

# **FCC Radio Test Report**

# FCC ID: TE7RE105V5

#### This report concerns: Original Grant

Project No. Equipment Brand Name	: 2002C070 : 300Mbps Wi-Fi Range Extender : tp-link
Test Model	: RE105
Series Model	: N/A
Applicant	: TP-Link Technologies Co., Ltd.
Address	: Building 24(floors1,3,4,5) and 28(floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China
Manufacturer	: TP-Link Technologies Co., Ltd.
Address	: Building 24(floors1,3,4,5) and 28(floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China
Date of Receipt	: Feb. 26, 2020
Date of Test	: Feb. 27, 2020 ~ Mar. 24, 2020
Issued Date	: Mar. 30, 2020
<b>Report Version</b>	: R00
Test Sample	: Engineering Sample No.: DG2020022618 for conducted, DG2020022619 for radiated
Standard(s)	<ul> <li>FCC Part15, Subpart C (15.247)</li> <li>ANSI C63.10-2013</li> <li>FCC KDB 558074 D01 15.247 Meas Guidance v05r02</li> </ul>

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.



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## APPENDIX H - POWER SPECTRAL DENSITY

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# **REPORT ISSUED HISTORY**

Report Version	Description	Issued Date
R00	Original Issue.	Mar. 30, 2020

# 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 Average 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:

AC power line conducted emissions test: Α.

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
		30MHz ~ 200MHz	V	4.88
		30MHz ~ 200MHz	Н	4.14
DG-CB03	CISPR	200MHz ~ 1,000MHz	V	4.62
DG-CB03		200MHz ~ 1,000MHz	Н	4.80
		1GHz ~ 6GHz	I	4.58
		6GHz ~ 18GHz	I	5.18
		18GHz ~ 26.5GHz	-	3.62
		26.5GHz ~ 40GHz	-	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	Sheldon Ou
Radiated Emissions-9K-30MHz	25°C	60%	AC 120V/60Hz	Sheldon Ou
Radiated Emissions-30 MHz to 1GHz	24°C	68%	AC 120V/60Hz	Kwok Guo
Radiated Emissions-Above 1000 MHz	25°C	60%	AC 120V/60Hz	Kwok Guo
Bandwidth	25°C	60%	AC 120V/60Hz	Hayden Chen
Maximum Average Output Power	25°C	60%	AC 120V/60Hz	Hayden Chen
Conducted Spurious Emissions	25°C	60%	AC 120V/60Hz	Hayden Chen
Power Spectral Density	25°C	60%	AC 120V/60Hz	Hayden Chen

# 2. GENERAL INFORMATION

#### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	300Mbps Wi-Fi Range Extender
Brand Name	tp-link
Test Model	RE105
Series Model	N/A
Model Difference(s)	N/A
Power Source	AC Mains.
Power Rating	100-240V~ 50/60Hz
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 300 Mbps
Maximum Average Output Power	IEEE 802.11b: 24.81 dBm (0.3027 W) IEEE 802.11g: 24.30 dBm (0.2692 W) IEEE 802.11n (HT20): 23.88 dBm (0.2443 W) IEEE 802.11n (HT40): 21.30 dBm (0.1349 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)							
		CH03	- CH09 for IE	EE 802.11	n (HT40)		
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	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	P/N	Antenna Type	Connector	Gain (dBi)
1	<b>TP-LINK</b> °	3101503088	Dipole	IPEX	2.25
2	<b>TP-LINK</b> °	3101502809	Dipole	IPEX	2.25

Note:

This EUT supports CDD, and all antennas have the same gain, so Directional gain= $G_{ANT}$ +Array Gain, For power spectral density measurements, Array Gain=10log( $N_{ANT}/N_{SS}$ ) dB, that is Directional gain=2.25+10log(2/1)=5.26. For Power measurements, Array Gain = 0 dB ( $N_{ANT} \le 4$ ), so the Directional gain=2.25.

#### 4. Table for Antenna Configuration:

Operating Mode TX Mode	2TX
802.11b	V (Ant. 1 + Ant. 2)
802.11g	V (Ant. 1 + Ant. 2)
802.11n(20 MHz)	V (Ant. 1 + Ant. 2)
802.11n(40 MHz)	V (Ant. 1 + Ant. 2)

#### 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 B Mode Channel 06
Mode 6	TX B Mode Channel 01/02/06/10/11
Mode 7	TX G Mode Channel 01/02/06/10/11
Mode 8	TX N-20 MHz Mode Channel 01/02/06/10/11
Mode 9	TX N-40 MHz Mode Channel 03/04/06/08/09

Following mode(s) was (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 B Mode Channel 06	

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

Radiated emissions test- Above 1GHz	
Final Test Mode	Description
Mode 6	TX B Mode Channel 01/02/06/10/11
Mode 7	TX G Mode Channel 01/02/06/10/11
Mode 8	TX N-20 MHz Mode Channel 01/02/06/10/11
Mode 9	TX N-40 MHz Mode Channel 03/04/06/08/09



Conducted test	
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

NOTE:

- (1) The measurements are performed at the high, middle, low available channels.
- (2) All the bit rate of transmitter have been tested and found the lowest rate is found to be the worst case and recorded.
- (3) For radiated emission below 1 GHz test, the IEEE 802.11b Channel 06 is found to be the worst case and recorded.
- (4) 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.

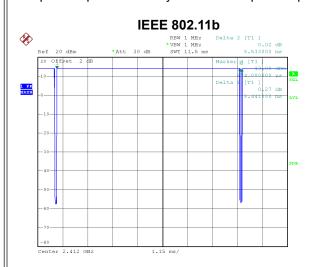
#### 2.3 PARAMETERS OF TEST SOFTWARE

Test Software	QATool_Dbg V0.0.070		
Frequency (MHz)	2412	2437	2462
IEEE 802.11b	11	15	11
IEEE 802.11g	12	19	10
IEEE 802.11n (HT20)	12	18	F
Frequency (MHz)	2422	2437	2452
IEEE 802.11n (HT40)	F	14	E



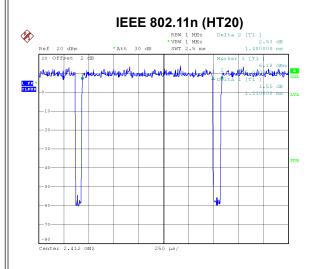
## 2.4 DUTY CYCLE

If duty cycle is  $\geq$  98 %, duty factor is not required. If duty cycle is < 98 %, duty factor shall be considered. The output power = measured power + duty factor. The power spectral density = measured power spectral density + duty factor.

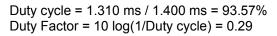


Date: 28.FEB.2020 13:40:52

Duty cycle = 8.441 ms / 8.533 ms = 98.92% Duty Factor = 10 log(1/Duty cycle) = 0.00

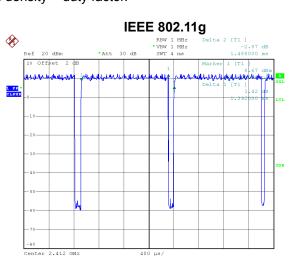


Date: 28.FEB.2020 13:41:58



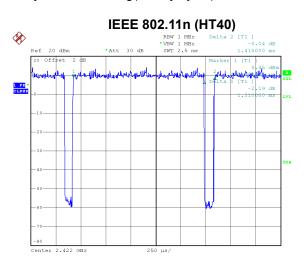
#### NOTE:

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



Date: 28.FEB.2020 13:41:21

Duty cycle = 1.392 ms / 1.488 ms = 93.55% Duty Factor = 10 log(1/Duty cycle) = 0.29



Date: 28.FEB.2020 13:42:18

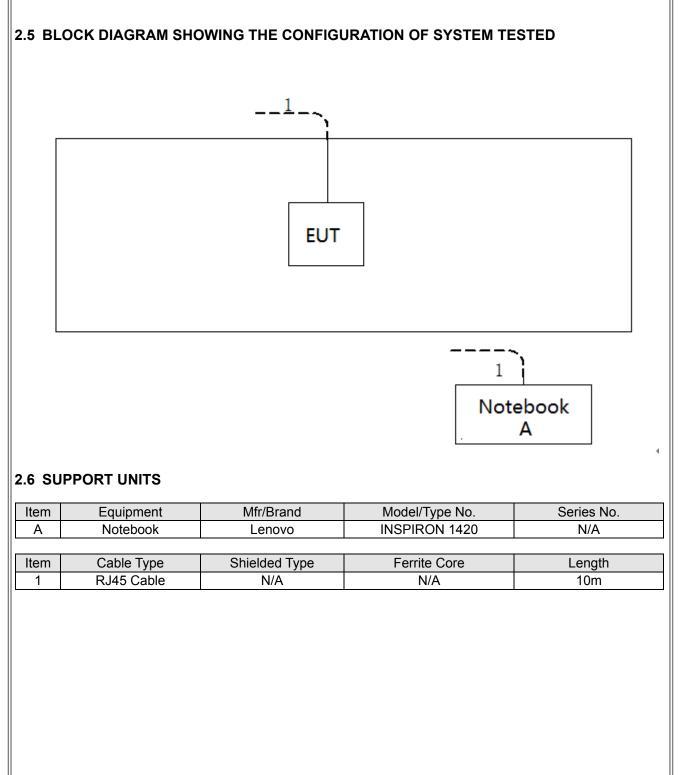
Duty cycle = 1.310 ms / 1.415 ms = 92.58% Duty Factor = 10 log(1/Duty cycle) = 0.33

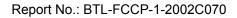
For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1 kHz (Duty cycle < 98%).

