

FCC Radio Test Report

FCC ID: V7TSP6V1

This report concerns: Original Grant

Project No.	:	1906C015B
Equipment	:	Smart Wi-Fi Plug Mini
Brand Name	:	Tenda
Test Model	:	SP6
Series Model	:	N/A
Applicant	:	SHENZHEN TENDA TECHNOLOGY CO.,LTD
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Date of Receipt	:	Nov. 11, 2019
Date of Test	:	Nov. 11, 2019 ~ Nov. 17, 2019
Issued Date	:	Nov. 27, 2019
Report Version	:	R00
Test Sample	:	Engineering Sample No.: DG20191111129.
Standard(s)	:	FCC Part15, Subpart C (15.247) ANSI C63.10-2013 KDB 558074 D01 15.247 Meas Guidance v05r02

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

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Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective. Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.





Table of Contents					
REPORT ISSUED HISTORY	6				
1. SUMMARY OF TEST RESULTS	7				
1.1 TEST FACILITY	8				
1.2 MEASUREMENT UNCERTAINTY	8				
1.3 TEST ENVIRONMENT CONDITIONS	8				
2. GENERAL INFORMATION	9				
2.1 GENERAL DESCRIPTION OF EUT	9				
2.2 DESCRIPTION OF TEST MODES	10				
2.3 PARAMETERS OF TEST SOFTWARE	11				
2.4 DUTY CYCLE	12				
2.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	13				
2.6 SUPPORT UNITS	13				
3 . AC POWER LINE CONDUCTED EMISSIONS TEST	14				
3.1 LIMIT	14				
3.2 TEST PROCEDURE	14				
3.3 DEVIATION FROM TEST STANDARD	14				
3.4 TEST SETUP	15				
3.5 EUT OPERATION CONDITIONS	15				
3.6 TEST RESULTS	15				
4 . RADIATED EMISSIONS TEST	16				
4.1 LIMIT	16				
4.2 TEST PROCEDURE	17				
4.3 DEVIATION FROM TEST STANDARD	17				
4.4 TEST SETUP	17				
4.5 EUT OPERATION CONDITIONS	19				
4.6 TEST RESULTS - 9 KHZ TO 30 MHZ	19				
4.7 TEST RESULTS - 30 MHZ TO 1000 MHZ	19				
4.8 TEST RESULTS - ABOVE 1000 MHZ	19				
5. BANDWIDTH TEST	20				
5.1 LIMIT	20				
5.2 TEST PROCEDURE	20				
5.3 DEVIATION FROM STANDARD	20				



Table of Contents	Page
5.4 TEST SETUP	20
5.5 EUT OPERATION CONDITIONS	20
5.6 TEST RESULTS	20
6 . MAXIMUM OUTPUT POWER TEST	21
6.1 LIMIT	21
6.2 TEST PROCEDURE	21
6.3 DEVIATION FROM STANDARD	21
6.4 TEST SETUP	21
6.5 EUT OPERATION CONDITIONS	21
6.6 TEST RESULTS	21
7. CONDUCTED SPURIOUS EMISSIONS	22
7.1 LIMIT	22
7.2 TEST PROCEDURE	22
7.3 DEVIATION FROM STANDARD	22
	22
7.5 EUT OPERATION CONDITIONS 7.6 TEST RESULTS	22 22
8 . POWER SPECTRAL DENSITY TEST	23
8.1 LIMIT	23
8.2 TEST PROCEDURE 8.3 DEVIATION FROM STANDARD	23 23
8.4 TEST SETUP	23
8.5 EUT OPERATION CONDITIONS	23
8.6 TEST RESULTS	23
9. MEASUREMENT INSTRUMENTS LIST	24
10 . EUT TEST PHOTO	26
APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS	30
APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ	33
APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ	38
APPENDIX D - RADIATED EMISSION- ABOVE 1000 MHZ	41
APPENDIX E - BANDWIDTH	90
APPENDIX F - MAXIMUM OUTPUT POWER	95



Table of Contents	Page
APPENDIX G - CONDUCTED SPURIOUS EMISSIONS	97
APPENDIX H - POWER SPECTRAL DENSITY	102



REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Nov. 27, 2019

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15, Subpart C (15.247)								
Standard(s) Section	Test Item	Test Result	Judgment	Remark				
15.207	AC Power Line Conducted Emissions	APPENDIX A	PASS					
15.247(d) 15.205(a) 15.209(a)	Radiated Emissions	APPENDIX B APPENDIX C APPENDIX D	PASS					
15.247(a)(2)	Bandwidth	APPENDIX E	PASS					
15.247(b)(3)	Maximum Output Power	APPENDIX F	PASS					
15.247(d)	Conducted Spurious Emissions	APPENDIX G	PASS					
15.247(e)	Power Spectral Density	APPENDIX H	PASS					
15.203	Antenna Requirement		PASS	Note 2				

Note:

- (1) "N/A" denotes test is not applicable in this test report.
- (2) The device what use a permanently attached antenna were considered sufficient to comply with the provisions of 15.203.



1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China. BTL's Test Firm Registration Number for FCC: 357015 BTL's Designation Number for FCC: CN1240

1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)) The BTL measurement uncertainty as below table:

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U, (dB)
DG-C02	CISPR	150kHz ~ 30MHz	2.60

B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
		9kHz ~ 30MHz	V	3.79
		9kHz ~ 30MHz	Н	3.57
	CISPR	30MHz ~ 200MHz	V	4.88
		30MHz ~ 200MHz	Н	4.14
DG-CB03		200MHz ~ 1,000MHz	V	4.62
DG-CB03		200MHz ~ 1,000MHz	Н	4.80
		1GHz ~ 6GHz	-	4.58
		6GHz ~ 18GHz	-	5.18
		18 ~ 26.5 GHz	-	3.62
		26.5 ~ 40 GHz	-	4.00

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
AC Power Line Conducted Emissions	25 °C	53%	AC 120V/60Hz	Laughing Zhang
Radiated Emissions-9K-30MHz	25 °C	60%	AC 120V/60Hz	Laughing Zhang
Radiated Emissions-30 MHz to 1GHz	24 °C	68%	AC 120V/60Hz	Sheldon
Radiated Emissions-Above 1000 MHz	24 °C	68%	AC 120V/60Hz	Sheldon
Bandwidth	24.6 °C	58%	AC 120V/60Hz	Jonas Chen
Maximum output power	24.6 °C	58%	AC 120V/60Hz	Laughing Zhang
Conducted Spurious Emissions	24.6 °C	58%	AC 120V/60Hz	Jonas Chen
Power Spectral Density	24.6 °C	58%	AC 120V/60Hz	Jonas Chen

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Smart Wi-Fi Plug Mini
Brand Name	Tenda
Test Model	SP6
Series Model	N/A
Model Difference(s)	N/A
Power Source	AC Mains.
Power Rating	I/P: 100-120V~ 60Hz 15A (0.1A, product only) O/P: 15A Maximum load
Operation Frequency	2412 MHz ~ 2462 MHz
Modulation Type	IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n: OFDM
Bit Rate of Transmitter	IEEE 802.11b: 11/5.5/2/1 Mbps IEEE 802.11g: 54/48/36/24/18/12/9/6 Mbps IEEE 802.11n: up to 150 Mbps
Maximum Output Power	IEEE 802.11b: 26.79 dBm (0.4775 W) IEEE 802.11g: 28.04 dBm (0.6368 W) IEEE 802.11n (HT20): 28.04 dBm (0.6368 W) IEEE 802.11n (HT40): 27.96 dBm (0.6252 W)

Note:

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

CH01 - CH11 for IEEE 802.11b, IEEE 802.11g, IEEE 802.11n (HT20) CH03 - CH09 for IEEE 802.11n (HT40)							
Channel Frequency (MHz) Channel Frequency (MHz) Channel Frequency (MHz) Channel (MHz) Channel (MHz)					Frequency (MHz)		
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

3. Antenna Specification:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Internal	N/A	1

2.2 DESCRIPTION OF TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.

Pretest Mode	Description	
Mode 1 TX B Mode Channel 01/06/11		
Mode 2	TX G Mode Channel 01/06/11	
Mode 3	TX N-20 MHz Mode Channel 01/06/11	
Mode 4	TX N-40 MHz Mode Channel 03/06/09	
Mode 5	TX G Mode Channel 06	

Following mode(s) as (were) found to be the worst case(s) and selected for the final test.

AC power line conducted emissions test		
Final Test Mode: Description		
Mode 5	TX G Mode Channel 06	

Radiated emissions test - Below 1GHz		
Final Test Mode:	Description	
Mode 5	TX G Mode Channel 06	

Radiated emissions test- Above 1GHz	
Final Test Mode:	Description
Mode 1	TX B Mode Channel 01/06/11
Mode 2	TX G Mode Channel 01/06/11
Mode 3	TX N-20 MHz Mode Channel 01/06/11
Mode 4	TX N-40 MHz Mode Channel 03/06/09

Description
Description
K B Mode Channel 01/06/11
K G Mode Channel 01/06/11
K N-20 MHz Mode Channel 01/06/11
K N-40 MHz Mode Channel 03/06/09
x



NOTE:

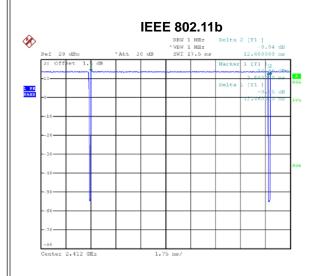
- (1) The measurements are performed at the high, middle, low available channels.
- (2) For radiated emission below 1 GHz test, the IEEE 802.11g Channel 06 is found to be the worst case and recorded.
- (3) For radiated emission above 1 GHz test, 1GHz~26.5GHz have been pre-tested and in this report only recorded the worst case. The remaining spurious points are all below the limit value of 20dB.

2.3 PARAMETERS OF TEST SOFTWARE

Test Software	UI_mptool_1v15		
Frequency (MHz)	2412 2437 2462		2462
IEEE 802.11b	51	53	50
IEEE 802.11g	51	63	48
IEEE 802.11n (HT20)	50	63	47
Frequency (MHz)	2422	2437	2452
IEEE 802.11n (HT40)	48	53	45

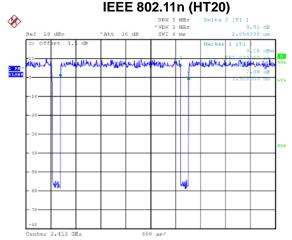


2.4 DUTY CYCLE



Date: 20.JUN.2019 18:33:04

Duty cycle = 12.460 ms / 12.600 ms = 98.89% Duty Factor = 10 log(1/Duty cycle) = 0.00



Date: 20.JUN.2019 18:34:12

Duty cycle = 1.928 ms / 2.056 ms = 93.77% Duty Factor = 10 log(1/Duty cycle) = 0.28

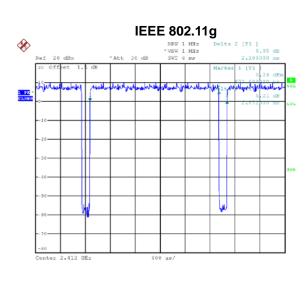
NOTE:

For IEEE 802.11g and IEEE 802.11n (HT20):

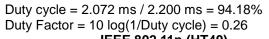
For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1 kHz (Duty cycle < 98%).

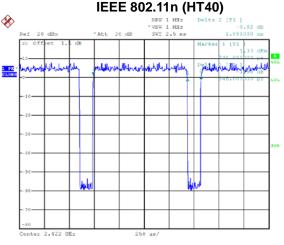
For IEEE 802.11n (HT40):

For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 2 kHz (Duty cycle < 98%).



Date: 20.JUN.2019 18:33:30





Date: 20.JUN.2019 18:34:32

Duty cycle = 0.945 ms / 1.080 ms = 87.50% Duty Factor = 10 log(1/Duty cycle) = 0.58



2.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.6 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.
-	-	-	-	-

lte	em	Cable Type	Shielded Type	Ferrite Core	Length
	1	AC Cable	NO	NO	1.5m



3. AC POWER LINE CONDUCTED EMISSIONS TEST

3.1 LIMIT

Eroquency of Emission (MHz)	Limit (dBµV)		
Frequency of Emission (MHz)	Quasi-peak	Average	
0.15 - 0.50	66 to 56*	56 to 46*	
0.50 - 5.0	56	46	
5.0 - 30.0	60	50	

NOTE:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting	
Attenuation	10 dB	
Start Frequency	0.15 MHz	
Stop Frequency	30 MHz	
IF Bandwidth	9 kHz	

3.2 TEST PROCEDURE

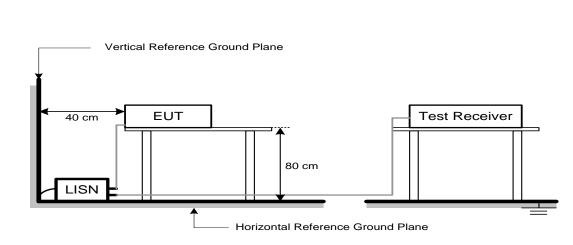
- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item -EUT Test Photos.

3.3 DEVIATION FROM TEST STANDARD

No deviation



3.4 TEST SETUP



3.5 EUT OPERATION CONDITIONS

EUT was programmed to be in continuously transmitting mode.

3.6 TEST RESULTS

Please refer to the APPENDIX A.



4. RADIATED EMISSIONS TEST

4.1 LIMIT

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (9 kHz-1000 MHz)

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000 MHz)

	(dBuV/m at 3 m)		
	Frequency (MHz)	Peak	Average
	Above 1000	74	54

NOTE:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting		
Attenuation	Auto		
Start Frequency	1000 MHz		
Stop Frequency	10th carrier harmonic		
RBW / VBW	1 MHz / 3 MHz for Peak,		
(Emission in restricted band)	1 MHz / 1/T for Average		
Receiver Parameter	Setting		
Attenuation	Auto		
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector		
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector		
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector		
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector		
Start ~ Stop Frequency	30 MHz~1000 MHz for QP detector		

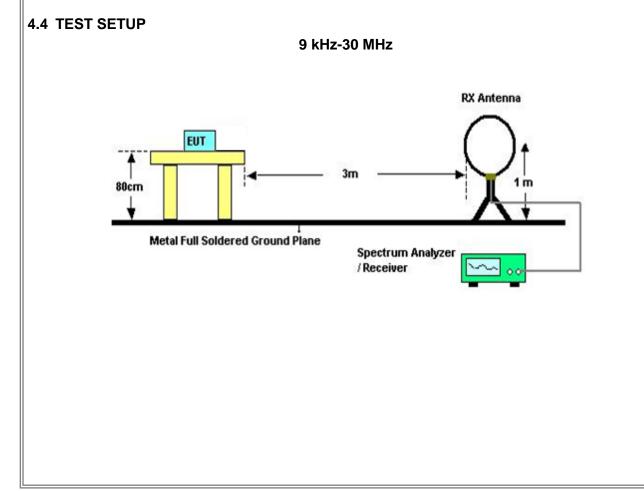


4.2 TEST PROCEDURE

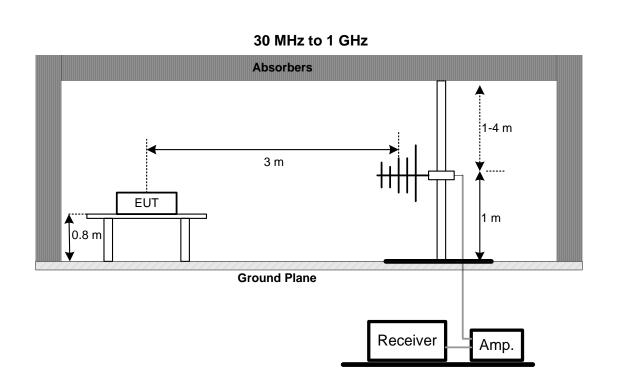
- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
- b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1 GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; the height of the test antenna shall vary between 1 m to 4 m. 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 find the maximum reading (used Bore sight function).
- e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1 GHz)
- All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1 GHz)
- i. For the actual test configuration, please refer to the related Item -EUT Test Photos.

4.3 DEVIATION FROM TEST STANDARD

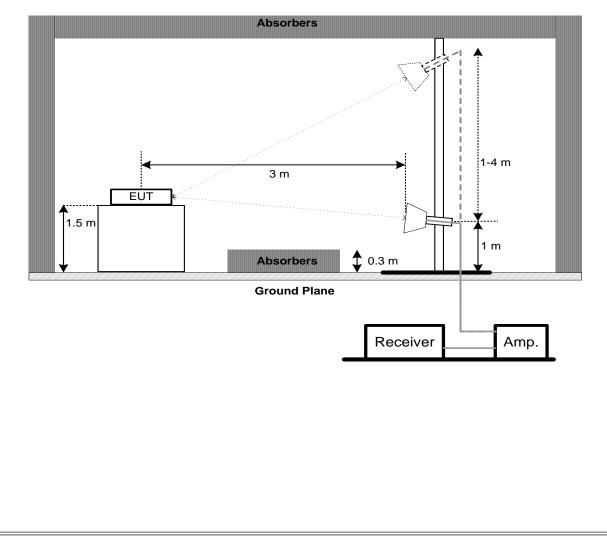
No deviation







Above 1 GHz





4.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6 TEST RESULTS - 9 KHZ TO 30 MHZ

Please refer to the APPENDIX B

Remark:

- (1) Distance extrapolation factor = 40 log (specific distance / test distance) (dB).
- (2) Limit line = specific limits (dBuV) + distance extrapolation factor.

4.7 TEST RESULTS - 30 MHZ TO 1000 MHZ

Please refer to the APPENDIX C.

4.8 TEST RESULTS - ABOVE 1000 MHZ

Please refer to the APPENDIX D.

Remark:

(1) No limit: This is fundamental signal, the judgment is not applicable. For fundamental signal judgment was referred to Peak output test.



5. BANDWIDTH TEST

5.1 LIMIT

FCC Part15, Subpart C (15.247)					
Section Test Item Limit					
	6 dB Bandwidth	Minimum 500 kHz			
15.247(a)(2)	99% Emission Bandwidth	-			

5.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. For 6 dB Bandwidth : RBW= 100 kHz, VBW=300 kHz, Sweep time = 2.5 ms.
 For 99% Emission Bandwidth B/G/N-20 Mode: RBW= 300 KHz, VBW=1 MHz, Sweep time = 2.5 ms.
 For 99% Emission Bandwidth N-40 Mode: RBW= 1 MHz, VBW=3 MHz, Sweep time = 2.5 ms.
- c. The bandwidth was performed in accordance with method 11.8.1 of ANSI C63.10-2013.

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6 TEST RESULTS

Please refer to the APPENDIX E.



6. MAXIMUM OUTPUT POWER TEST

6.1 LIMIT

FCC Part15, Subpart C (15.247)					
Section Test Item Limit					
15.247(b)(3) Maximum Output Power 1 Watt or 30dBm					

6.2 TEST PROCEDURE

- a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.
- b. The maximum conducted output power was performed in accordance with method 11.9.1.3 of ANSI C63.10-2013.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP



6.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

6.6 TEST RESULTS

Please refer to the APPENDIX F.



7. CONDUCTED SPURIOUS EMISSIONS

7.1 LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak Output Power limits. If the transmitter complies with the Output Power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

7.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Spectrum Setting: RBW= 100 kHz, VBW=300 kHz, Sweep time = Auto.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



SPECTRUM ANALYZER

7.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.6 TEST RESULTS

Please refer to the APPENDIX G.



8. POWER SPECTRAL DENSITY TEST

8.1 LIMIT

FCC Part15, Subpart C (15.247)					
Section Test Item Limit					
15.247(a)	Bower Spectral Density	8 dBm			
15.247(e)	Power Spectral Density	(in any 3 kHz)			

8.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Spectrum Setting: RBW=3 kHz, VBW=10 kHz, Sweep time = Auto.
- c. The Power Spectral Density was performed in accordance with method 11.10.2 of ANSI C63.10-2013.

