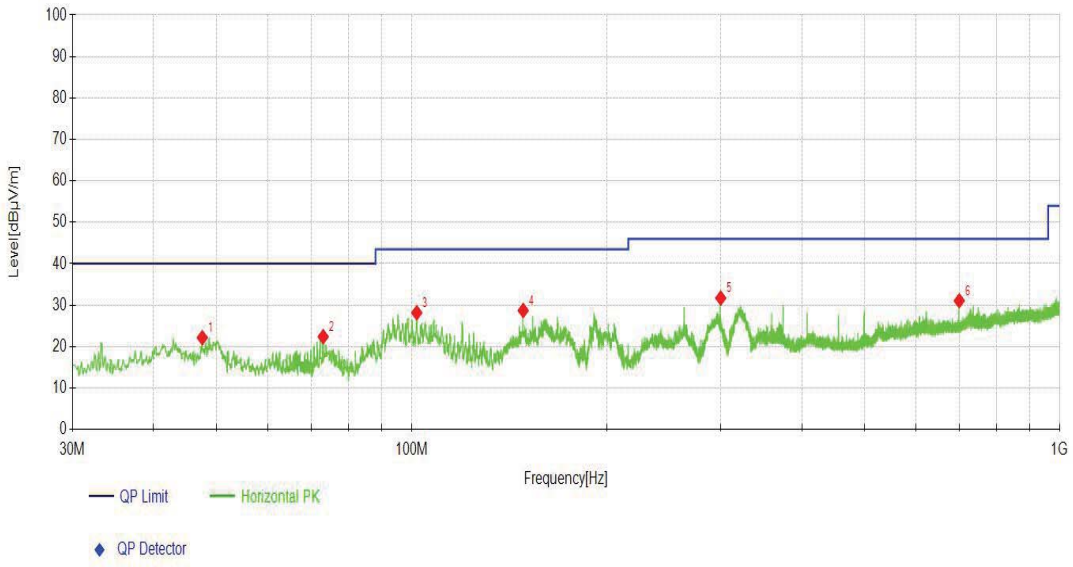


3.2.4 Test results

BELOW 1GHz WORST-CASE DATA:

Worst Test Mode	802.11b	Channel	CH 1
Frequency Range	9KHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Horizontal

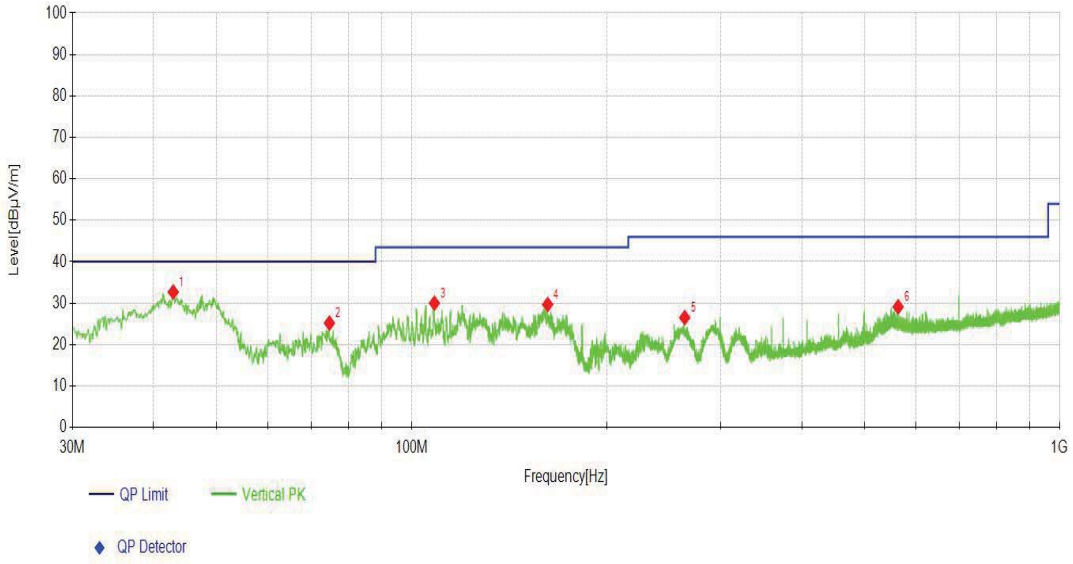


NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	47.5588	7.78	22.13	14.35	40.00	17.87	200	122
2	73.0723	11.11	22.38	11.27	40.00	17.62	300	290
3	101.8842	16.76	28.16	11.40	43.50	15.34	300	344
4	148.7399	13.34	28.70	15.36	43.50	14.80	200	134
5	299.9780	16.87	31.72	14.85	46.00	14.28	100	184
6	700.0460	8.78	31.07	22.29	46.00	14.93	100	358

Remark: 1. 9KHz~30MHz have been test and test data more than 20dB margin.
2. The emission levels of other frequencies were greater than 20dB margin.
3. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
4. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
5. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]

Worst Test Mode	802.11b	Channel	CH 1
Frequency Range	9KHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Vertical



NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	42.9023	18.19	32.68	14.49	40.00	7.32	100	99
2	74.7215	14.14	25.18	11.04	40.00	14.82	100	296
3	108.4808	18.22	29.99	11.77	43.50	13.51	100	76
4	162.2242	13.95	29.66	15.71	43.50	13.84	100	177
5	263.9874	12.92	26.51	13.59	46.00	19.49	100	183
6	563.3593	8.91	29.10	20.19	46.00	16.90	100	344

Remark: 1. 9KHz~30MHz have been test and test data more than 20dB margin.
2. The emission levels of other frequencies were greater than 20dB margin.
3. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
4. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
5. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]

ABOVE 1GHz DATA

Channel	802.11b CH 1	Frequency	2412MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Horizontal

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2390	46.65	-0.13	46.52	54.00	7.48	150	141	AV
2	2390	63.04	-0.13	62.91	74.00	11.09	196	141	PK
3	2412	96.36	0.14	96.50	-	-	147	213	AV
4	2412	98.78	0.16	98.94	-	-	243	226	PK
5	4824	44.93	14.61	59.54	74.00	14.46	189	341	PK
6	4824	37.33	14.51	51.84	54.00	2.16	166	143	AV
7	7236	23.34	12.81	36.15	54.00	17.85	228	32	AV
8	7236	30.58	12.72	43.30	74.00	30.70	227	181	PK
9	9648	26.76	13.14	39.90	54.00	14.10	206	356	AV
10	9648	32.25	13.14	45.39	74.00	28.61	164	359	PK

Vertical

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	2390	46.02	-0.15	45.87	54.00	8.13	149	220	AV
2	2390	61.78	-0.15	61.63	74.00	12.37	176	220	PK
3	2412	98.46	0.14	98.60	-	-	165	220	AV
4	2412	100.80	0.15	100.95	-	-	224	214	PK
5	4824	44.91	9.92	54.83	74.00	19.17	164	360	PK
6	4824	37.88	10.00	47.88	54.00	6.12	218	323	AV
7	7236	23.97	12.41	36.38	54.00	17.62	188	206	AV
8	7236	31.56	12.45	44.01	74.00	29.99	160	286	PK
9	9648	37.14	13.14	50.28	74.00	23.72	132	225	PK
10	9648	33.10	13.14	46.24	54.00	7.76	157	225	AV

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]

Channel	802.11b CH 6	Frequency	2437MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Horizontal

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	4874	44.83	9.98	54.81	74.00	19.19	194	263	PK
2	4874	36.67	10.22	46.89	54.00	7.11	130	359	AV
3	7311	30.27	12.81	43.08	74.00	30.92	246	334	PK
4	7311	23.66	12.80	36.46	54.00	17.54	134	281	AV
5	9748	30.78	13.23	44.01	74.00	29.99	155	308	PK
6	9748	24.84	13.23	38.07	54.00	15.93	147	288	AV

Vertical

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	2390	45.34	10.09	55.43	74.00	18.57	245	157	PK
2	2390	36.60	10.18	46.78	54.00	7.22	133	348	AV
3	2412	24.42	12.23	36.65	54.00	17.35	158	130	AV
4	2412	31.81	12.59	44.40	74.00	29.60	140	144	PK
5	4824	36.35	13.23	49.58	74.00	24.42	167	216	PK
6	4824	30.09	13.23	43.32	54.00	10.68	154	222	AV

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]

Channel	802.11b CH 11	Frequency	2462MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Horizontal

NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2462	95.76	0.60	96.36	-	-	155	119	AV
2	2462	98.02	0.61	98.63	-	-	196	119	PK
3	2483.5	44.50	0.45	44.95	54.00	9.05	202	153	AV
4	2483.5	60.46	0.46	60.92	74.00	13.08	130	119	PK
5	4924	36.53	9.96	46.49	54.00	7.51	234	94	AV
6	4924	44.78	10.11	54.89	74.00	19.11	174	107	PK
7	7386	31.67	12.17	43.84	74.00	30.16	130	311	PK
8	7386	24.29	12.74	37.03	54.00	16.97	148	339	AV
9	9848	30.66	13.23	43.89	74.00	30.11	209	305	PK
10	9848	25.79	13.23	39.02	54.00	14.98	187	305	AV

Vertical

NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	2462	99.47	0.59	100.06	-	-	244	49	AV
2	2462	101.73	0.62	102.35	-	-	242	49	PK
3	2483.5	66.52	0.51	67.03	74.00	6.97	167	28	PK
4	2483.5	50.23	0.51	50.74	54.00	3.26	200	28	AV
5	4924	45.45	10.00	55.45	74.00	18.55	181	249	PK
6	4924	36.00	10.12	46.12	54.00	7.88	236	1	AV
7	7386	32.10	11.91	44.01	74.00	29.99	175	307	PK
8	7386	23.67	12.55	36.22	54.00	17.78	148	334	AV
9	9848	35.53	13.23	48.76	74.00	25.24	175	221	PK
10	9848	32.20	13.23	45.43	54.00	8.57	244	221	AV

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]

Channel	802.11g CH 1	Frequency	2412MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Horizontal

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2390	48.88	-0.16	48.72	74.00	25.28	187	186	PK
2	2390	40.93	-0.15	40.78	54.00	13.22	246	117	AV
3	2412	100.84	0.06	100.90	-	-	174	117	PK
4	2412	93.80	0.14	93.94	-	-	175	117	AV
5	4824	44.68	9.90	54.58	74.00	19.42	224	348	PK
6	4824	35.89	10.10	45.99	54.00	8.01	245	223	AV
7	7236	33.06	11.43	44.49	74.00	29.51	154	262	PK
8	7236	24.45	11.54	35.99	54.00	18.01	148	64	AV
9	9648	31.81	13.14	44.95	74.00	29.05	130	283	PK
10	9648	26.75	13.14	39.89	54.00	14.11	219	283	AV

Vertical

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	2390	48.25	-0.18	48.07	74.00	25.93	130	48	PK
2	2390	40.15	-0.16	39.99	54.00	14.01	250	40	AV
3	2412	93.53	0.13	93.66	-	-	157	40	AV
4	2412	100.65	0.18	100.83	-	-	153	40	PK
5	4824	45.30	9.84	55.14	74.00	18.86	192	304	PK
6	4824	36.04	9.87	45.91	54.00	8.09	141	1	AV
7	7236	30.73	12.47	43.20	74.00	30.80	197	6	PK
8	7236	23.49	12.70	36.19	54.00	17.81	136	269	AV
9	9648	36.71	13.14	49.85	74.00	24.15	187	222	PK
10	9648	33.54	13.14	46.68	54.00	7.32	235	222	AV

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]

Channel	802.11g CH 6	Frequency	2437MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Horizontal

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	4874	44.76	9.74	54.50	74.00	19.50	226	359	PK
2	4874	36.21	10.10	46.31	54.00	7.69	203	259	AV
3	7311	30.63	12.55	43.18	74.00	30.82	234	236	PK
4	7311	23.66	12.51	36.17	54.00	17.83	199	94	AV
5	9748	30.41	13.23	43.64	74.00	30.36	178	285	PK
6	9748	24.93	13.23	38.16	54.00	15.84	226	285	AV

Vertical

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	4874	45.29	9.98	55.27	74.00	18.73	234	143	PK
2	4874	35.98	10.00	45.98	54.00	8.02	239	128	AV
3	7311	23.30	12.81	36.11	54.00	17.89	217	326	AV
4	7311	30.99	12.68	43.67	74.00	30.33	138	181	PK
5	9748	37.70	13.23	50.93	74.00	23.07	165	210	PK
6	9748	32.77	13.23	46.00	54.00	8.00	183	210	AV

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]

Channel	802.11g CH 11	Frequency	2462MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Horizontal

NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2462	95.00	0.57	95.57	-	-	130	48	AV
2	2462	102.07	0.56	102.63	-	-	242	48	PK
3	2483.5	60.82	0.48	61.30	74.00	12.70	130	39	PK
4	2483.5	45.46	0.48	45.94	54.00	8.06	168	39	AV
5	4924	35.75	10.25	46.00	54.00	8.00	167	0	AV
6	4924	44.60	10.28	54.88	74.00	19.12	149	23	PK
7	7386	24.16	12.52	36.68	54.00	17.32	189	34	AV
8	7386	31.13	12.52	43.65	74.00	30.35	240	34	PK
9	9848	30.52	13.23	43.75	74.00	30.25	217	268	PK
10	9848	26.20	13.23	39.43	54.00	14.57	219	296	AV

Vertical

NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	2462	91.33	0.57	91.90	-	-	250	124	AV
2	2462	98.26	0.56	98.82	-	-	238	124	PK
3	2483.5	53.88	0.47	54.35	74.00	19.65	222	112	PK
4	2483.5	40.14	0.47	40.61	54.00	13.39	176	112	AV
5	4924	45.27	10.08	55.35	74.00	18.65	238	4	PK
6	4924	36.10	10.11	46.21	54.00	7.79	131	216	AV
7	7386	31.97	11.81	43.78	74.00	30.22	183	186	PK
8	7386	23.56	12.83	36.39	54.00	17.61	163	90	AV
9	9848	35.76	13.23	48.99	74.00	25.01	248	201	PK
10	9848	32.69	13.23	45.92	54.00	8.08	207	208	AV

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]

Channel	802.11n20 CH 1	Frequency	2412MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Horizontal

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2390	40.37	-0.16	40.21	54.00	13.79	245	212	AV
2	2390	46.78	-0.15	46.63	74.00	27.37	245	231	PK
3	2412	93.62	0.25	93.87	-	-	182	231	AV
4	2412	100.15	0.25	100.40	-	-	163	231	PK
5	4824	46.43	9.78	56.21	74.00	17.79	250	302	PK
6	4824	35.92	10.11	46.03	54.00	7.97	191	175	AV
7	7236	32.30	11.31	43.61	74.00	30.39	130	262	PK
8	7236	23.76	12.23	35.99	54.00	18.01	131	262	AV
9	9648	31.77	13.14	44.91	74.00	29.09	237	288	PK
10	9648	26.86	13.14	40.00	54.00	14.00	201	357	AV

Vertical

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	2390	41.68	-0.16	41.52	54.00	12.48	228	106	AV
2	2390	52.86	-0.15	52.71	74.00	21.29	215	113	PK
3	2412	96.70	0.24	96.94	-	-	235	120	AV
4	2412	104.31	0.24	104.55	-	-	170	106	PK
5	4824	45.06	9.95	55.01	74.00	18.99	166	296	PK
6	4824	35.99	9.80	45.79	54.00	8.21	164	197	AV
7	7236	31.73	12.06	43.79	74.00	30.21	142	215	PK
8	7236	23.99	12.72	36.71	54.00	17.29	180	215	AV
9	9648	35.85	13.14	48.99	74.00	25.01	244	127	PK
10	9648	32.60	13.14	45.74	54.00	8.26	151	221	AV

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]

Channel	802.11n20 CH 6	Frequency	2437MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Horizontal

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	4874	44.90	10.04	54.94	74.00	19.06	218	222	PK
2	4874	36.06	10.16	46.22	54.00	7.78	175	39	AV
3	7311	23.04	12.81	35.85	54.00	18.15	192	87	AV
4	7311	30.72	12.48	43.20	74.00	30.80	179	26	PK
5	9748	24.61	13.23	37.84	54.00	16.16	229	276	AV
6	9748	30.49	13.24	43.73	74.00	30.27	215	60	PK

Vertical

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	4874	46.21	10.07	56.28	74.00	17.72	231	15	PK
2	4874	35.60	11.05	46.65	54.00	7.35	213	359	AV
3	7311	31.37	11.85	43.22	74.00	30.78	183	2	PK
4	7311	23.68	12.70	36.38	54.00	17.62	196	141	AV
5	9748	33.04	13.23	46.27	54.00	7.73	136	208	AV
6	9748	37.13	13.23	50.36	74.00	23.64	217	208	PK

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBμV/m] - Level [dBμV/m]

Channel	802.11n20 CH 11	Frequency	2462MHz
Frequency Range	Above 1G	Detector Function	PK/AV

Horizontal

NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector
1	2462	94.04	0.57	94.61	-	-	197	166	AV
2	2462	101.67	0.60	102.27	-	-	223	214	PK
3	2483.5	55.70	0.51	56.21	74.00	17.79	150	222	PK
4	2483.5	42.51	0.53	43.04	54.00	10.96	227	160	AV
5	4924	45.65	9.92	55.57	74.00	18.43	228	358	PK
6	4924	35.70	10.68	46.38	54.00	7.62	199	102	AV
7	7386	23.48	12.77	36.25	54.00	17.75	229	236	AV
8	7386	31.30	12.32	43.62	74.00	30.38	208	61	PK
9	9848	31.67	13.23	44.90	74.00	29.10	205	277	PK
10	9848	25.61	13.23	38.84	54.00	15.16	220	277	AV

Vertical

NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	2462	105.50	0.64	106.14	-	-	207	2	PK
2	2462	97.74	0.73	98.47	-	-	148	45	AV
3	2483.5	45.22	0.46	45.68	54.00	8.32	227	316	AV
4	2483.5	58.81	0.47	59.28	74.00	14.72	178	337	PK
5	4924	44.28	9.71	53.99	74.00	20.01	162	102	PK
6	4924	35.60	9.87	45.47	54.00	8.53	154	150	AV
7	7386	23.40	12.77	36.17	54.00	17.83	236	236	AV
8	7386	30.53	12.81	43.34	74.00	30.66	230	125	PK
9	9848	34.56	13.23	47.79	74.00	26.21	176	207	PK
10	9848	31.64	13.23	44.87	54.00	9.13	176	207	AV

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]

3.3 6dB BANDWIDTH MEASUREMENT

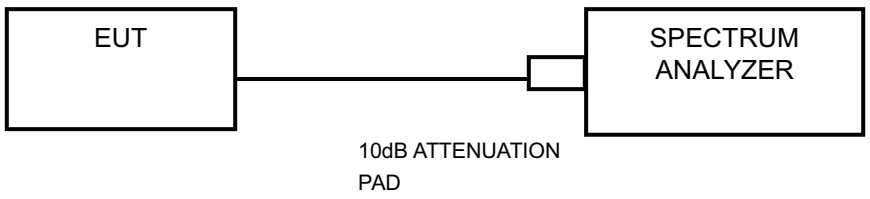
3.3.1 Limits

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

3.3.2 Measurement procedure

a. Set resolution bandwidth (RBW) = 100KHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associatedwith the two amplitude points (upper and lower) that are attenuated by 6 dB relative to themaximum level measured in the fundamental emission.

3.3.3 Test setup



3.3.4 Test result

Please refer Annex A

3.4 CONDUCTED OUTPUT POWER

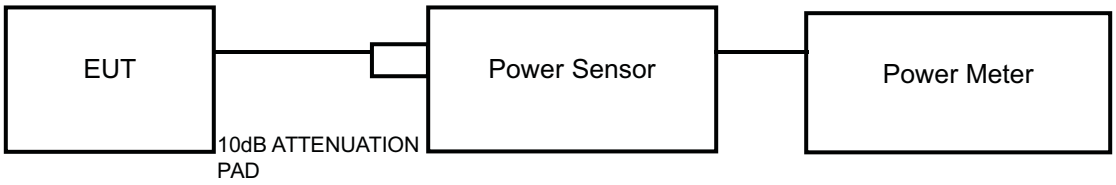
3.4.1 Limits

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

3.4.2 Measurement procedure

a. 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 and set the detector to PEAK. Record the power level.
b. Anaverage power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power senso and set the detector to AVERAGE. Record the power level.

3.4.3 Test setup



3.4.4 Test result

Please refer Annex A.

3.5 POWER SPECTRAL DENSITY MEASUREMENT

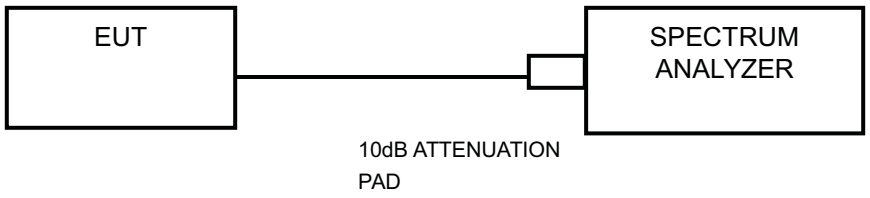
3.5.1 Limits

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

3.5.2 Measurement procedure

a. Set instrument center frequency to DTS channel center frequency.
b. Set the span to 1.5 times the DTS bandwidth.
c. Set RBW to: 3KHz
d. Set VBW ≥3 x RBW.
e. Detector = peak
f. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
g. Sweep time = auto couple.
h. Use the peak marker function to determine the maximum amplitude level.

3.5.3 Test setup



3.5.4 Test result

Please refer Annex A.

3.6 OUT OF BAND EMISSION MEASUREMENT

3.6.1 Limits

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

3.6.2 Measurement procedure

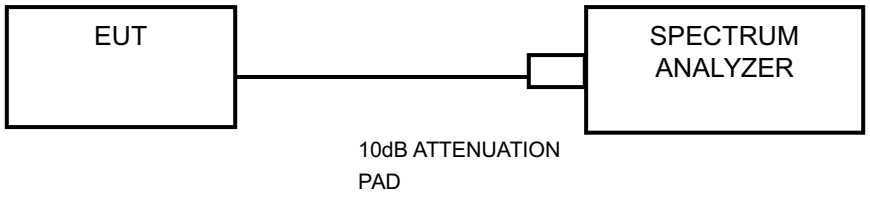
Measurement Procedure -Reference Level

a. Set the RBW = 100 kHz.
b. Set the VBW ≥ 300 kHz.
c. Detector = peak.
d. Sweep time = auto couple.
e. Trace mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum power level in any 100 kHzband segment within the fundamental EBW.

Measurement Procedure –Unwanted Emission Level

a. Set RBW = 100 kHz.
b. Set VBW ≥ 300 kHz.
c. Set span to encompass the spectrum to be examined
d. Detector = peak.
e. Trace Mode = max hold.
f. Sweep = auto couple.

3.6.3 Test setup



3.6.4 Test result

Please refer Annex A.

4 PHOTOGRAPHS OF TEST SETUP

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

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5 Appendix A

Please refer to the following pages for test results.