#### 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%).









# 3. AC POWER LINE CONDUCTED EMISSIONS TEST

#### 3.1 LIMIT

Frequency of Emission (MHz)	Limit (d	BμV)
	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

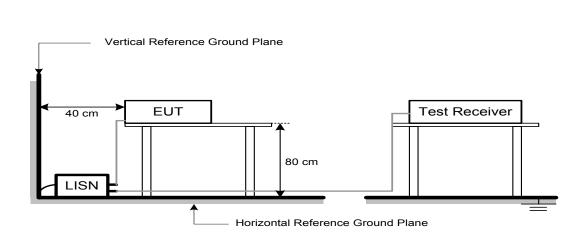
- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 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)

	Frequency (MHz)	(dBuV/m at 3 m)	
		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

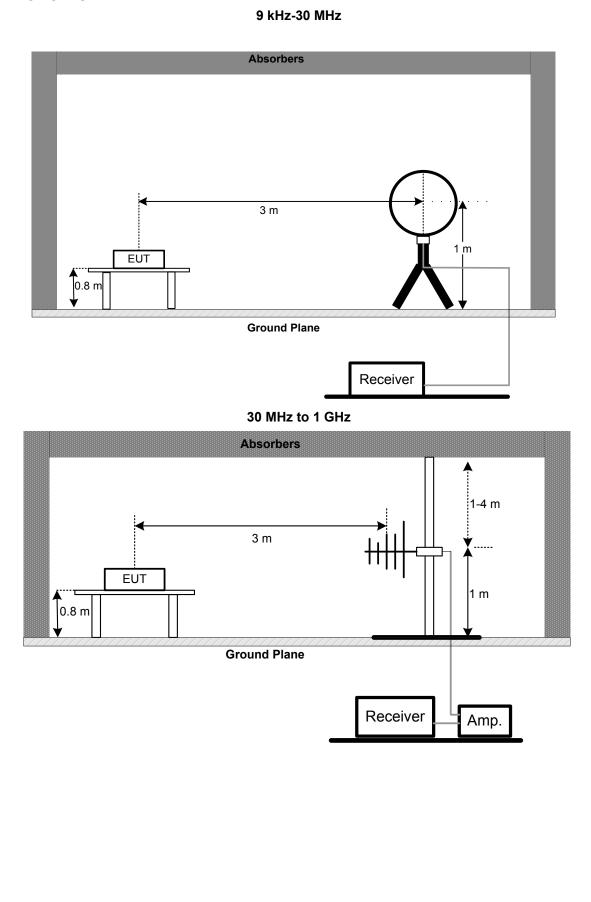
- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
- b. The measuring distance 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)
- h. 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

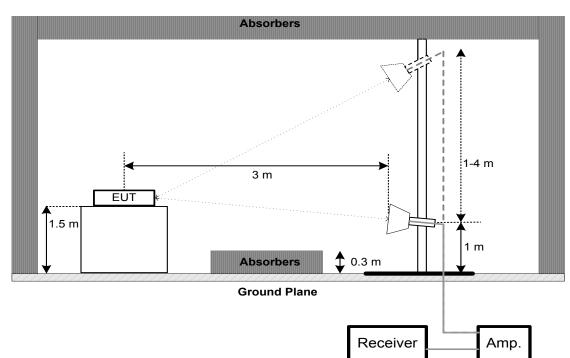


# 4.4 TEST SETUP



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#### 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						
15.247(a)(2)	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. Spectrum Setting:

For 6 dB Bandwidth: RBW= 100 kHz, VBW=300 kHz, Sweep time = auto.

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



SPECTRUM ANALYZER

#### 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 AVERAGE OUTPUT POWER TEST

#### 6.1 LIMIT

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

#### 6.2 TEST PROCEDURE

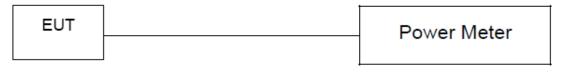
a. The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.

b. The maximum conducted output power was performed in accordance with method 11.9.2.3.1 of ANSI C63.10-2013 and FCC KDB 662911 D01 v02r01 Multiple Transmitter Output.

#### 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.

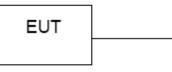
#### 7.2 TEST PROCEDURE

- 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(e)	Power Spectral Density	8 dBm (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

EUT	SPECTRUM
	ANALYZER

#### 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	Feb. 28, 2021			
2	LISN	EMCO	3816/2	52765	Mar. 01, 2021			
3	TWO-LINE V-NETWORK	R&S	ENV216	101447	May 19, 2020			
4	50Ω Terminator	SHX	TF5-3	15041305	Mar. 01, 2021			
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A			
6	Cable	N/A			Mar. 10, 2021			

	Radiated Emissions - 9 kHz to 30 MHz							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until			
1*	Antenna	EM	EM-6876-1	230	Jan. 15, 2022			
2	Cable	N/A	RG 213/U	C-102	May 31, 2020			
3	EMI Test Receiver	R&S	ESCI	100895	Feb. 28, 2021			
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	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, 2021			
2*	Amplifier	HP	8447D	2944A09673	Aug. 11, 2021			
3	Receiver	Agilent	Agilent N9038A MY52130039 A		Aug. 03, 2020			
4	Cable	emci	LMR-400(30MHz-1 GHz)(8m+5m)	N/A	May 24, 2020			
5	Controller	СТ	SC100	N/A 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	Apr. 09, 2020			
2	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 23, 2020			
3	Amplifier	Agilent 8449B		3008A02333	Mar. 01, 2021			
4	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 07, 2021			
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	FaradEZ-EMC Ver.NB-03A1-01N/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								
		Maximum	Average Output Po	wer					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until				
1	Peak Power Analyzer	Keysight 8990B MY51000506 Aug		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.