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

8.6 TEST RESULTS

Please refer to the APPENDIX H.

9. MEASUREMENT INSTRUMENTS LIST

	AC Power Line Conducted Emissions							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until			
1	EMI Test Receiver	R&S	ESCI	100382	Mar. 10, 2020			
2	LISN	SN EMCO 3816/2 52765		52765	Mar. 10, 2020			
3	TWO-LINE V-NETWORK			101447	May. 19, 2020			
4	50Ω Terminator	SHX	TF5-3	15041305	Mar. 10, 2020			
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A			
6	Cable	N/A	RG223	12m	Mar. 12, 2020			

	Radiated Emissions - 9 kHz to 30 MHz						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until		
1	Loop Antenna	EM	EM-6876-1	230	Jan. 15, 2020		
2	Cable	N/A	RG 213/U	C-102	May 31, 2020		
3	EMI Test Receiver	R&S	ESCI	100895	Mar. 10, 2020		
4	Measurement Software	Farad N/A		N/A	N/A		

	Radiated Emissions - 30 MHz to 1 GHz						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until		
1	Antenna	Schwarzbeck	VULB9160	9160-3232	Mar. 09, 2020		
2*	Amplifier	HP	8447D	2944A09673	Aug. 11, 2021		
3	Receiver	Agilent	N9038A	MY52130039	Aug. 03, 2020		
4	Cable	emci	LMR-400(30MHz-1 GHz)(8m+5m)	N/A	May 24, 2020		
5	Controller	СТ	SC100	SC100 N/A			
6	Controller	MF	MF-7802	MF780208416	N/A		
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A		

	Radiated Emissions - Above 1 GHz						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until		
1	Double Ridged Guide Antenna	ETS	3115	75789	Mar. 09, 2020		
2	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 23, 2020		
3	Amplifier	Agilent	8449B	3008A02333	Mar. 10, 2020		
4	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 10, 2020		
5	Receiver	Agilent	N9038A	MY52130039	Aug. 03, 2020		
6	Controller	СТ	SC100	N/A	N/A		
7	Controller	MF	MF-7802	MF780208416	N/A		
8	Cable	mitron	B10-01-01-12M	18072744	Jun. 29, 2020		
9	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A		



	Bandwidth & Antenna Conducted Spurious Emissions & Power Spectral Density							
Item	Item Kind of Equipment Manufacturer Type No. Serial No. Calibrated until							
1	1 Spectrum Analyzer R&S FSP40 100185 Aug. 03, 2020							
		Maxin	num Output Power					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until			
1	Peak Power Analyzer	Keysight	8990B	MY51000506	Aug. 03, 2020			
2	Wideband power sensor	Keysight	N1923A	MY58310004	Aug. 03, 2020			

Remark: "N/A" denotes no model name, serial no. or calibration specified.

"*" calibration period of equipment list is three year.

Except * item, all calibration period of equipment list is one year.





10. EUT TEST PHOTO

AC Power Line Conducted Emissions Test Photos





BL



9 kHz to 30 MHz



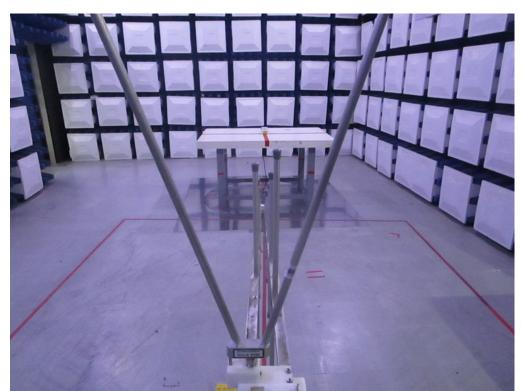


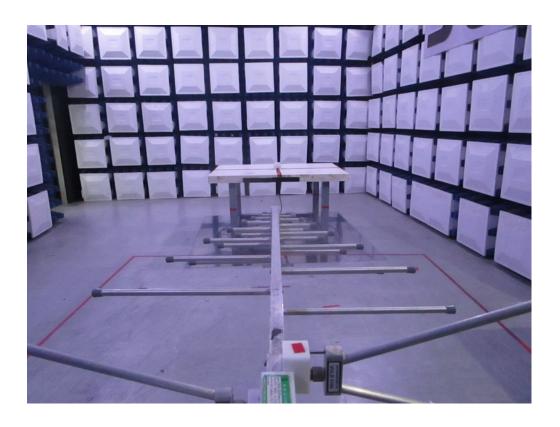




Radiated Emissions Test Photos

30 MHz to 1 GHz







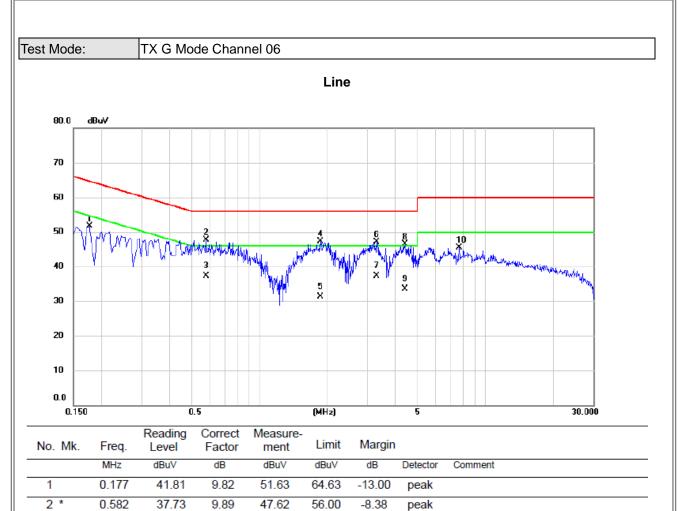






APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS





RF	MA	R	٢S	

3

4

5

6

7

8

9

10

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

27.32

37.32

21.22

37.10

27.15

36.25

23.32

35.05

9.89

9.99

9.99

10.08

10.08

10.16

10.16

10.37

0.582

1.865

1.865

3.296

3.296

4.407

4.407

7.620

37.21

47.31

31.21

47.18

37.23

46.41

33.48

45.42

46.00

56.00

46.00

56.00

46.00

56.00

46.00

60.00

-8.79

-8.69

-14.79

-8.82

-8.77

-9.59

-12.52

-14.58

AVG

peak

AVG

peak

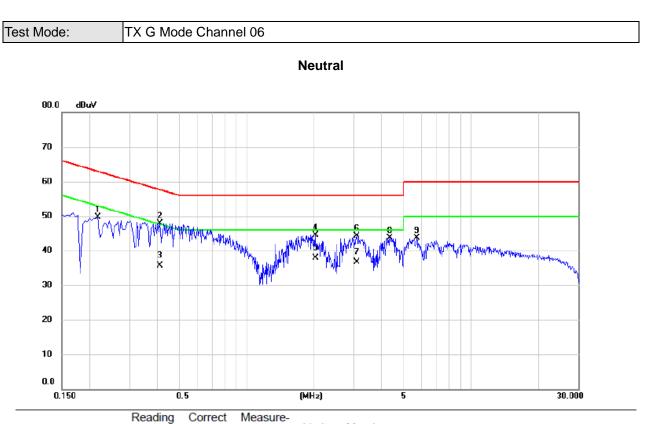
AVG

peak

AVG

peak



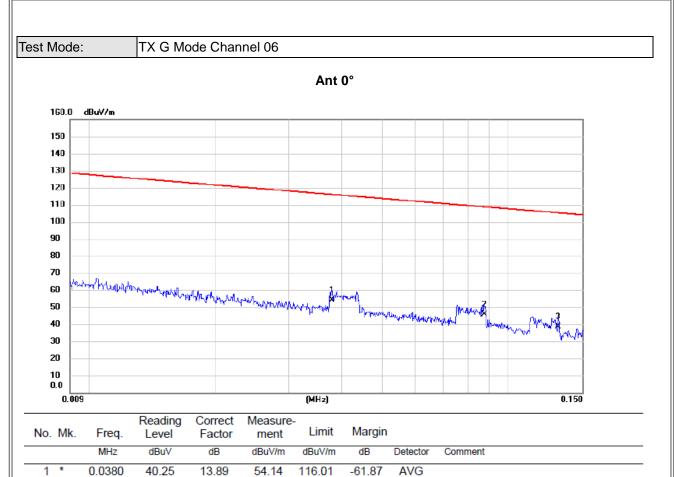


No. Mk.	Freq.	Level	Factor	Measure- ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.217	39.84	9.91	49.75	62.91	-13.16	peak	
2	0.411	37.98	10.01	47.99	57.63	-9.64	peak	
3	0.411	25.69	10.01	35.70	47.63	-11.93	AVG	
4	2.022	34.33	10.19	44.52	56.00	-11.48	peak	
5 *	2.022	27.62	10.19	37.81	46.00	-8.19	AVG	
6	3.093	34.03	10.25	44.28	56.00	-11.72	peak	
7	3.093	26.39	10.25	36.64	46.00	-9.36	AVG	
8	4.357	33.29	10.34	43.63	56.00	-12.37	peak	
9	5.716	33.17	10.46	43.63	60.00	-16.37	peak	

- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.

APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ





2

3

0.0874

0.1314

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

32.15

25.14

13.54

13.55

45.69

38.69

108.77

105.24

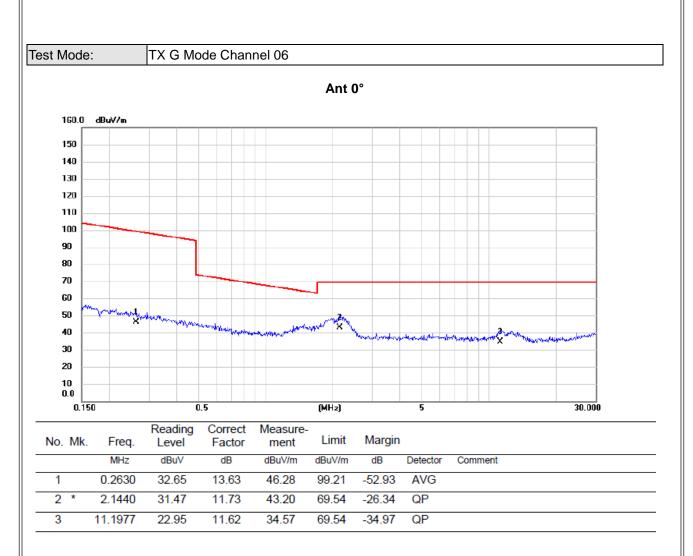
AVG

AVG

-63.08

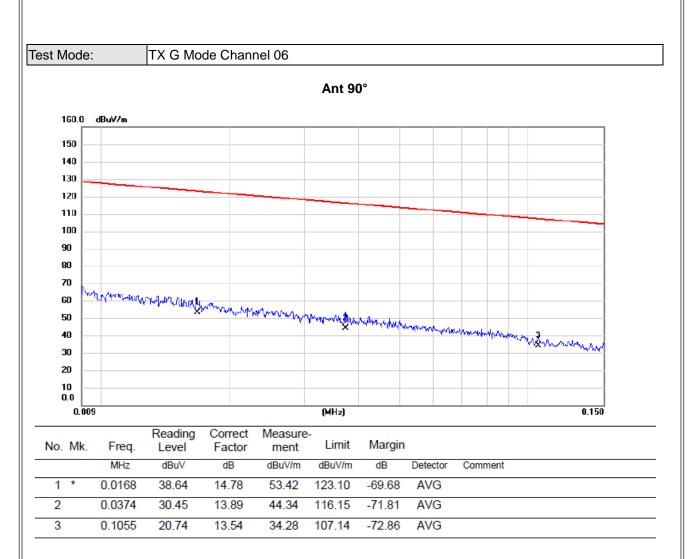
-66.55





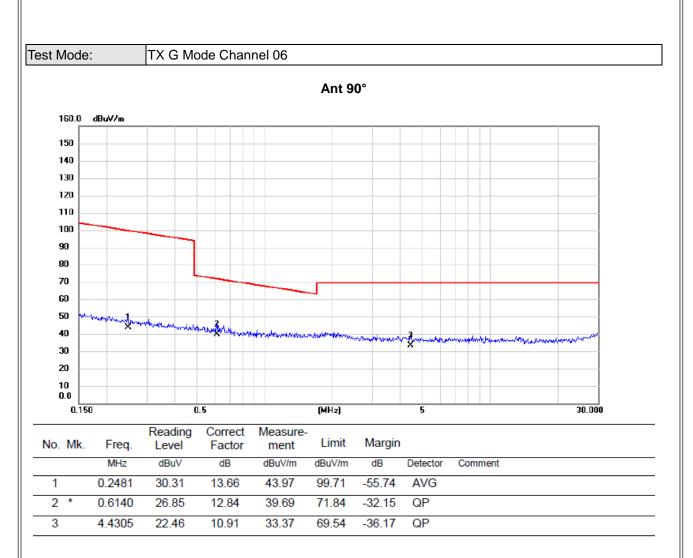
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





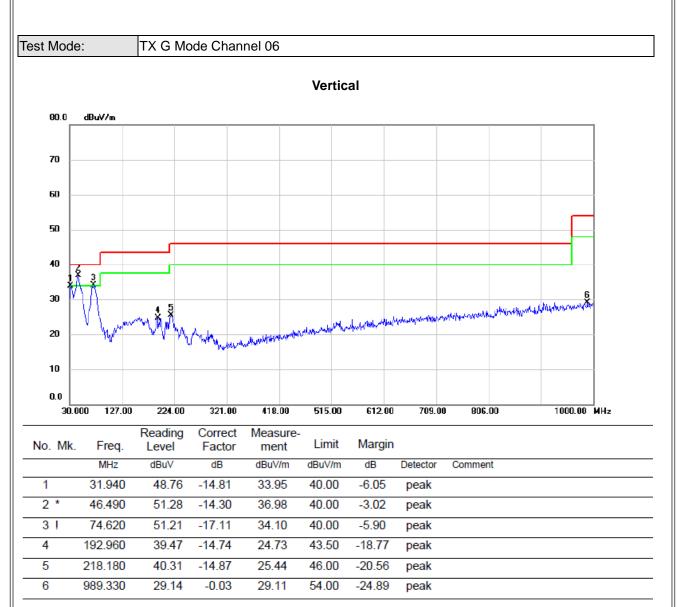
REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

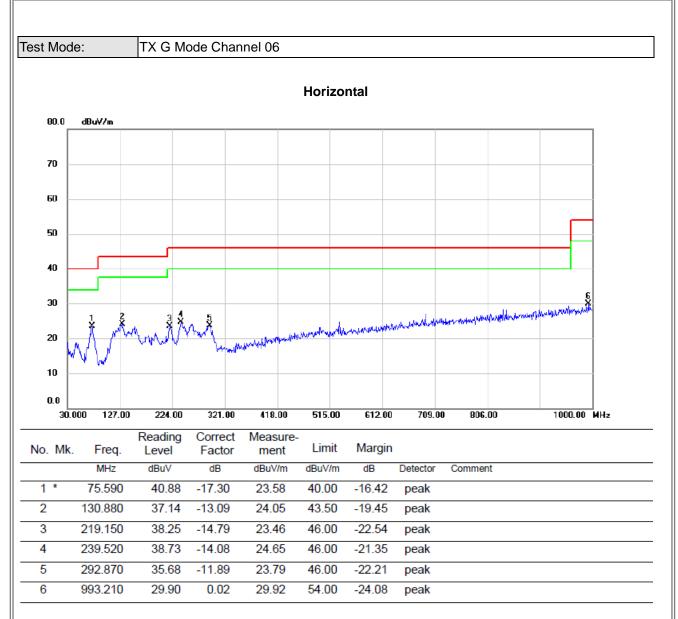




REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



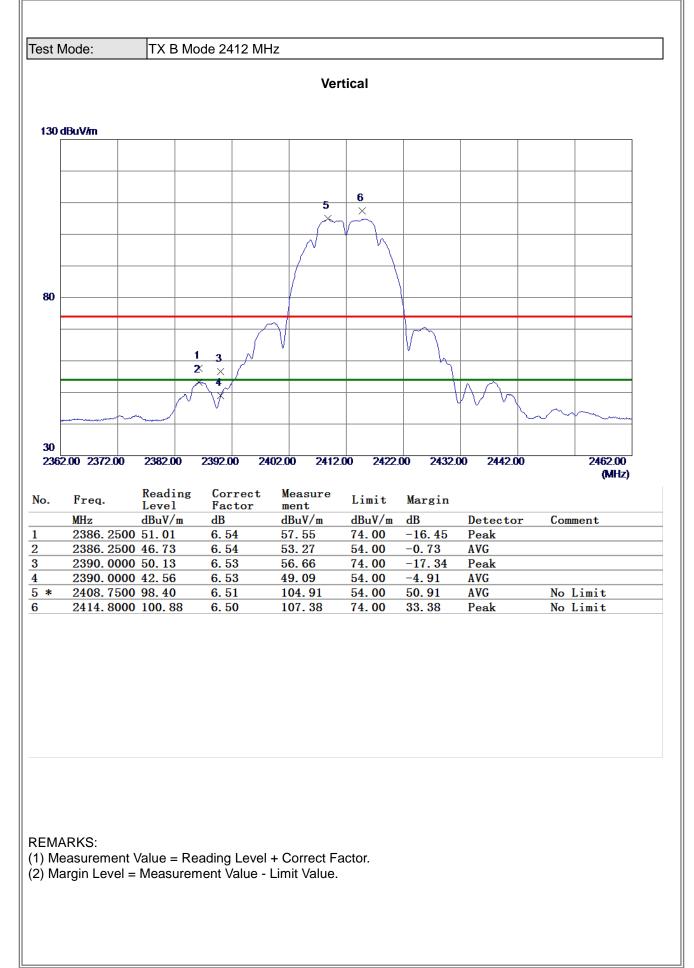


REMARKS:

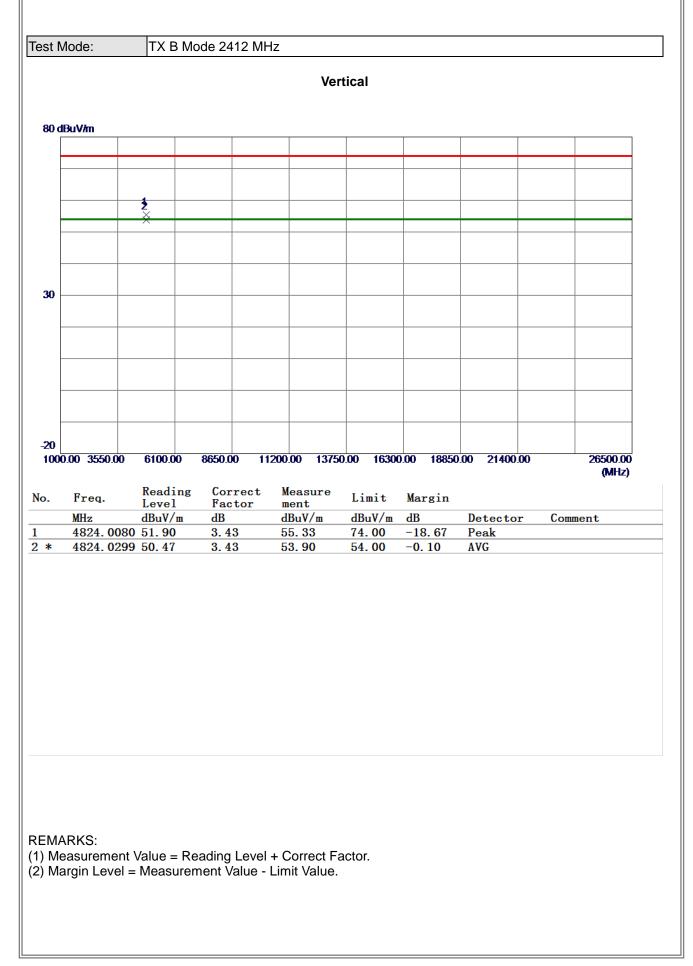
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