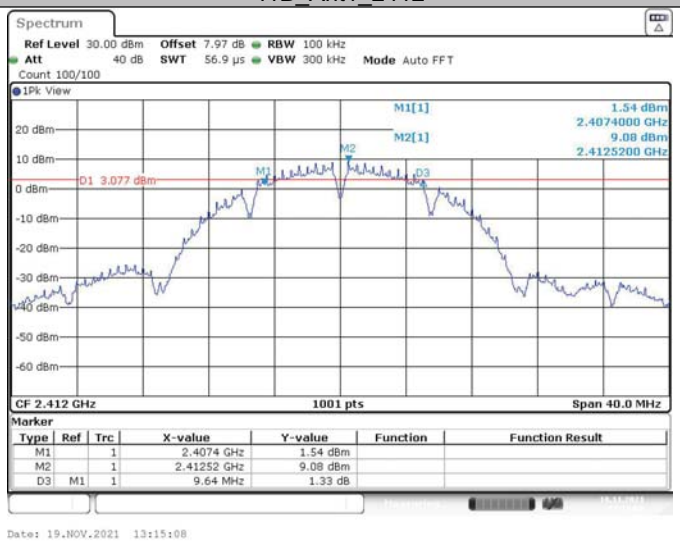
5.1 6DB BANDWIDTH MEASUREMENT

5.1.1 Test Result

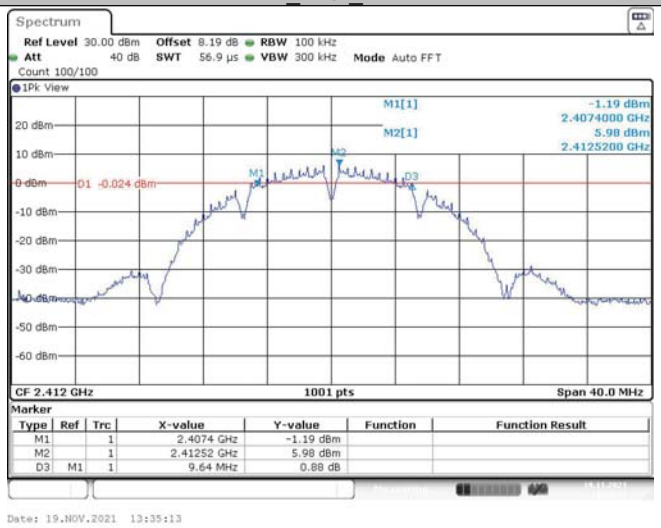
TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.640	2407.400	2417.040	0.5	PASS
	Ant2	2412	9.640	2407.400	2417.040	0.5	PASS
	Ant1	2437	10.160	2431.920	2442.080	0.5	PASS
	Ant2	2437	10.080	2431.960	2442.040	0.5	PASS
	Ant1	2462	9.200	2457.400	2466.600	0.5	PASS
	Ant2	2462	9.640	2456.960	2466.600	0.5	PASS
11G	Ant1	2412	16.400	2403.800	2420.200	0.5	PASS
	Ant2	2412	16.400	2403.800	2420.200	0.5	PASS
	Ant1	2437	16.400	2428.800	2445.200	0.5	PASS
	Ant2	2437	16.400	2428.800	2445.200	0.5	PASS
	Ant1	2462	16.400	2453.800	2470.200	0.5	PASS
	Ant2	2462	16.400	2453.800	2470.200	0.5	PASS
11N20MIMO	Ant1	2412	17.400	2403.440	2420.840	0.5	PASS
	Ant2	2412	17.640	2403.200	2420.840	0.5	PASS
	Ant1	2437	17.640	2428.200	2445.840	0.5	PASS
	Ant2	2437	17.640	2428.200	2445.840	0.5	PASS
	Ant1	2462	17.640	2453.200	2470.840	0.5	PASS
	Ant2	2462	17.680	2453.160	2470.840	0.5	PASS