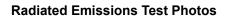
# 10. EUT TEST PHOTO

#### AC Power Line Conducted Emissions Test Photos

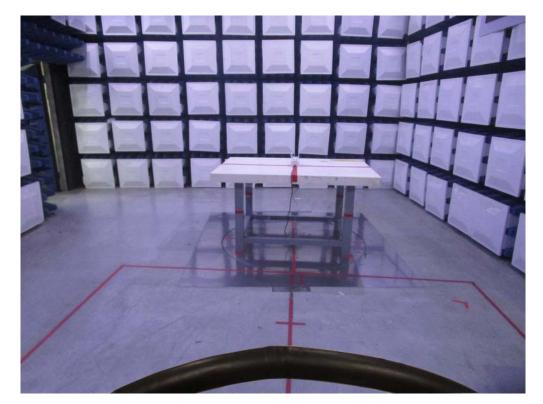


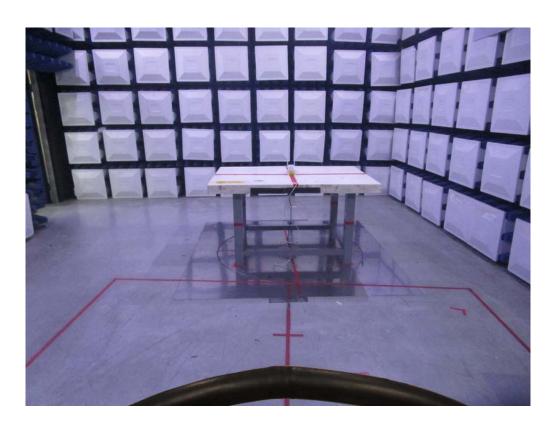






9 kHz to 30 MHz



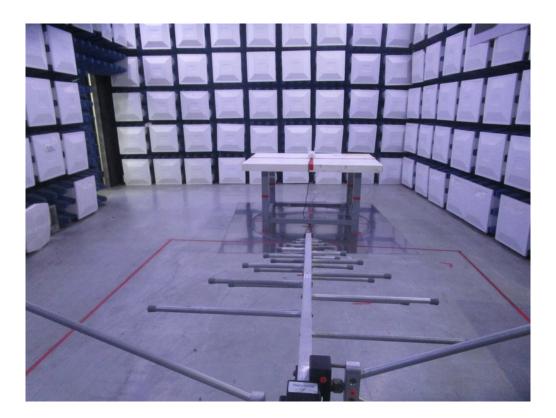






30 MHz to 1 GHz



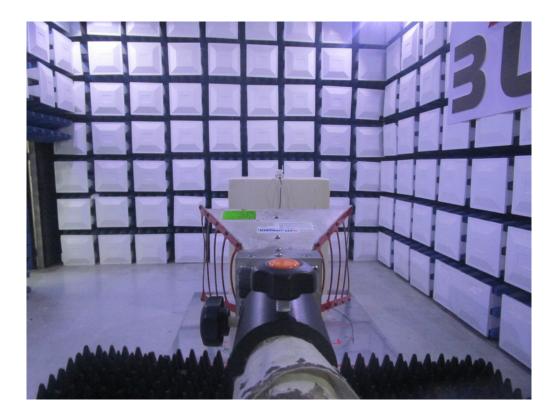




**Radiated Emissions Test Photos** 

Above 1 GHz

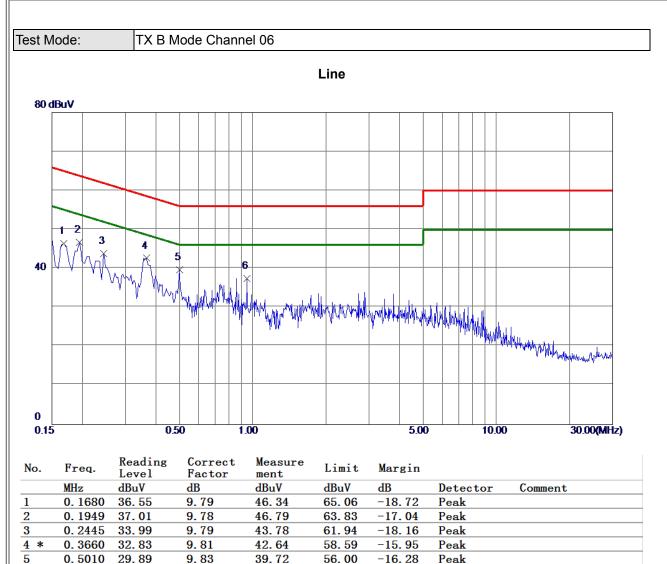






# **APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS**





56.00

-18.49

Peak

REMARKS:

6

0.9465

27.66

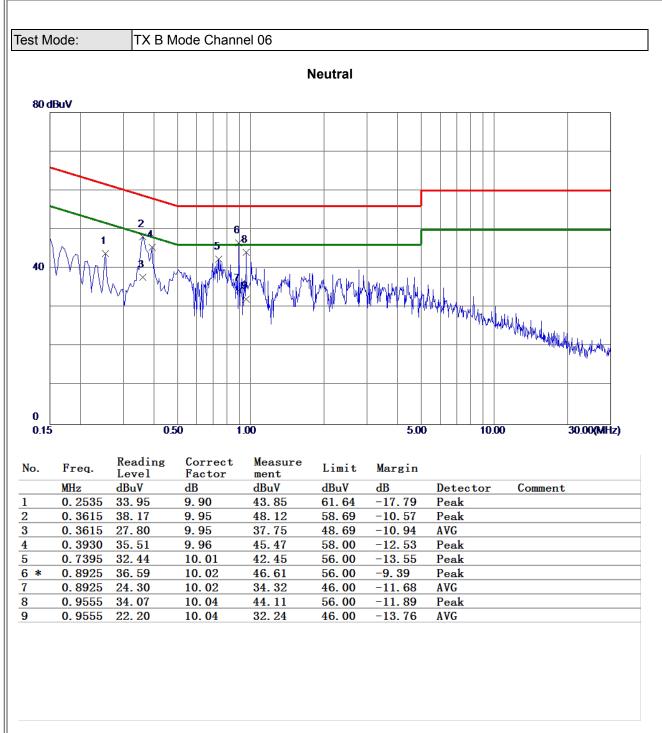
(1) Measurement Value = Reading Level + Correct Factor.

9.85

37.51

(2) Margin Level = Measurement Value - Limit Value.





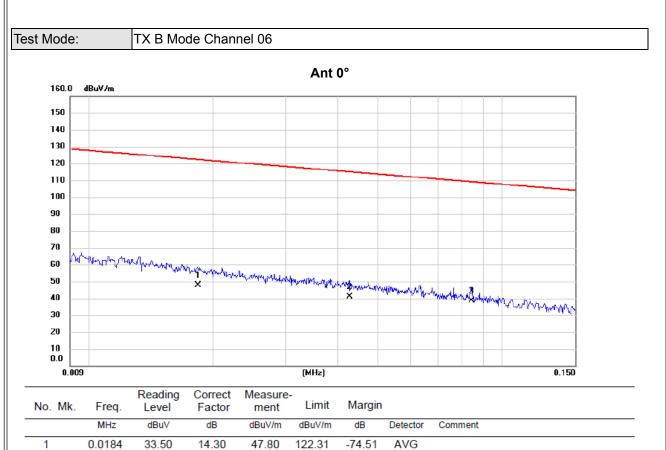
REMARKS:

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



# **APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ**





**REMARKS**:

2

3 \*

0.0428

0.0843

27.20

25.10

13.91

13.54

41.11

38.64

114.98

109.09

-73.87

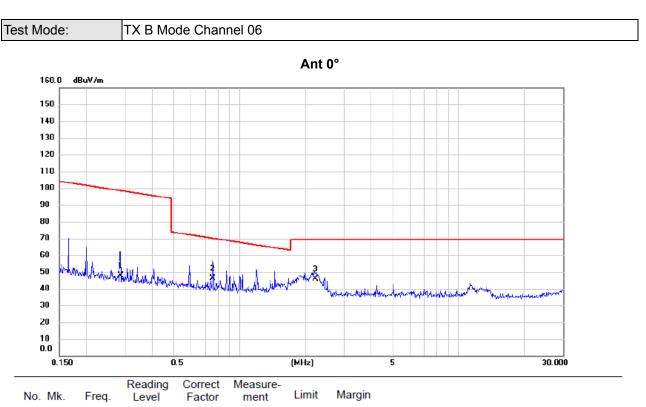
-70.45

AVG

AVG

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



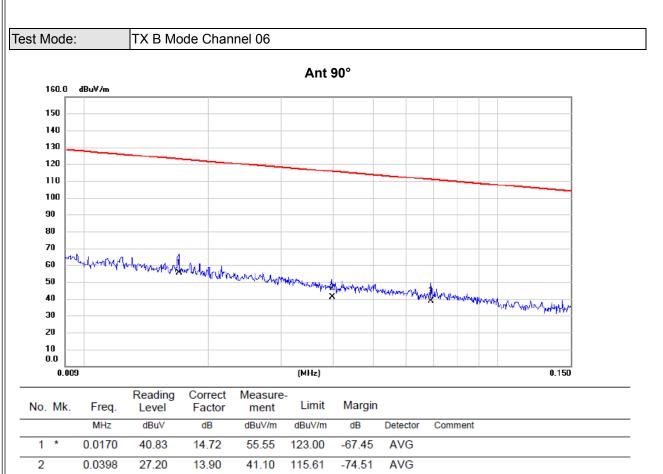


NO. MK.	Freq.	Level	Factor	ment	Limit	margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.2863	34.30	13.57	47.87	98.47	-50.60	AVG	
2	0.7550	33.50	12.58	46.08	70.05	-23.97	QP	
3 *	2.2132	34.10	11.69	45.79	69.54	-23.75	QP	