APPENDIX D - RADIATED EMISSION- ABOVE 1000 MHZ

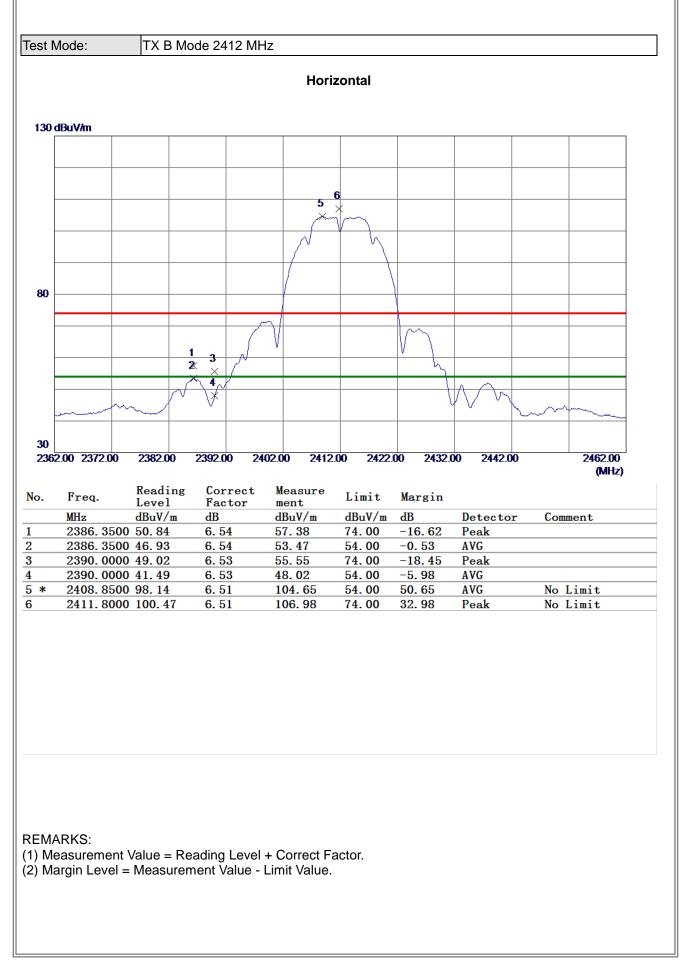




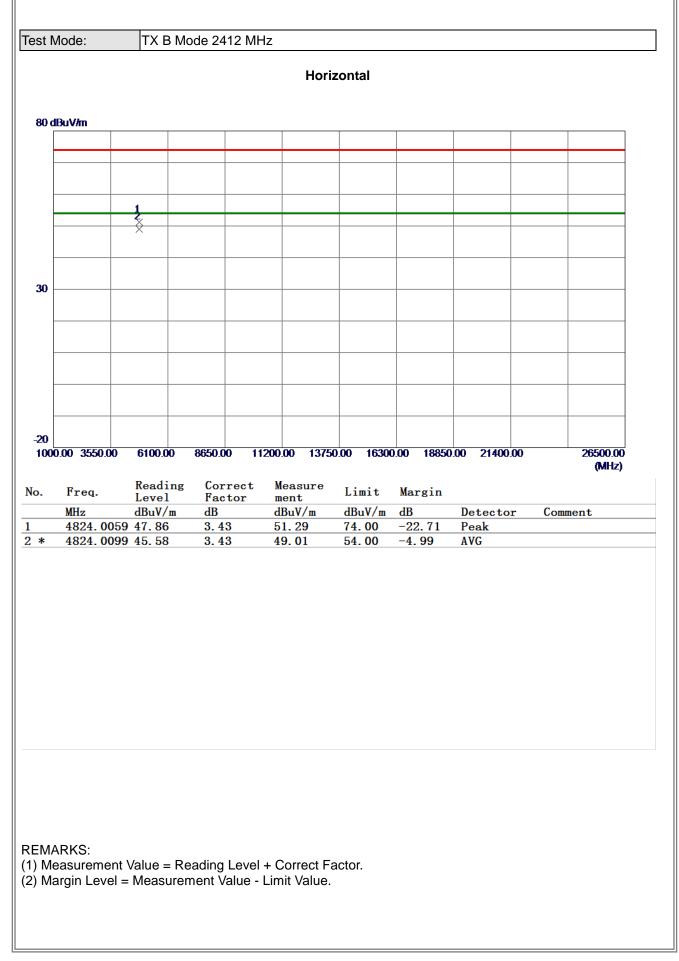




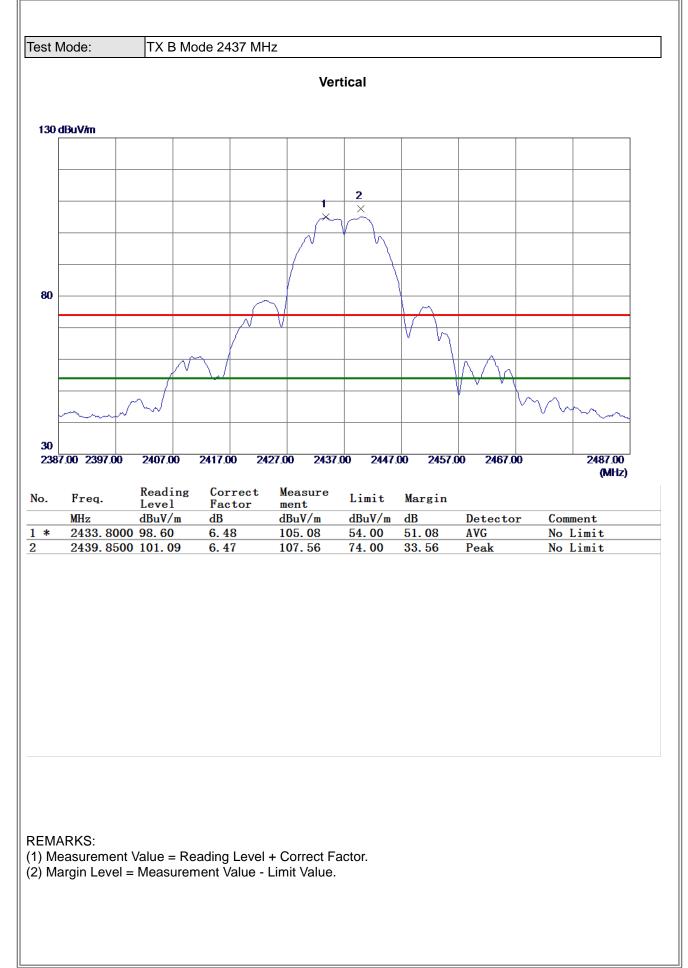




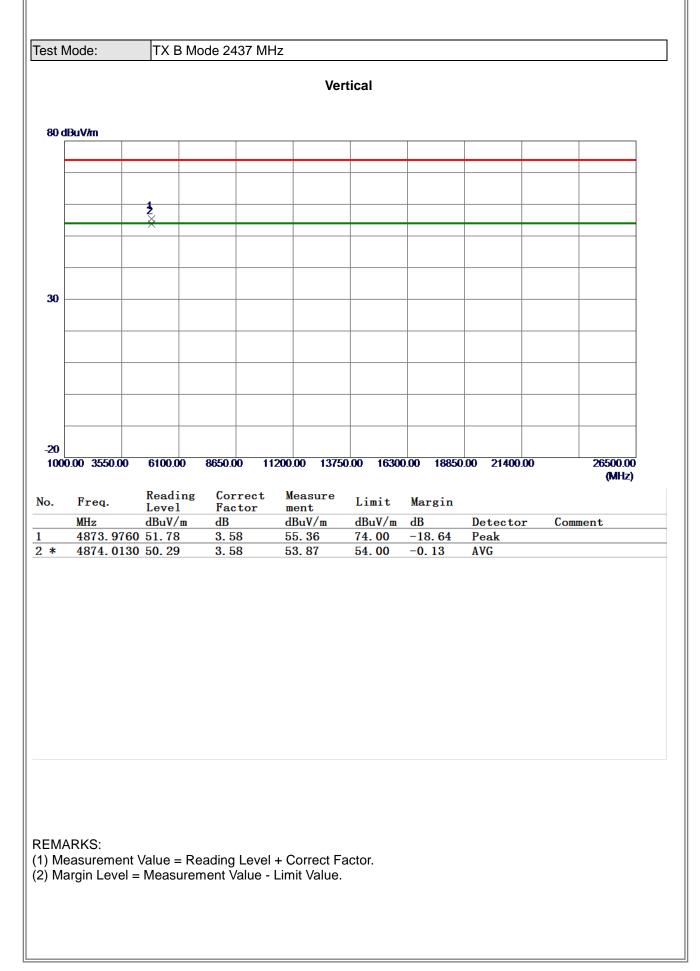




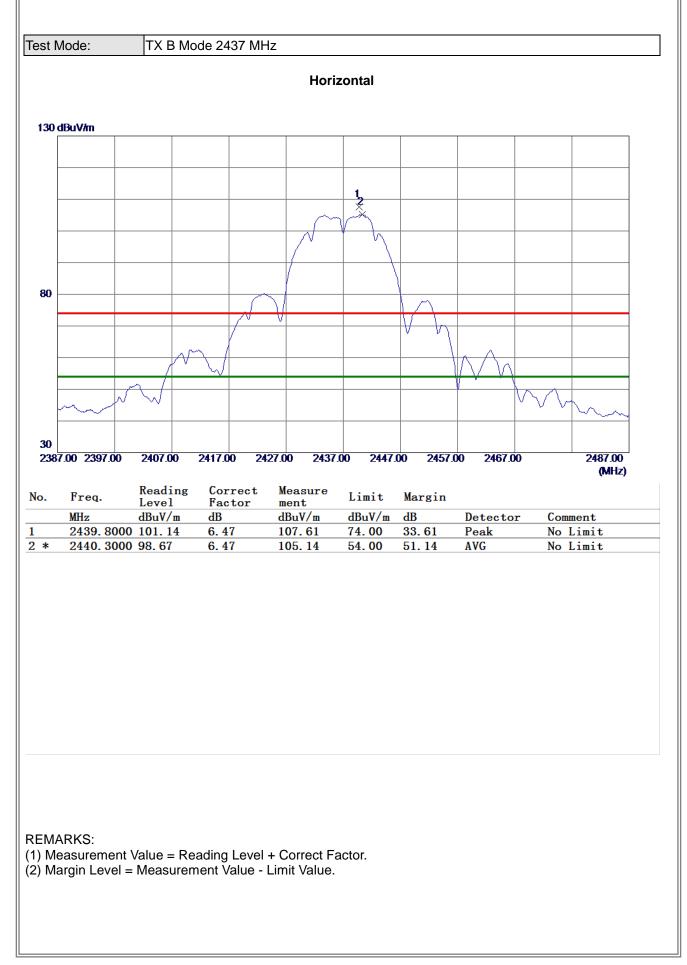




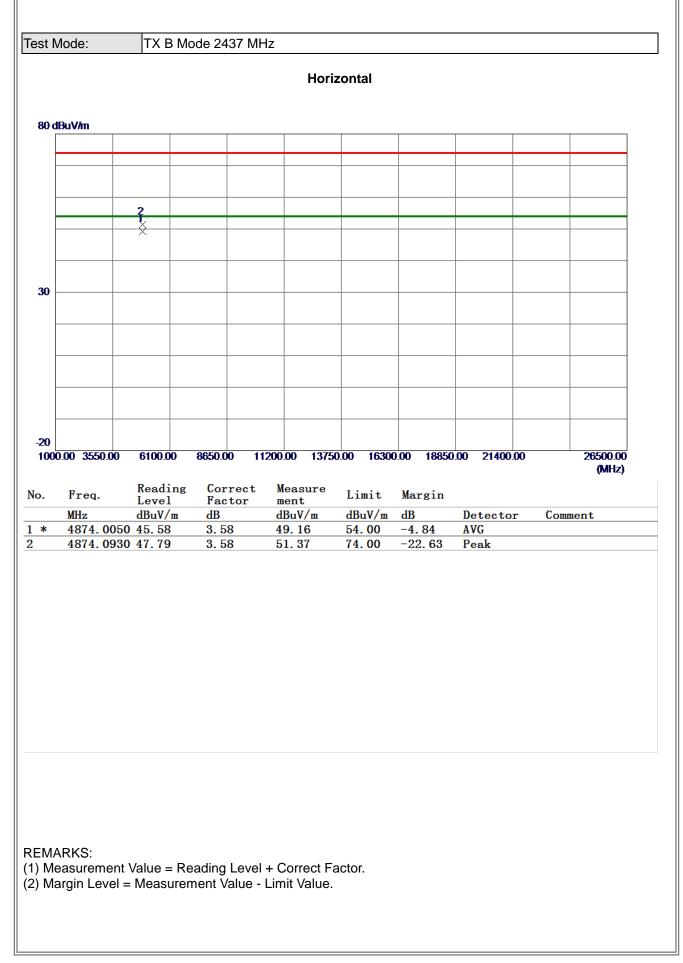




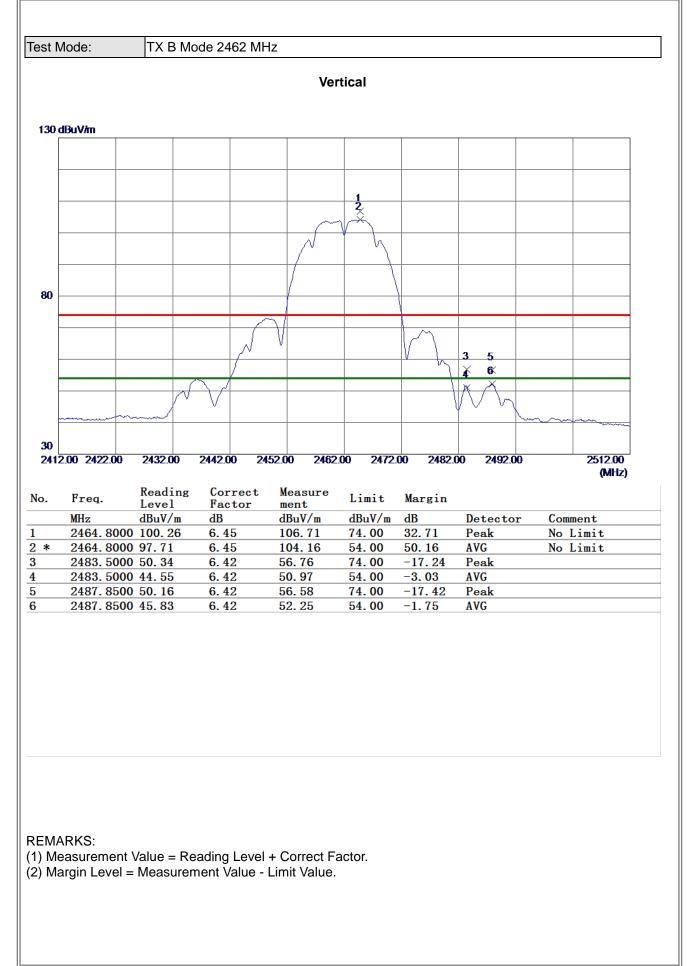




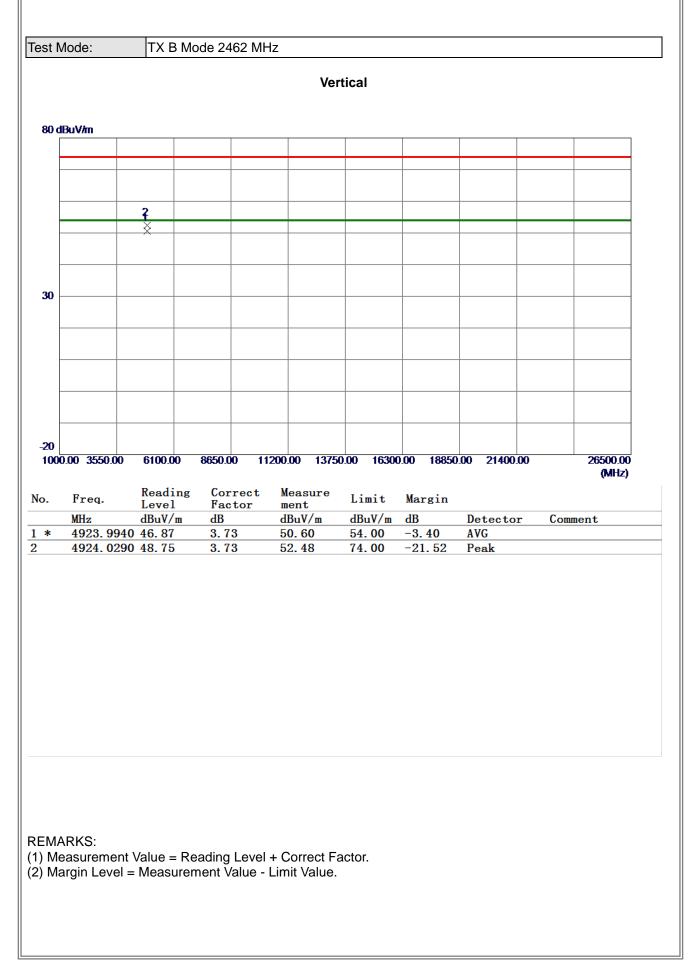




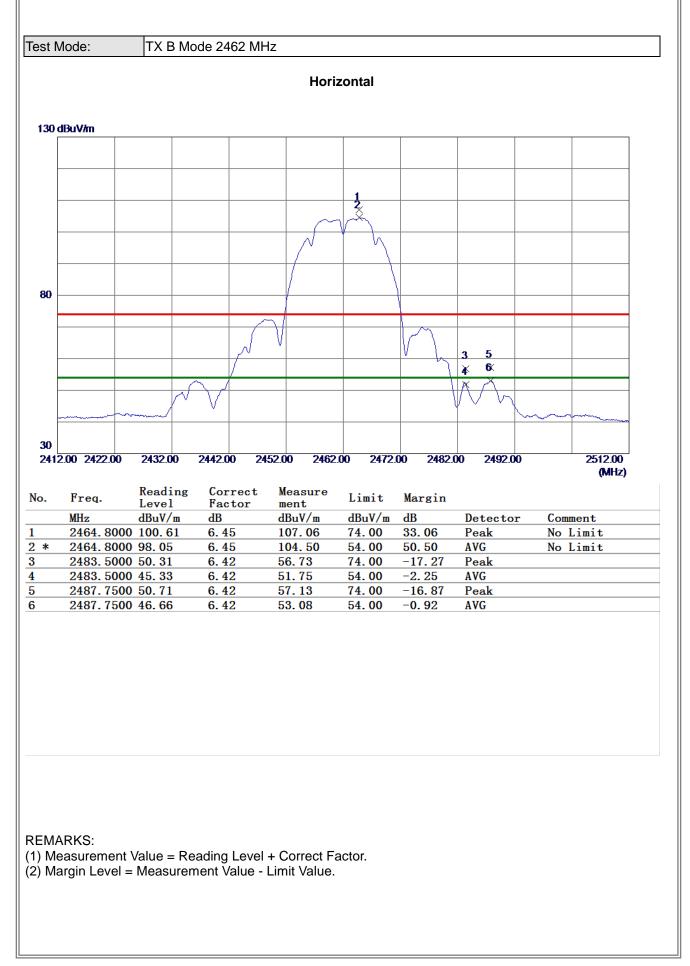




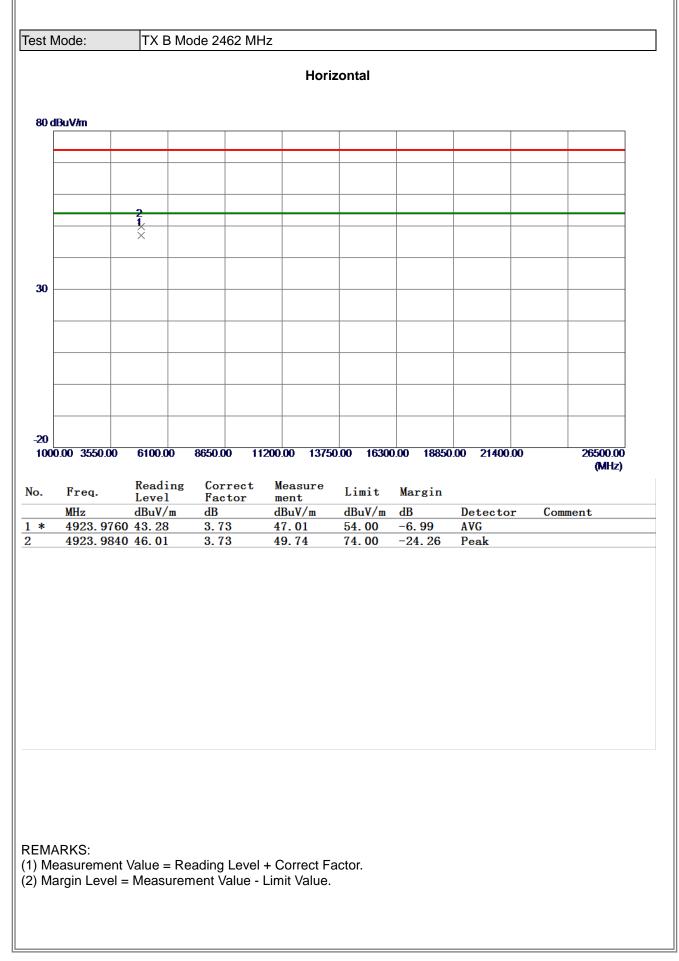




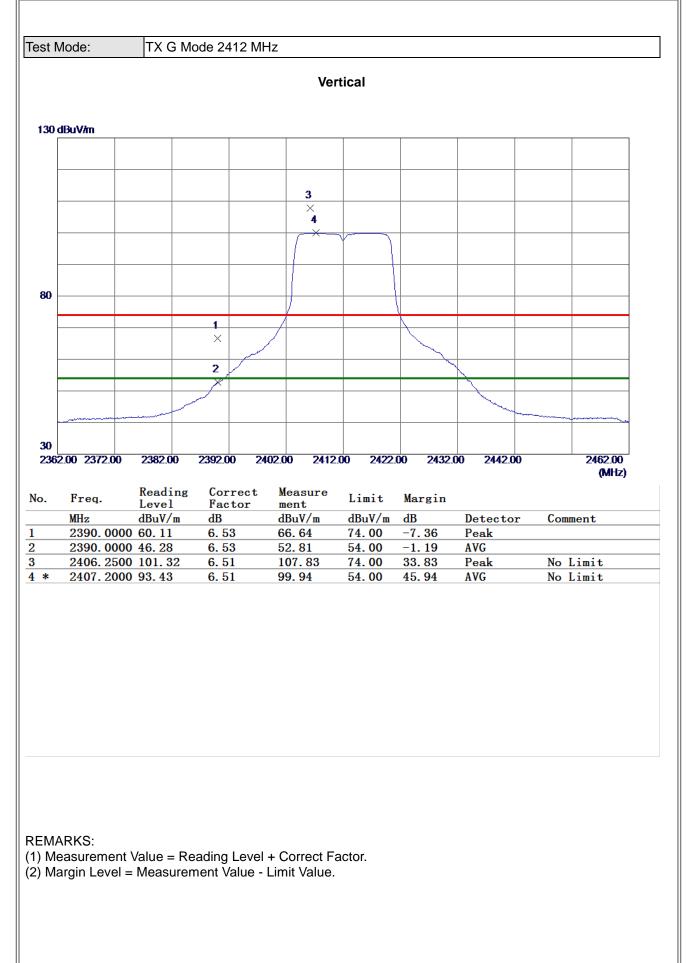




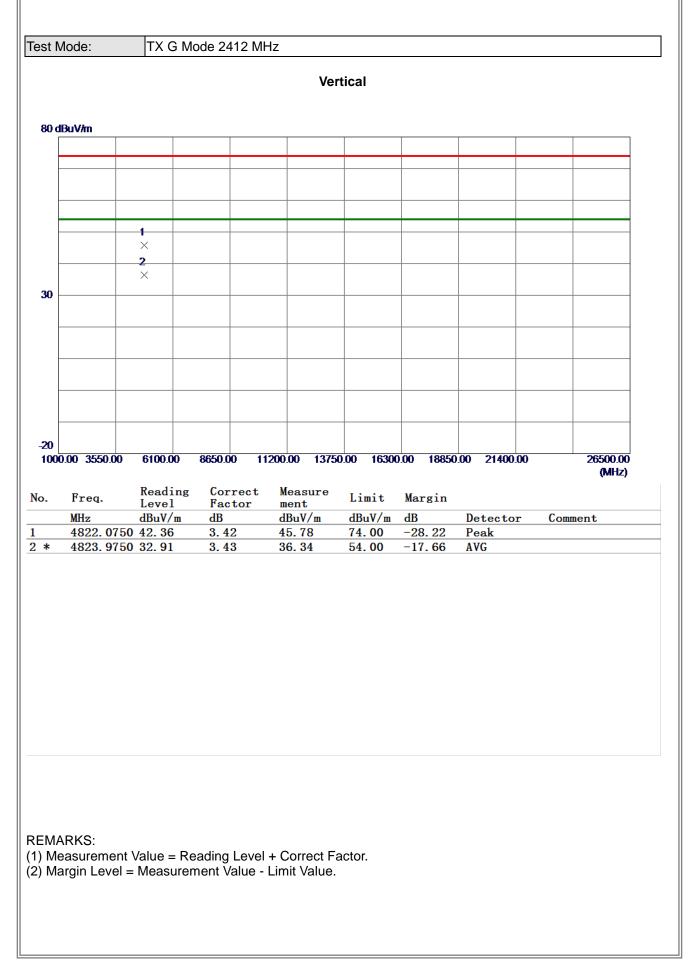




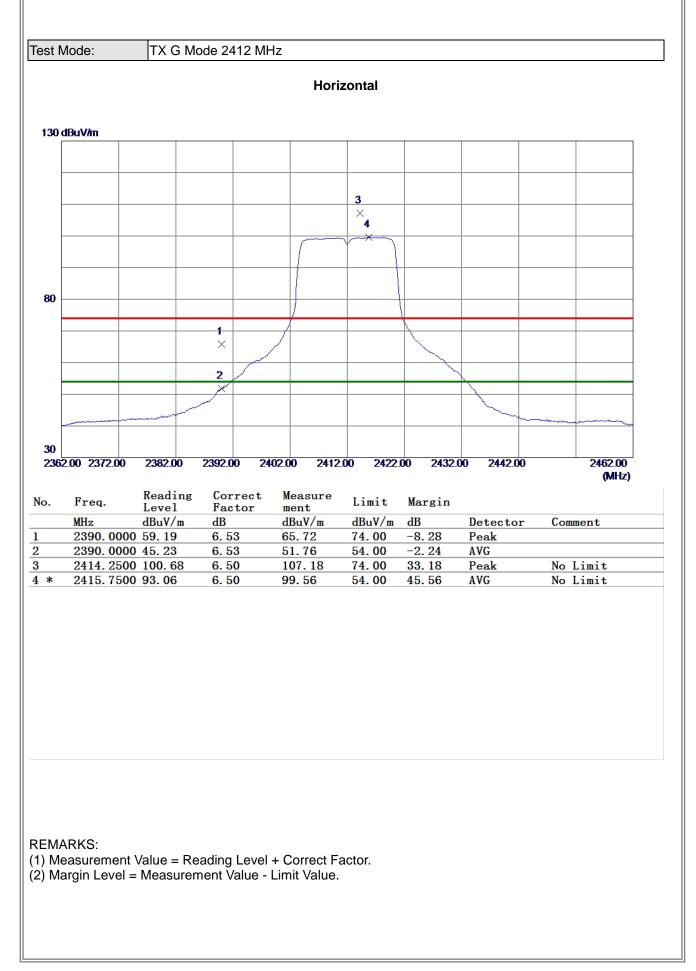




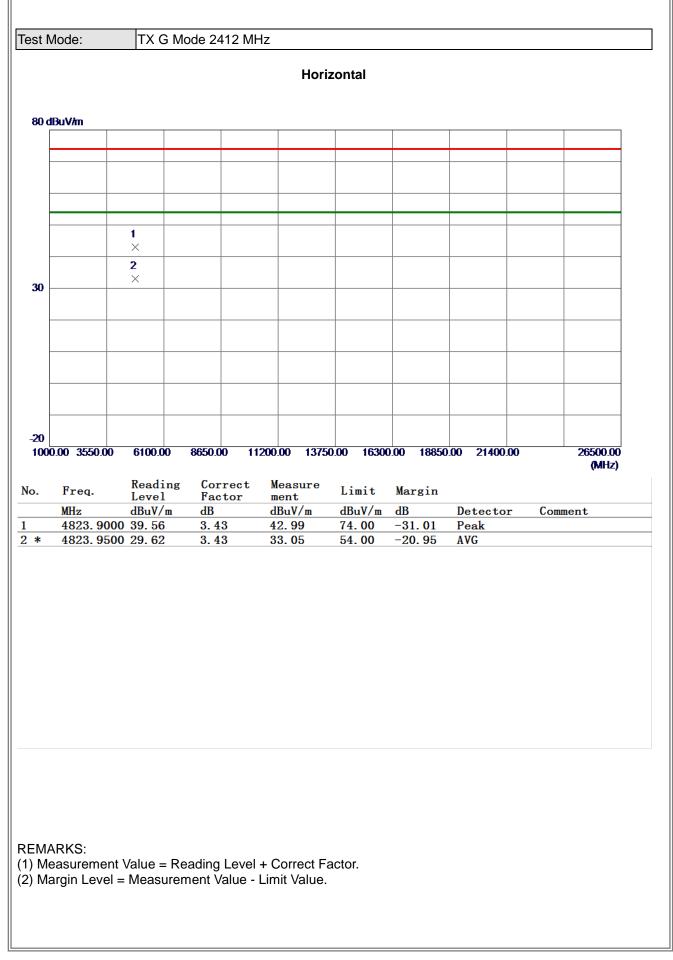




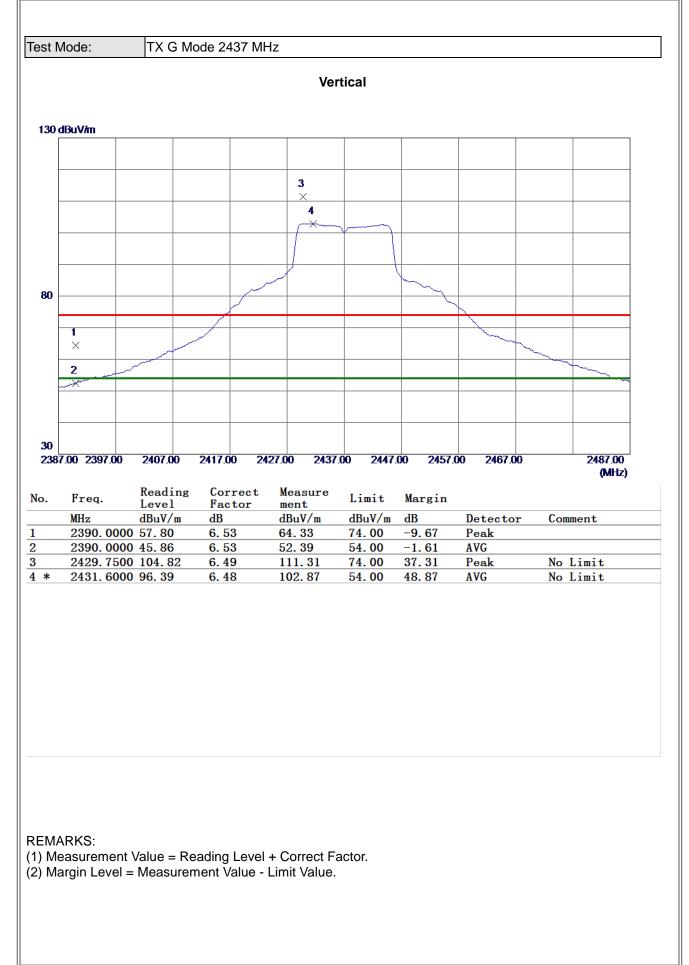




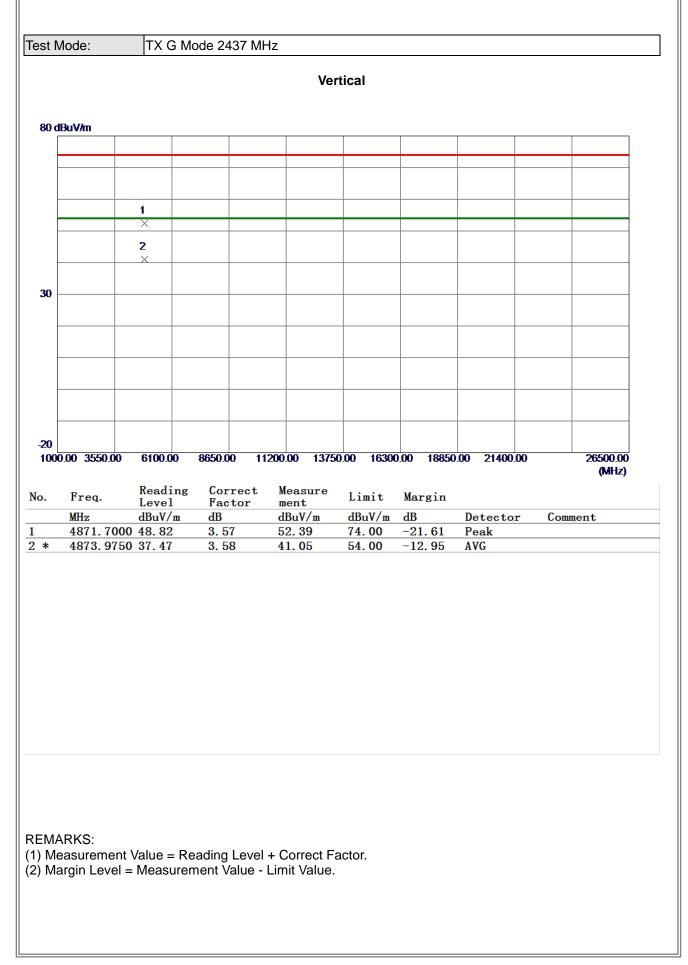




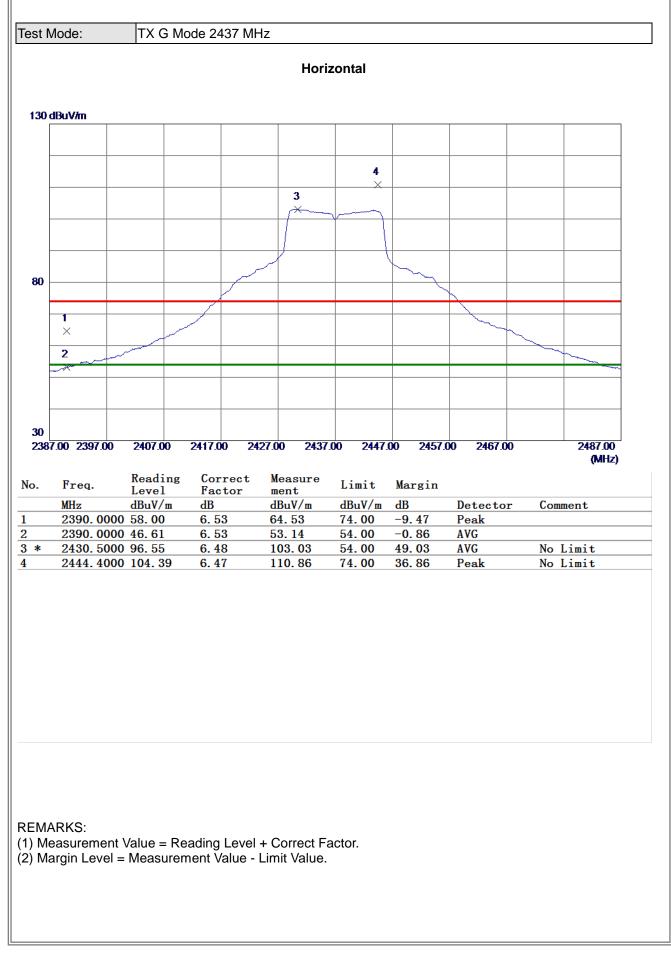




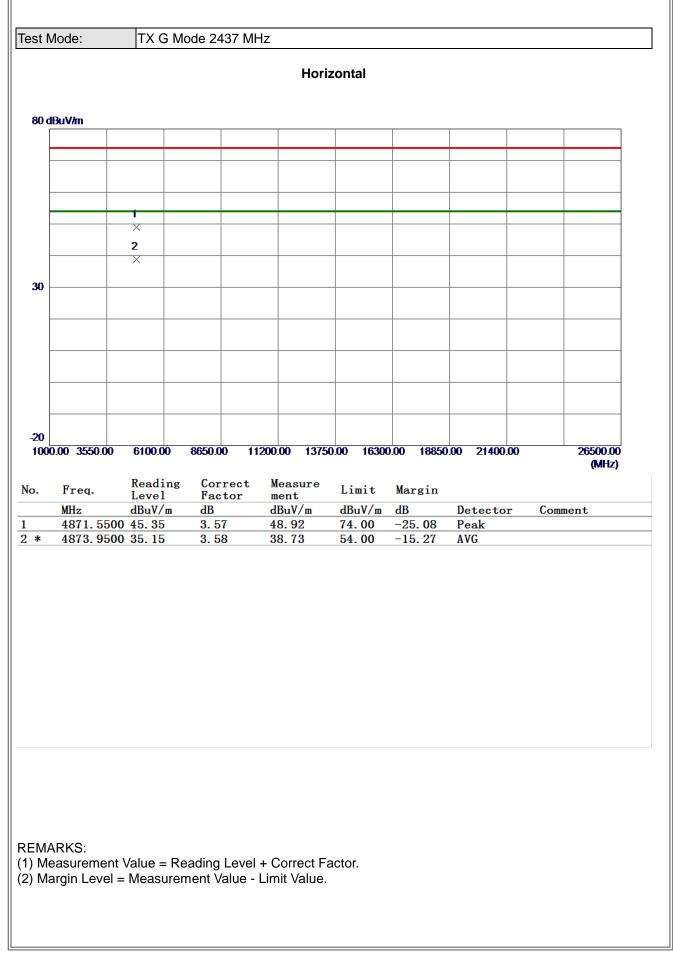