5.1.2 Test Graphs

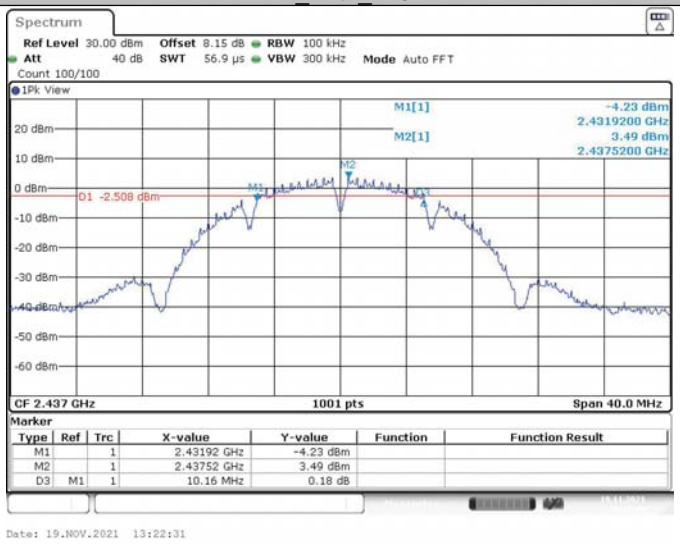
11B_Ant1_2412



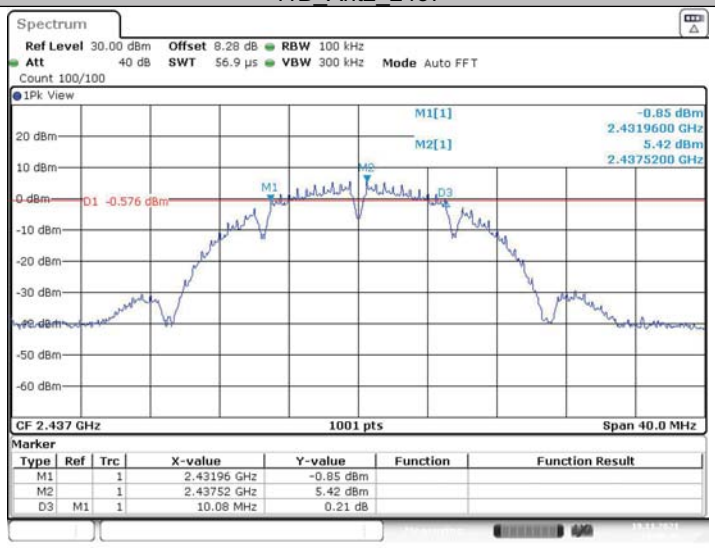
11B_Ant2_2412



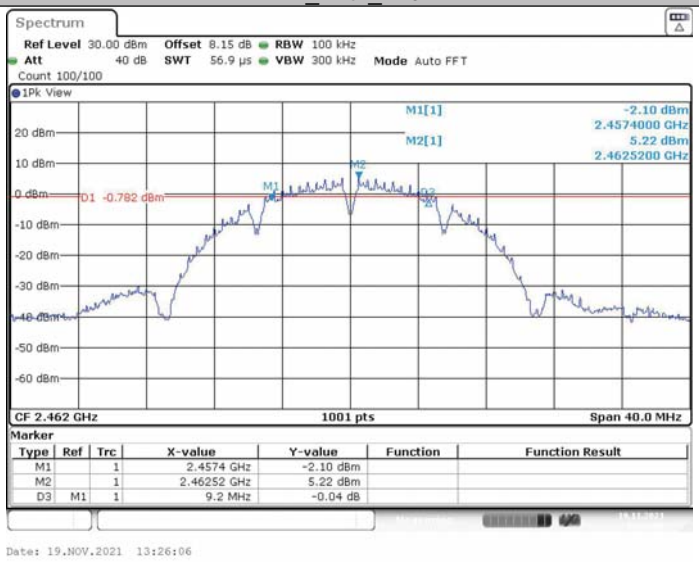
11B_Ant1_2437



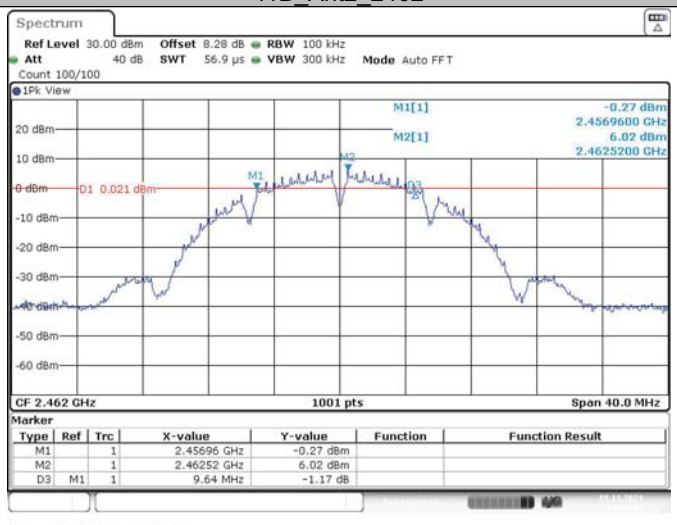
11B_Ant2_2437



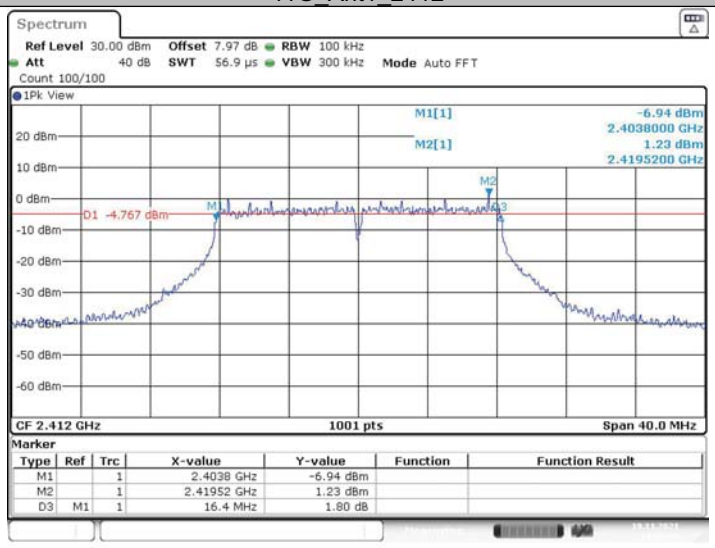
11B_Ant1_2462



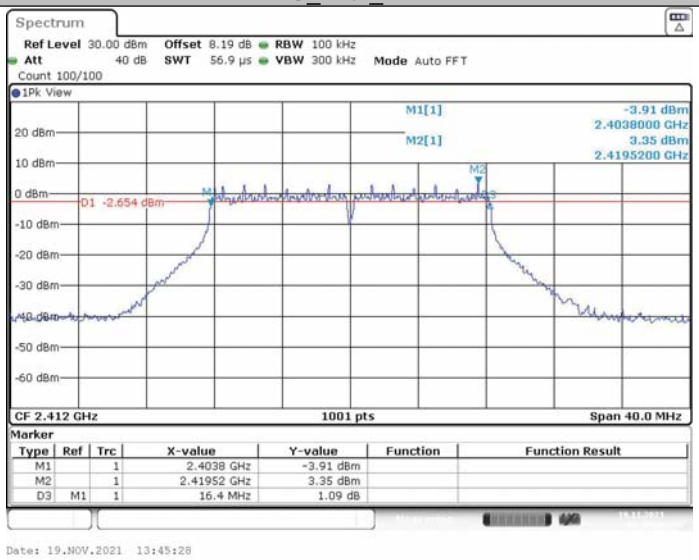
11B_Ant2_2462



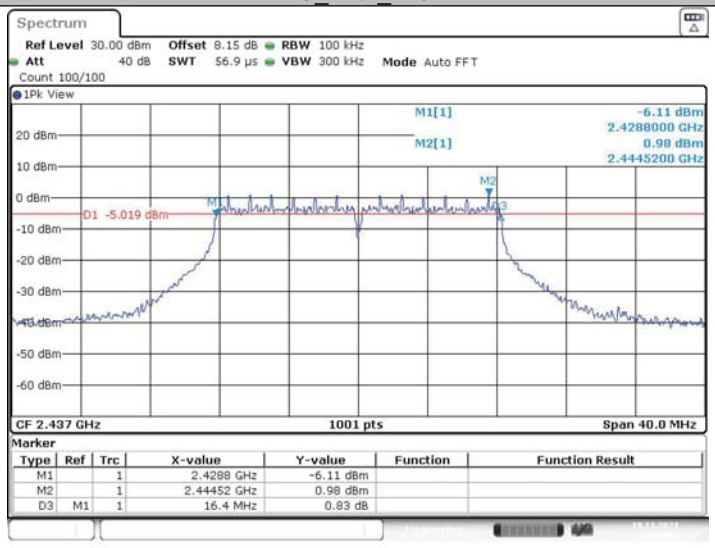
11G_Ant1_2412



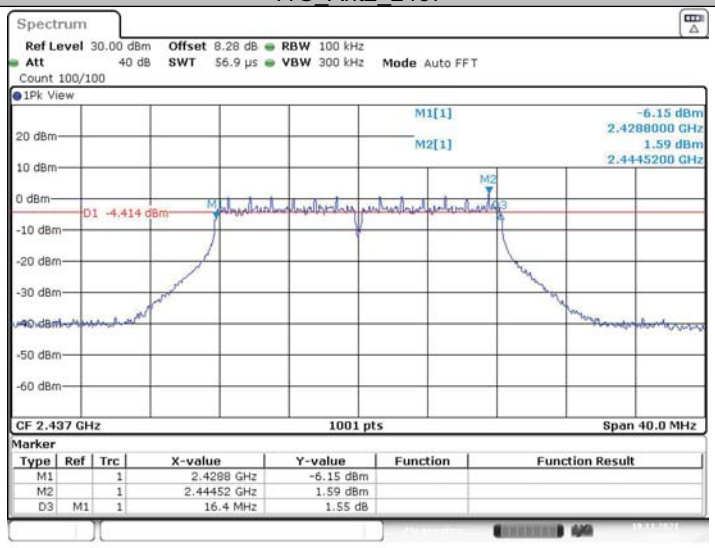
11G_Ant2_2412



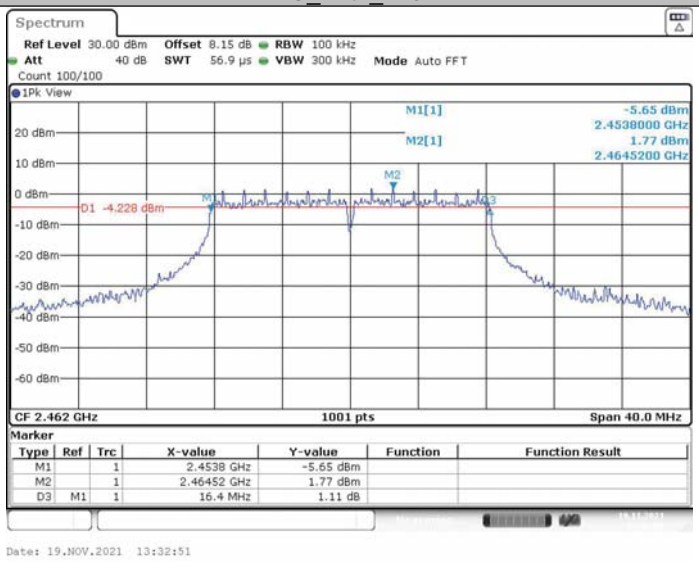
11G_Ant1_2437



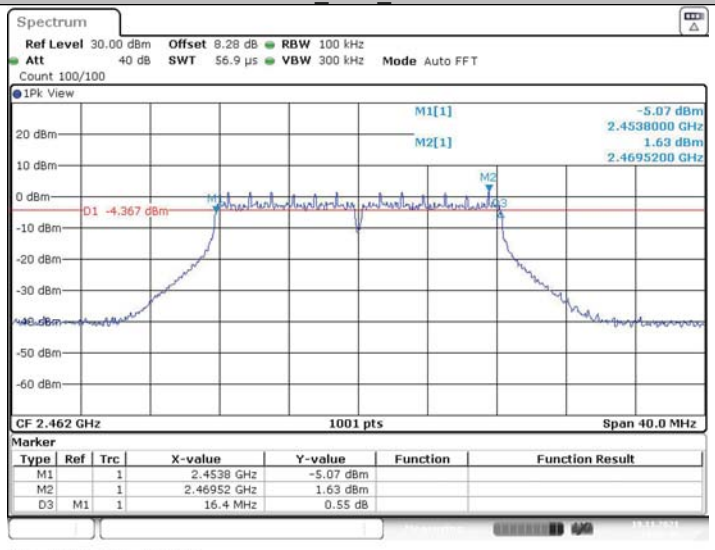
11G_Ant2_2437



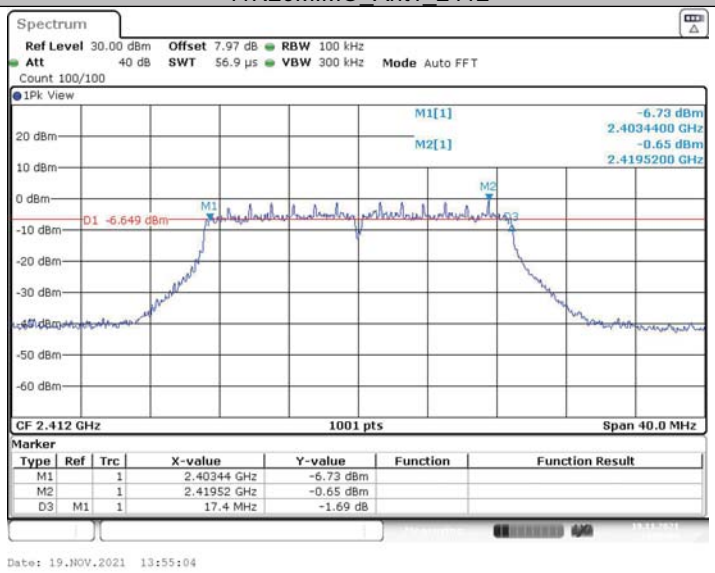
11G_Ant1_2462



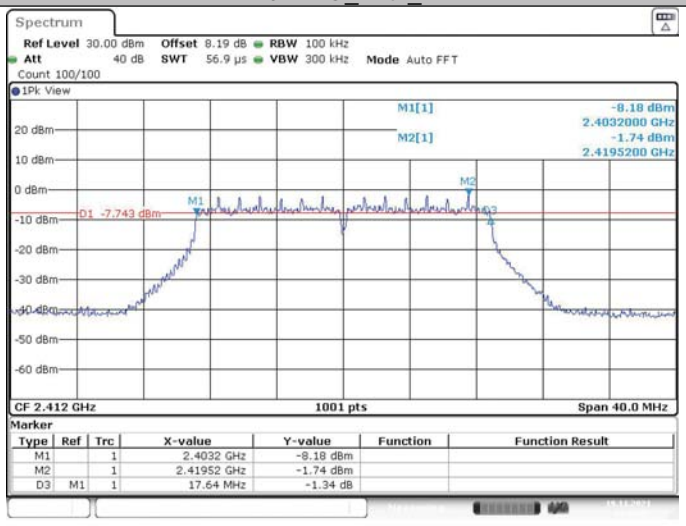
11G_Ant2_2462



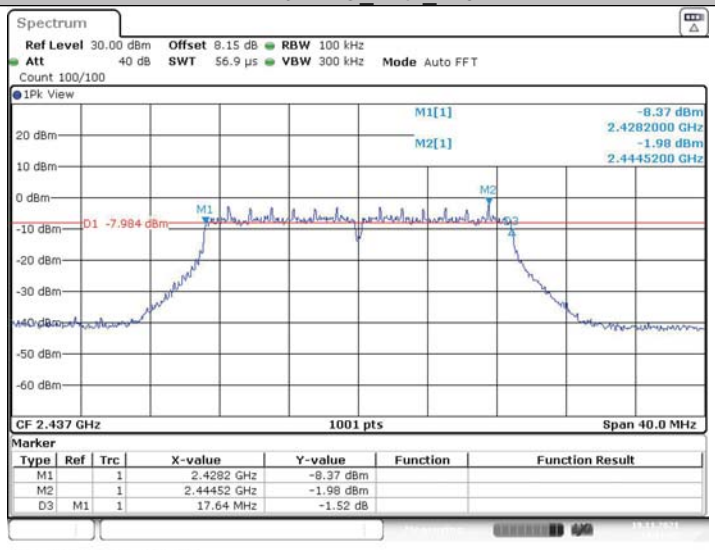
11N20MIMO_Ant1_2412



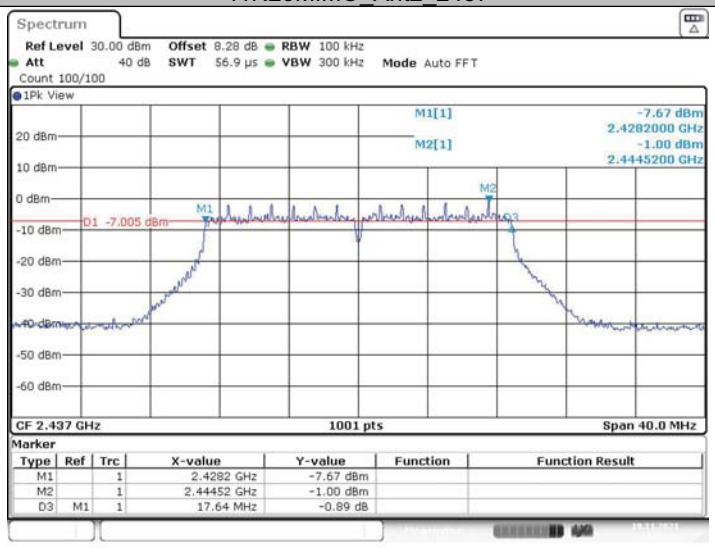
11N20MIMO_Ant2_2412



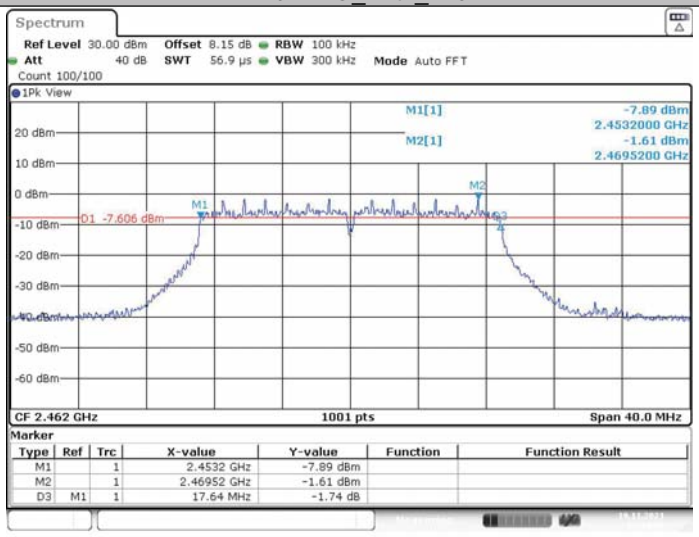
11N20MIMO_Ant1_2437



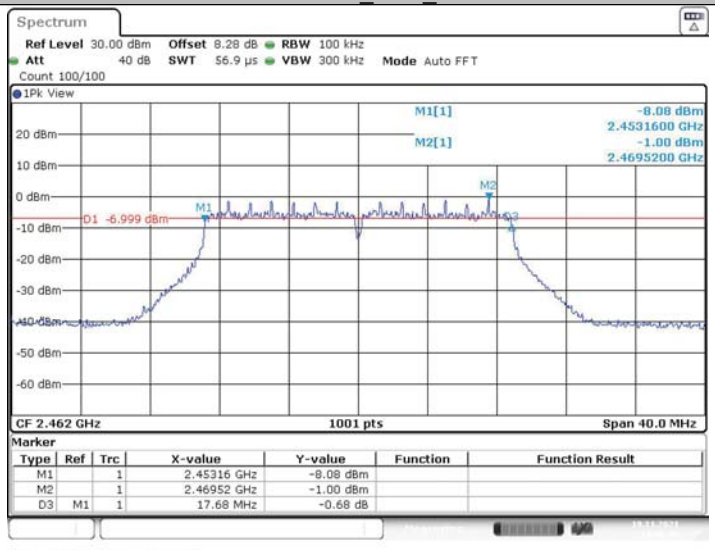
11N20MIMO_Ant2_2437



11N20MIMO_Ant1_2462



11N20MIMO_Ant2_2462



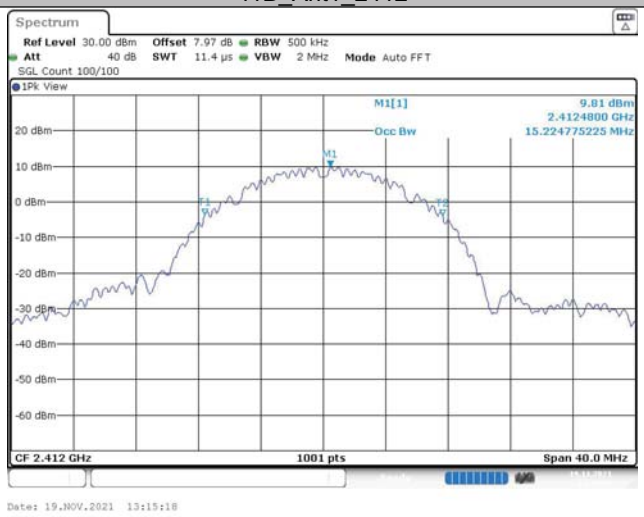
5.2 Occupied Channel Bandwidth

5.2.1 Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	15.225	2404.408	2419.632	---	PASS
	Ant2	2412	15.105	2404.488	2419.592	---	PASS
	Ant1	2437	15.265	2429.368	2444.632	---	PASS
	Ant2	2437	15.225	2429.448	2444.672	---	PASS
	Ant1	2462	15.145	2454.448	2469.592	---	PASS
	Ant2	2462	15.185	2454.408	2469.592	---	PASS
11G	Ant1	2412	17.103	2403.528	2420.631	---	PASS
	Ant2	2412	17.622	2403.009	2420.631	---	PASS
	Ant1	2437	17.063	2428.369	2445.432	---	PASS
	Ant2	2437	16.903	2428.648	2445.551	---	PASS
	Ant1	2462	17.023	2453.369	2470.392	---	PASS
	Ant2	2462	16.943	2453.489	2470.432	---	PASS
11N20MIMO	Ant1	2412	18.182	2402.769	2420.951	---	PASS
	Ant2	2412	18.422	2402.969	2421.391	---	PASS
	Ant1	2437	18.501	2427.609	2446.111	---	PASS
	Ant2	2437	18.182	2428.009	2446.191	---	PASS
	Ant1	2462	18.142	2452.809	2470.951	---	PASS
	Ant2	2462	18.062	2452.929	2470.991	---	PASS

5.2.2 Test Graphs

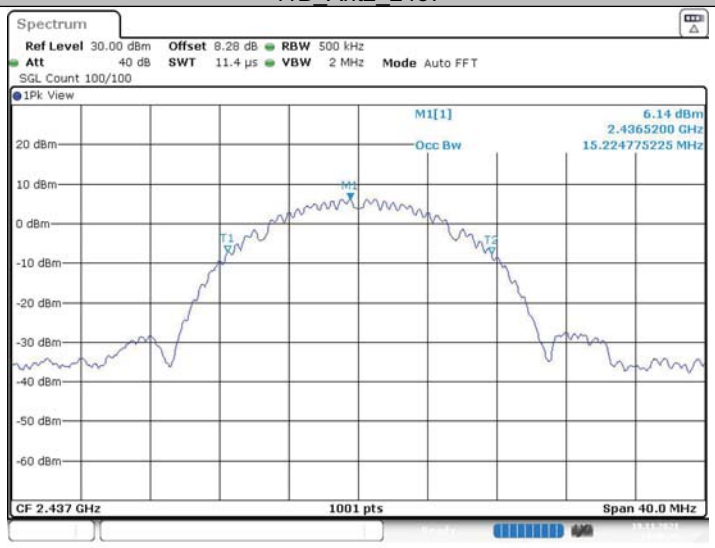
11B_Ant1_2412



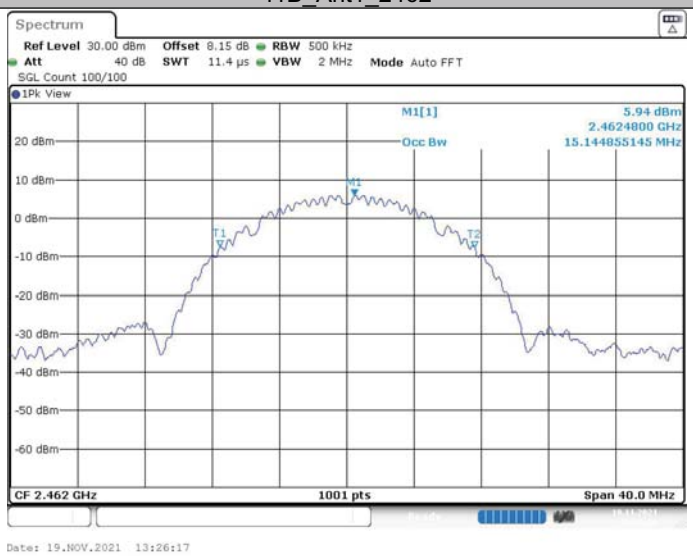
11B_Ant2_2412

11B_Ant1_2437

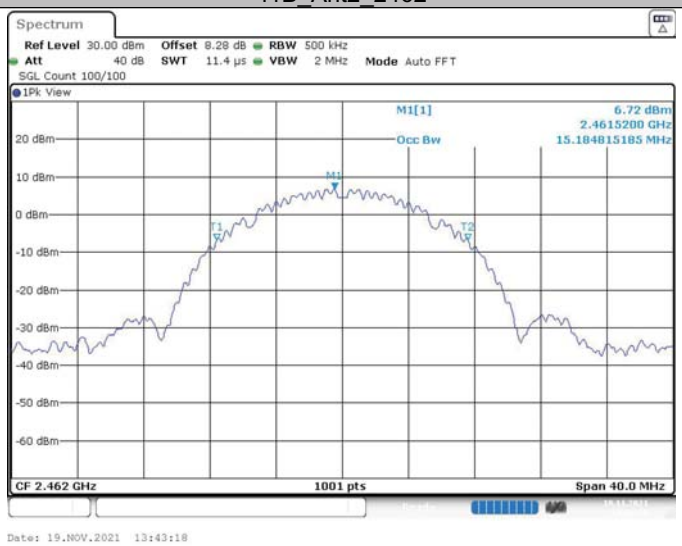
11B_Ant2_2437



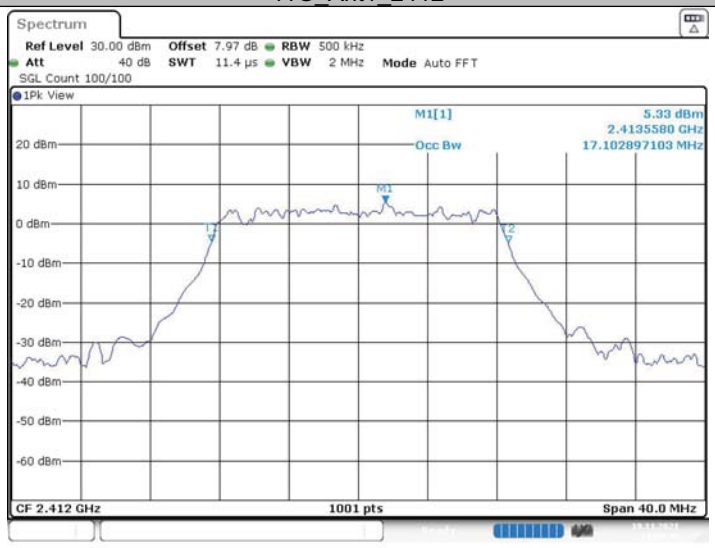
11B_Ant1_2462



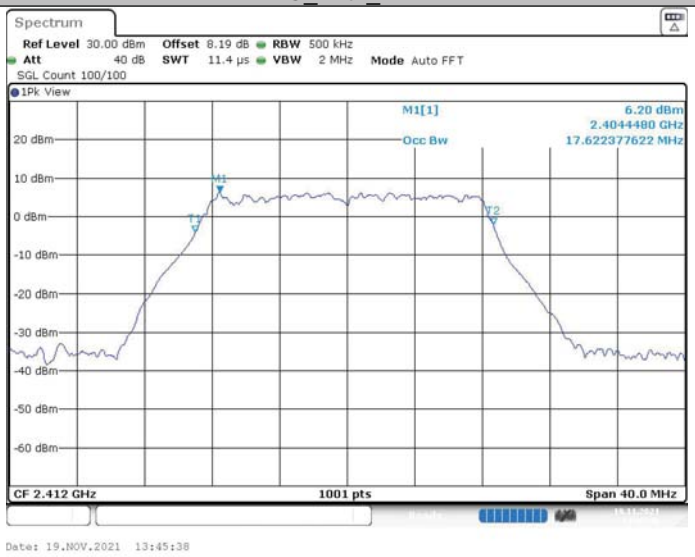
11B_Ant2_2462



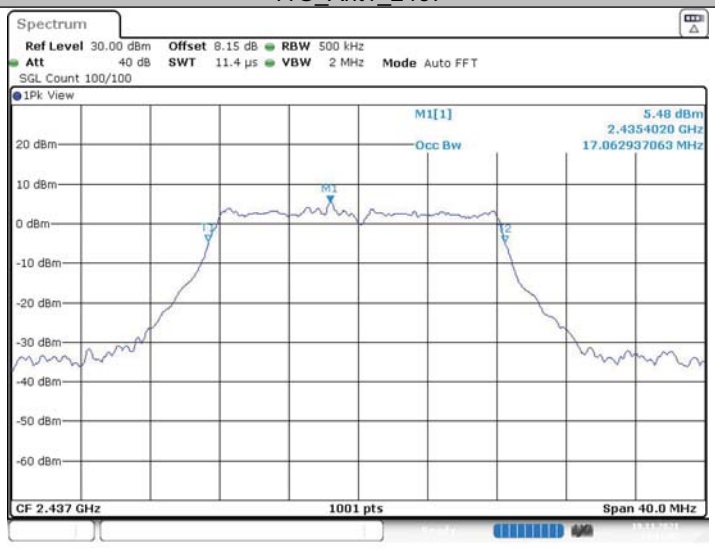
11G_Ant1_2412



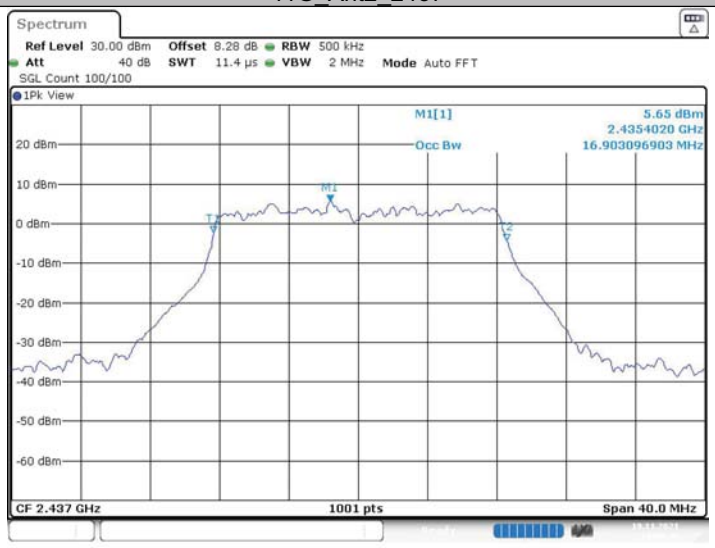
11G_Ant2_2412



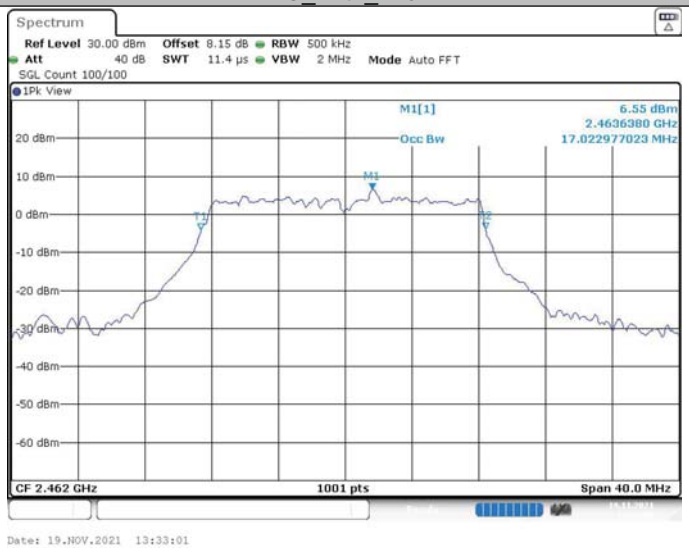
11G_Ant1_2437



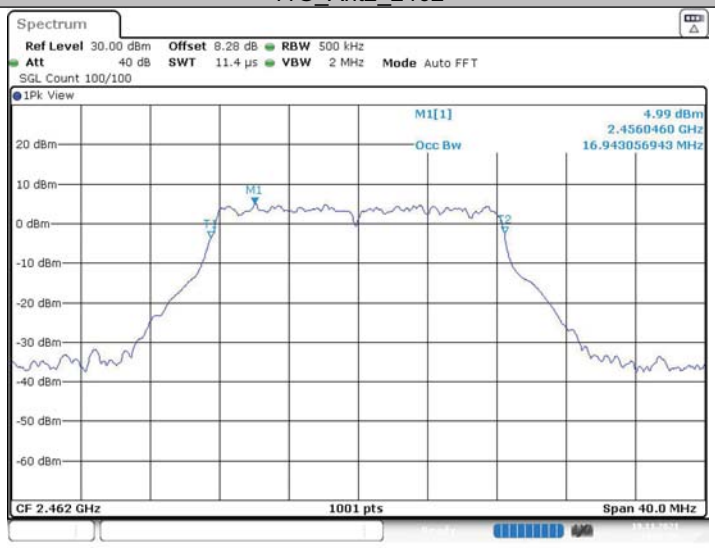
11G_Ant2_2437



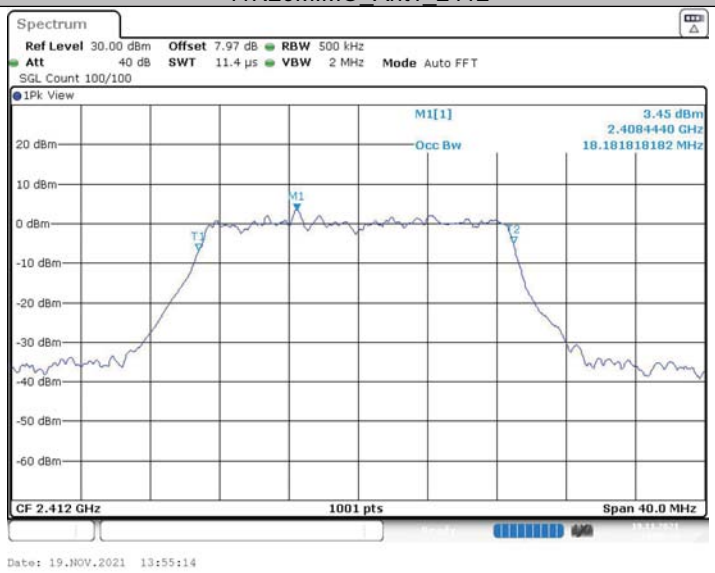
11G_Ant1_2462



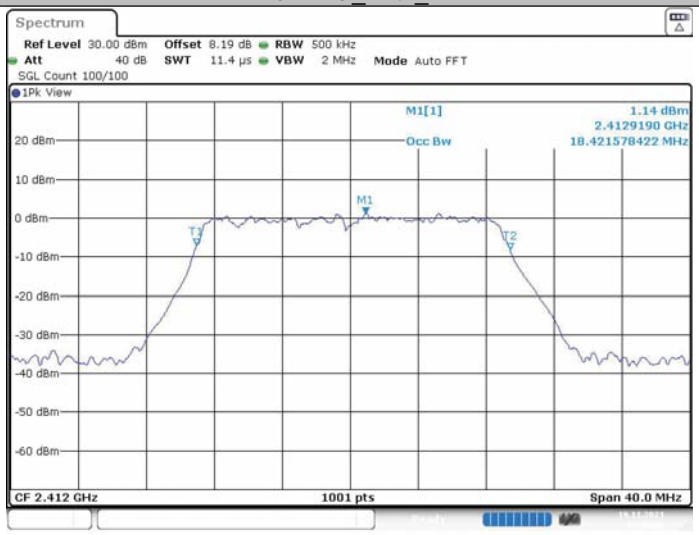
11G_Ant2_2462



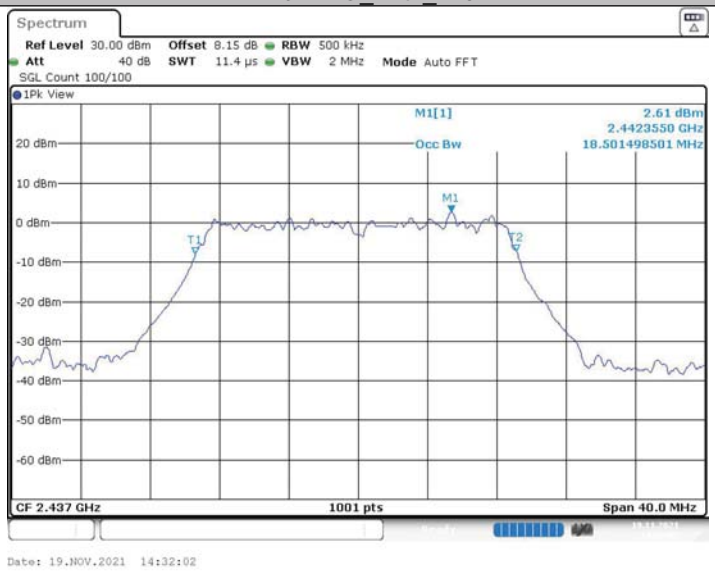
11N20MIMO_Ant1_2412



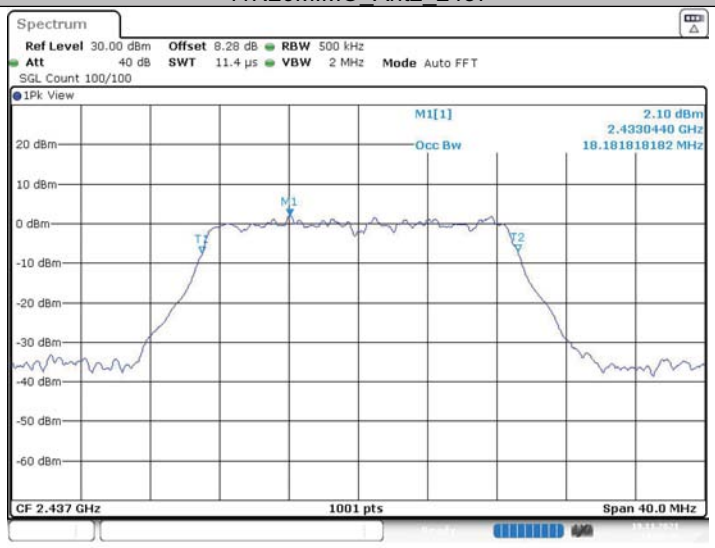
11N20MIMO_Ant2_2412



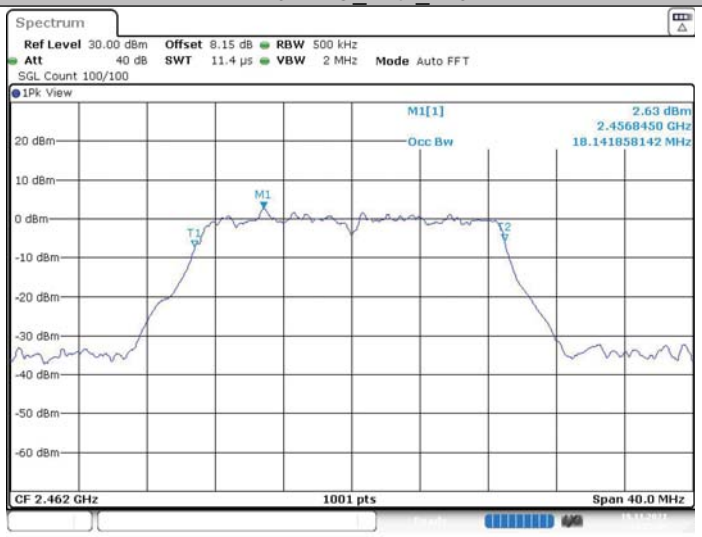
11N20MIMO_Ant1_2437



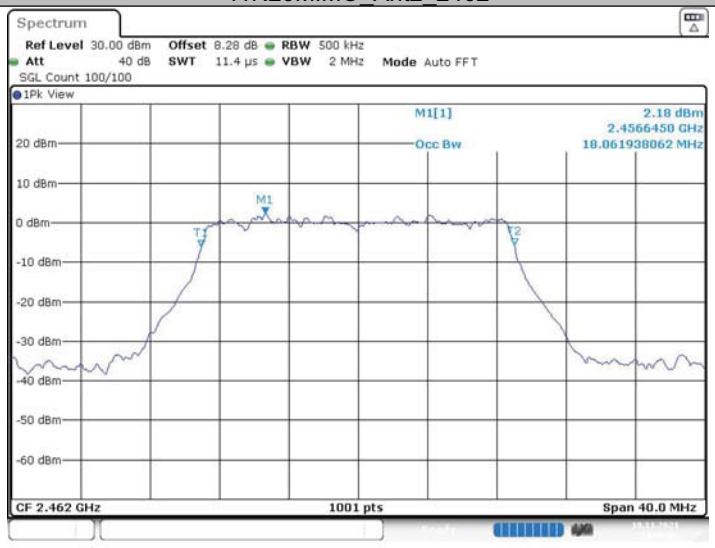
11N20MIMO_Ant2_2437



11N20MIMO_Ant1_2462



11N20MIMO_Ant2_2462



5.3 CONDUCTED OUTPUT POWER

5.3.1 Test Result

AVG：

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	18.49	≤30	PASS
	Ant2	2412	18.48	≤30	PASS
	Ant1	2437	17.90	≤30	PASS
	Ant2	2437	18.26	≤30	PASS
	Ant1	2462	18.23	≤30	PASS
	Ant2	2462	18.09	≤30	PASS
11G	Ant1	2412	15.67	≤30	PASS
	Ant2	2412	15.34	≤30	PASS
	Ant1	2437	15.21	≤30	PASS
	Ant2	2437	15.13	≤30	PASS
	Ant1	2462	15.83	≤30	PASS
	Ant2	2462	15.09	≤30	PASS
11N	Ant1	2412	14.61	≤30	PASS
	Ant2	2412	14.91	≤30	PASS
	total	2412	17.77	≤30	PASS
	Ant1	2437	14.91	≤30	PASS
	Ant2	2437	15.53	≤30	PASS
	total	2437	18.24	≤30	PASS
11N	Ant1	2462	15.30	≤30	PASS
	Ant2	2462	15.45	≤30	PASS
	total	2462	18.39	≤30	PASS