**REMARKS**:

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





3

0.0690

24.80

13.63

38.43

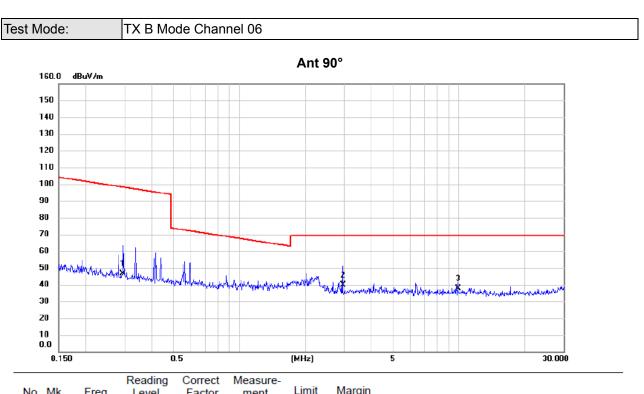
110.83

-72.40

AVG

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





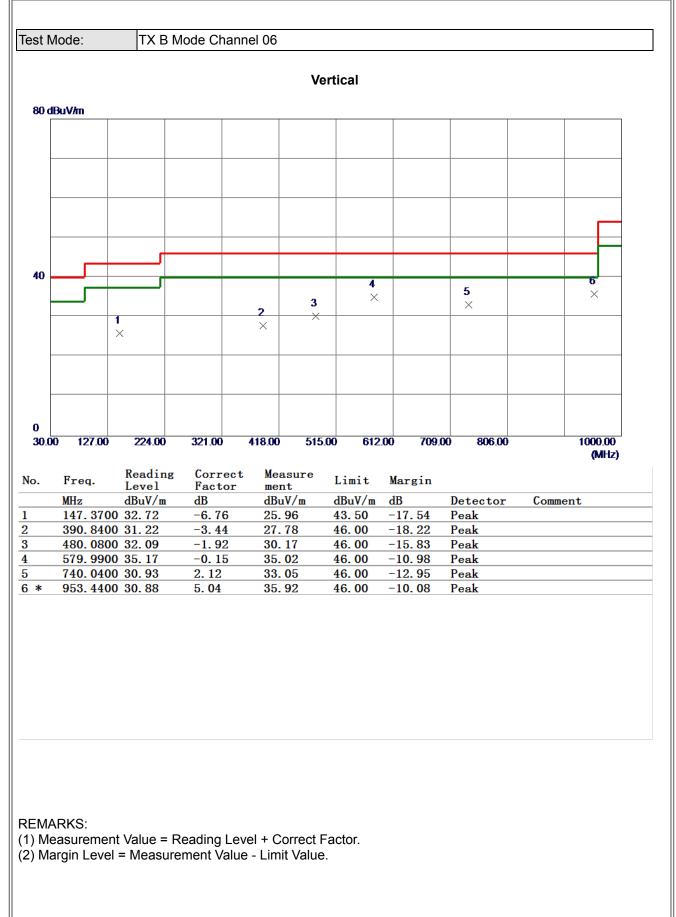
No.	Mk.	Freq.	Level	Factor	ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.2955	33.00	13.55	46.55	98.19	-51.64	AVG	
2	*	2.9620	28.50	11.25	39.75	69.54	-29.79	QP	
3		9.9130	26.30	11.62	37.92	69.54	-31.62	QP	