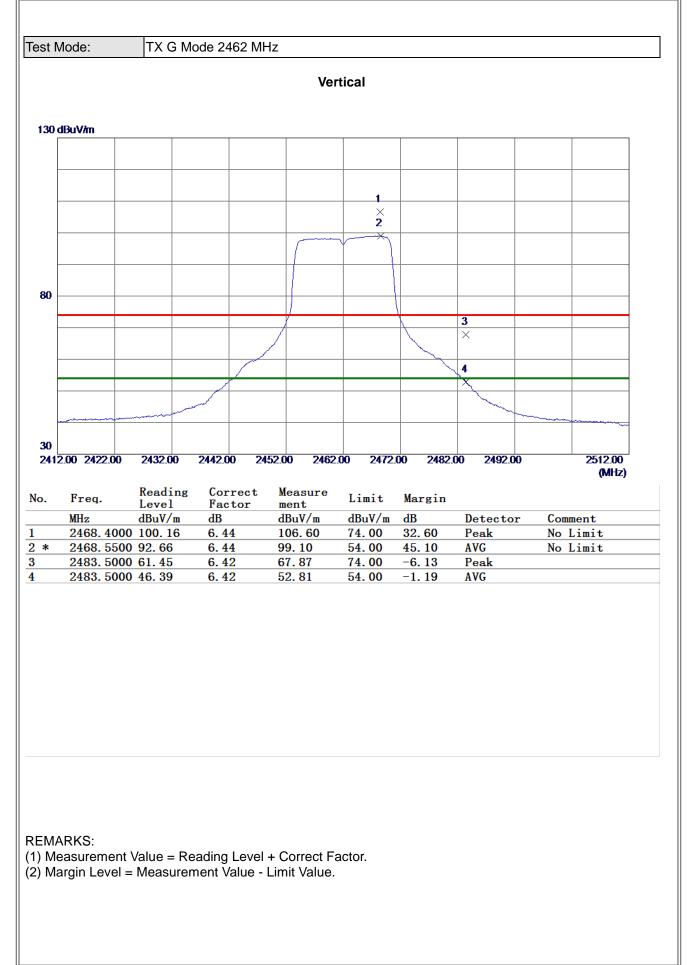




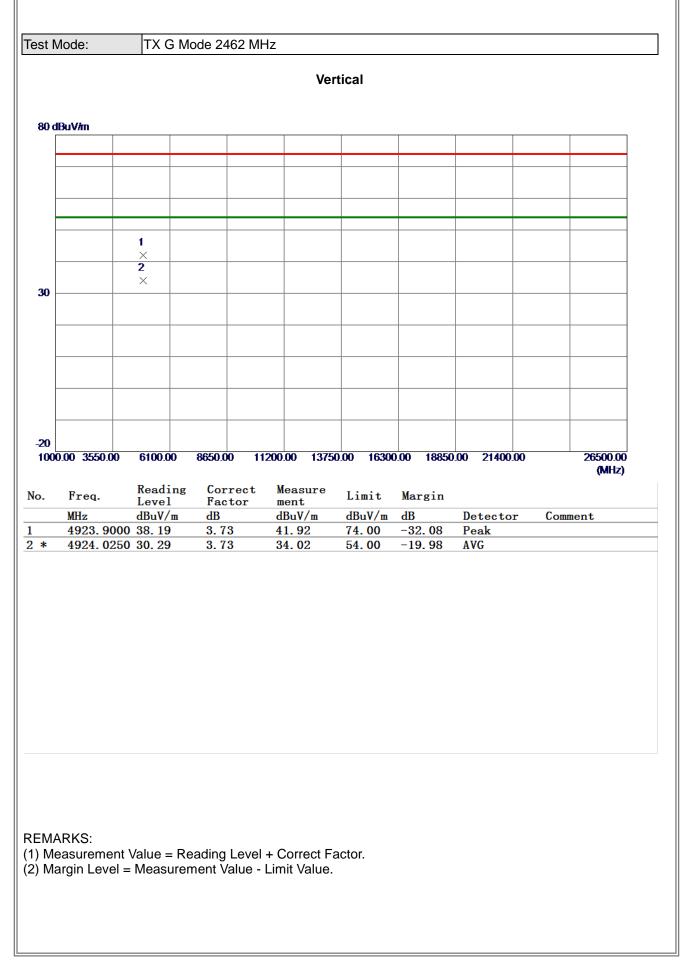




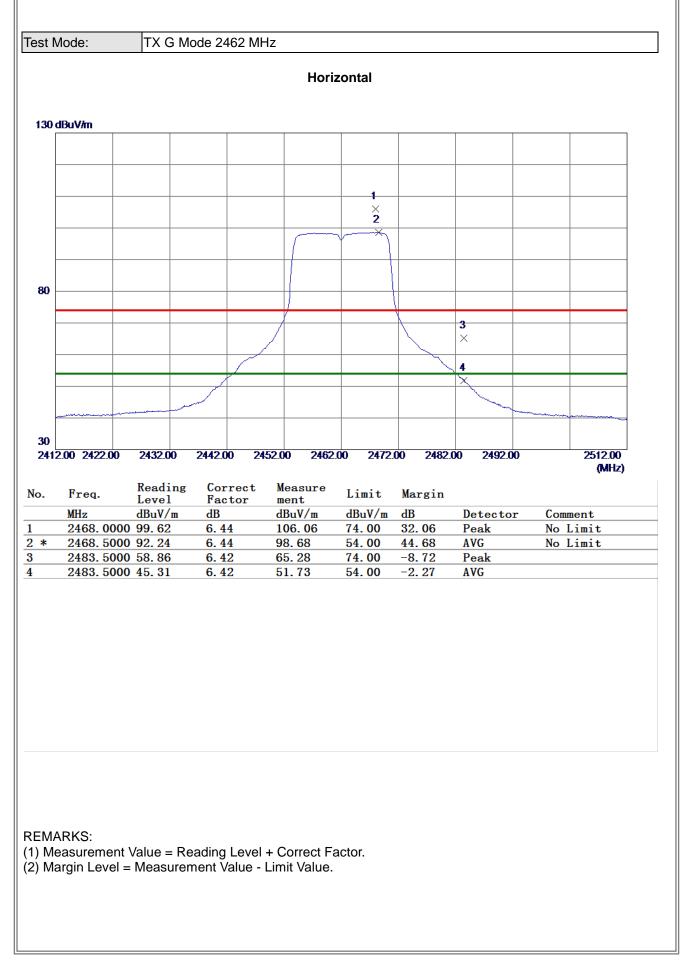




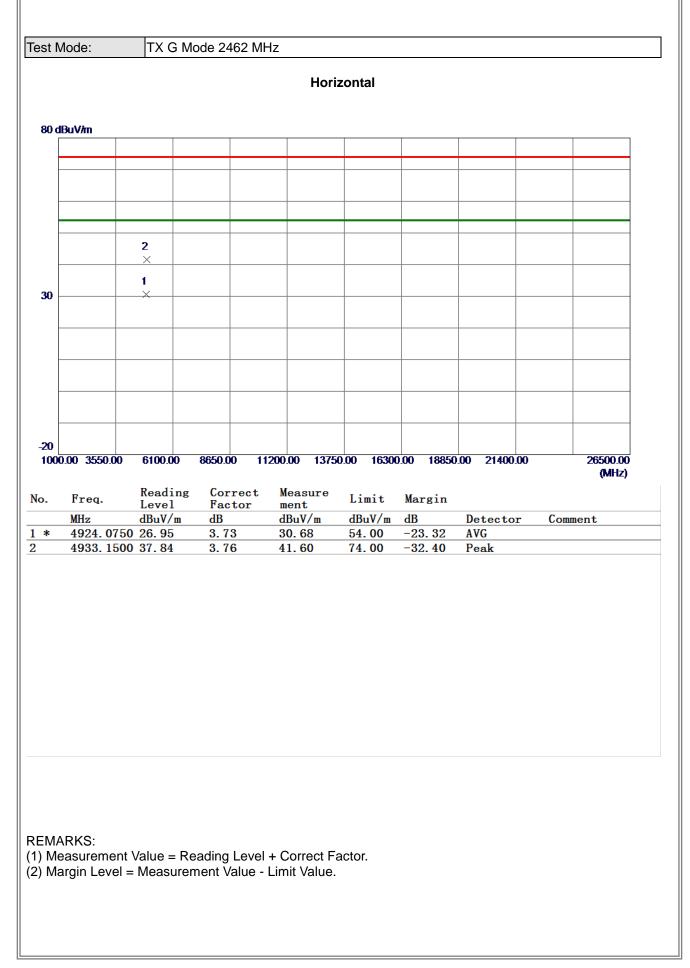




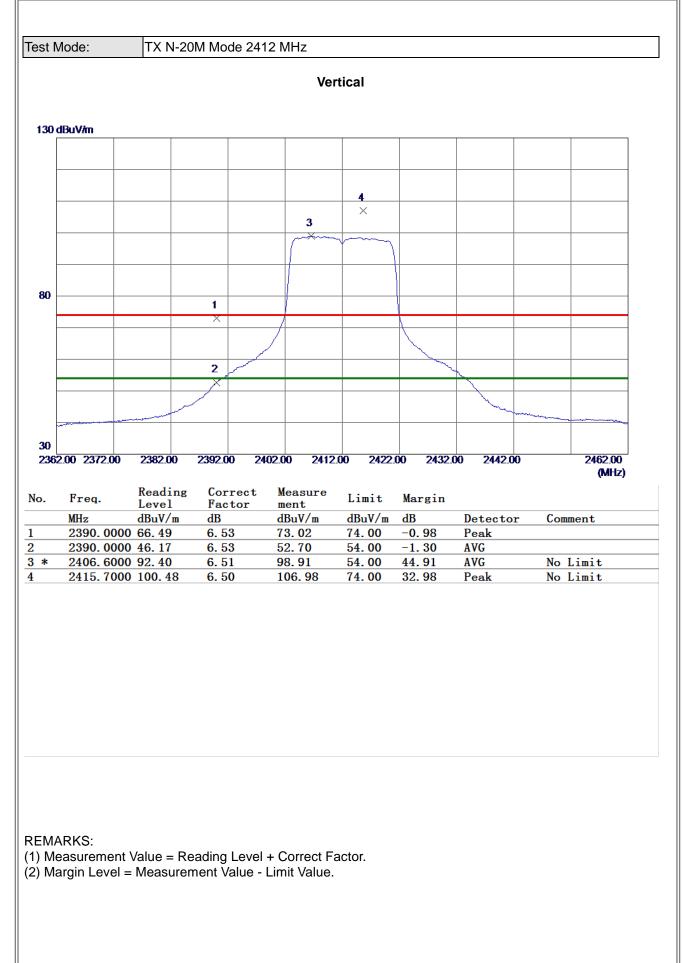




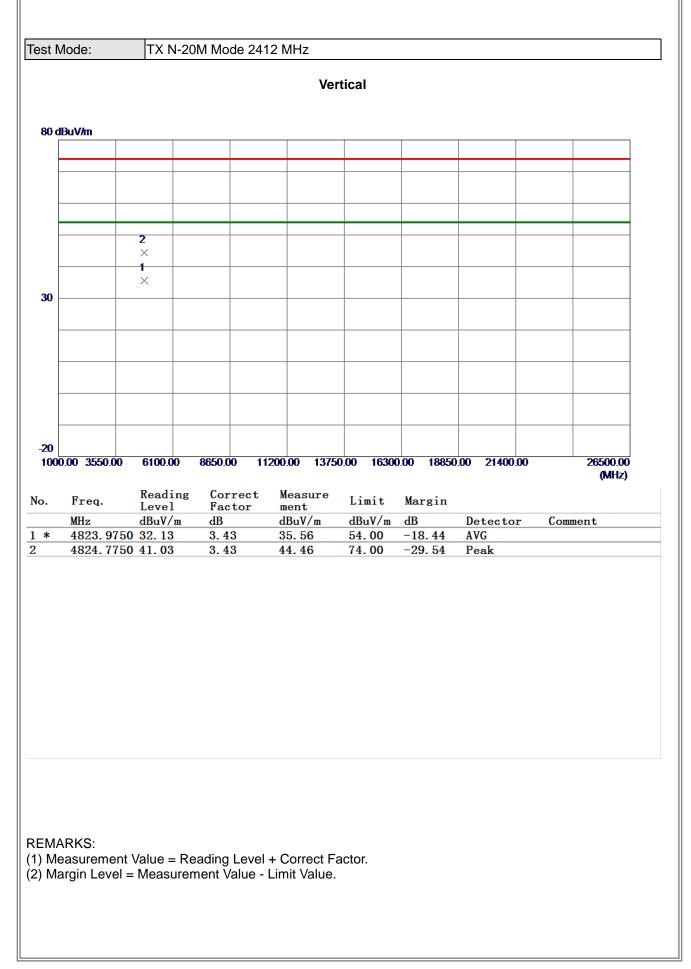




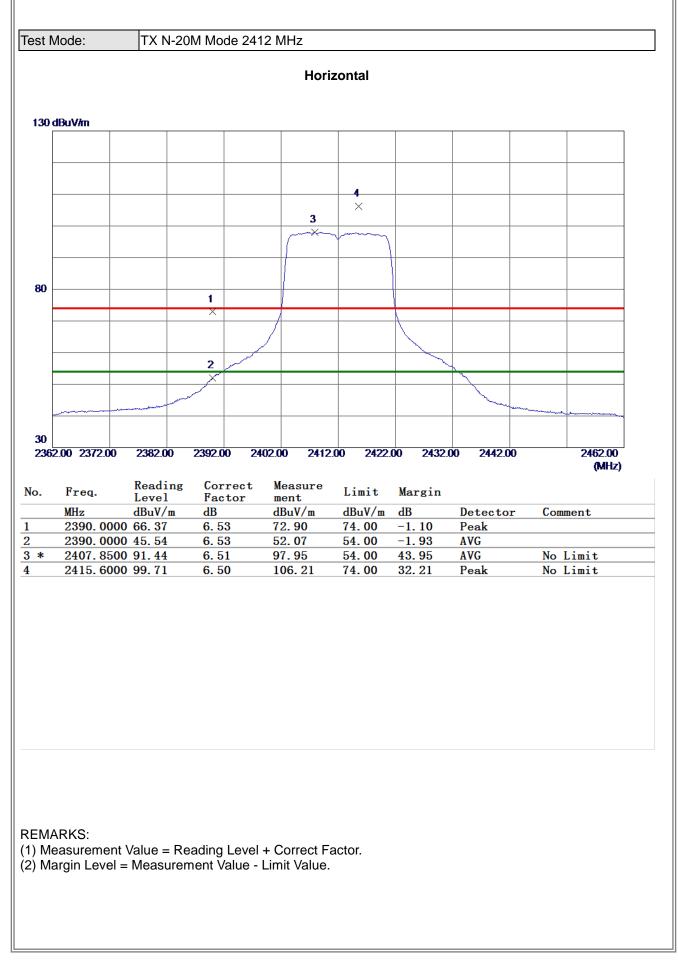




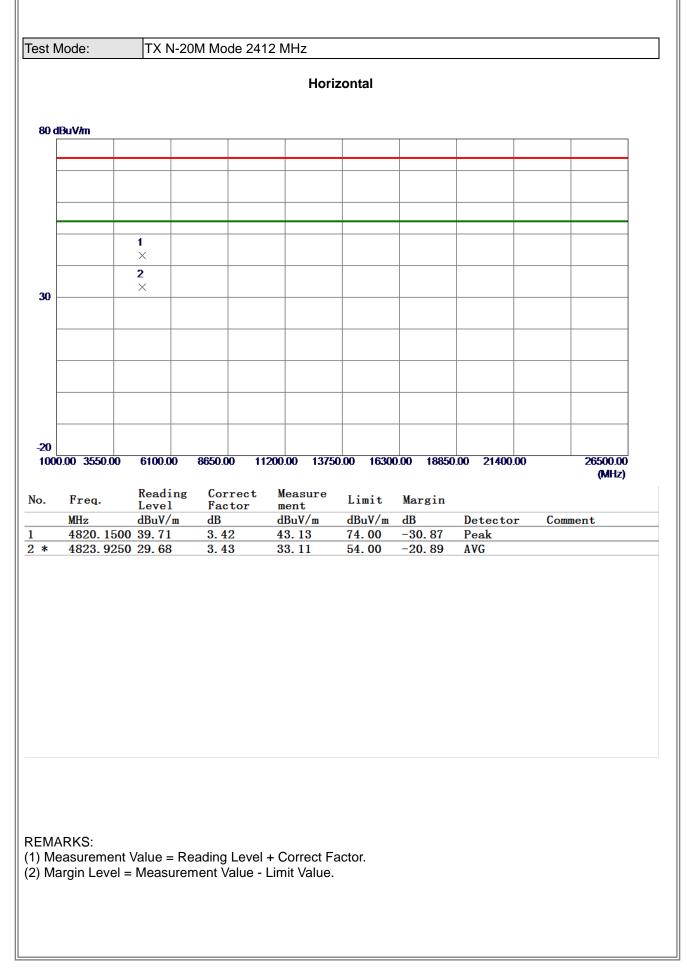




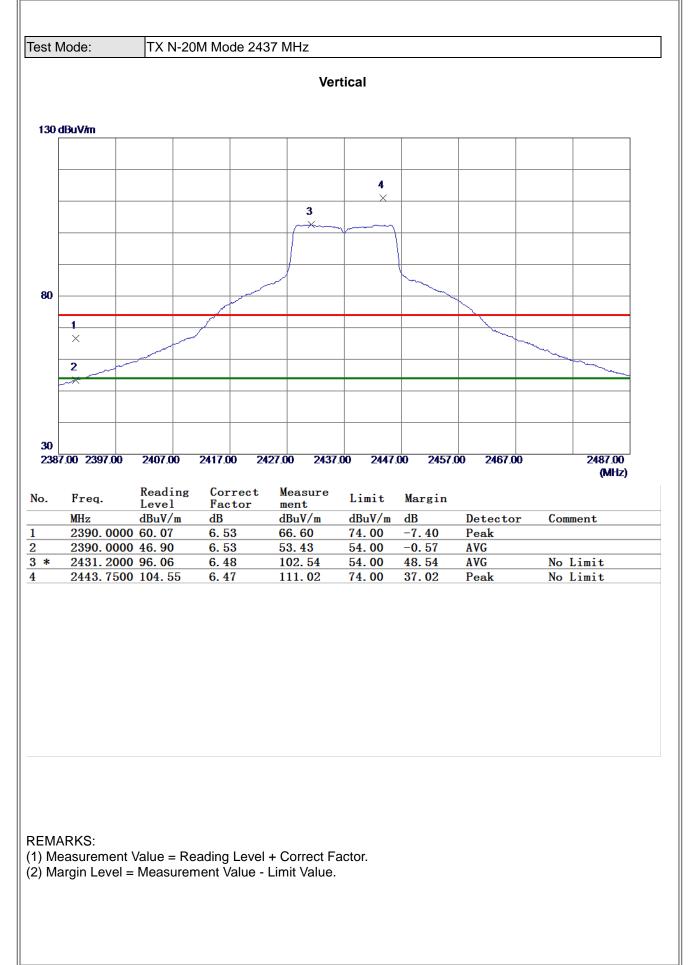




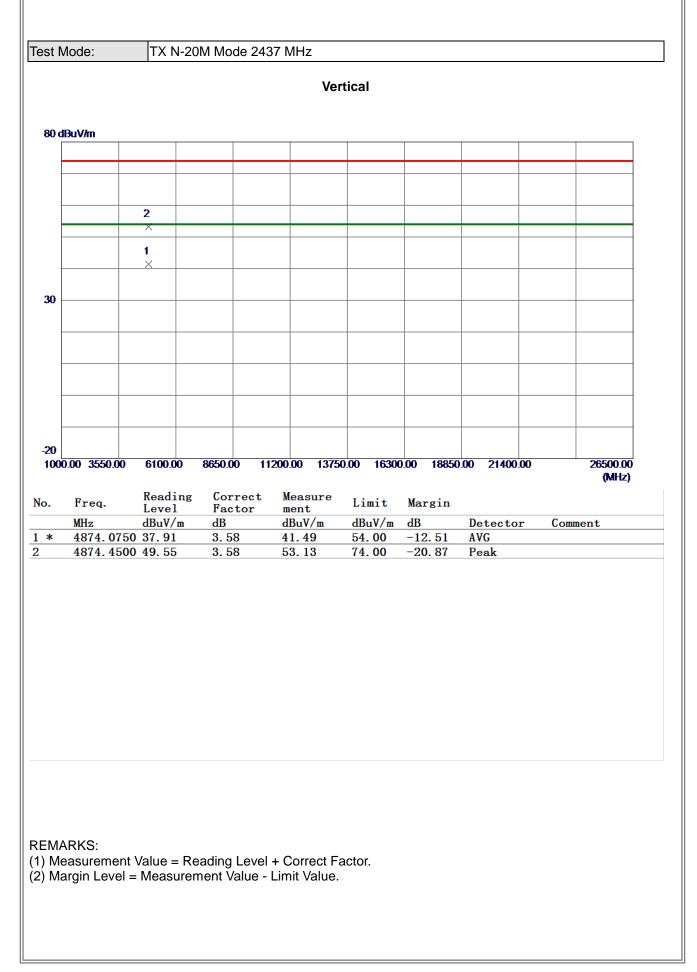




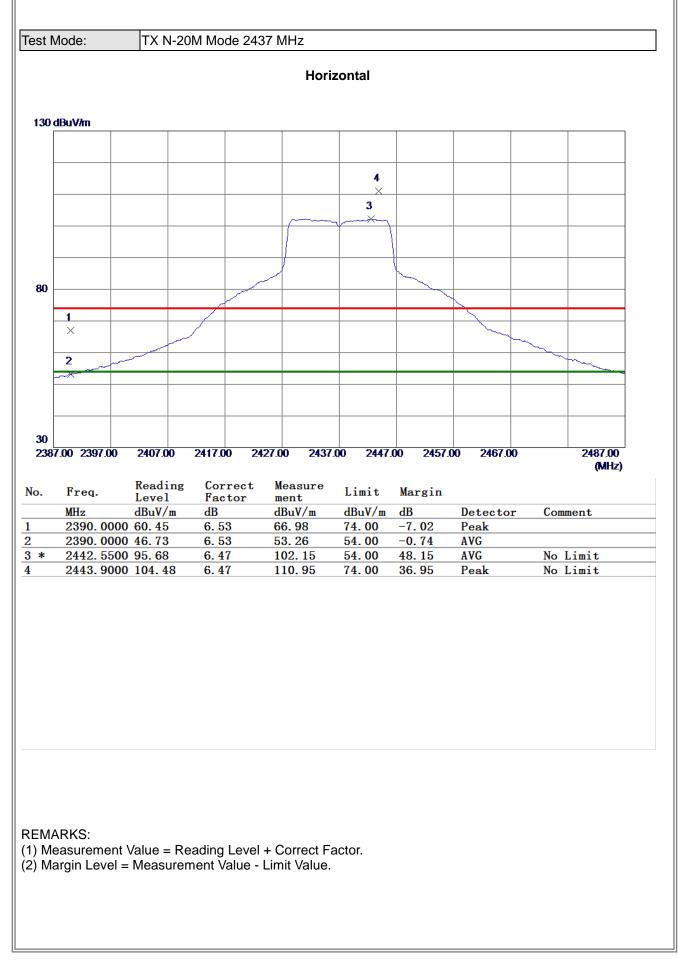




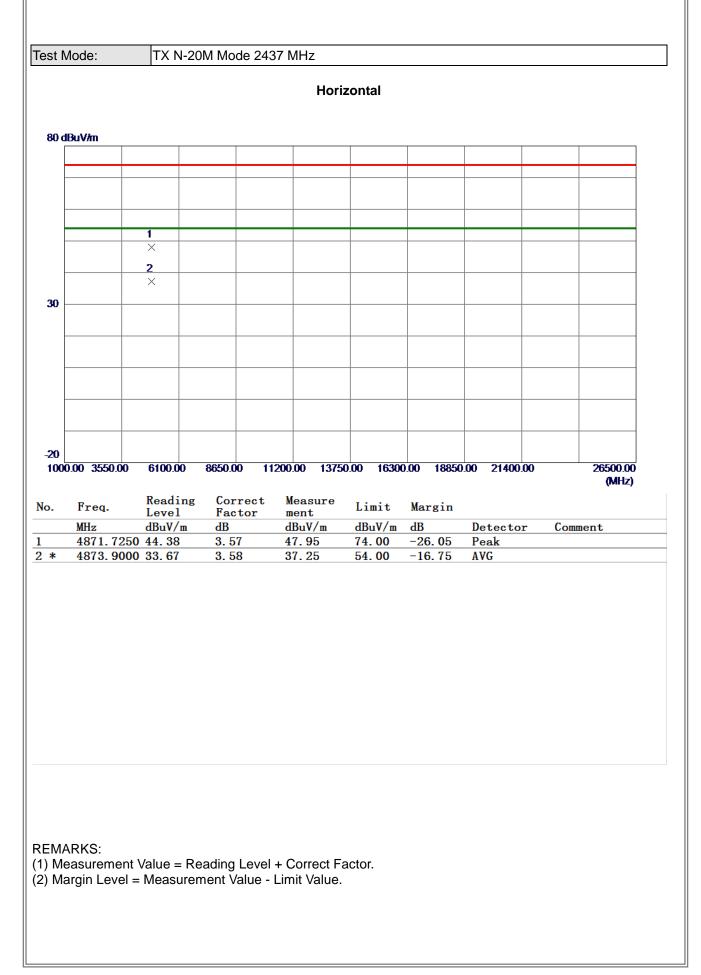




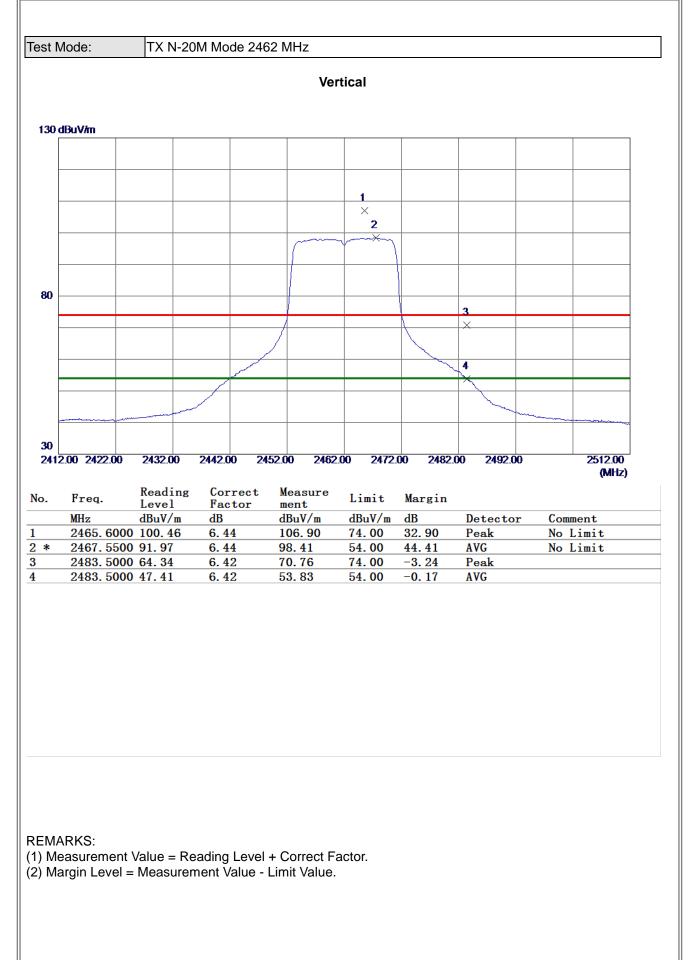




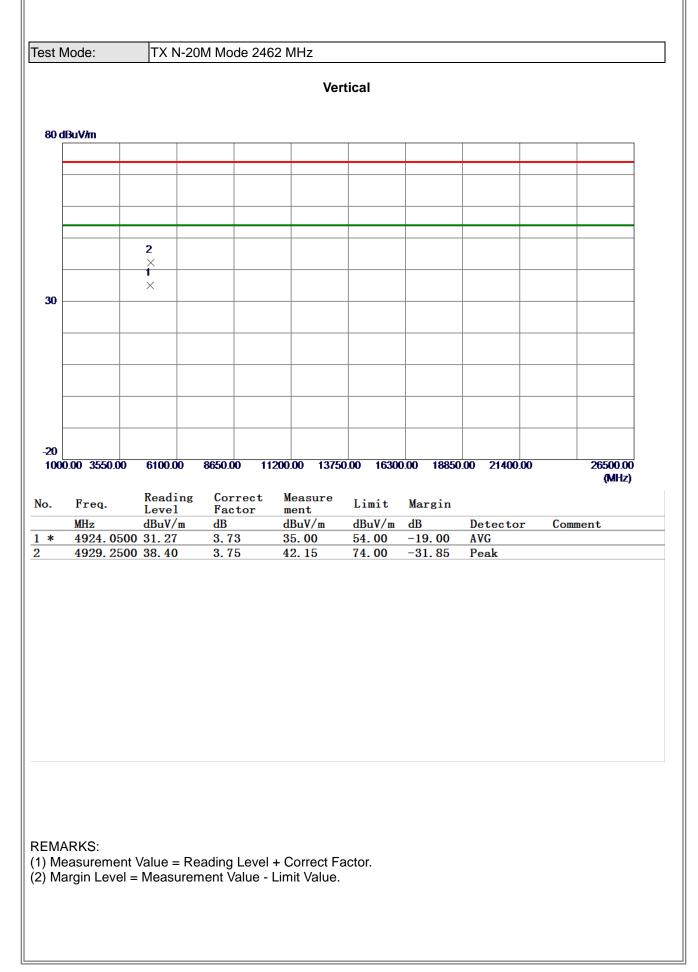




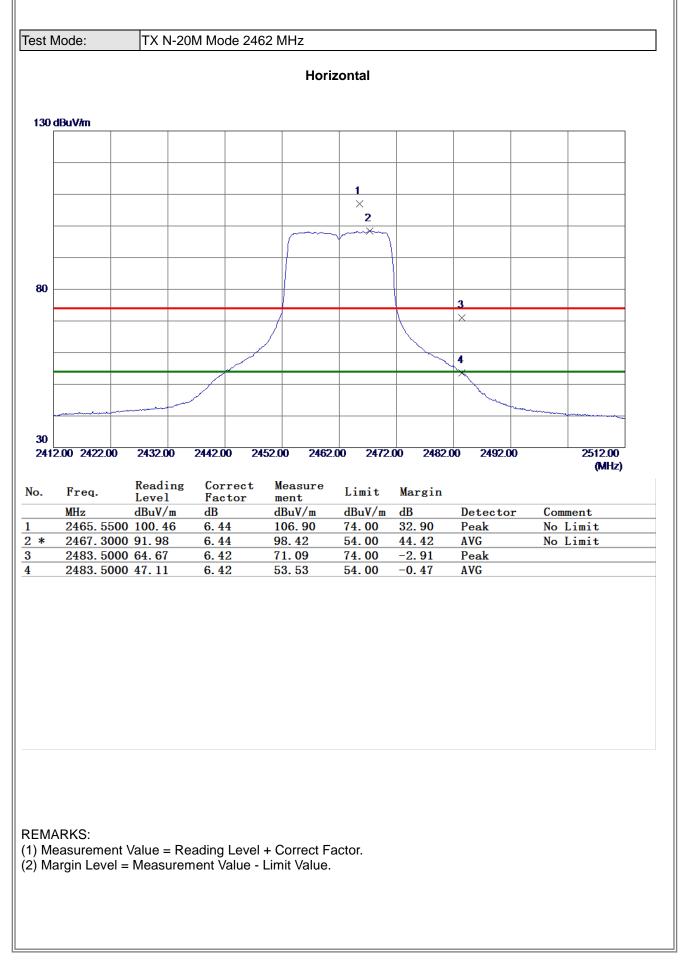




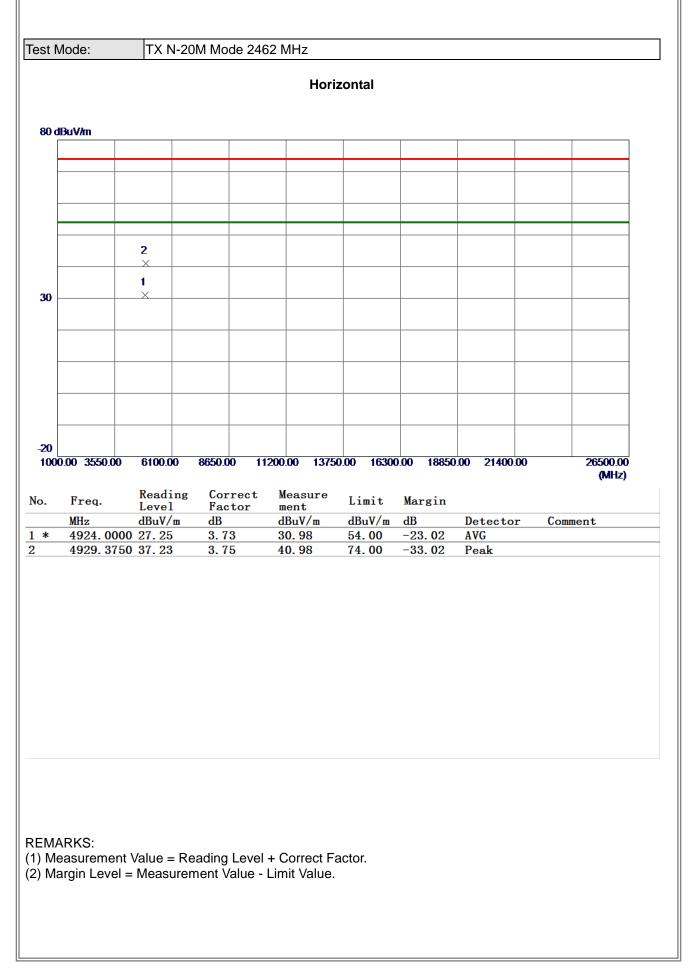




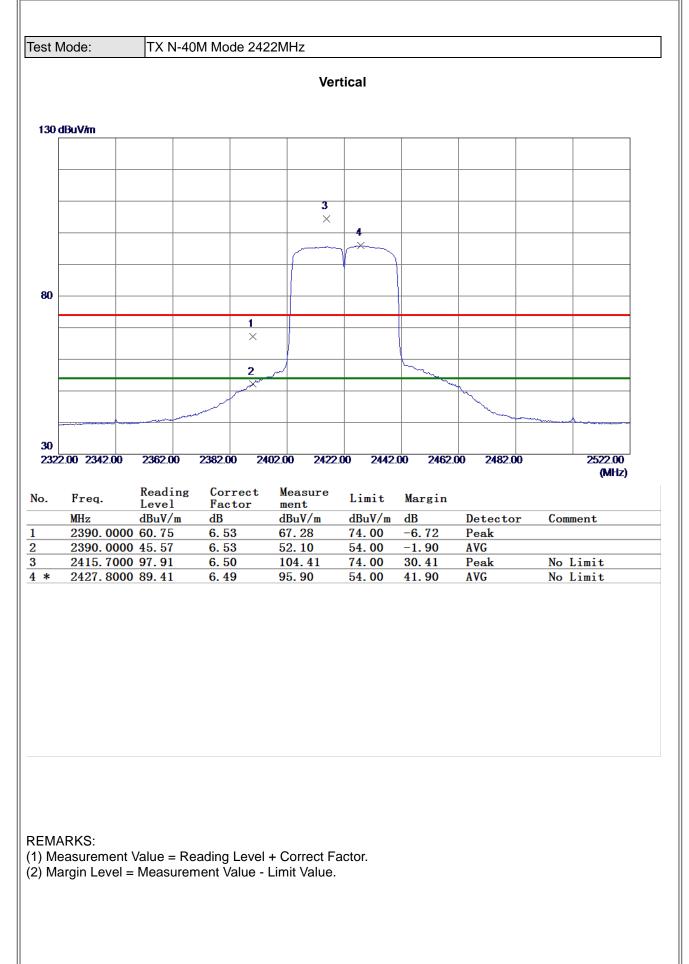




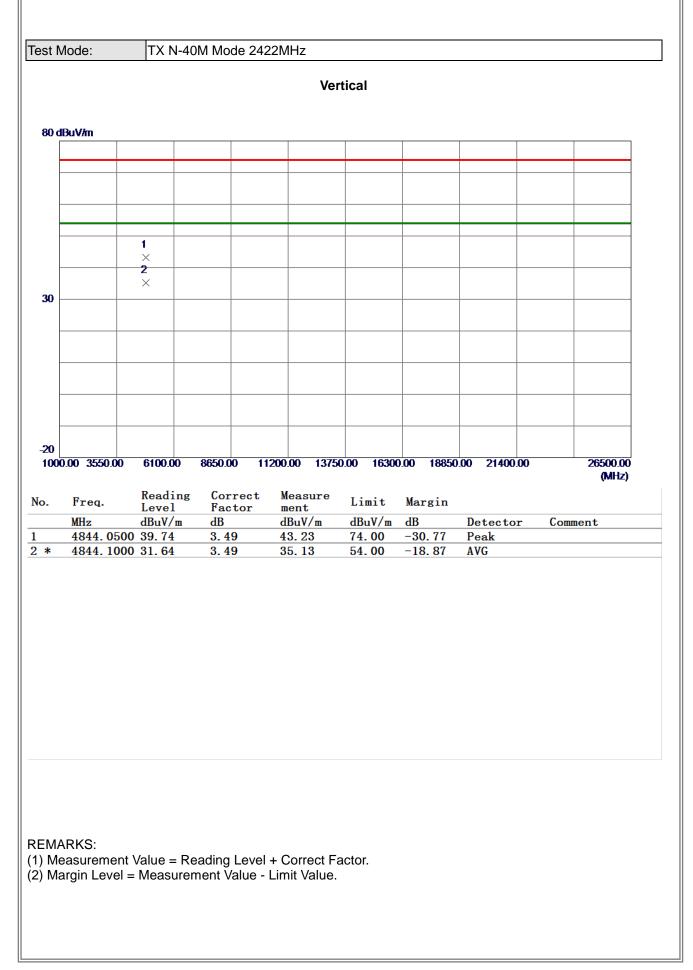




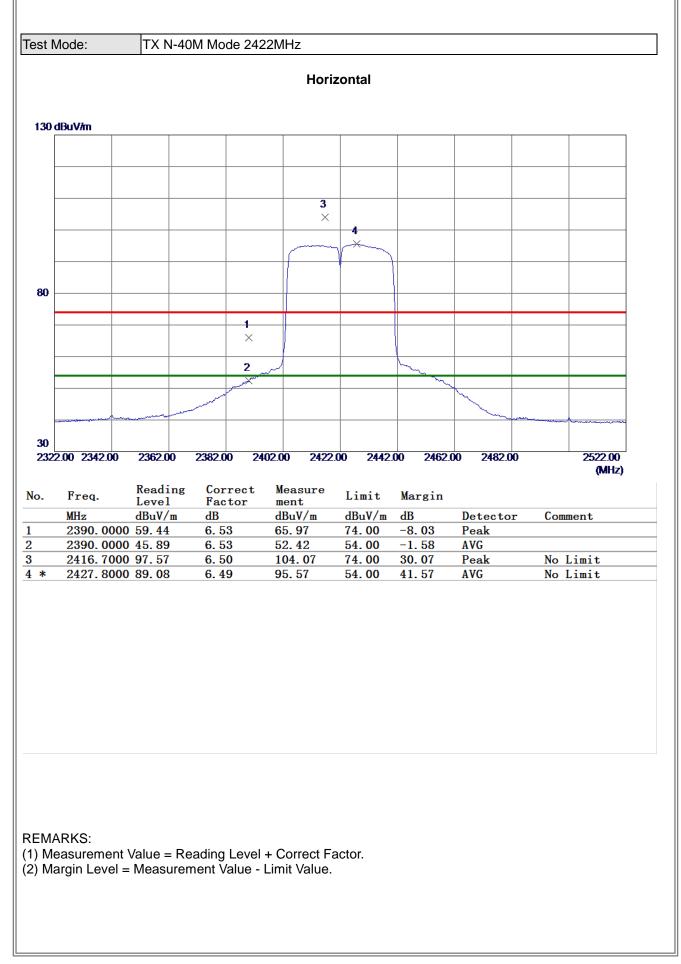