PK：

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	19.59	≤30	PASS
	Ant2	2412	19.74	≤30	PASS
	Ant1	2437	19.22	≤30	PASS
	Ant2	2437	19.74	≤30	PASS
	Ant1	2462	19.43	≤30	PASS
	Ant2	2462	19.41	≤30	PASS
11G	Ant1	2412	20.81	≤30	PASS
	Ant2	2412	21.04	≤30	PASS
	Ant1	2437	20.75	≤30	PASS
	Ant2	2437	21.05	≤30	PASS
	Ant1	2462	21.47	≤30	PASS
	Ant2	2462	20.84	≤30	PASS
11N20MIMO	Ant1	2412	20.09	≤30	PASS
	Ant2	2412	20.57	≤30	PASS
	total	2412	23.30	≤30	PASS
	Ant1	2437	20.82	≤30	PASS
	Ant2	2437	21.70	≤30	PASS
	total	2437	24.30	≤30	PASS
	Ant1	2462	21.56	≤30	PASS
	Ant2	2462	21.16	≤30	PASS
	total	2462	24.40	≤30	PASS

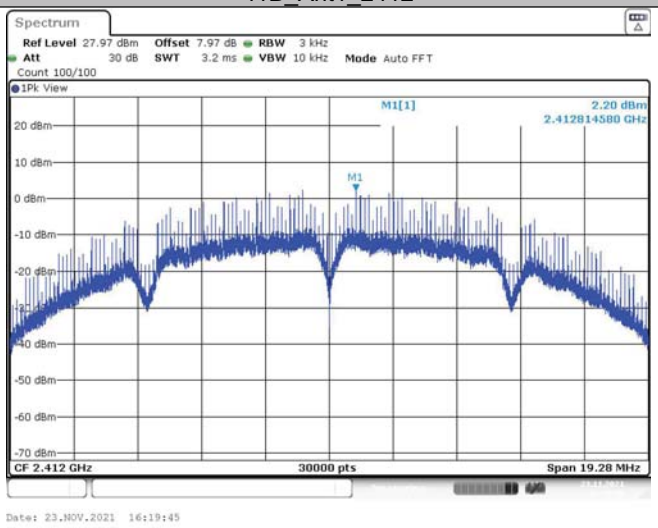
5.4 POWER SPECTRAL DENSITY MEASUREMENT

5.4.1 Test Result

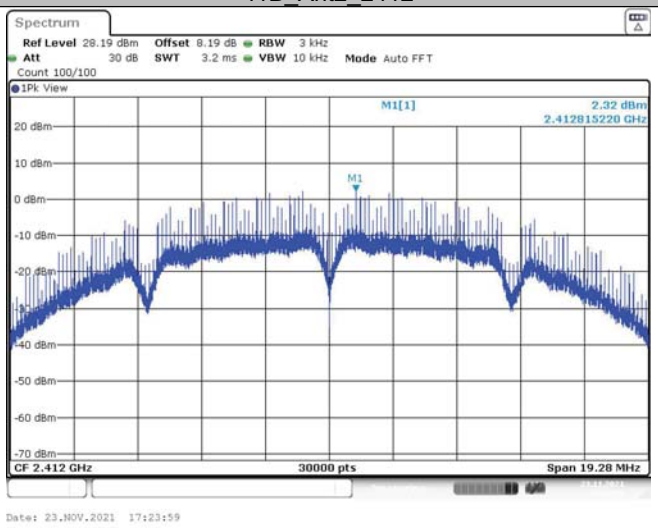
TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	2.20	≤8	PASS
	Ant2	2412	2.32	≤8	PASS
	Ant1	2437	1.63	≤8	PASS
	Ant2	2437	2.15	≤8	PASS
	Ant1	2462	2.12	≤8	PASS
	Ant2	2462	2.01	≤8	PASS
11G	Ant1	2412	-13.63	≤8	PASS
	Ant2	2412	-13.47	≤8	PASS
	Ant1	2437	-13.75	≤8	PASS
	Ant2	2437	-13.26	≤8	PASS
	Ant1	2462	-12.77	≤8	PASS
	Ant2	2462	-13.66	≤8	PASS
11N20MIMO	Ant1	2412	-14.03	≤8	PASS
	Ant2	2412	-13.17	≤8	PASS
	total	2412	-10.57	≤8	PASS
	Ant1	2437	-13.02	≤8	PASS
	Ant2	2437	-12.66	≤8	PASS
	total	2437	-9.83	≤8	PASS
	Ant1	2462	-12.93	≤8	PASS
	Ant2	2462	-12.79	≤8	PASS
	total	2462	-9.85	≤8	PASS