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

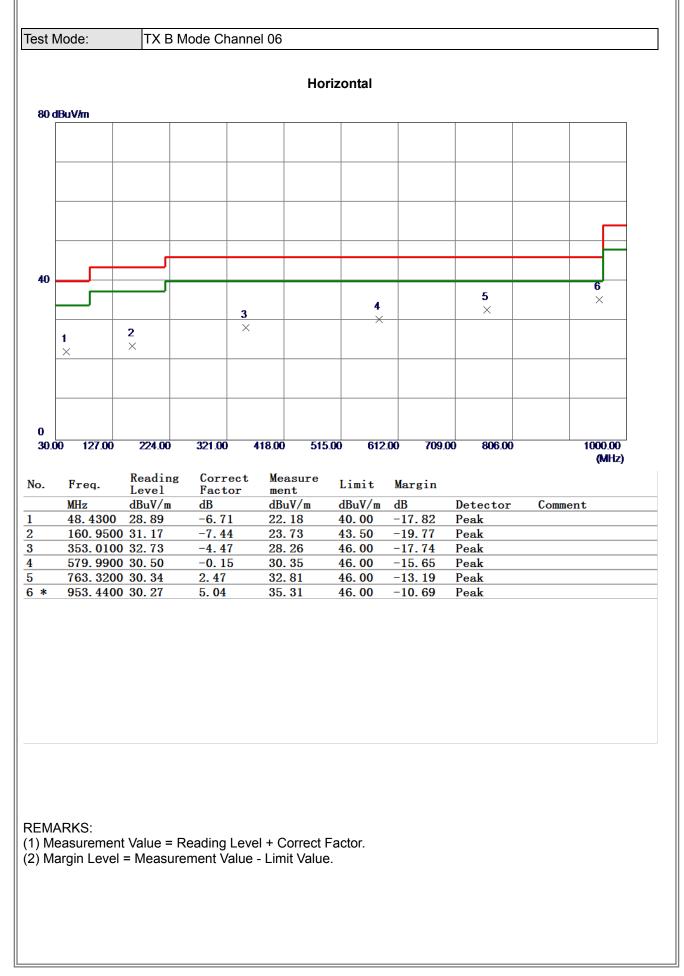


## APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ





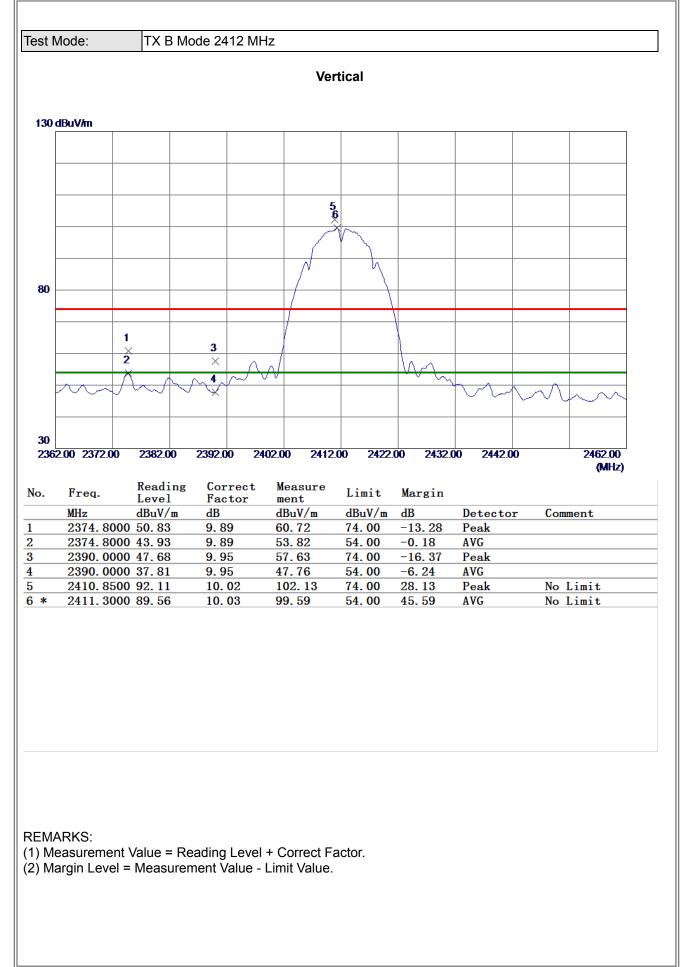




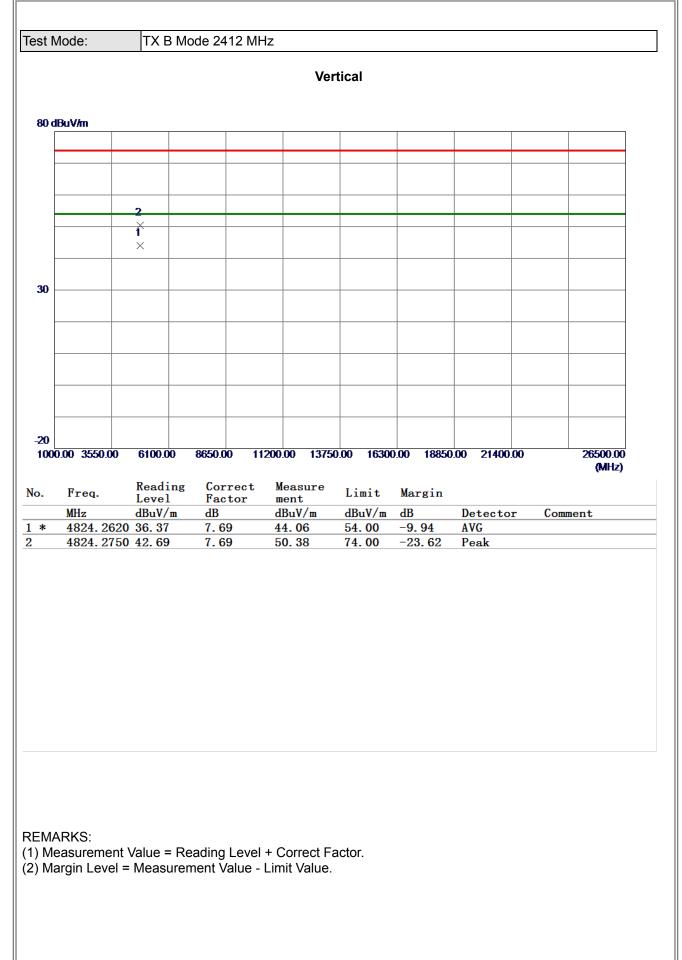


## **APPENDIX D - RADIATED EMISSION- ABOVE 1000 MHZ**

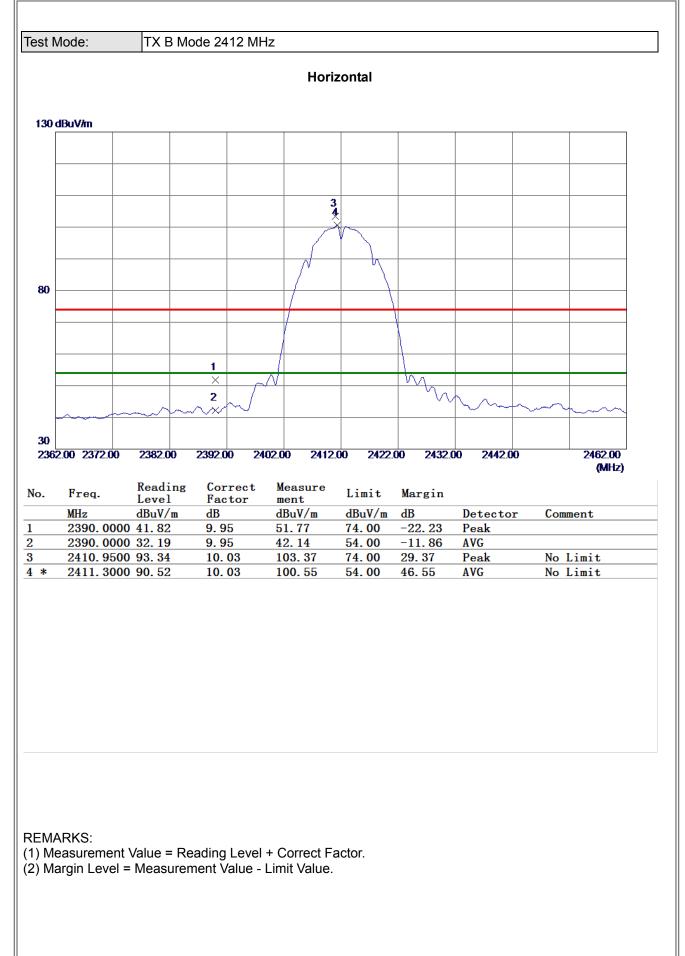




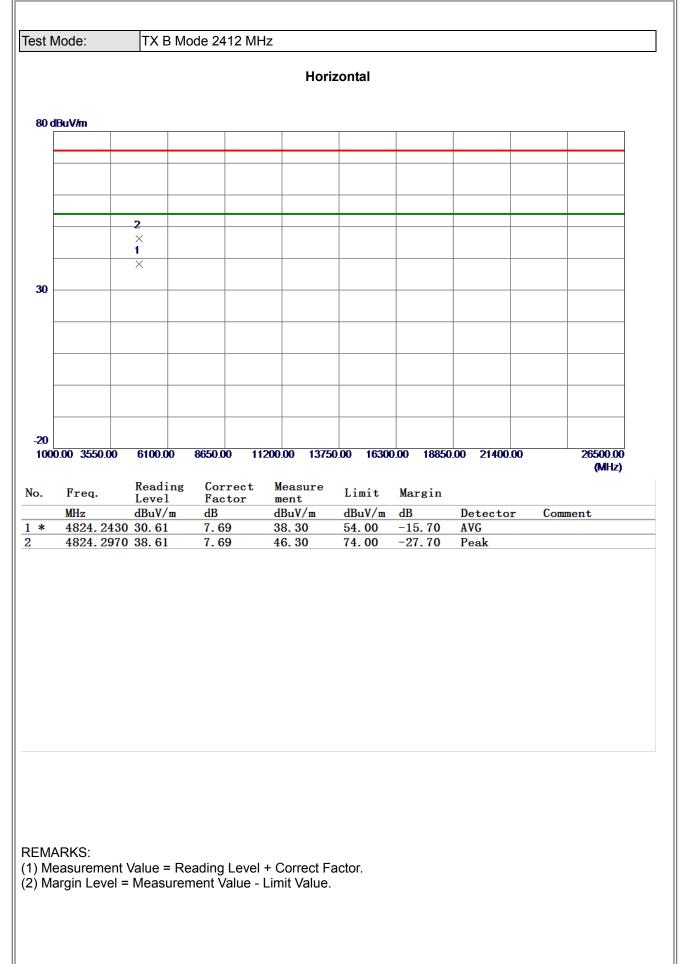




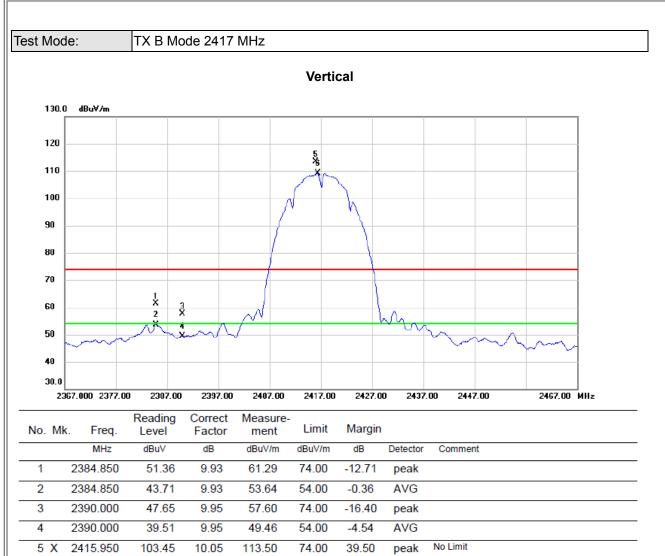












6 \*

2416.350

(1) Measurement Value = Reading Level + Correct Factor.

109.23

54.00

55.23

AVG

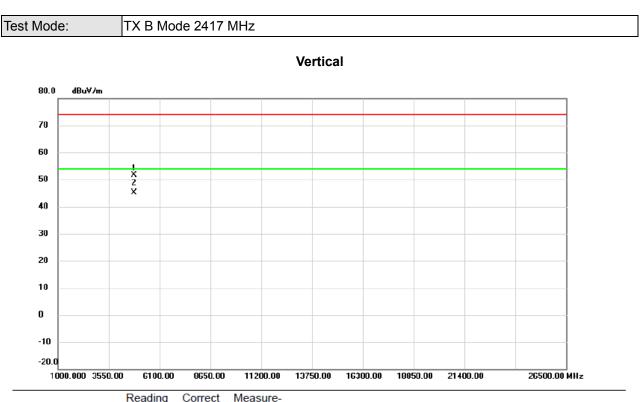
No Limit

(2) Margin Level = Measurement Value - Limit Value.