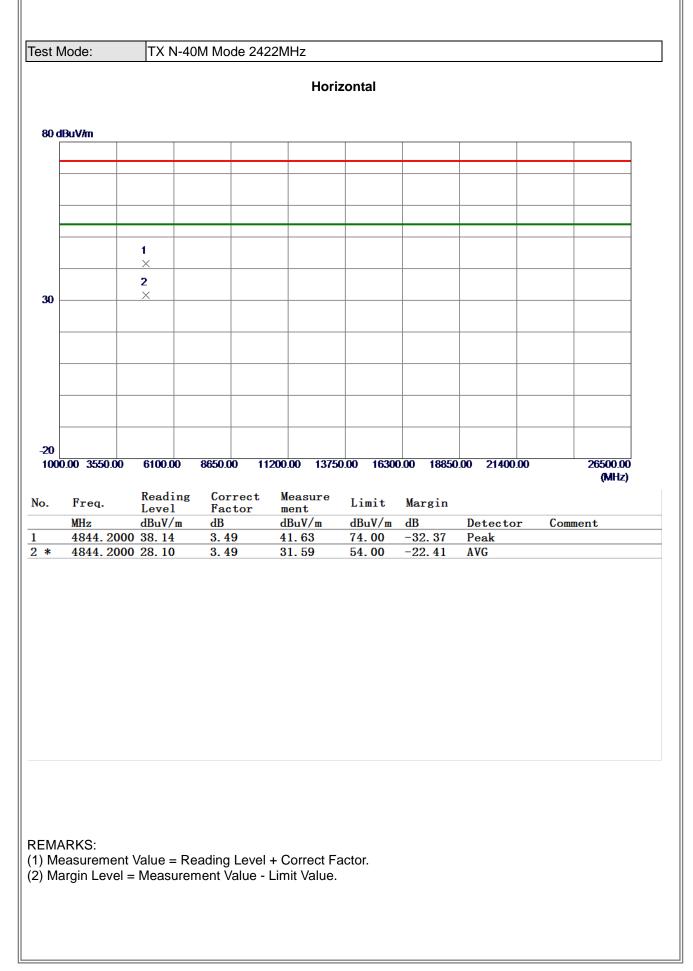




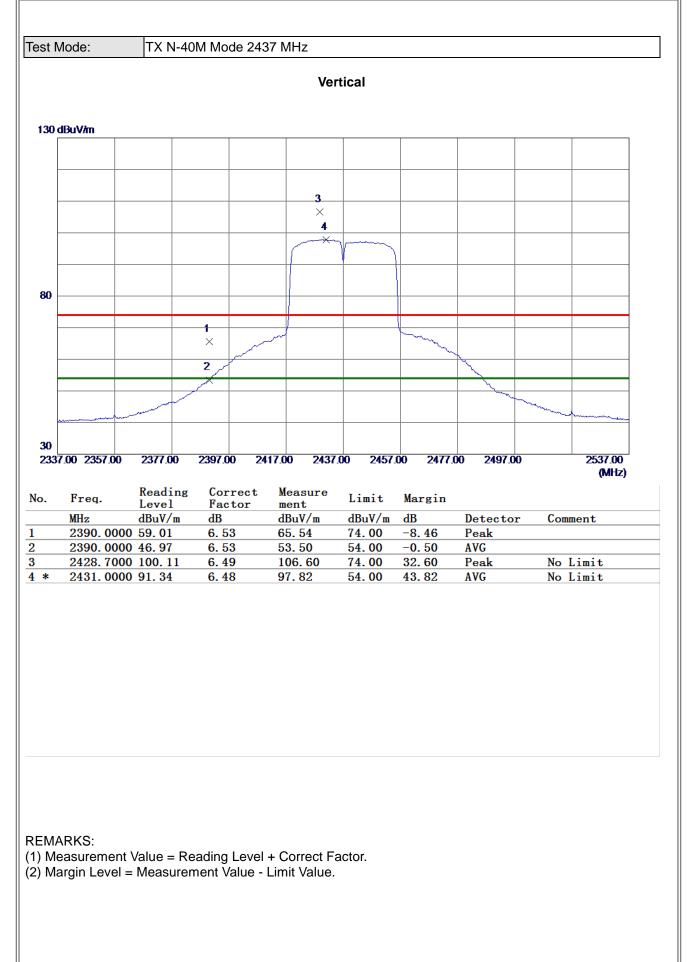




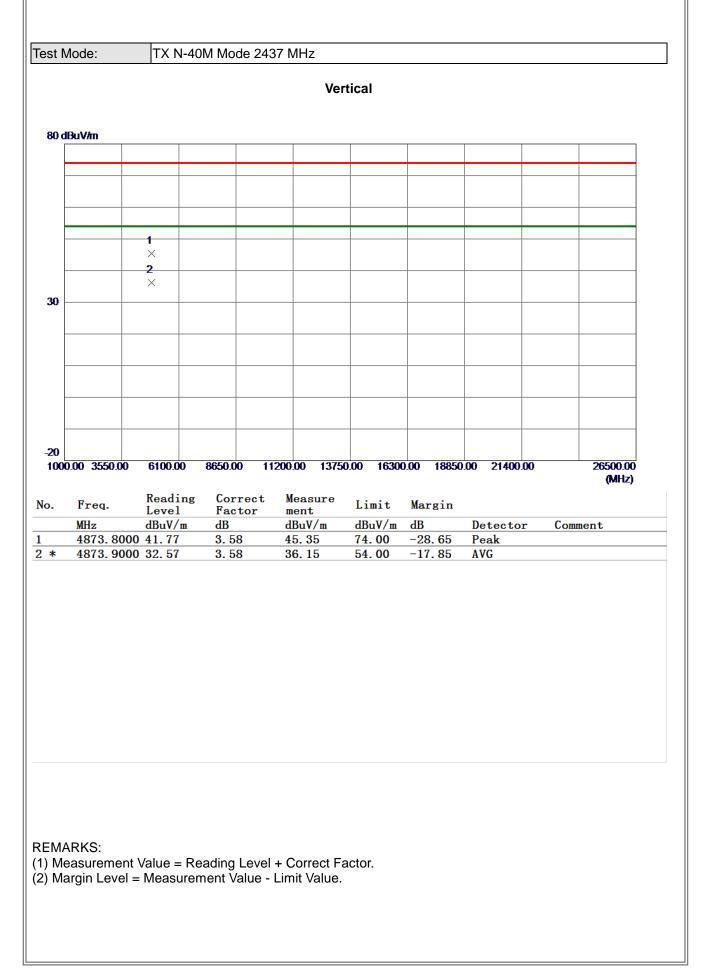




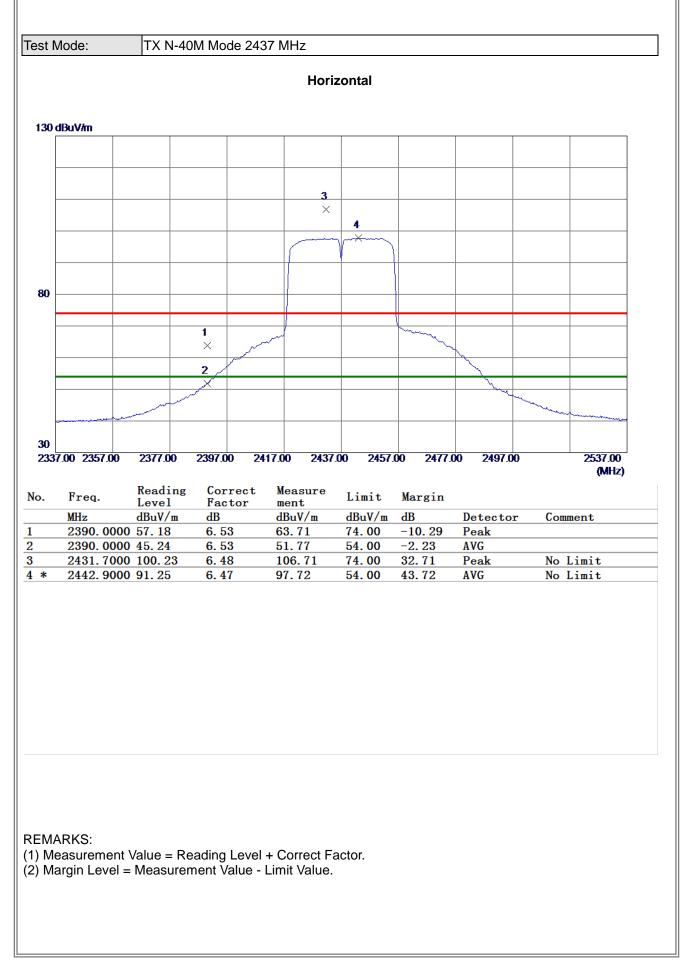




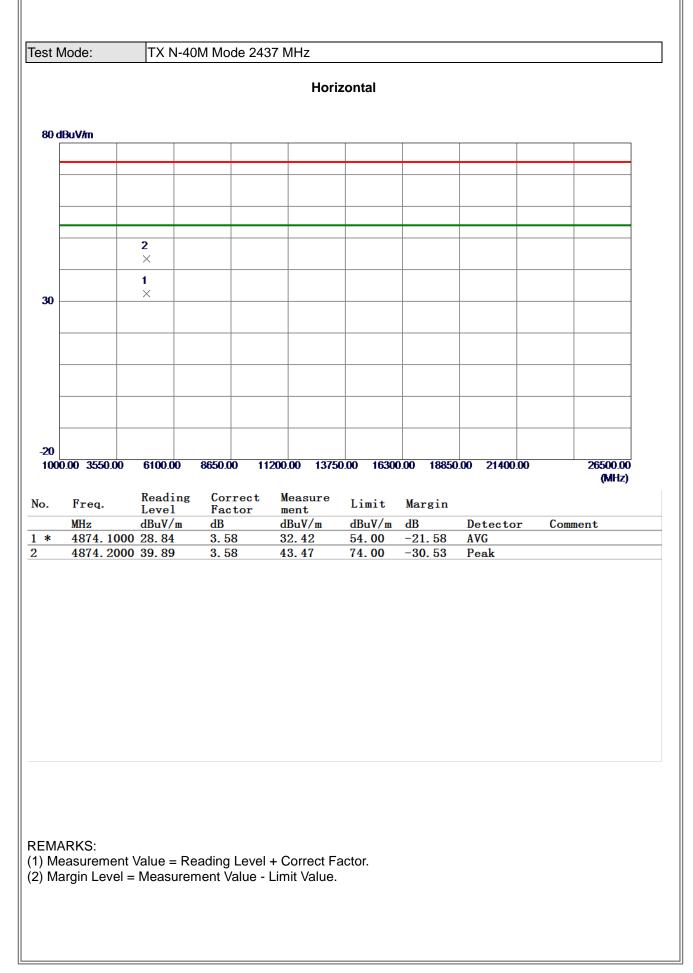




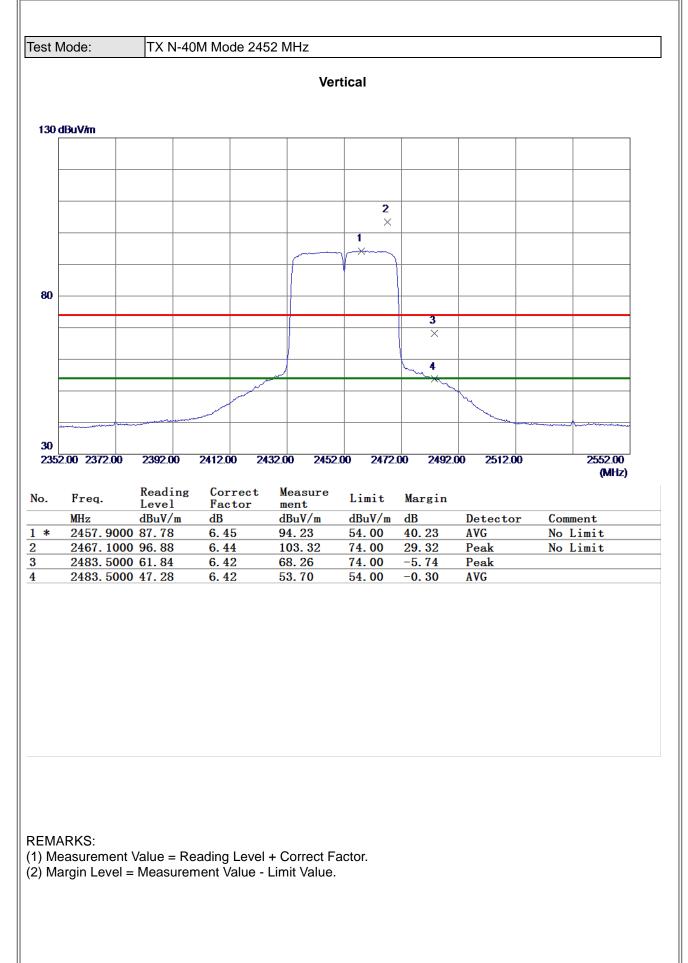




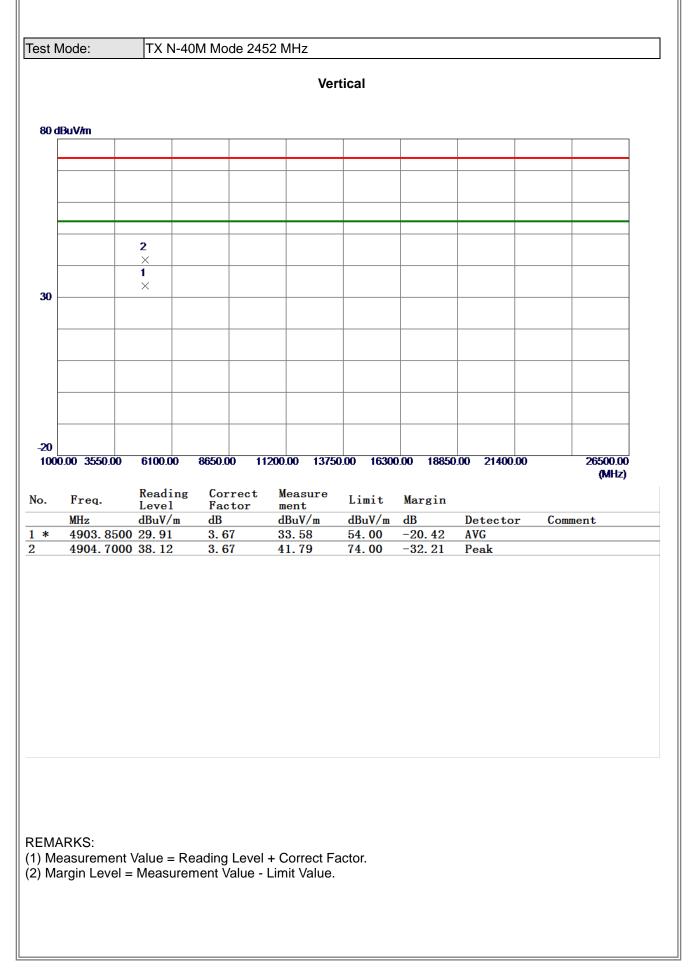




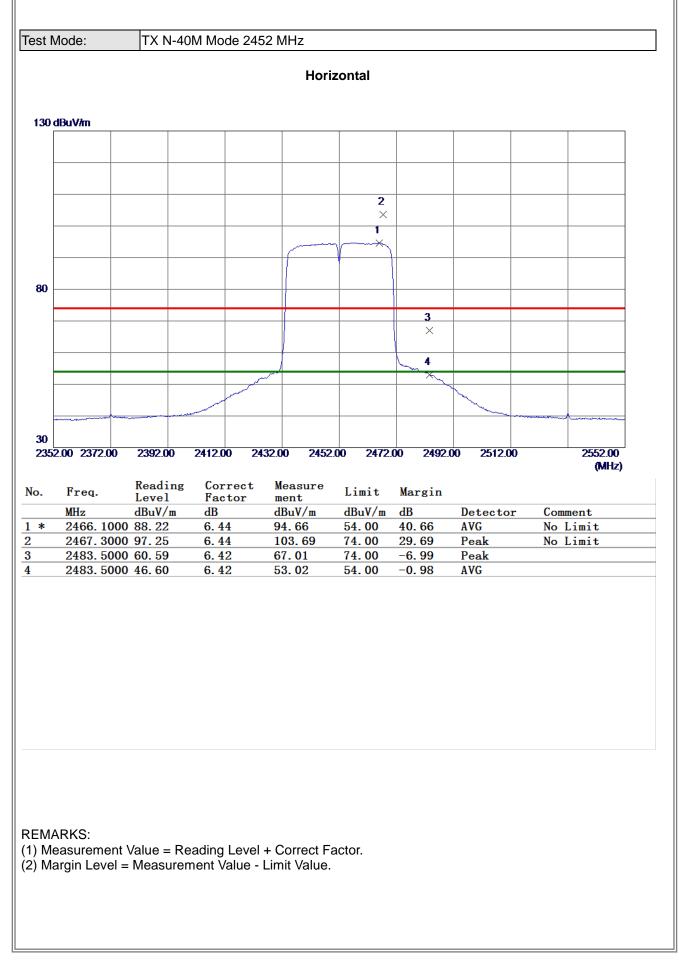




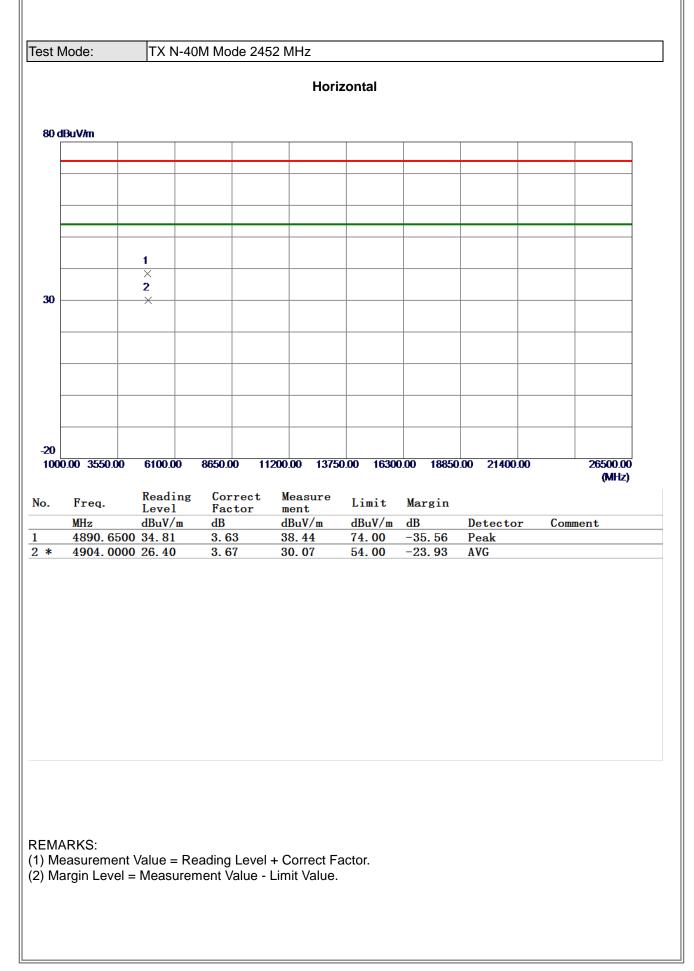








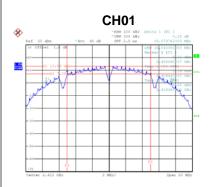




APPENDIX E - BANDWIDTH



٦	TX B Mode					
	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result	
	01	2412	10.08	500	Complies	
	06	2437	10.11	500	Complies	
	11	2462	10.11	500	Complies	







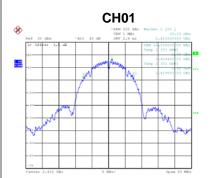
Date: 17.JUN.2019 11:20:29

Date: 17.30N.2019 11:31:1

Test Mode TX B Mode

Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	15.10	Complies
06	2437	15.40	Complies