5.4.2 Test Graphs

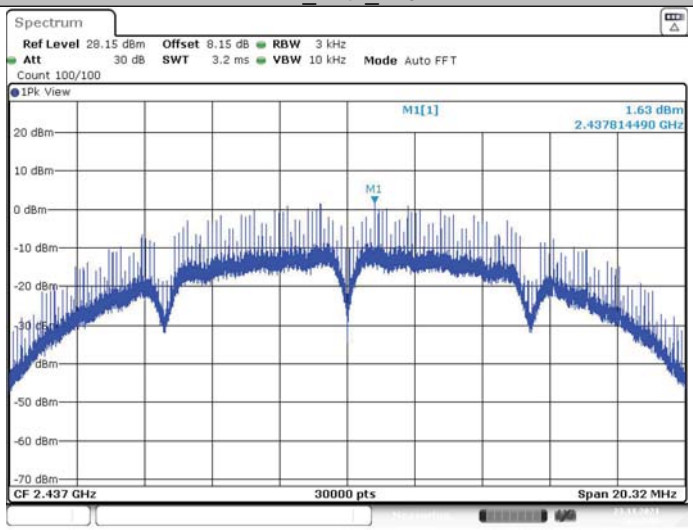
11B_Ant1_2412



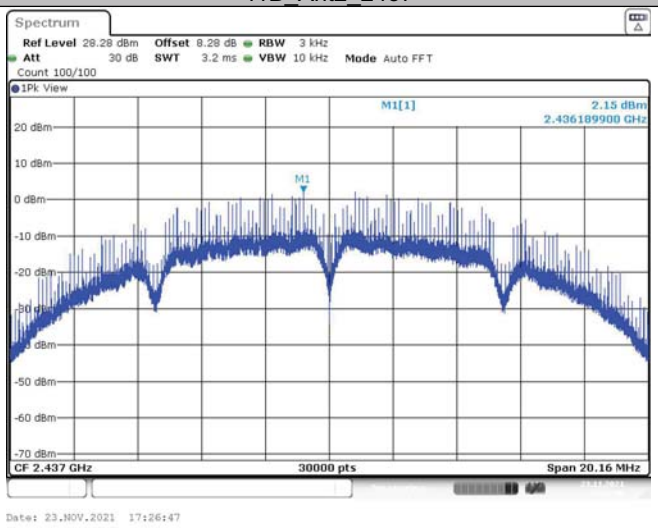
11B_Ant2_2412



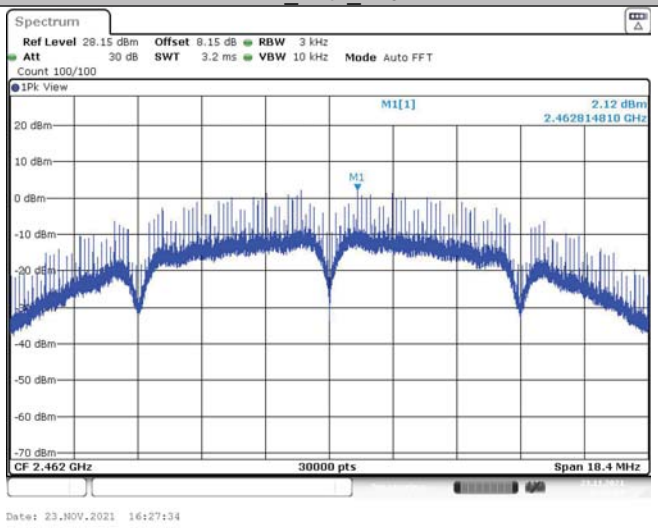
11B_Ant1_2437



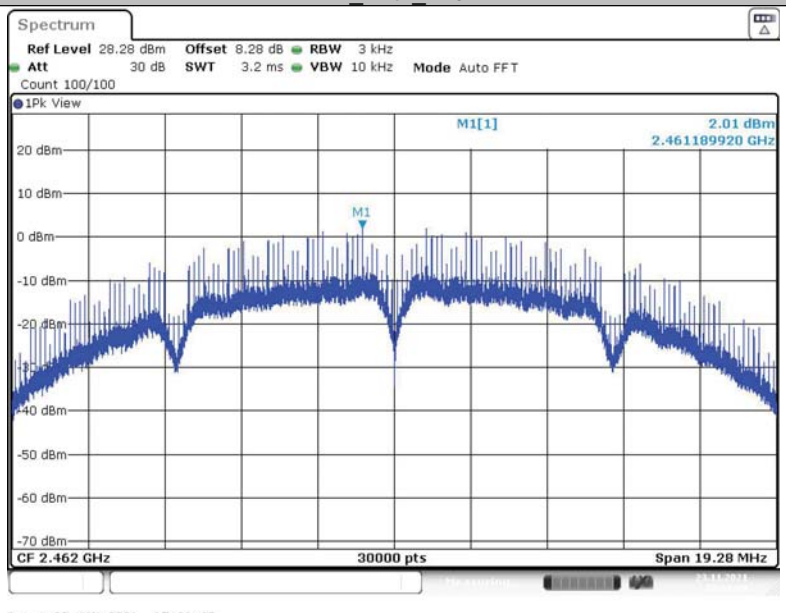
11B_Ant2_2437



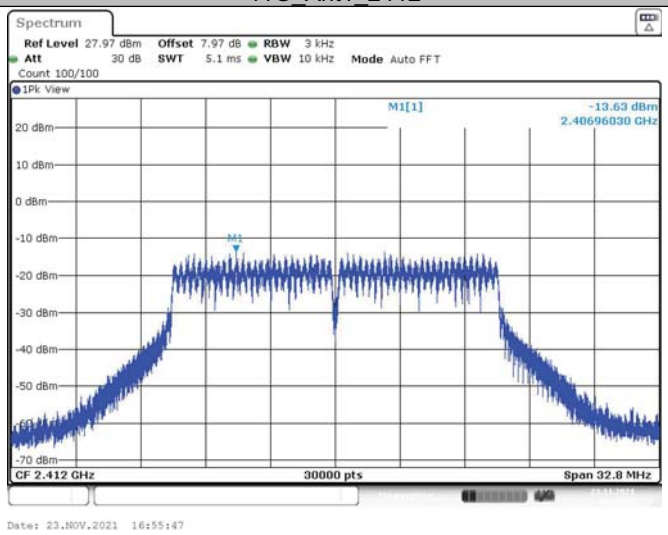
11B_Ant1_2462



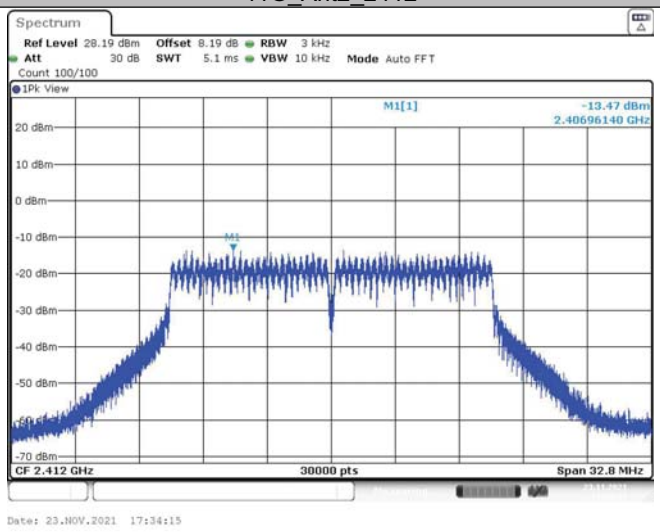
11B_Ant2_2462



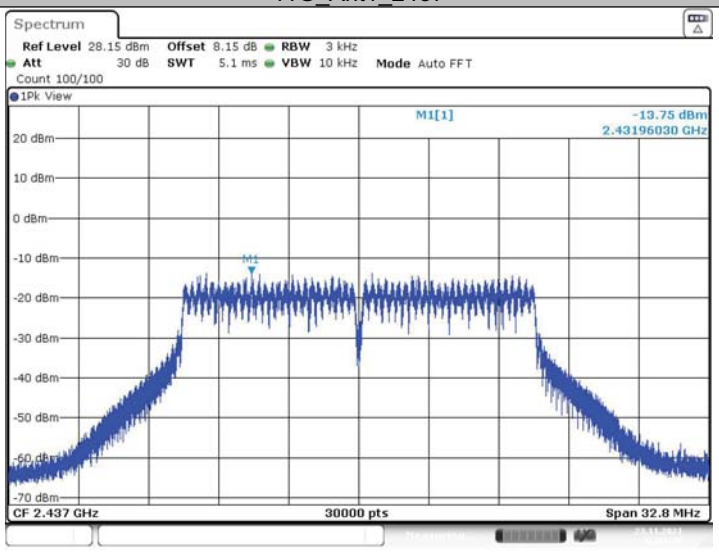
11G_Ant1_2412



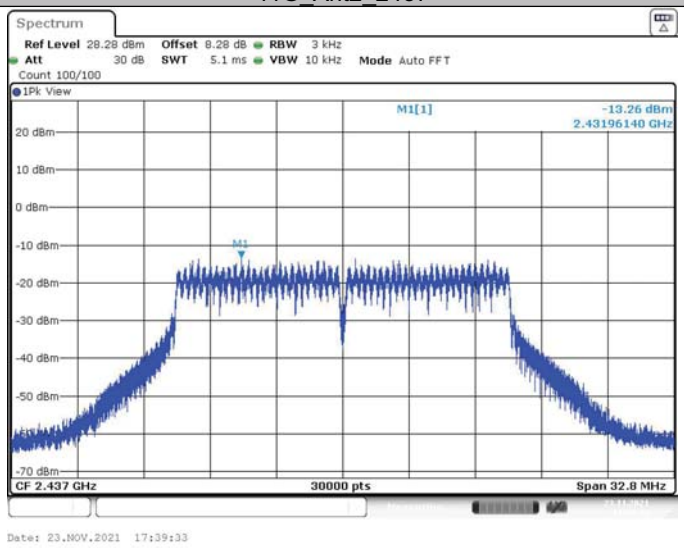
11G_Ant2_2412



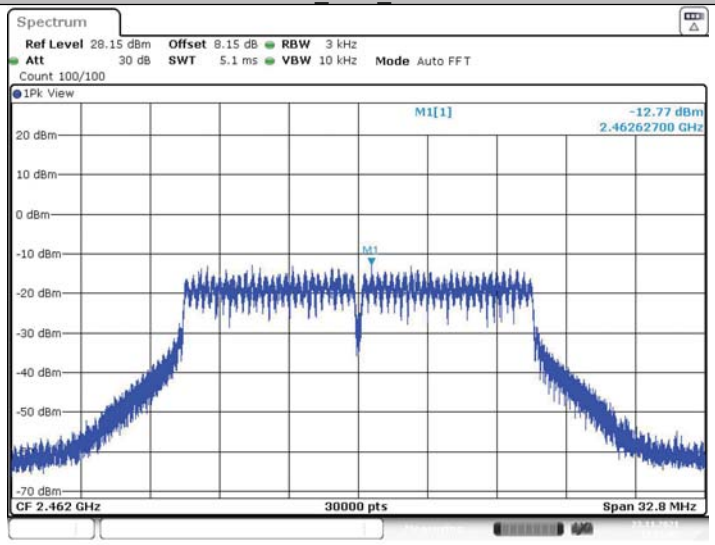
11G_Ant1_2437



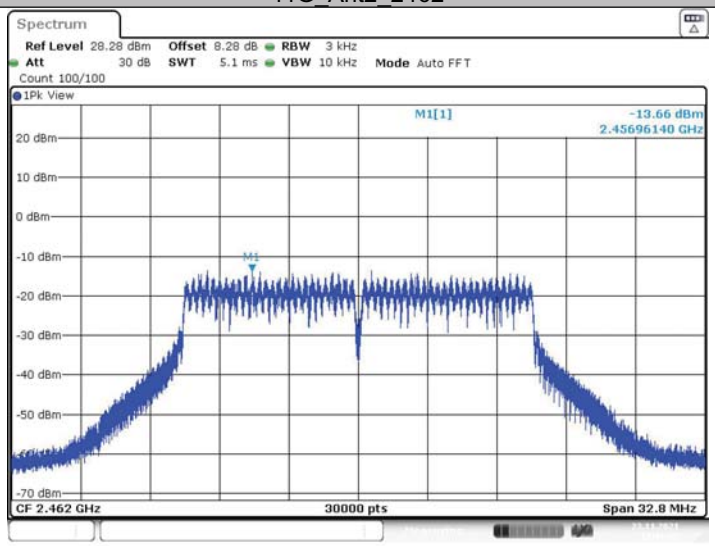
11G_Ant2_2437



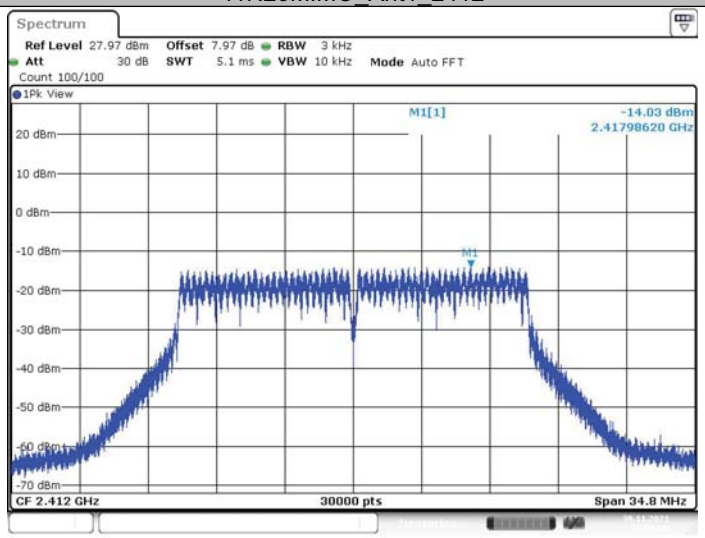
11G_Ant1_2462



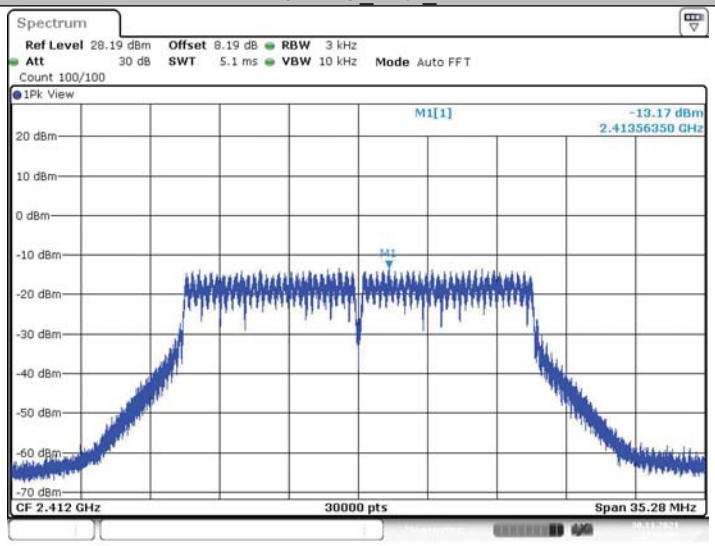
11G_Ant2_2462



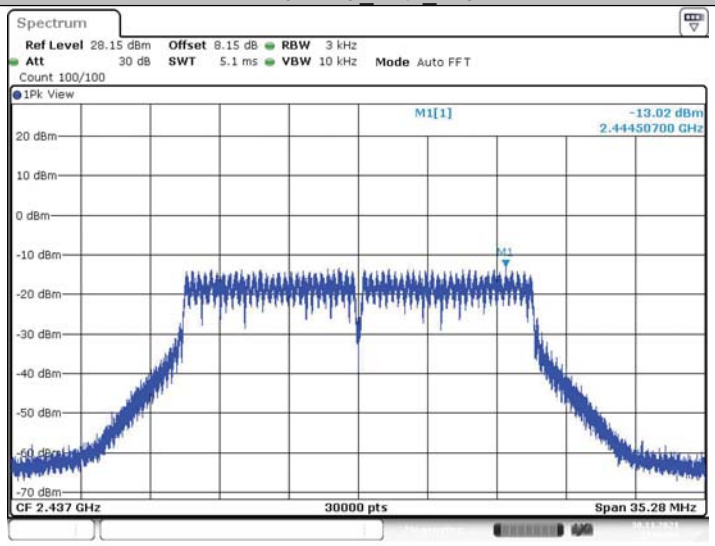
11N20MIMO_Ant1_2412



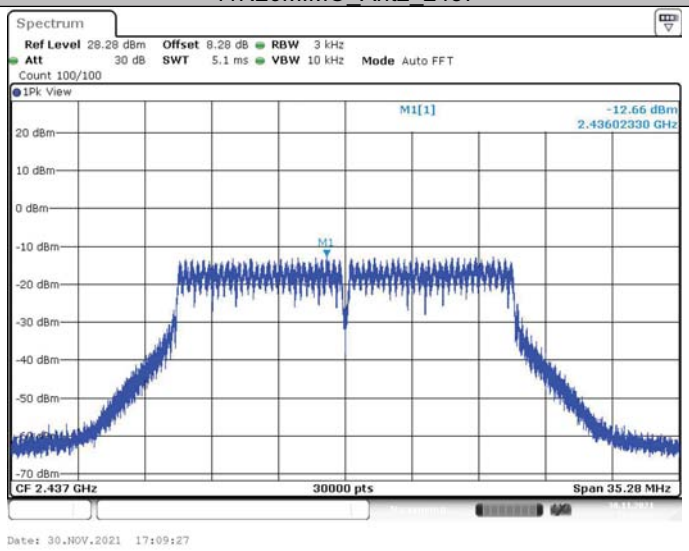
11N20MIMO_Ant2_2412



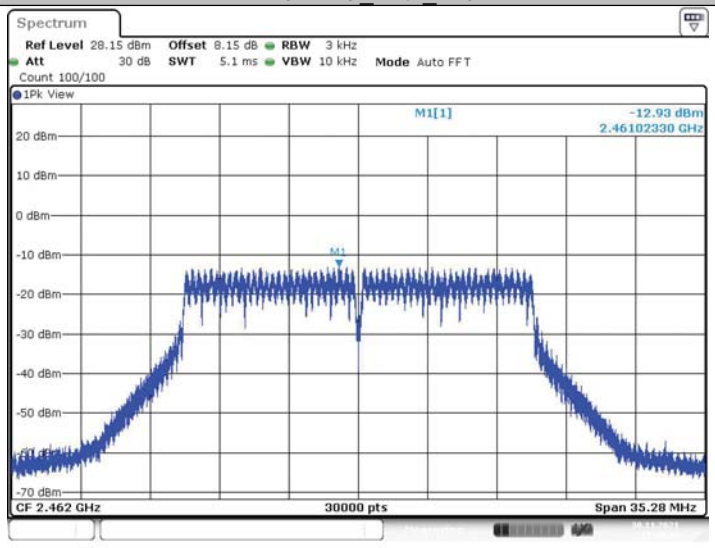
11N20MIMO_Ant1_2437



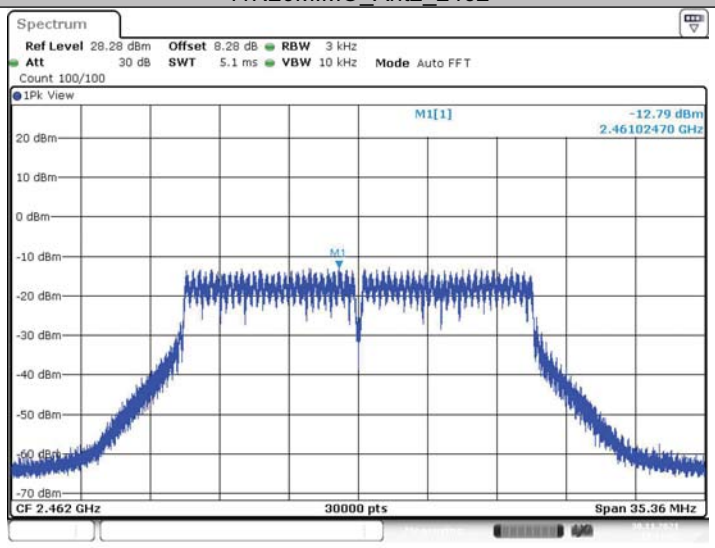
11N20MIMO_Ant2_2437



11N20MIMO_Ant1_2462



11N20MIMO_Ant2_2462



5.5 Band edge measurements

5.5.1 Test Result

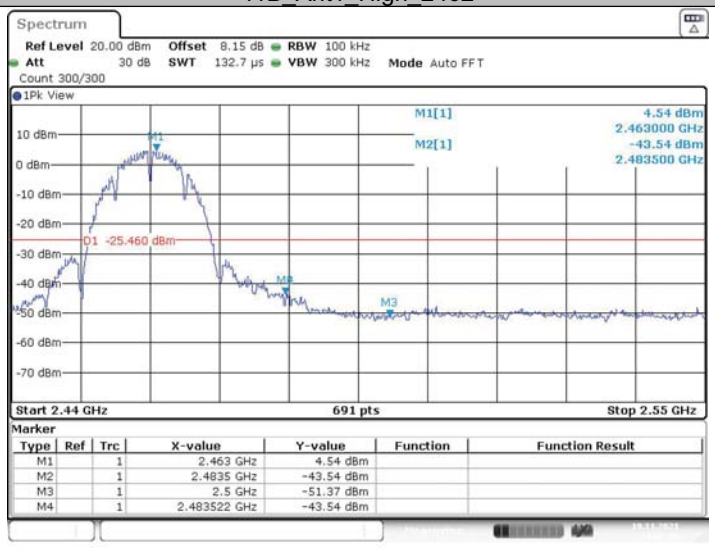
TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	4.63	-31.74	≤-25.37	PASS
	Ant2	Low	2412	4.95	-31.58	≤-25.05	PASS
	Ant1	High	2462	4.54	-43.54	≤-25.46	PASS
	Ant2	High	2462	5.74	-47.57	≤-24.26	PASS
11G	Ant1	Low	2412	1.33	-33.78	≤-28.67	PASS
	Ant2	Low	2412	0.51	-37.73	≤-29.49	PASS
	Ant1	High	2462	1.93	-40.71	≤-28.07	PASS
	Ant2	High	2462	1.25	-47.38	≤-28.75	PASS
11N20MIMO	Ant1	Low	2412	-2.12	-39.13	≤-32.12	PASS
	Ant2	Low	2412	-1.96	-38.88	≤-31.96	PASS
	Ant1	High	2462	-1.52	-44.87	≤-31.52	PASS
	Ant2	High	2462	-1.48	-47.51	≤-31.48	PASS

5.5.2 Test Graphs

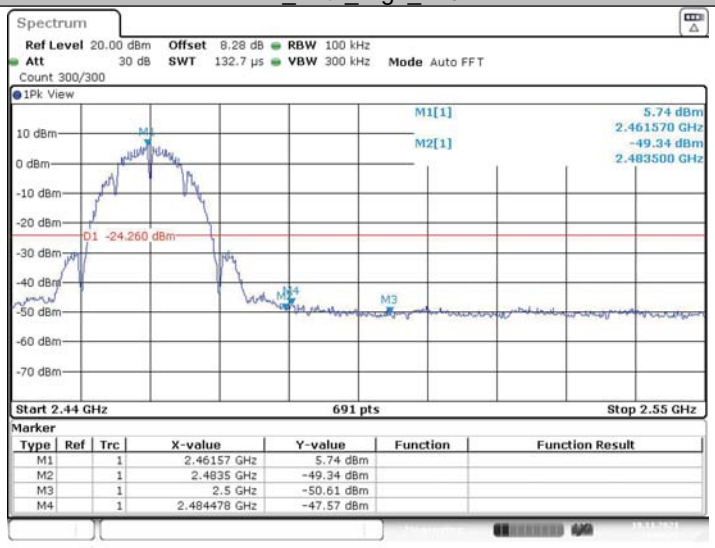
11B_Ant1_Low_2412

11B_Ant2_Low_2412

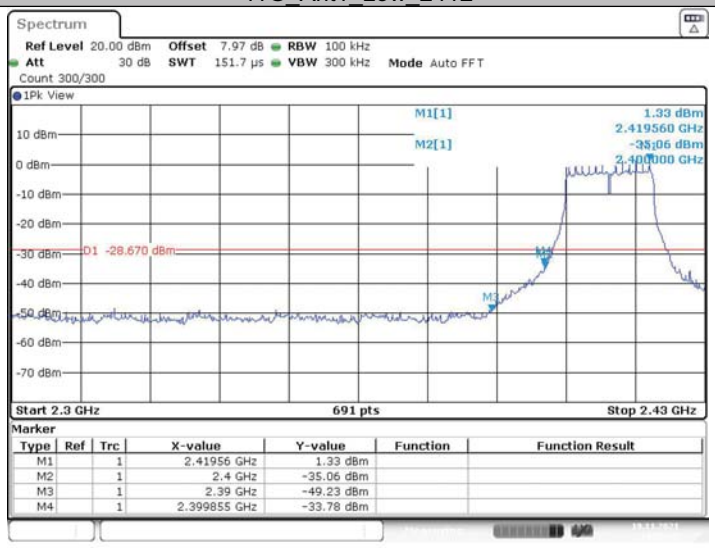
11B_Ant1_High_2462



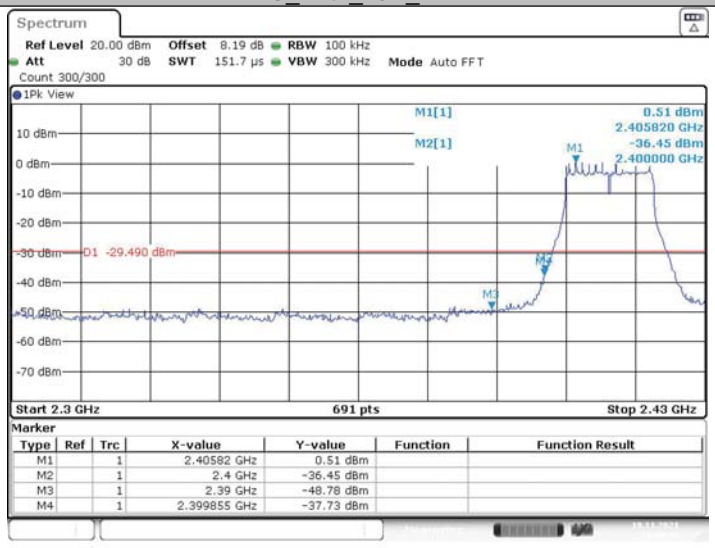
11B_Ant2_High_2462



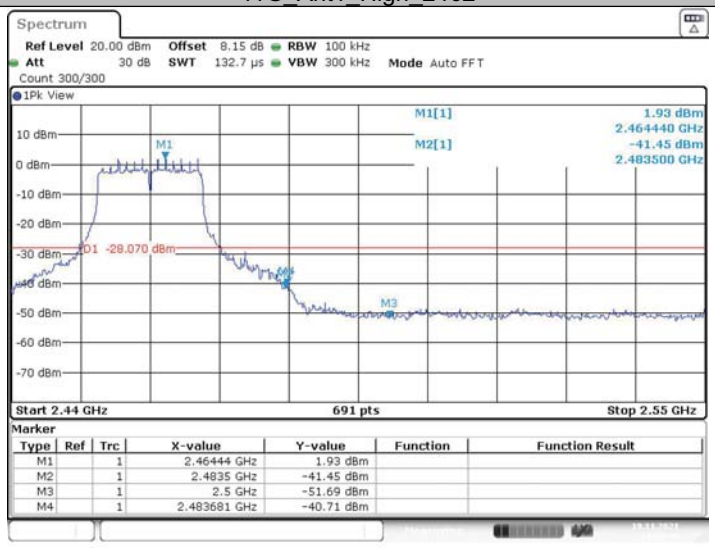
11G_Ant1_Low_2412



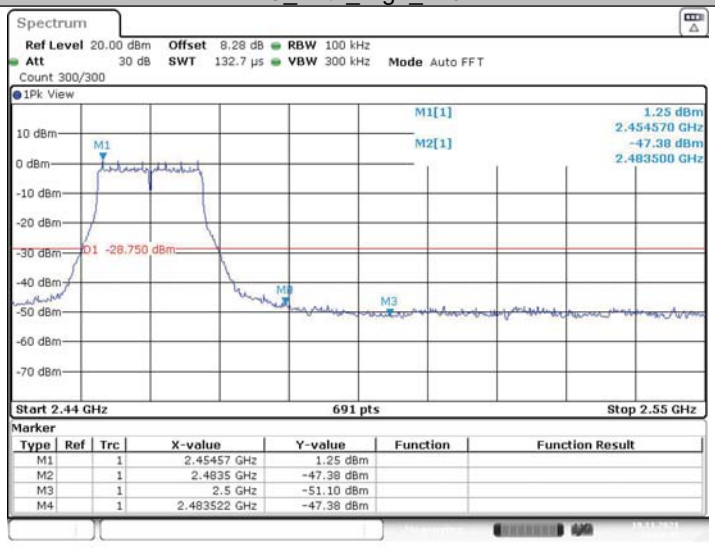
11G_Ant2_Low_2412



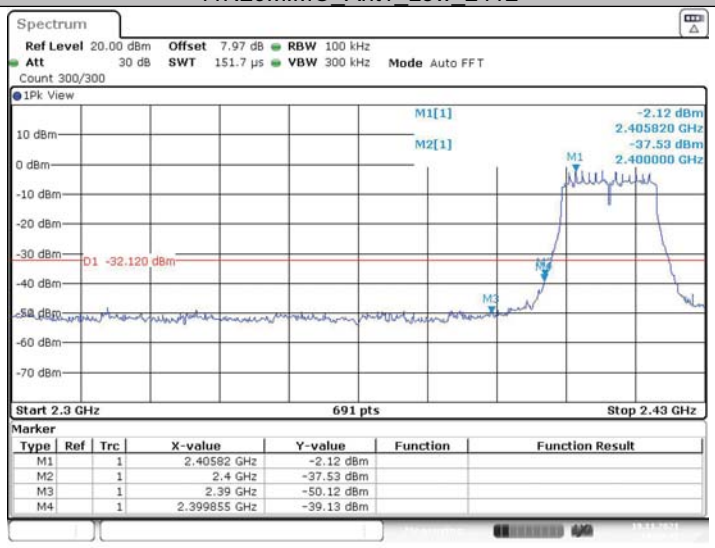
11G_Ant1_High_2462



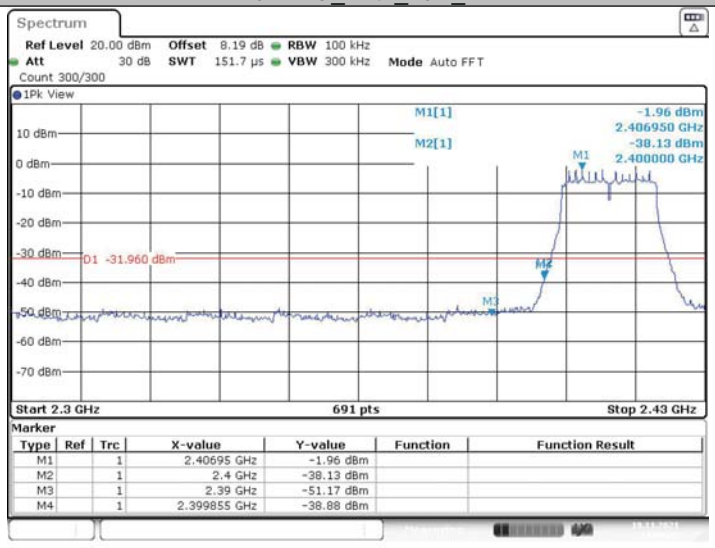
11G_Ant2_High_2462



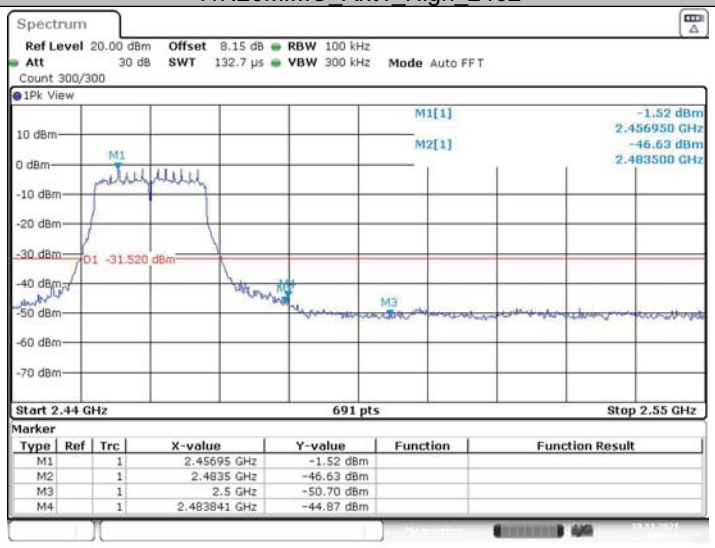
11N20MIMO_Ant1_Low_2412



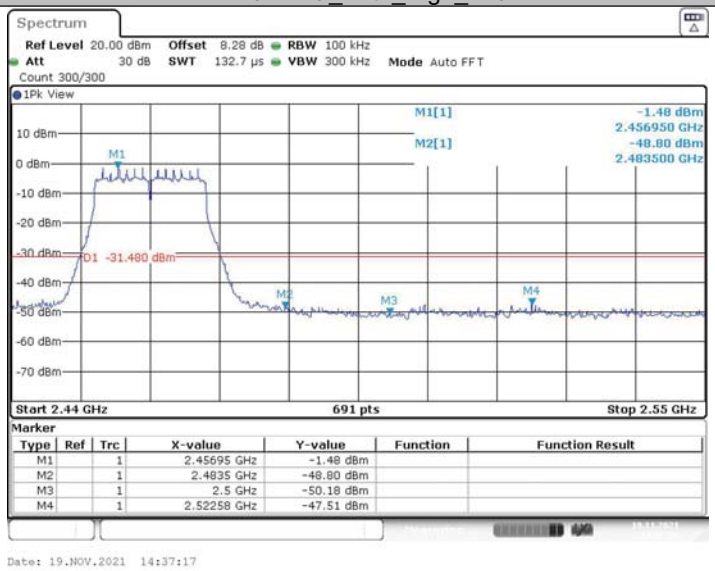
11N20MIMO_Ant2_Low_2412



11N20MIMO_Ant1_High_2462



11N20MIMO_Ant2_High_2462



5.6 OUT OF BAND EMISSION MEASUREMENT

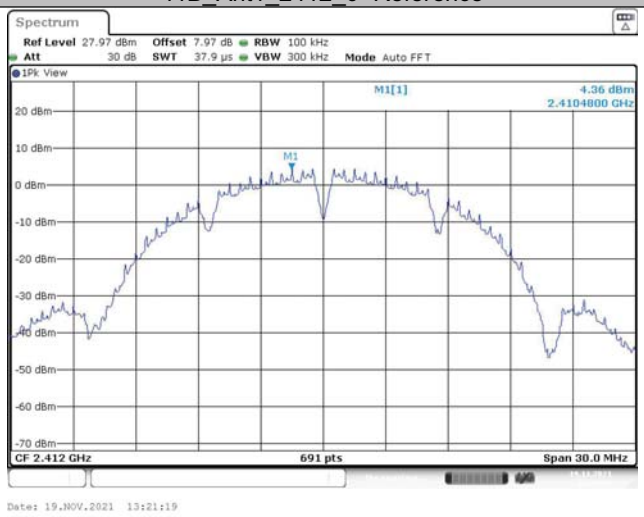
5.6.1 Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	4.36	4.36	---	PASS
			30~1000	4.36	-60.14	≤-25.64	PASS
			1000~26500	4.36	-48.98	≤-25.64	PASS
	Ant2	2412	Reference	4.85	4.85	---	PASS
			30~1000	4.85	-59.66	≤-25.15	PASS
			1000~26500	4.85	-48.69	≤-25.15	PASS
	Ant1	2437	Reference	4.43	4.43	---	PASS
			30~1000	4.43	-59.22	≤-25.57	PASS
			1000~26500	4.43	-49.11	≤-25.57	PASS
	Ant2	2437	Reference	5.15	5.15	---	PASS
			30~1000	5.15	-59.68	≤-24.85	PASS
			1000~26500	5.15	-48.65	≤-24.85	PASS
	Ant1	2462	Reference	5.05	5.05	---	PASS
			30~1000	5.05	-58.93	≤-24.95	PASS
			1000~26500	5.05	-44.85	≤-24.95	PASS
	Ant2	2462	Reference	5.70	5.70	---	PASS
			30~1000	5.70	-59.31	≤-24.3	PASS
			1000~26500	5.70	-48.69	≤-24.3	PASS
11G	Ant1	2412	Reference	0.88	0.88	---	PASS
			30~1000	0.88	-59.65	≤-29.12	PASS
			1000~26500	0.88	-48.99	≤-29.12	PASS
	Ant2	2412	Reference	0.35	0.35	---	PASS
			30~1000	0.35	-60.1	≤-29.65	PASS
			1000~26500	0.35	-48.39	≤-29.65	PASS
	Ant1	2437	Reference	1.09	1.09	---	PASS
			30~1000	1.09	-60.12	≤-28.91	PASS
			1000~26500	1.09	-48.06	≤-28.91	PASS
	Ant2	2437	Reference	1.01	1.01	---	PASS
			30~1000	1.01	-59.48	≤-28.99	PASS
			1000~26500	1.01	-48.45	≤-28.99	PASS
	Ant1	2462	Reference	2.00	2.00	---	PASS
			30~1000	2.00	-59.65	≤-28	PASS
			1000~26500	2.00	-44.9	≤-28	PASS
	Ant2	2462	Reference	1.95	1.95	---	PASS
			30~1000	1.95	-59.48	≤-28.05	PASS
			1000~26500	1.95	-48.19	≤-28.05	PASS

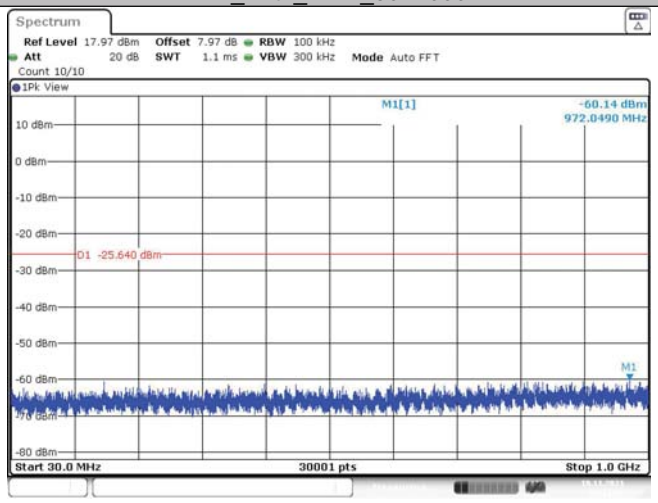
11N20MIMO	Ant1	2412	Reference	-1.63	-1.63	---	PASS
			30~1000	-1.63	-60.43	≤-31.63	PASS
			1000~26500	-1.63	-49.62	≤-31.63	PASS
	Ant2	2412	Reference	-1.61	-1.61	---	PASS
			30~1000	-1.61	-60.02	≤-31.61	PASS
			1000~26500	-1.61	-48.2	≤-31.61	PASS
	Ant1	2437	Reference	-2.24	-2.24	---	PASS
			30~1000	-2.24	-59.53	≤-32.24	PASS
			1000~26500	-2.24	-49.05	≤-32.24	PASS
	Ant2	2437	Reference	-0.89	-0.89	---	PASS
			30~1000	-0.89	-59.42	≤-30.89	PASS
			1000~26500	-0.89	-48.78	≤-30.89	PASS
	Ant1	2462	Reference	-1.50	-1.50	---	PASS
			30~1000	-1.50	-59.1	≤-31.5	PASS
			1000~26500	-1.50	-47.58	≤-31.5	PASS
	Ant2	2462	Reference	-1.14	-1.14	---	PASS
			30~1000	-1.14	-58.53	≤-31.14	PASS
			1000~26500	-1.14	-48.76	≤-31.14	PASS