99.18

10.05

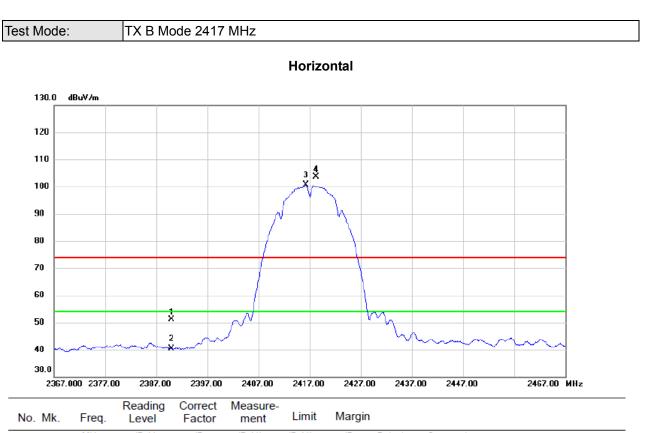




No.	Mk	. Freq.	Level	Factor	ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4834.257	43.90	7.72	51.62	74.00	-22.38	peak	
2	*	4834.270	37.45	7.72	45.17	54.00	-8.83	AVG	

- Measurement Value = Reading Level + Correct Factor.
   Margin Level = Measurement Value Limit Value.

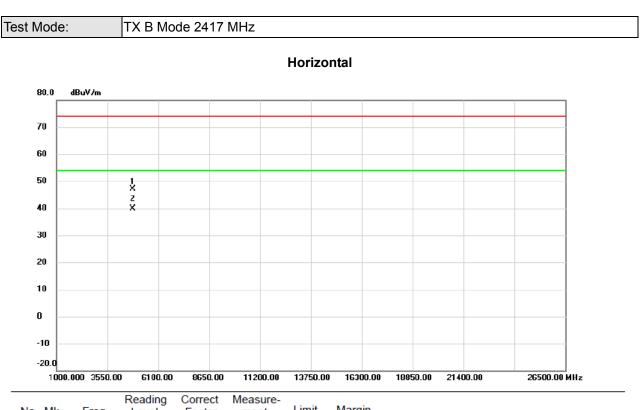




No.	Mk.	Freq.	Level		ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2	2390.000	41.07	9.95	51.02	74.00	-22.98	peak	
2	2	2390.000	30.34	9.95	40.29	54.00	-13.71	AVG	
3	* 2	2416.300	90.57	10.05	100.62	54.00	46.62	AVG	No Limit
4	X 2	2418.250	93.50	10.06	103.56	74.00	29.56	peak	No Limit

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

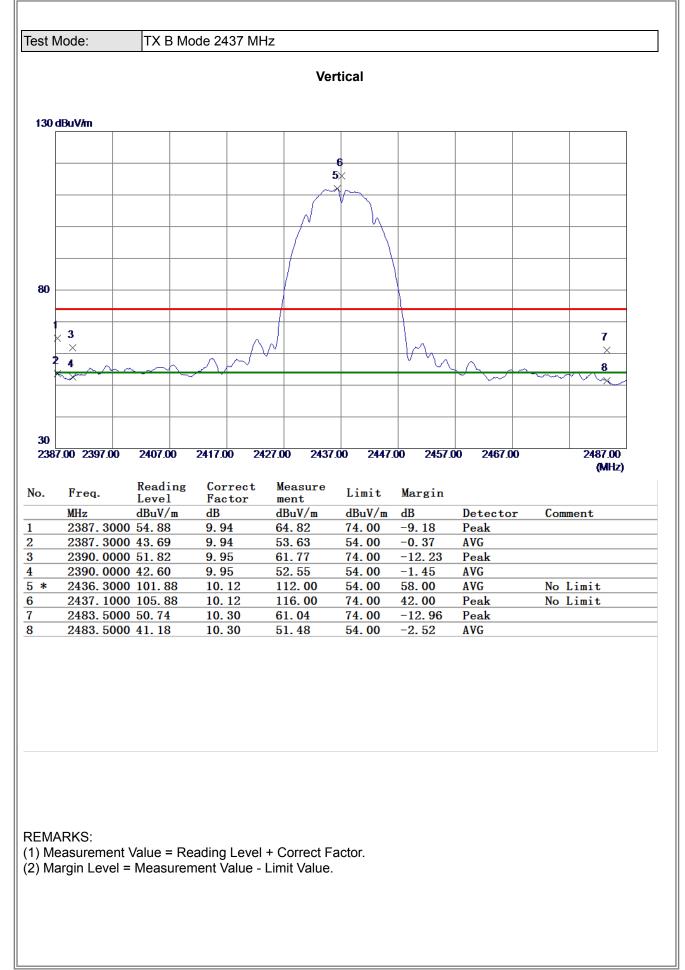




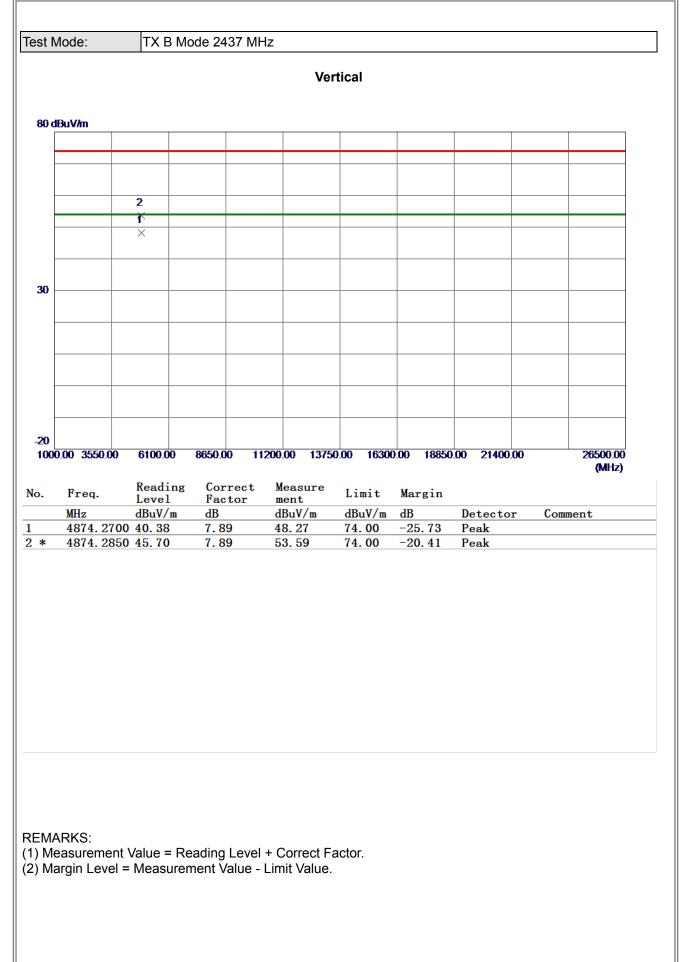
No.	Mk.	Freq.	Level	Factor	ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4	833.927	39.44	7.72	47.16	74.00	-26.84	peak	
2 *	'4	834.225	32.11	7.72	39.83	54.00	-14.17	AVG	