11	2462	15.20	Complies

CH06



Date: 17.JUN.2019 11:10:22

* 282 368 KE New 12 (12) * 12 30 40 * 12 0 40 * 12 30 40 * 12 0 40

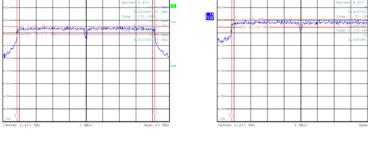


Date: 17.JUN.2019 11:11:14

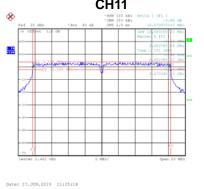
Date: 17.JUN.2019 11:12:09



Test Mode	TX G Mode			
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	16.62	500	Complies
06	2437	16.58	500	Complies
11	2462	16.58	500	Complies
	CU104	CLIOC	0	
**************************************	CHO1	2004 21 dBa *Abts 41 dB 2007 21 0 Mz 10 off2 + c 1.6 dB *Abts 41 dB 2007 2.4 ms 10 off2 + c 1.6 dB 100 ms 000 10 off2 + c 1.6 dB 100 ms 000 ms 10 off2 + c 1.6 dB 100 ms 000 ms 10 off2 + c 1.6 dB 100 ms 000 ms 10 off2 + c 1.0 dB 100 ms 100 ms 10 off2 + c 1.0 dB 100 ms 100 ms 10 off2 + c 1.0 dB 100 ms 100 ms 10 off2 + c 1.0 dB 100 ms 100 ms 10 off2 + c 1.0 dB 100 ms 100 ms 10 off2 + c 1.0 