5.6.2 Test Graphs

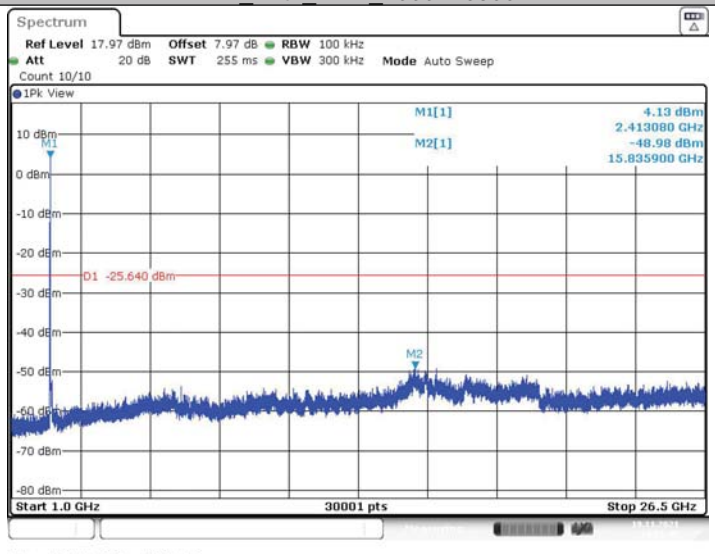
11B_Ant1_2412_0~Reference



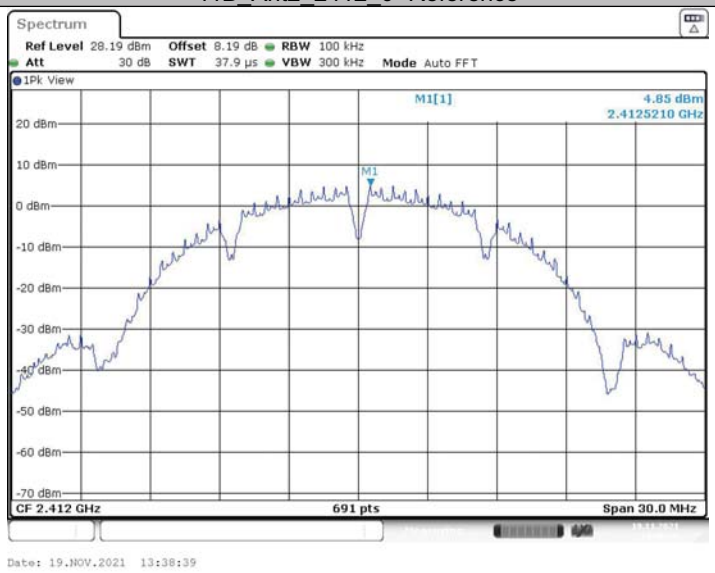
11B_Ant1_2412_30~1000



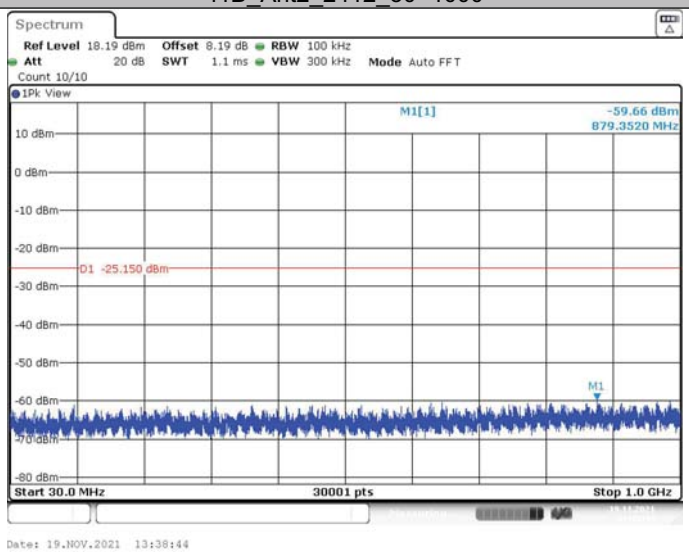
11B_Ant1_2412_1000~26500



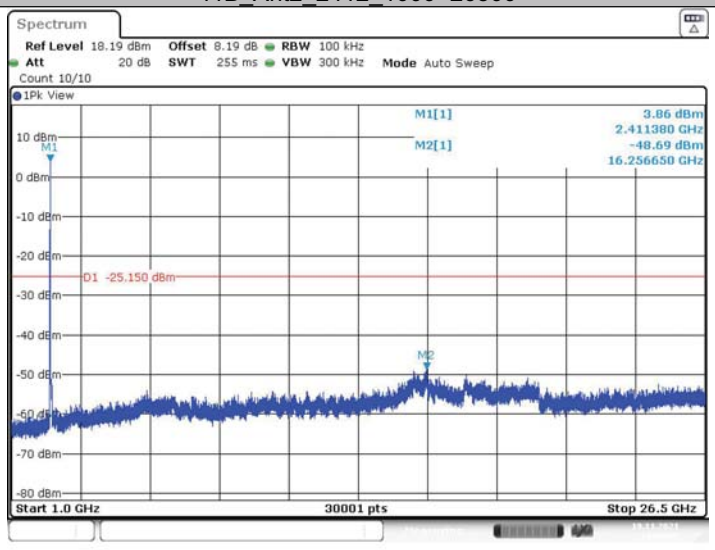
11B_Ant2_2412_0~Reference



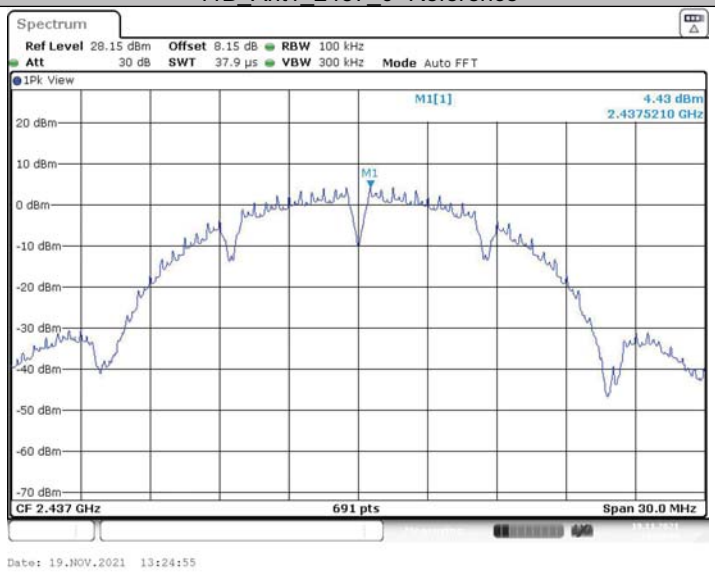
11B_Ant2_2412_30~1000



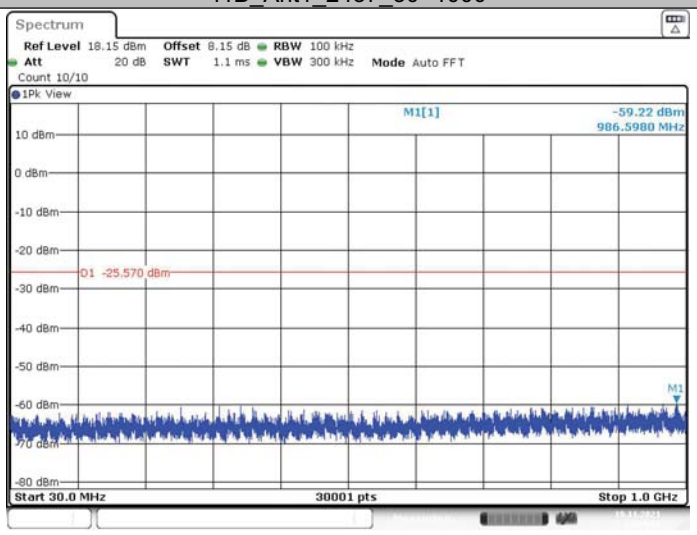
11B_Ant2_2412_1000~26500



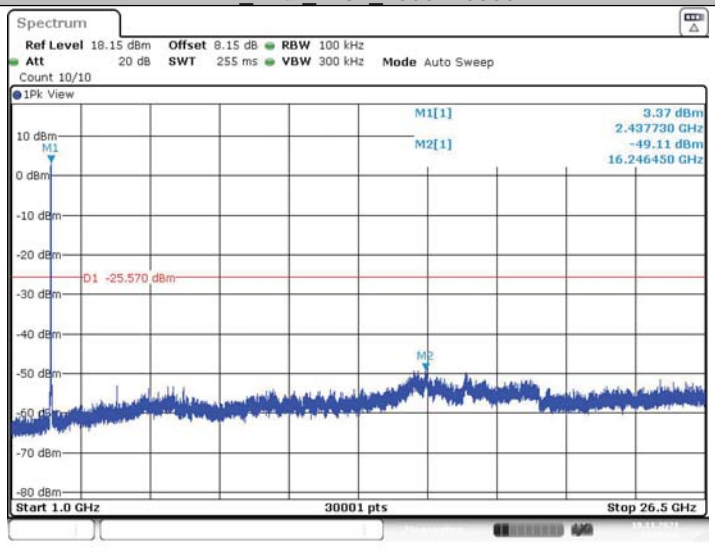
11B_Ant1_2437_0~Reference



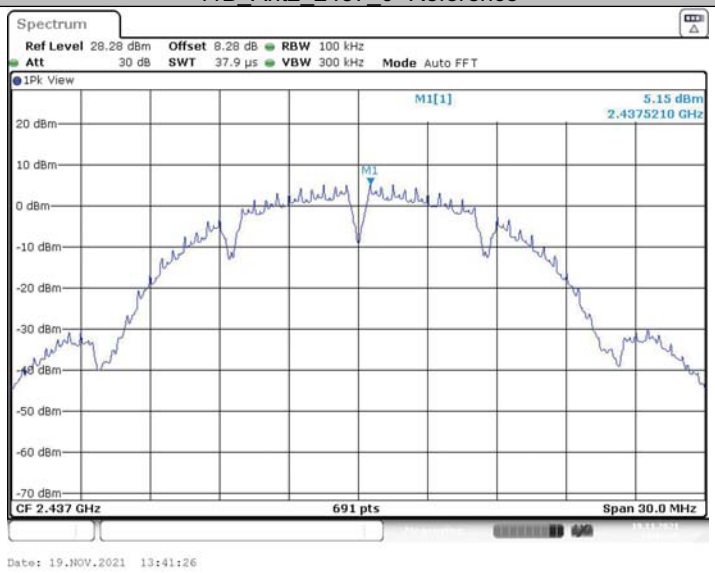
11B_Ant1_2437_30~1000



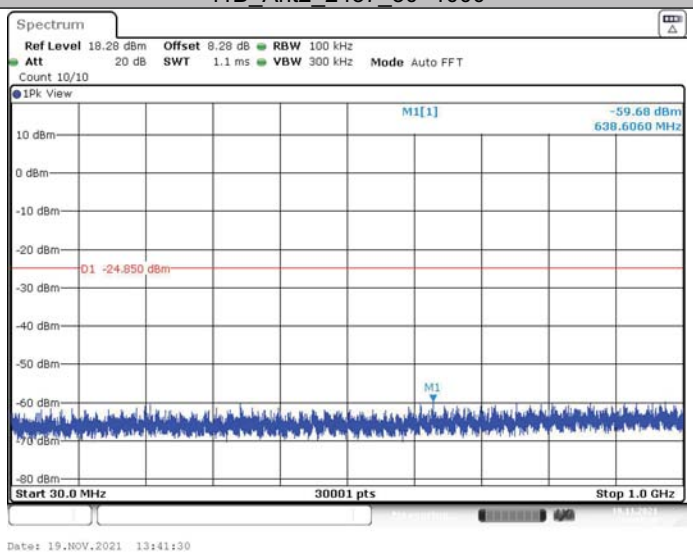
11B_Ant1_2437_1000~26500



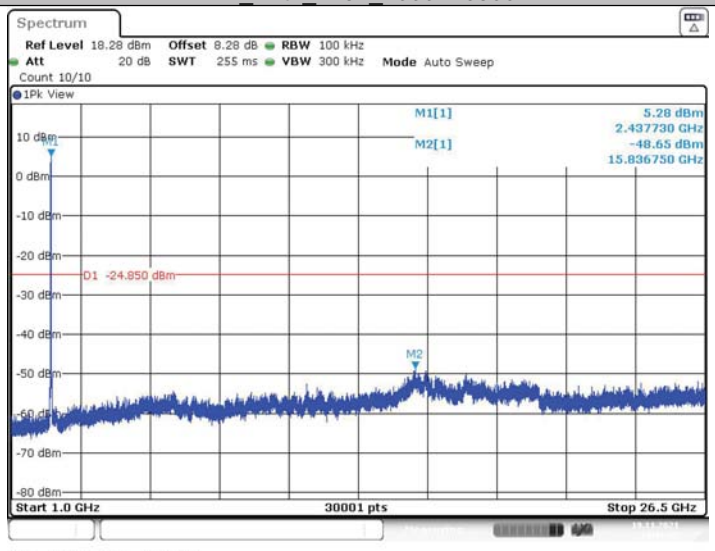
11B_Ant2_2437_0~Reference



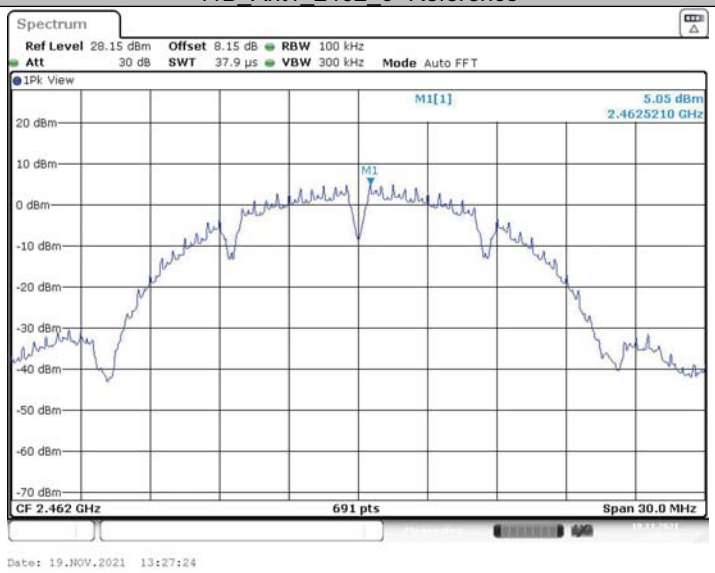
11B_Ant2_2437_30~1000



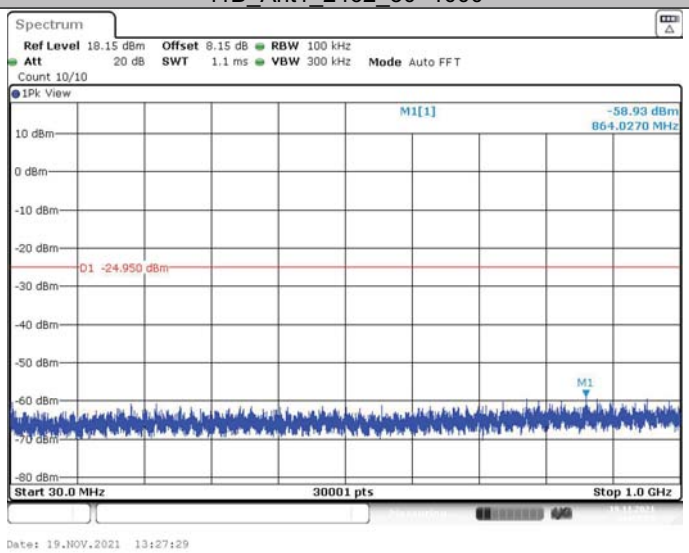
11B_Ant2_2437_1000~26500



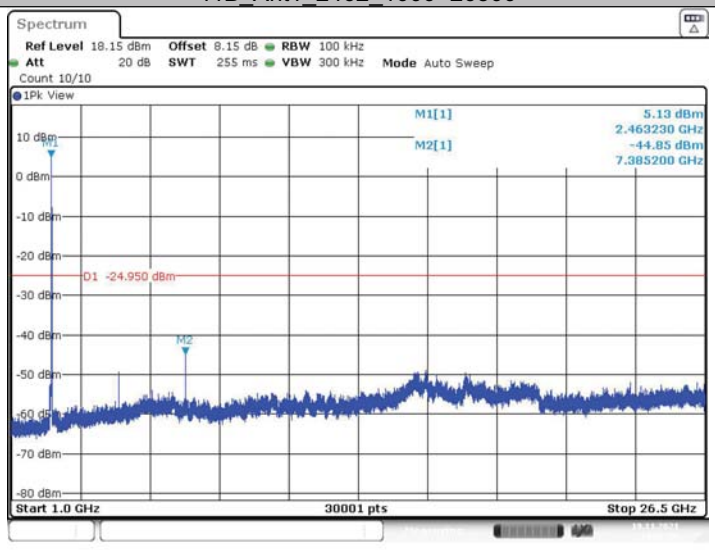
11B_Ant1_2462_0~Reference



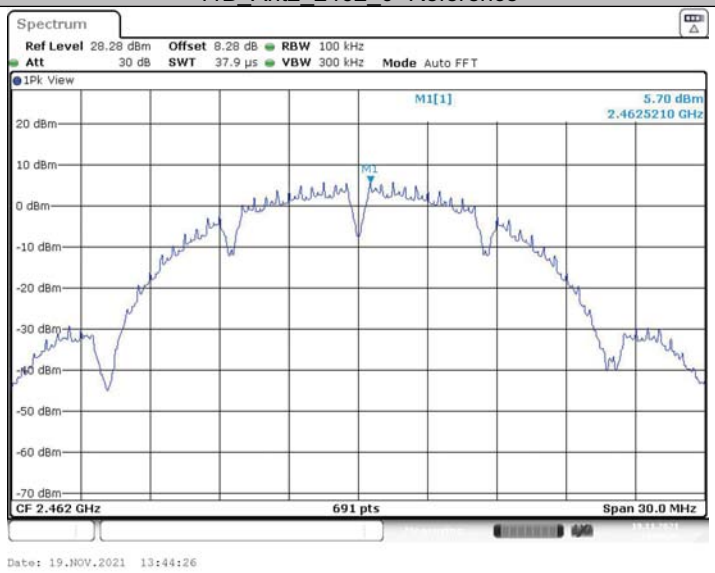
11B_Ant1_2462_30~1000



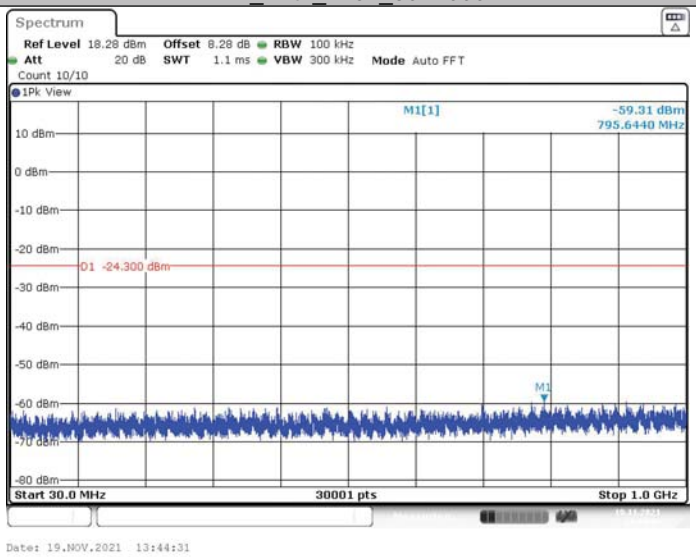
11B_Ant1_2462_1000~26500



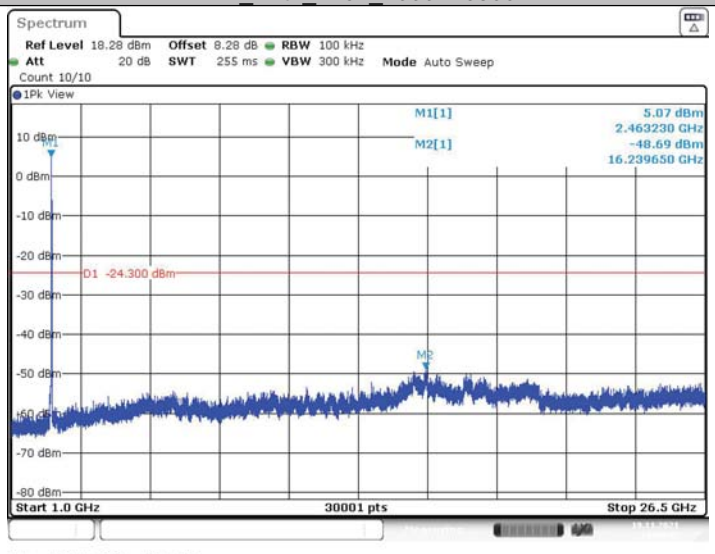
11B_Ant2_2462_0~Reference



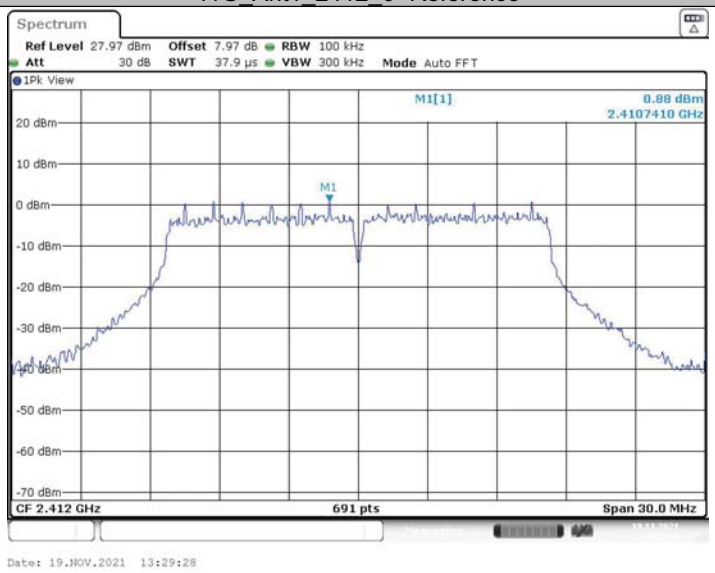
11B_Ant2_2462_30~1000



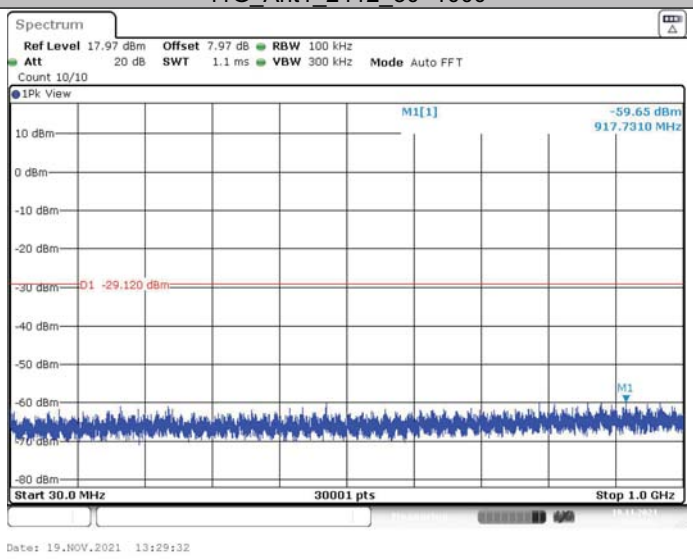
11B_Ant2_2462_1000~26500



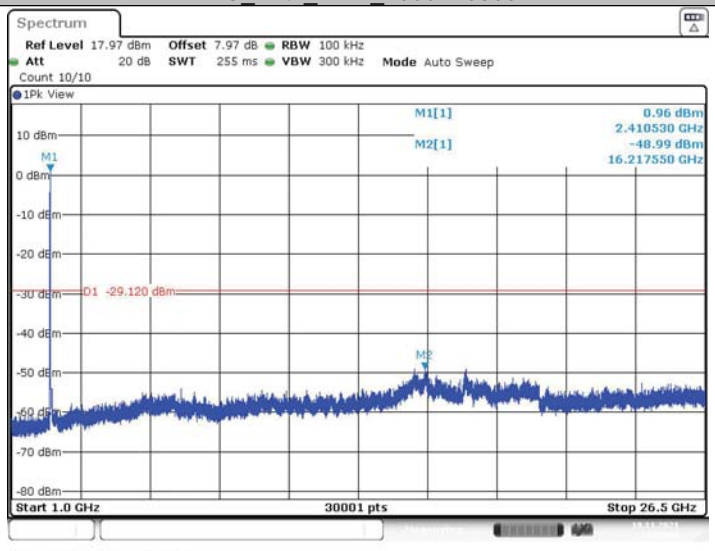
11G_Ant1_2412_0~Reference



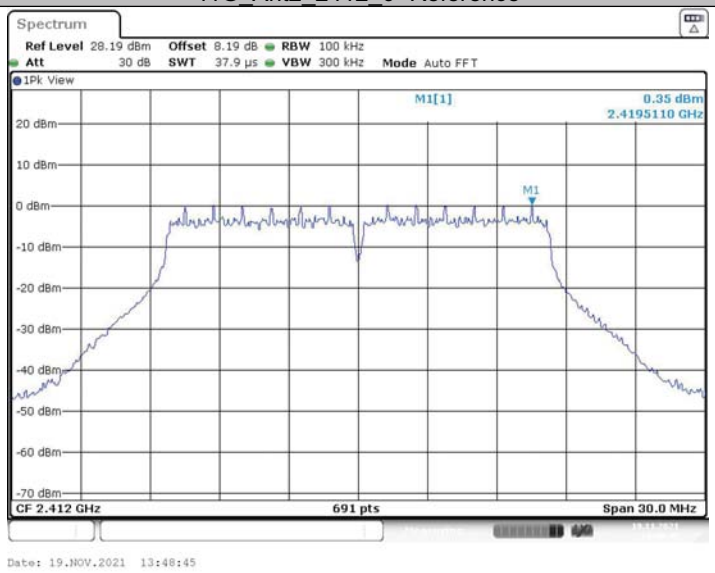
11G_Ant1_2412_30~1000