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

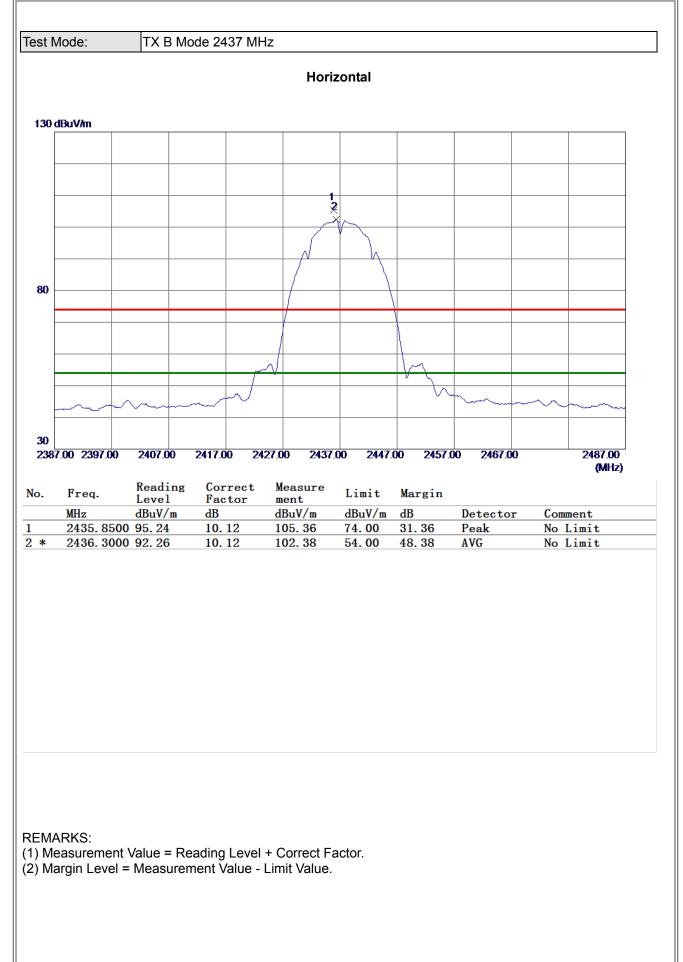




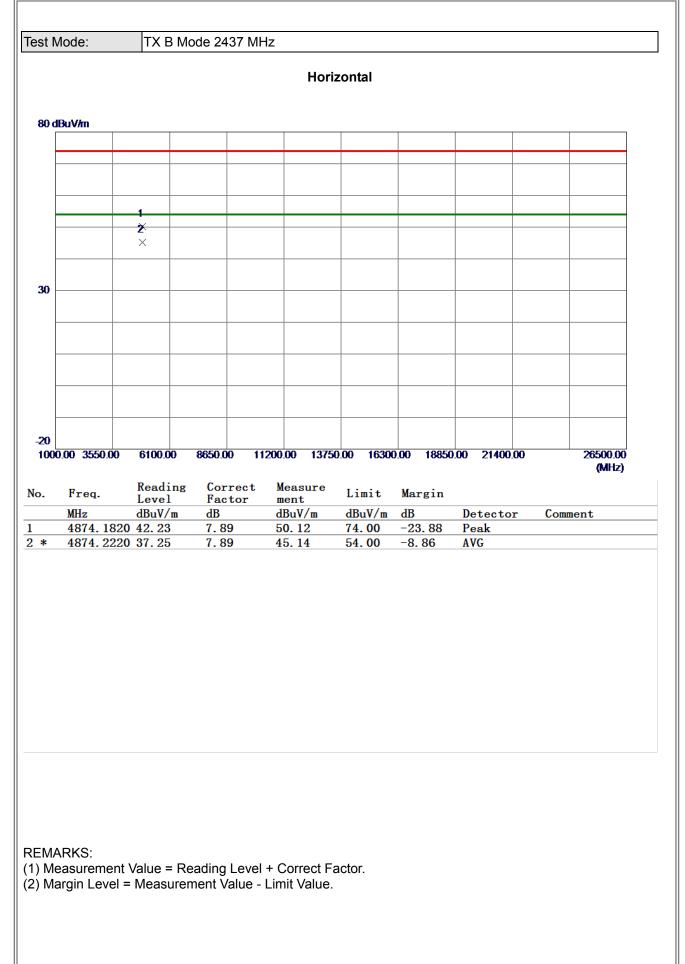




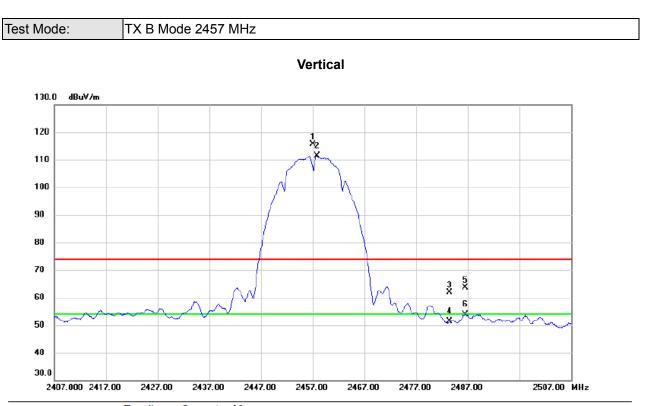








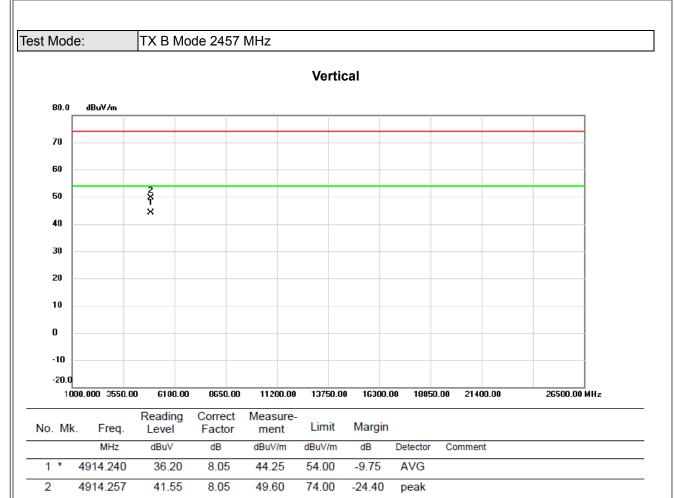




N	0.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1	Х	2457.100	105.33	10.20	115.53	74.00	41.53	peak	No Limit
	2	*	2457.850	101.17	10.20	111.37	54.00	57.37	AVG	No Limit
	3		2483.500	51.68	10.29	61.97	74.00	-12.03	peak	
	4		2483.500	41.02	10.29	51.31	54.00	-2.69	AVG	
	5		2486.600	53.38	10.30	63.68	74.00	-10.32	peak	
	6		2486.600	43.58	10.30	53.88	54.00	-0.12	AVG	

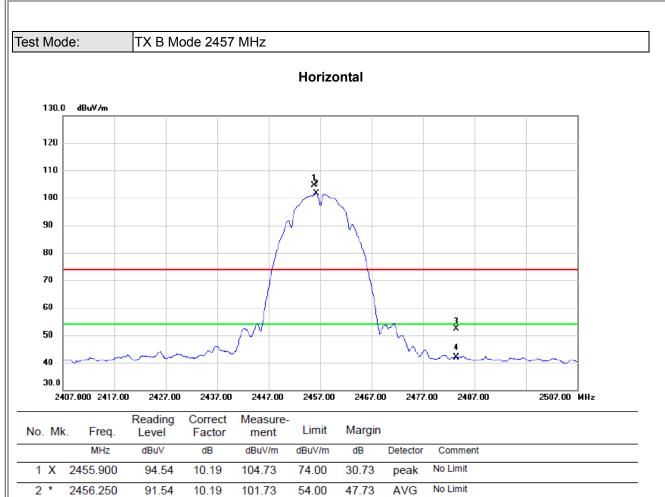
- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.