dB 100 ms 100 ms 10 off2 + c 1.0 dB 100 ms 100 ms 10 off2 + c 1.0 dB 100 ms 100 ms 10 off2 + c 1.0 dB 100 ms 100 ms 10 off2 + c 1.0 dB 100 ms 100 ms 10 off2 + c 1.0 dB 100 ms 100 ms	LLA 1 CT] 	H111 MM 10 ME (c) (1 (1) MM 20 ME (c) (1



Date: 17.JUN.2019 11:34:01



Date: 17.JUN.2019 11:32:44

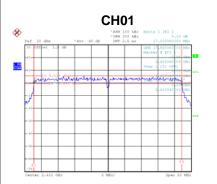
Test Mode TX G Mode

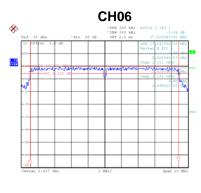
Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	17.10	Complies
06	2437	25.30	Complies
11	2462	17.10	Complies





Test Mode	Test Mode TX N-20M Mode						
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result			
01	2412	17.83	500	Complies			
06	2437	17.83	500	Complies			
11	2462	17.82	500	Complies			







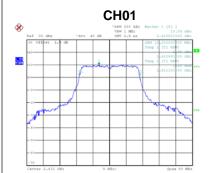
Date: 17.JUN.2019 11:39:22

Date: 17.JUN.2019 11:41:12

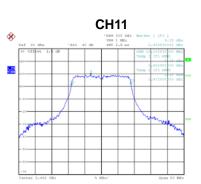
.....