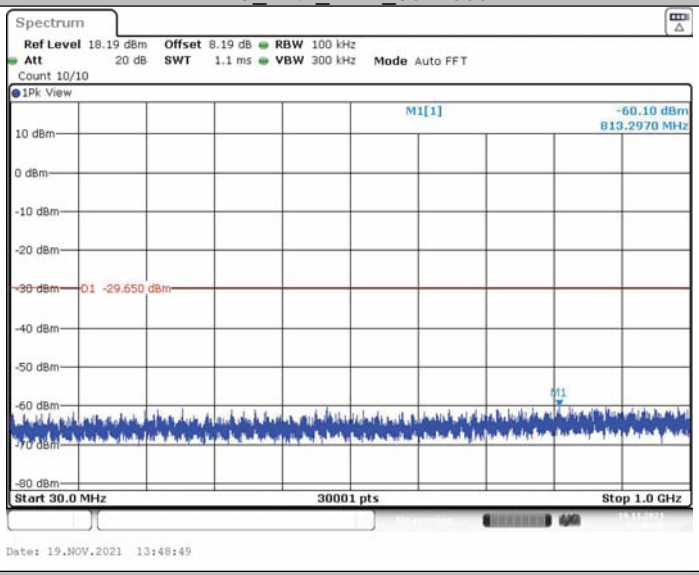
11G_Ant1_2412_1000~26500



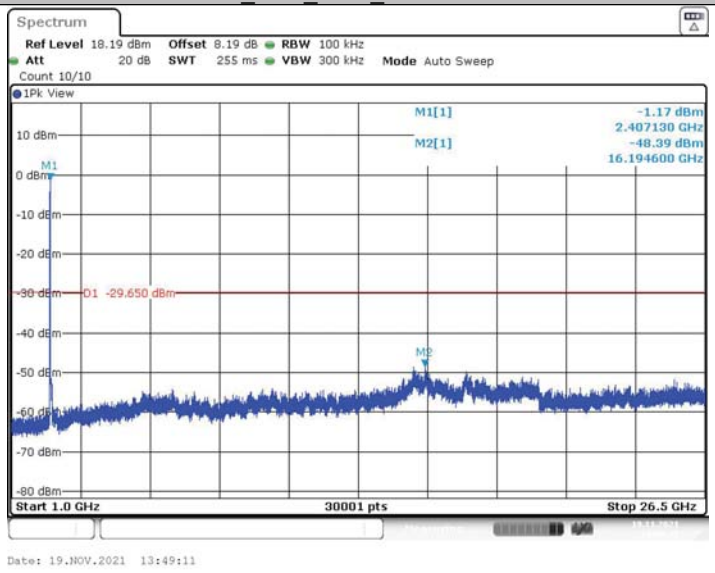
11G_Ant2_2412_0~Reference



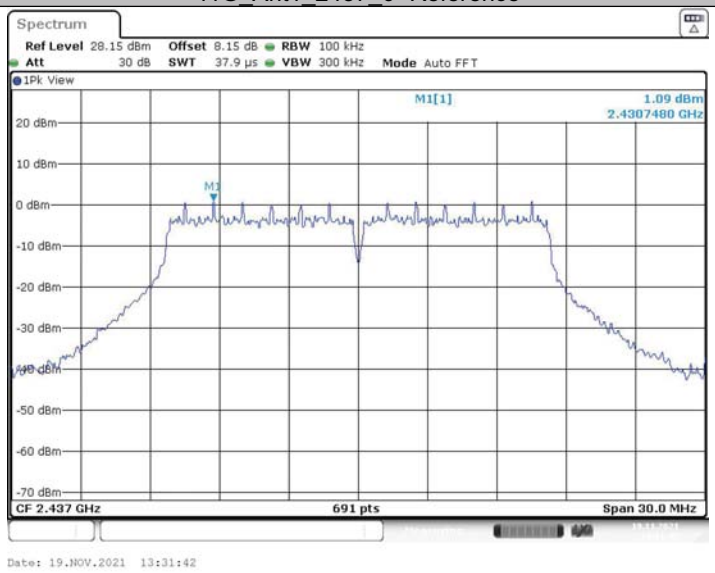
11G_Ant2_2412_30~1000



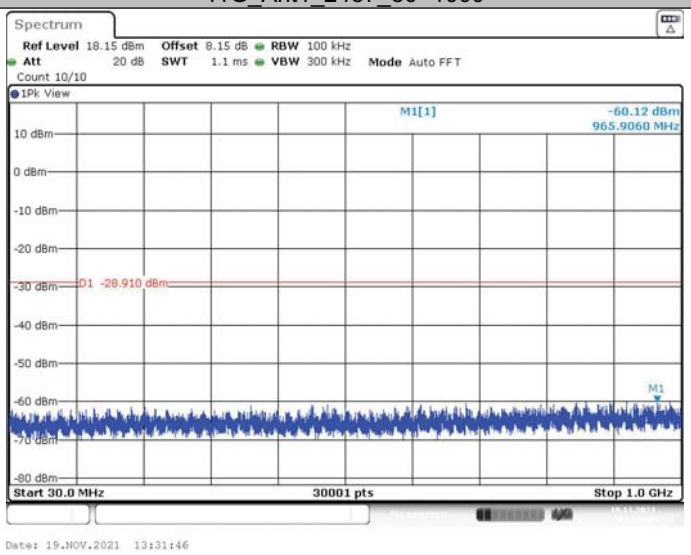
11G_Ant2_2412_1000~26500



11G_Ant1_2437_0~Reference



11G_Ant1_2437_30~1000



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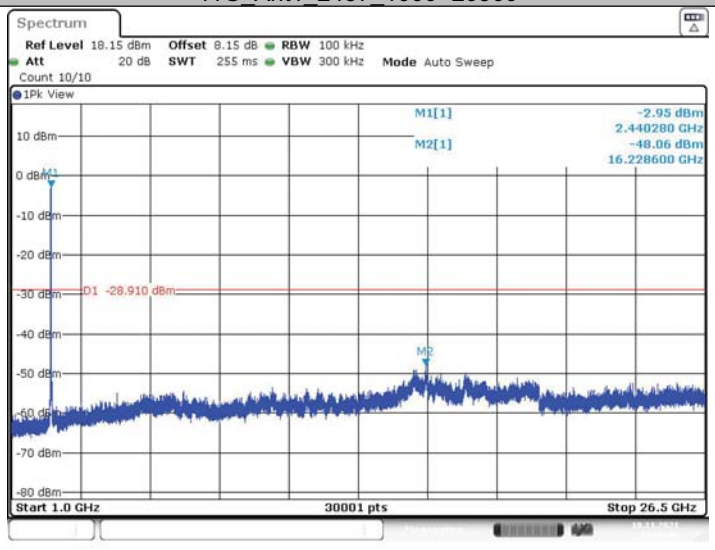

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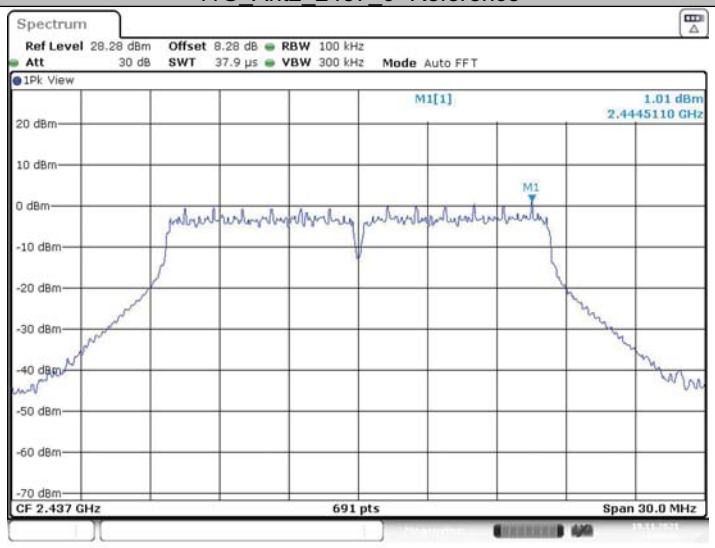

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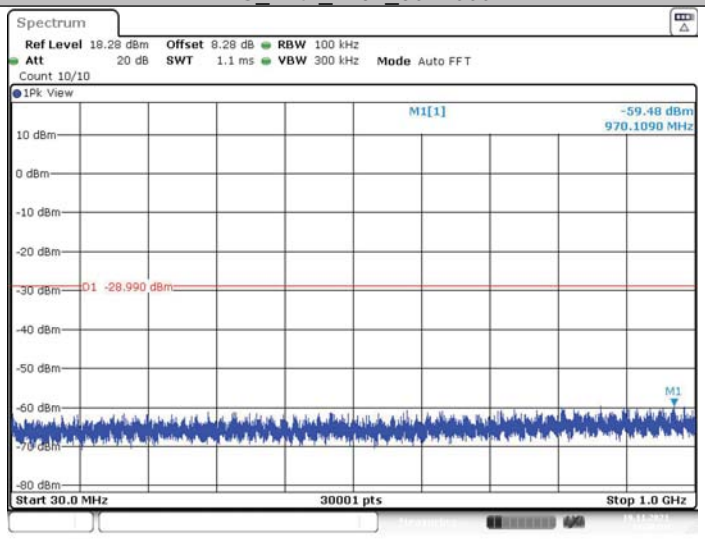

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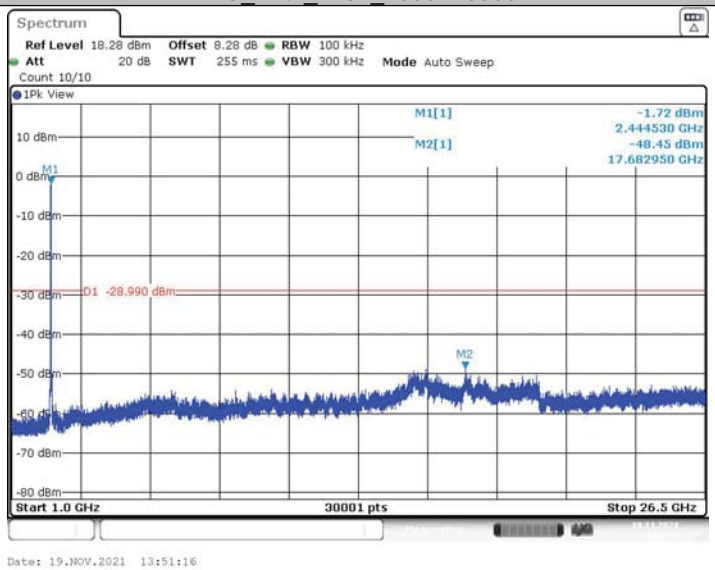

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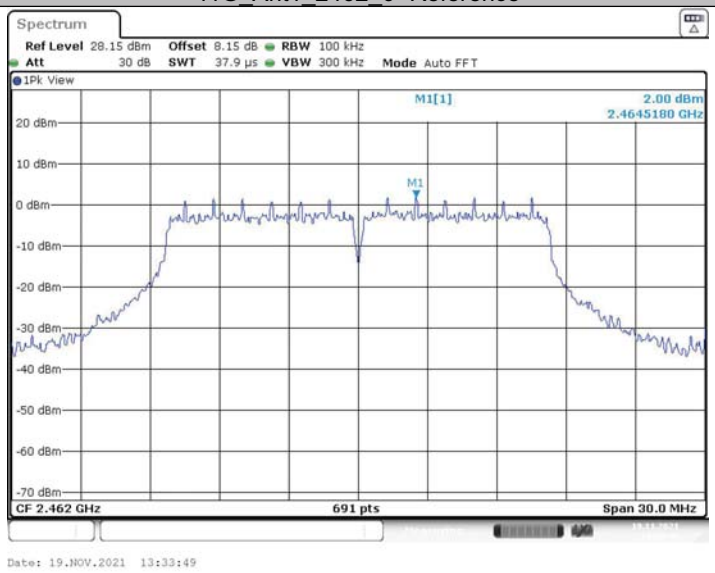

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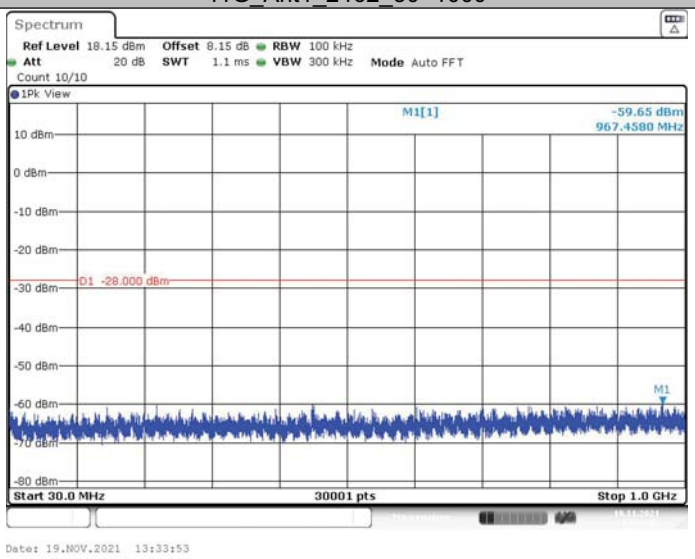

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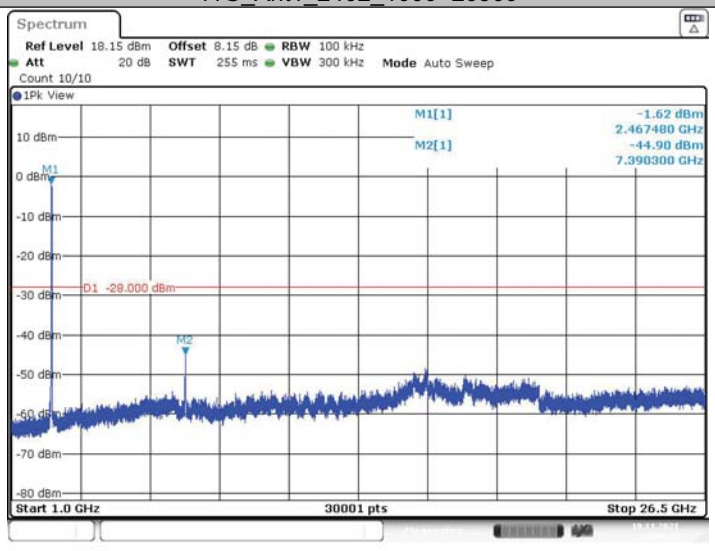

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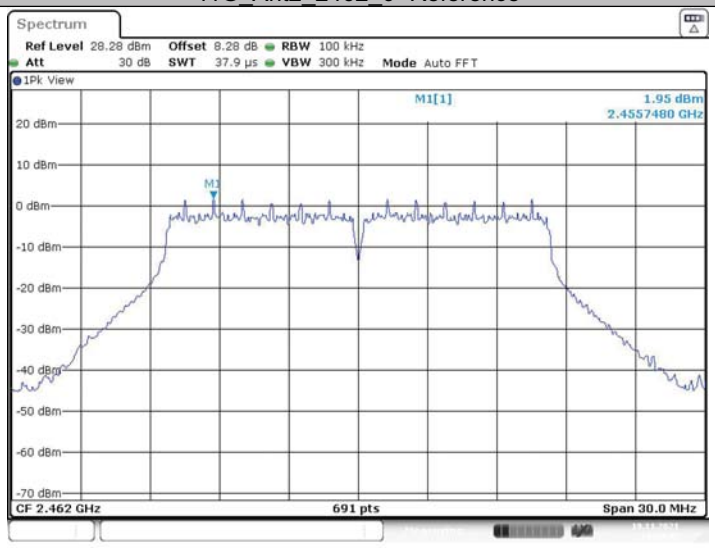

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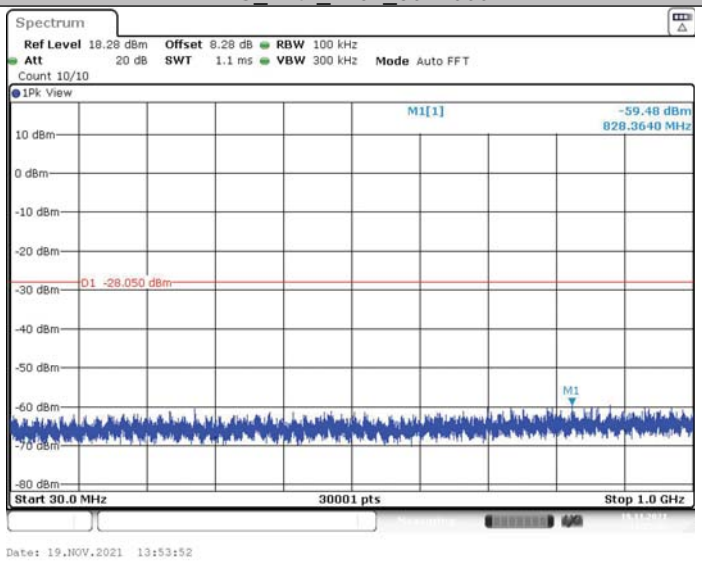

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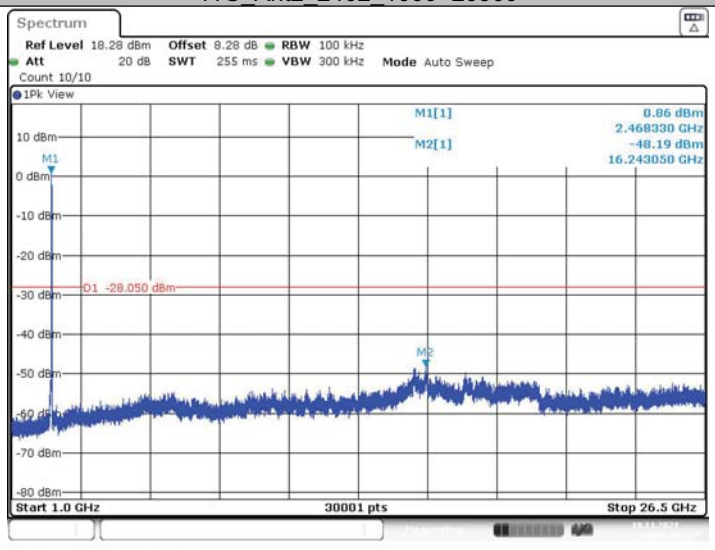

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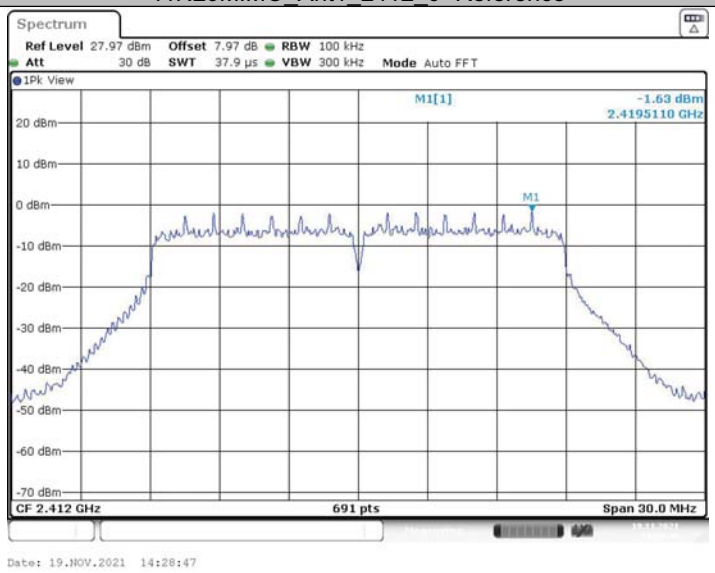

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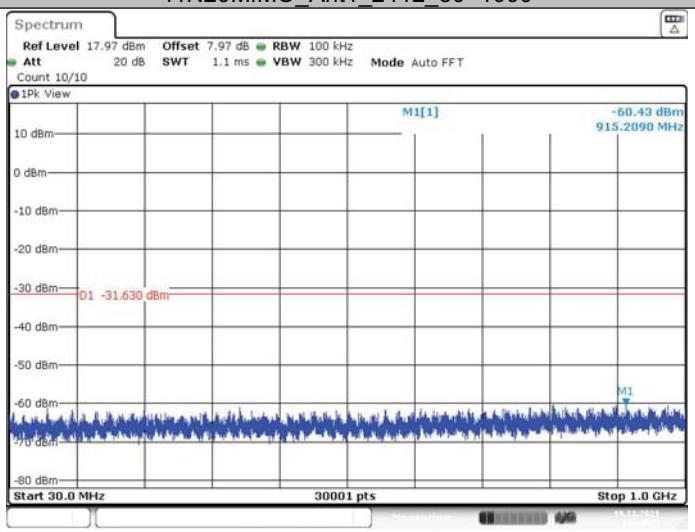

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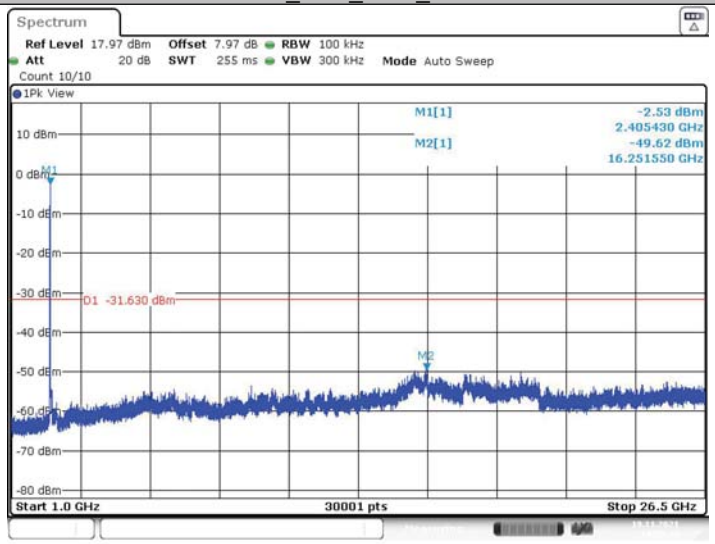

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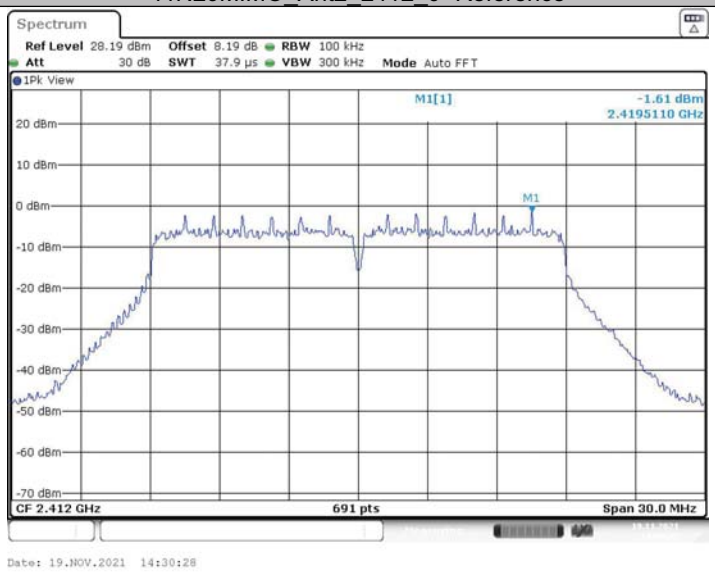

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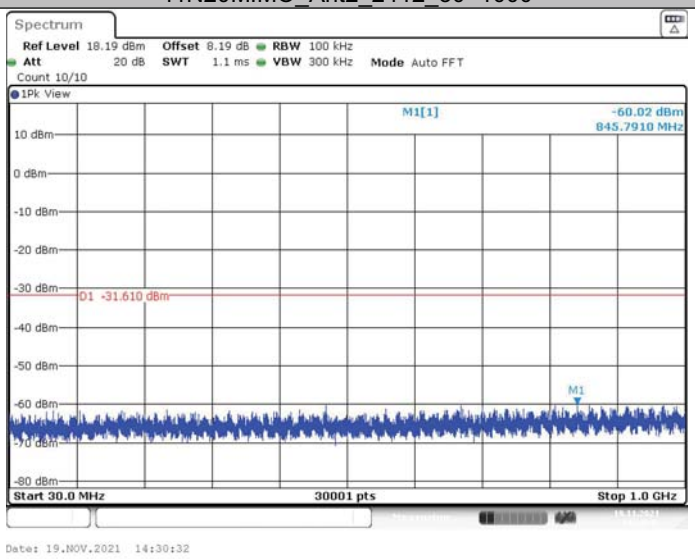

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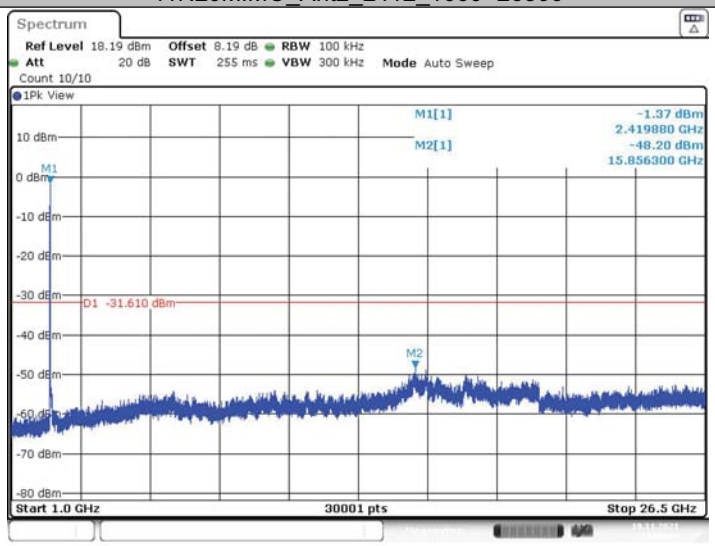

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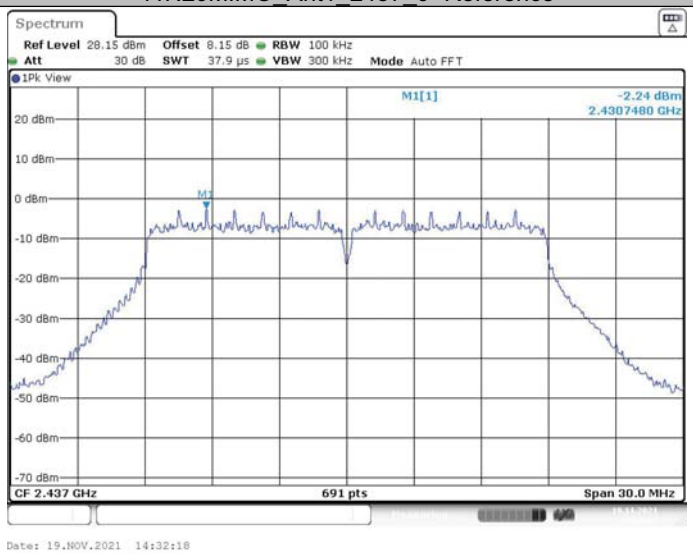

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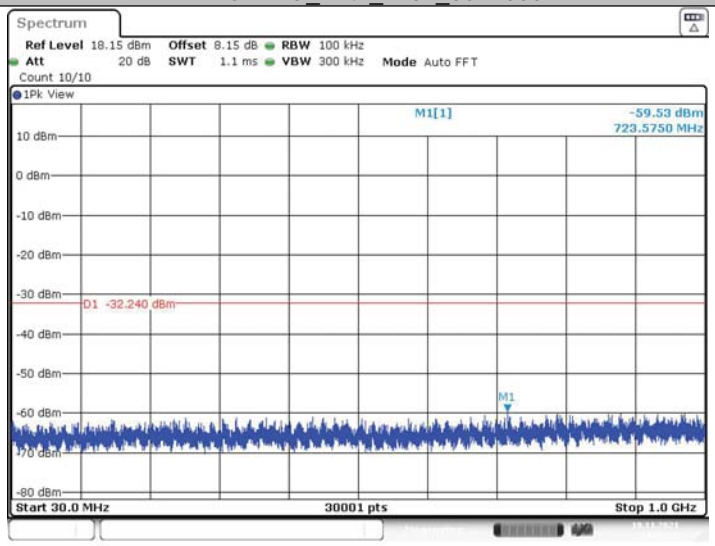

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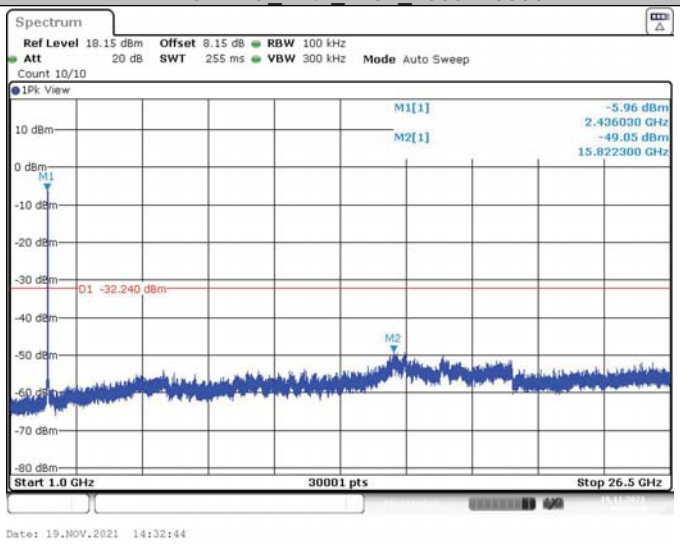

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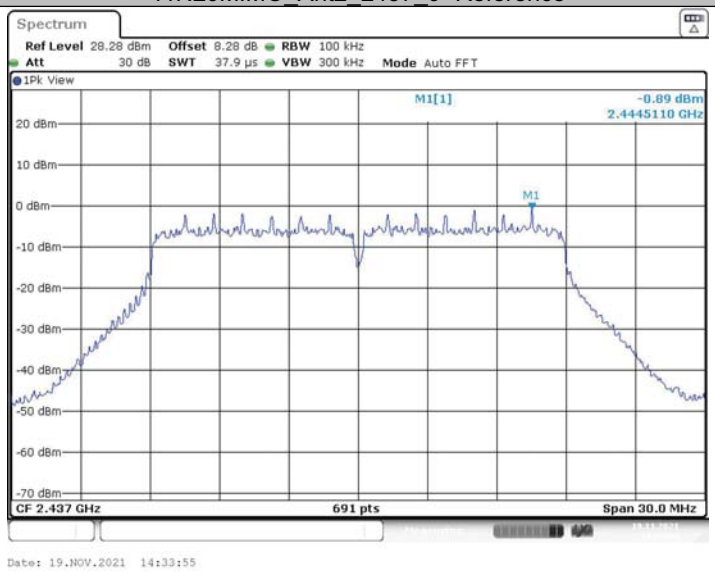

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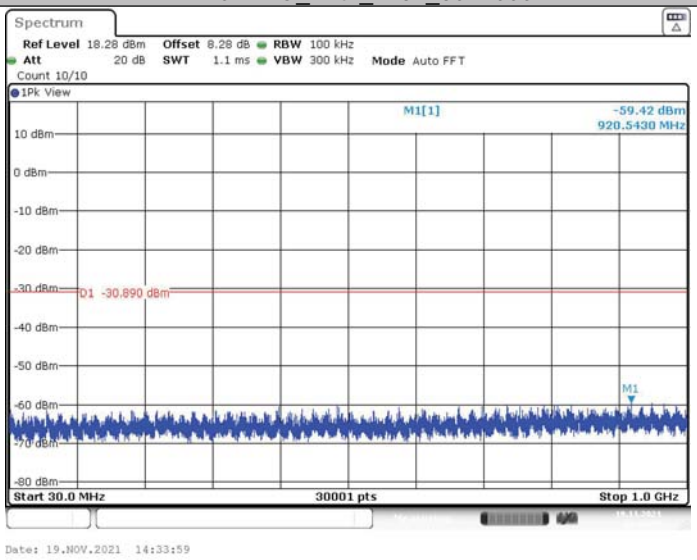

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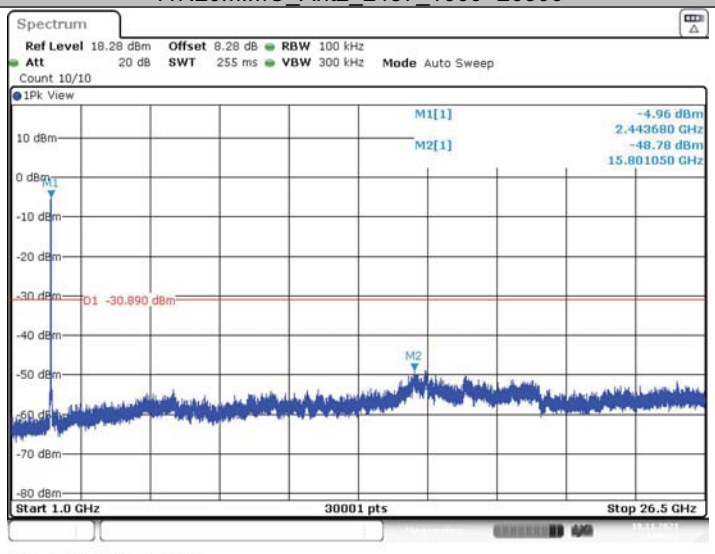

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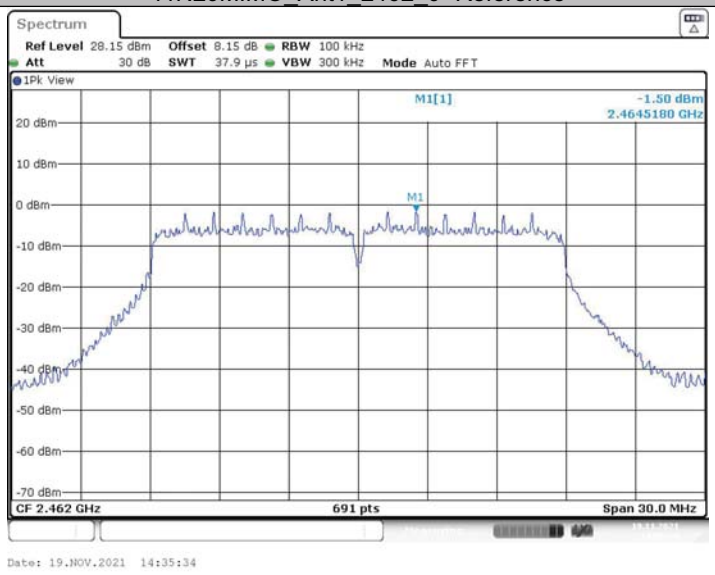

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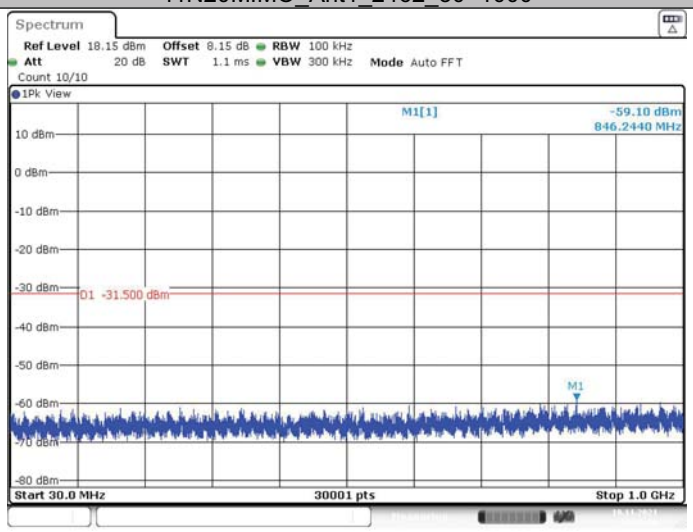

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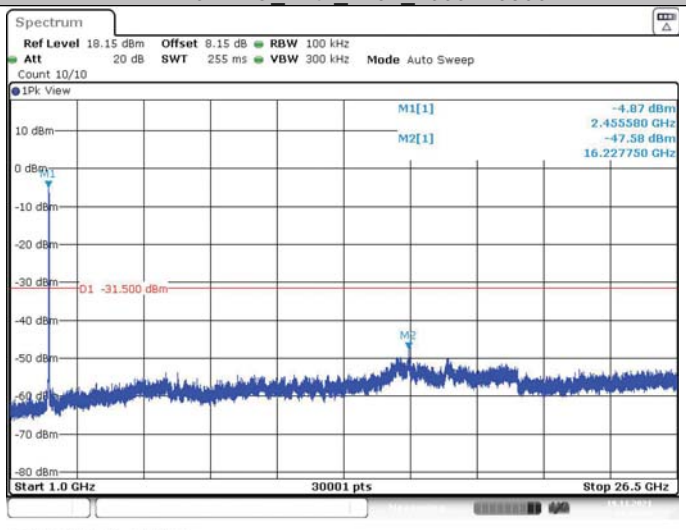

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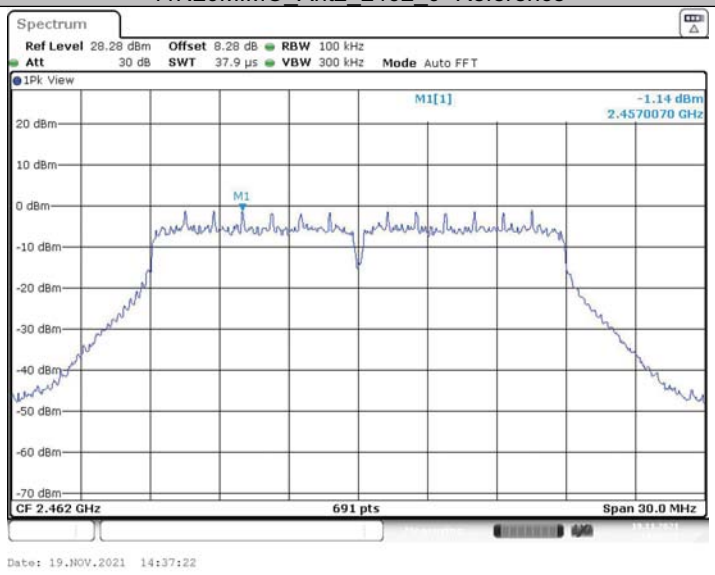

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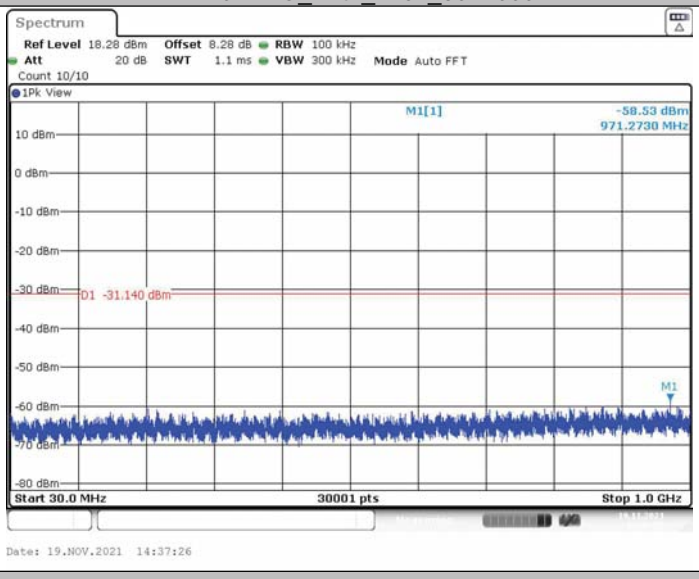

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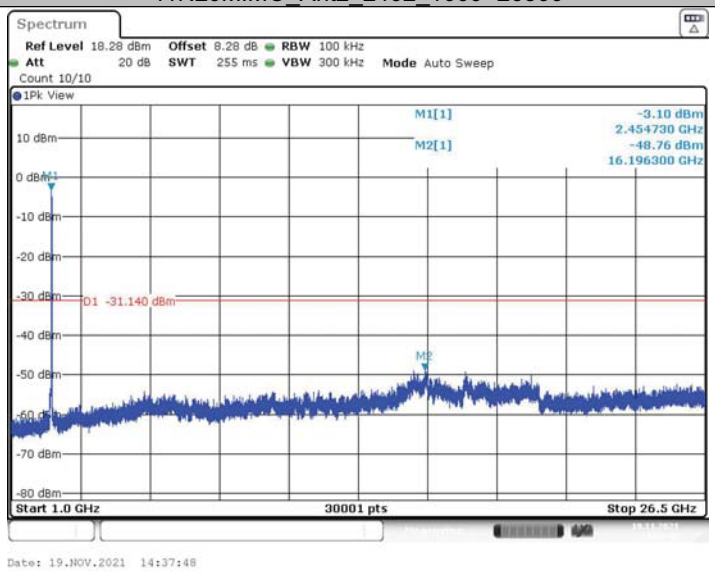

6 Appendix B

Antenna Port Conducted Test				
Equipment	Model No.	Serial Number	Manufacturer	Cal. Due
Communication Shielded Room 3	4m*3m*3m	CRTDSWKSR44301	CRT	2024/04/24
Spectrum Analyzer	N9030A	MY53310374	Agilent	2022/09/28
Comprehensive Test Instrument	CMW270	100659	R&S	2021/12/07
Analog Signal Generator	N5173B	MY53270588	KEYSIGHT	2022/01/04
Vector Signal Generator	N5172B	MY53051933	KEYSIGHT	2021/12/07
Four-channel Power Probe	U2021XA	MY55400014	Tonscend	2022/01/04
Programmable DC Power Supply	E3646A	MY58036222	KEYSIGHT	2022/06/07

Radiated Emission Test - 3M Chamber				
Equipment	Model No.	Serial Number	Manufacturer	Cal. Due
3m Semi-Anechoic Chamber	FACT-4	ST08035	ETS	2024/12/12
Spectrum Analyzer	N9010B	MY57470323	KEYSIGHT	2022/03/04
EMI Test Receiver	N9038A-508	MY532290079	Agilent	2022/03/05
Broadband Antenna	VULB 9163	9163-530	SCHWARZBECK	2022/06/26
Waveguide Horn Antenna	HF906	360306/008	R&S	2022/03/05
Waveguide Horn Antenna	BBHA9170	00949	SCHWARZBECK	2022/08/27
Preamplifier	BBV 9721	9721-050	SCHWARZBECK	2022/06/30
5G Bandstop Filters	WRCJV12-4900-5100-5900-6100-50EE	1	WI	2021/12/16
Comprehensive tester	CMW500	159000	R&S	2022/01/04

Important

(1) The test report is valid with the official seal of the laboratory and the signatures of Test engineer, Author and Reviewer simultaneously.

(2) The test report is invalid if altered.

(3) Any photocopies or part photocopies in the test report are forbidden without the written permission from the laboratory.

(4) Objections to the test report must be submitted to the laboratory within 15 days.

(5) Generally, commission test is responsible for the tested samples only.

Address of the laboratory:
CVC Testing Technology Co., Ltd.
Address: No.3,TiantaiyiRoad,KaitaiAvenue,ScienceCity,Guangzhou,China
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