Test Mode TX N-20M Mode

Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	18.20	Complies
06	2437	27.80	Complies
11	2462	18.10	Complies



Certification of the second se



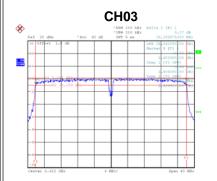
Date: 17.JUN.2019 11:17:00

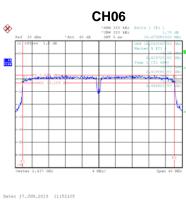
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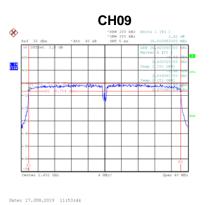
Date: 17.JUN.2019 11:10:12



Test Mode TX N-40M Mode						
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result		
03	2422	36.39	500	Complies		
06	2437	36.48	500	Complies		
09	2452	36.56	500	Complies		







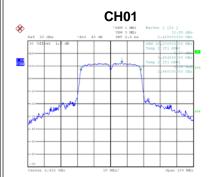
Date: 17.JUN.2019 11:47:19

Date: 17.30N.2019

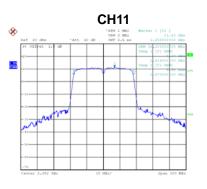
Test Mode TX N-40M Mode

Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
03	2422	36.20	Complies
06	2437	36.40	Complies
09	2452	36.20	Complies

CH06



Date: 17.JUN.2019 11:21:15



Date: 17.JUN.2019 11:20:42

Date: 17.JUN.2019 11:21:54

APPENDIX F - MAXIMUM OUTPUT POWER

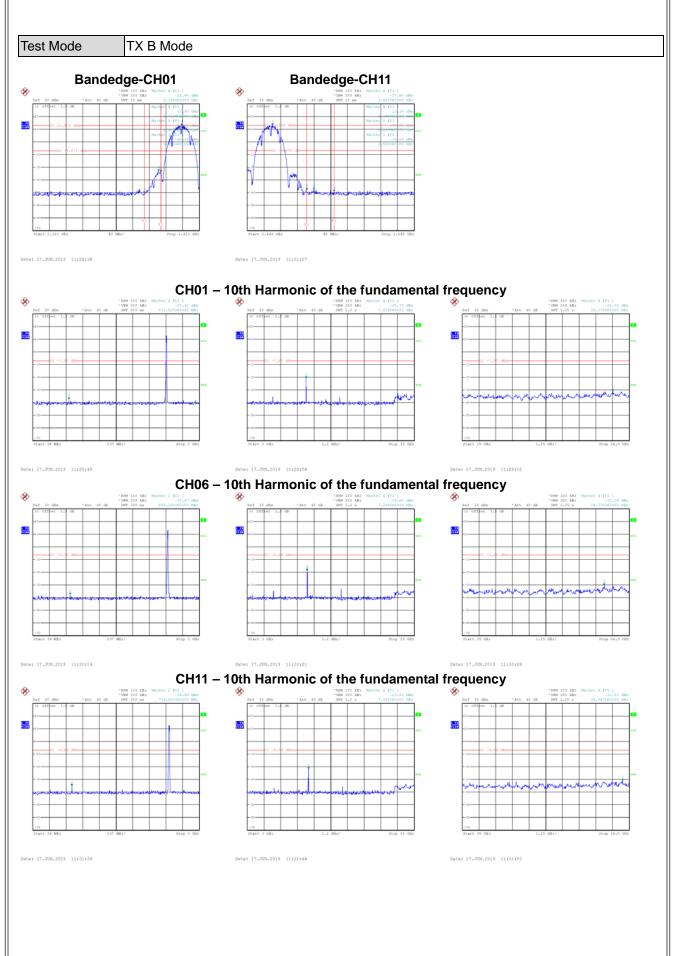


Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 26.16 0.4130 06 2437 26.79 0.4775 11 2462 26.14 0.4111 Tx G Mode Tx G Mode Tx G Mode Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.48 0.5598 06 2437 28.04 0.6368 11 2462 27.03 0.5047 Tx N-20M Mode Tx N-20M Mode Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.68 0.5861 06 2437 28.04 0.6368 01 2412 27.68 0.5861 06 2437 28.04 0.6368 11 2462 27.45 0.5559	Max. Limit (dBm) 30.00 30.00 30.00 30.00 30.00 30.00 30.00 30.00 30.00 30.00	Max. Limit (W) 1.0000 1.0000 1.0000 Max. Limit (W) 1.0000 1.0000 1.0000	Result Complies Complies Complies Result Complies Complies				
06 2437 26.79 0.4775 11 2462 26.14 0.4111 Test Mode TX G Mode TX G Mode Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.48 0.5598 06 2437 28.04 0.6368 11 2462 27.03 0.5047 Test Mode TX N-20M Mode Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.68 0.5861 06 2437 28.04 0.6368	30.00 30.00 Max. Limit (dBm) 30.00 30.00 30.00 30.00	1.0000 1.0000 Max. Limit (W) 1.0000 1.0000 1.0000	Complies Complies Result Complies Complies Complies				
11 2462 26.14 0.4111 Test Mode TX G Mode Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.48 0.5598 06 2437 28.04 0.6368 11 2462 27.03 0.5047 Test Mode TX N-20M Mode Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.68 0.5861 06 2437 28.04 0.6368	30.00 Max. Limit (dBm) 30.00 30.00 30.00 Max. Limit (dBm)	1.0000 Max. Limit (W) 1.0000 1.0000 1.0000	Complies Result Complies Complies Complies				
Test ModeTX G ModeChannelFrequency (MHz)Output Power (dBm)Output Power (W)01 2412 27.48 0.5598 06 2437 28.04 0.6368 11 2462 27.03 0.5047 Test ModeTX N-20M ModeChannelFrequency (MHz)Output Power (dBm)Output Power (W)01 2412 27.68 0.5861 06 2437 28.04 0.6368	Max. Limit (dBm) 30.00 30.00 30.00 30.00 Max. Limit (dBm)	Max. Limit (W) 1.0000 1.0000 1.0000	Result Complies Complies Complies				
Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.48 0.5598 06 2437 28.04 0.6368 11 2462 27.03 0.5047 Test Mode Test Mode Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.68 0.5861 06 2437 28.04 0.6368	(dBm) 30.00 30.00 30.00 Max. Limit (dBm)	(W) 1.0000 1.0000 1.0000	Complies Complies Complies				
Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.48 0.5598 06 2437 28.04 0.6368 11 2462 27.03 0.5047 Test Mode Test Mode Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.68 0.5861 06 2437 28.04 0.6368	(dBm) 30.00 30.00 30.00 Max. Limit (dBm)	(W) 1.0000 1.0000 1.0000	Complies Complies Complies				
Channel (MHz) (dBm) Output Power (W) 01 2412 27.48 0.5598 06 2437 28.04 0.6368 11 2462 27.03 0.5047 Test Mode Test Mode Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.68 0.5861 06 2437 28.04 0.6368	(dBm) 30.00 30.00 30.00 Max. Limit (dBm)	(W) 1.0000 1.0000 1.0000	Complies Complies Complies				
06 2437 28.04 0.6368 11 2462 27.03 0.5047 Test Mode TX N-20M Mode Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.68 0.5861 06 2437 28.04 0.6368	30.00 30.00 Max. Limit (dBm)	1.0000 1.0000 Max. Limit	Complies Complies				
11 2462 27.03 0.5047 Test Mode TX N-20M Mode Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.68 0.5861 06 2437 28.04 0.6368	30.00 Max. Limit (dBm)	1.0000 Max. Limit	Complies				
Test Mode TX N-20M Mode Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.68 0.5861 06 2437 28.04 0.6368	Max. Limit (dBm)	Max. Limit					
Channel Frequency (MHz) Output Power (dBm) Output Power (W) 01 2412 27.68 0.5861 06 2437 28.04 0.6368	(dBm)		Result				
Channel (MHz) (dBm) Output Power (W) 01 2412 27.68 0.5861 06 2437 28.04 0.6368	(dBm)		Result				
01 2412 27.68 0.5861 06 2437 28.04 0.6368	, ,	()					
		1.0000	Complies				
11 2462 27.45 0.5559	30.00	1.0000	Complies				
	30.00	1.0000	Complies				
Test Mode TX N-40M Mode	Test Mode TX N-40M Mode						
Channel Frequency Output Power (W) (MHz) Output Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result				
03 2422 24.47 0.2799	30.00	1.0000	Complies				
06 2437 27.96 0.6252	30.00	1.0000	Complies				
09 2452 27.03 0.5047	30.00	1.0000	Complies				

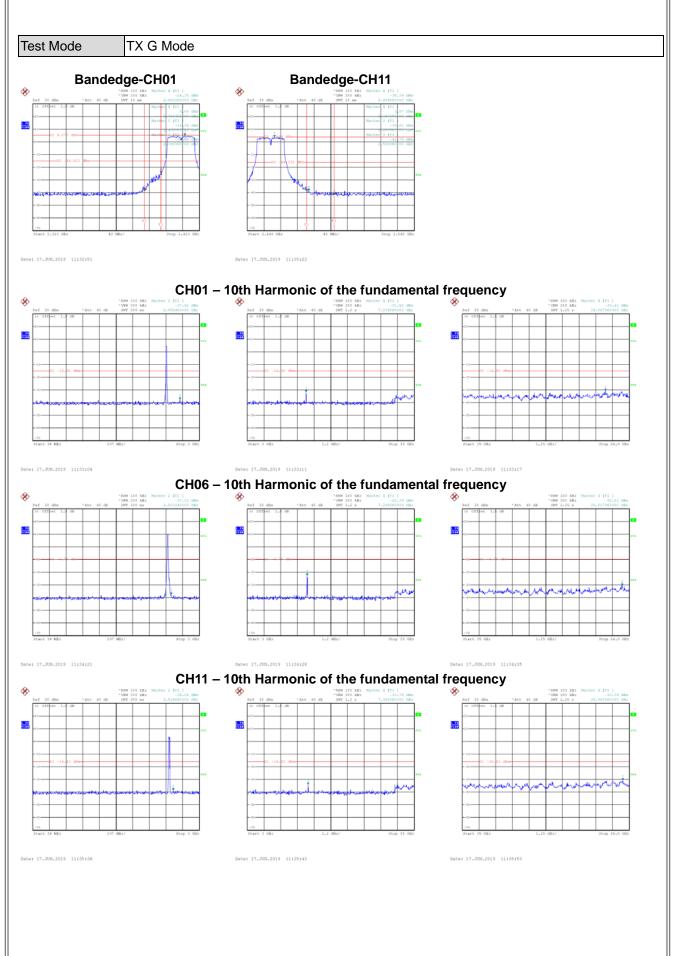


APPENDIX G - CONDUCTED SPURIOUS EMISSIONS

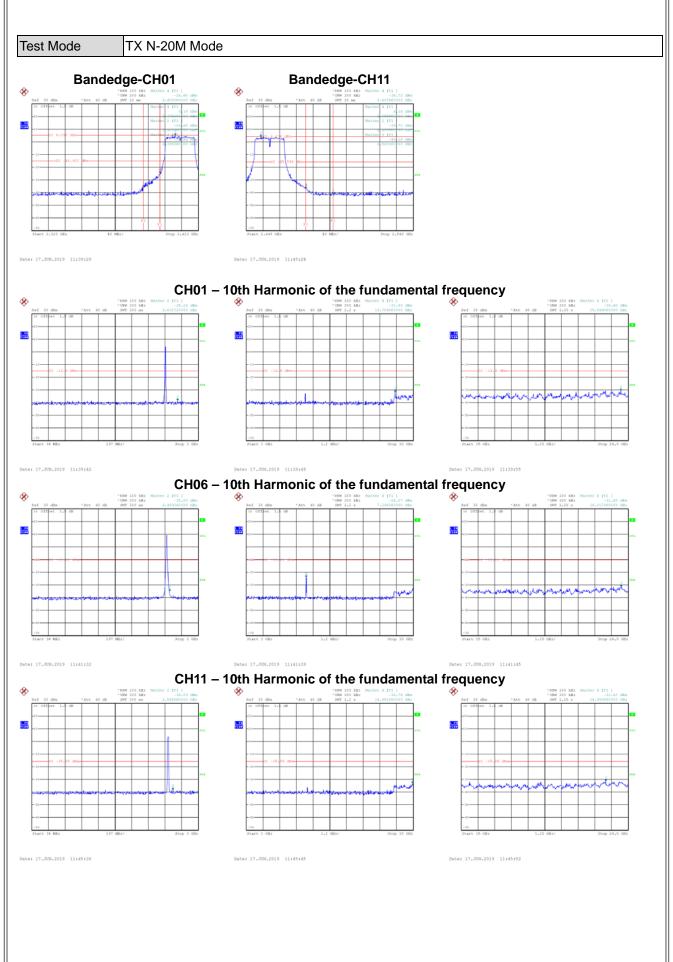




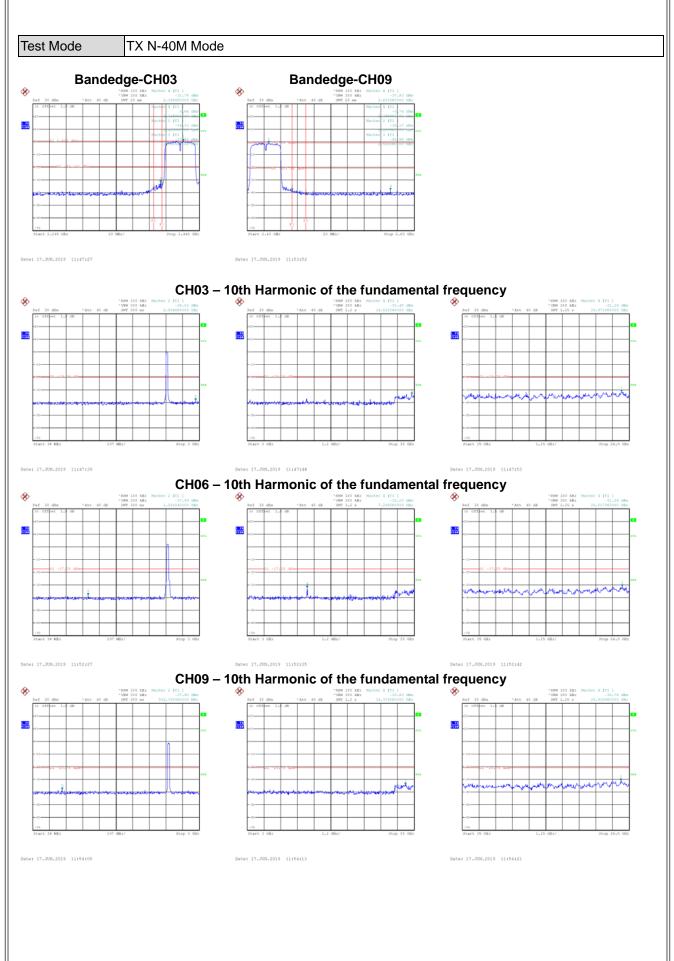










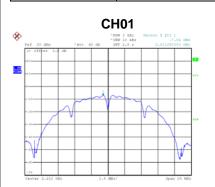




APPENDIX H - POWER SPECTRAL DENSITY



Test Mode	Test Mode TX B Mode							
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result				
01	2412	-7.04	8	Complies				
06	2437	-6.18	8	Complies				
11	2462	-6.85	8	Complies				







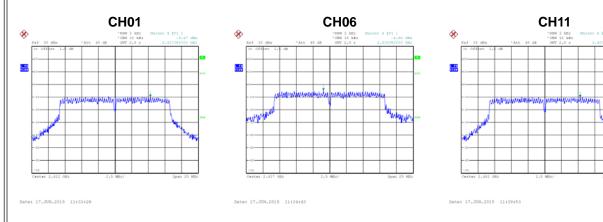
Date: 17.JUN.2019 11:29:11

Date: 17.JUN.2019 11:30:37

Date: 17.JUN.2019 11:32:01

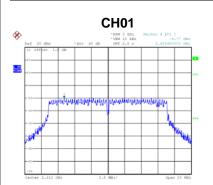
Test Mode TX G Mode

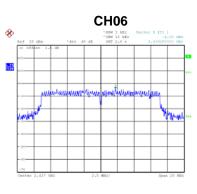
Frequency **Power Spectral Density** Max. Limit Channel Result (MHz) (dBm/3kHz) (dBm/3kHz) 2412 -9.47 Complies 01 8 2437 8 06 -4.56 Complies 11 2462 -9.64 8 Complies

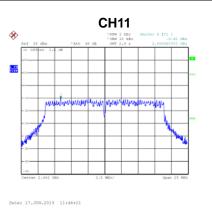




Test Mode	TX N-20M Mode			
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-9.77	8	Complies
06	2437	-4.30	8	Complies
11	2462	-9.92	8	Complies





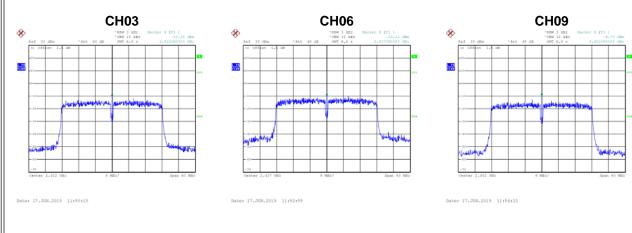


Date: 17.JUN.2019 11:40:04

Date: 17.JUN.2019 11:41:54

Test Mode TX N-40M Mode

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
03	2422	-10.18	8	Complies
06	2437	-10.11	8	Complies
09	2452	-9.73	8	Complies



End of Test Report