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





2483.500

2483.500

3

4

42.06

31.65

10.29

10.29

52.35

41.94

74.00

54.00

-21.65

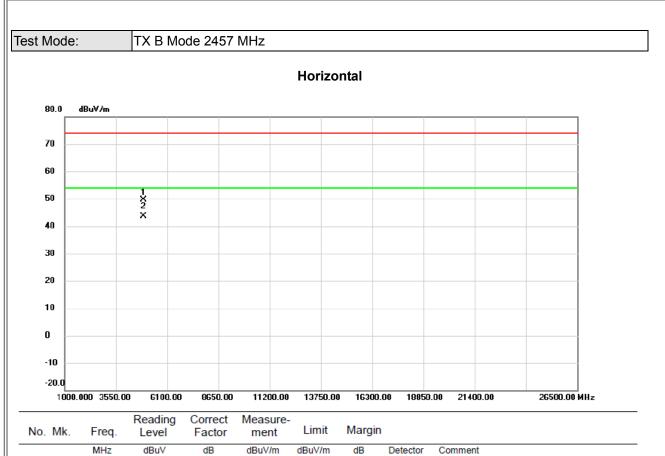
-12.06

peak

AVG

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





1

2 \*

4914.148

4914.217

41.46

35.68

8.05

8.05

49.51

43.73

74.00

54.00

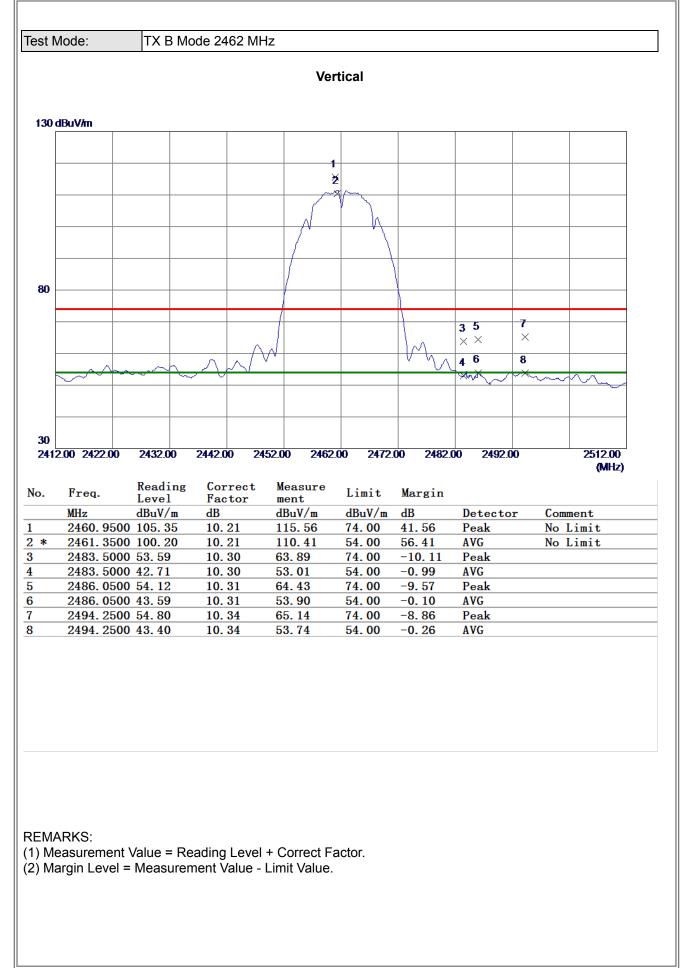
-24.49

-10.27

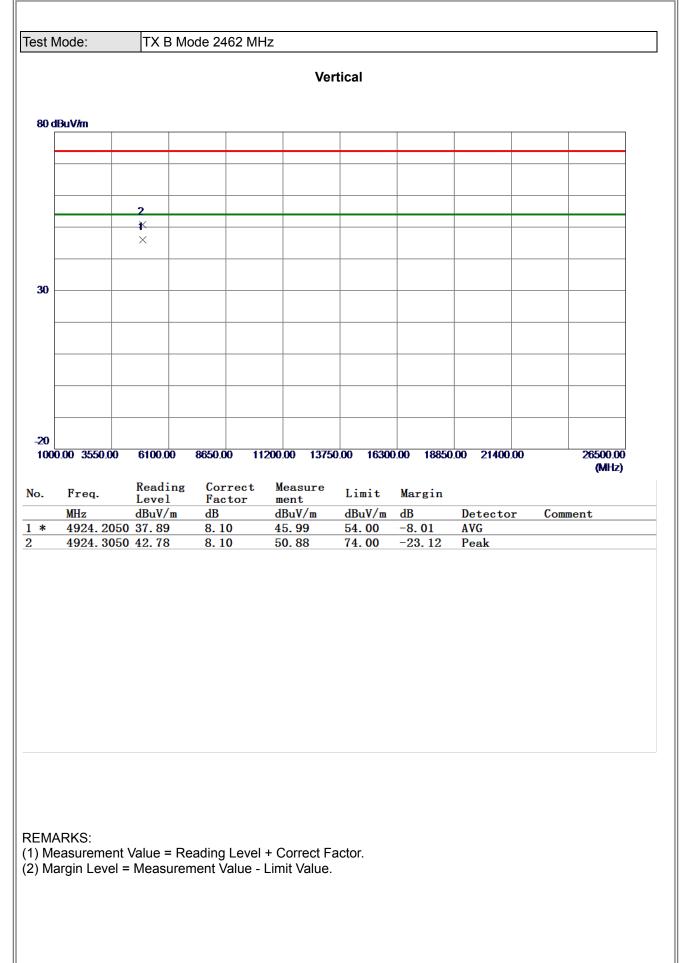
peak AVG

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

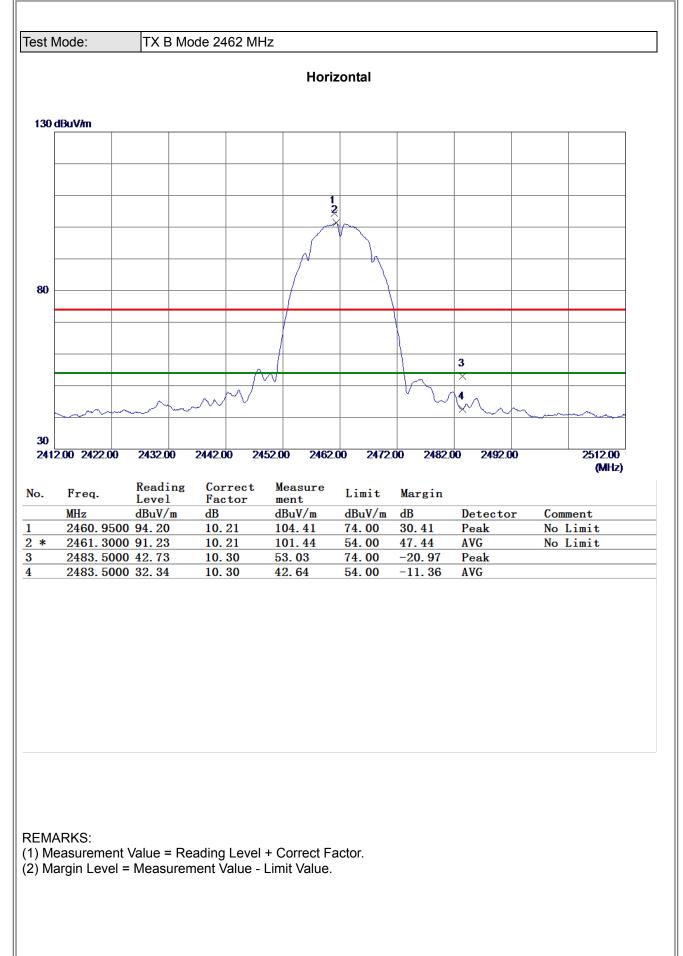








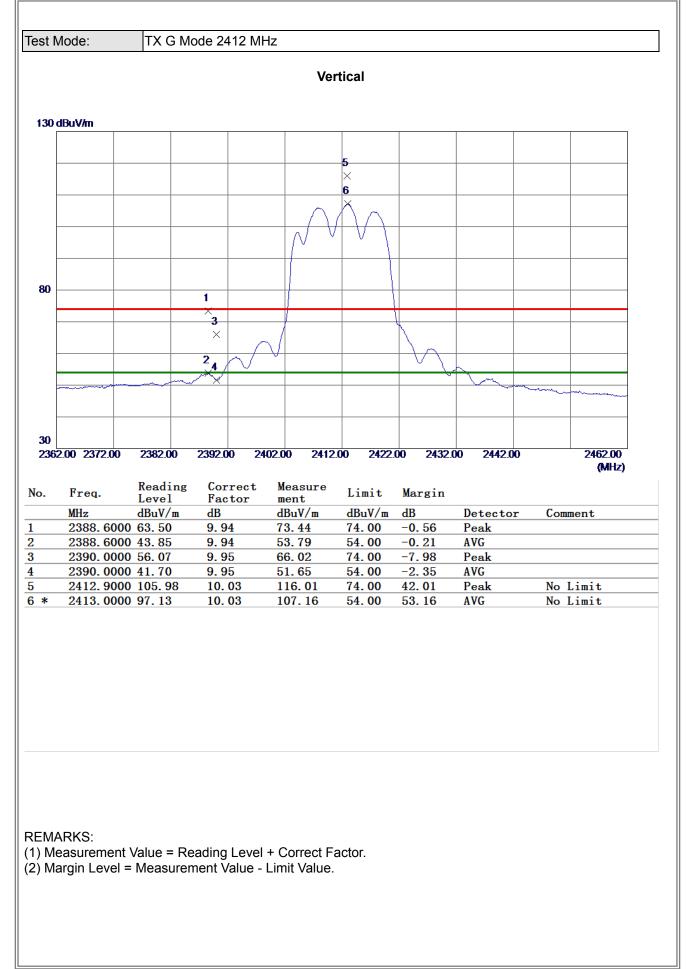




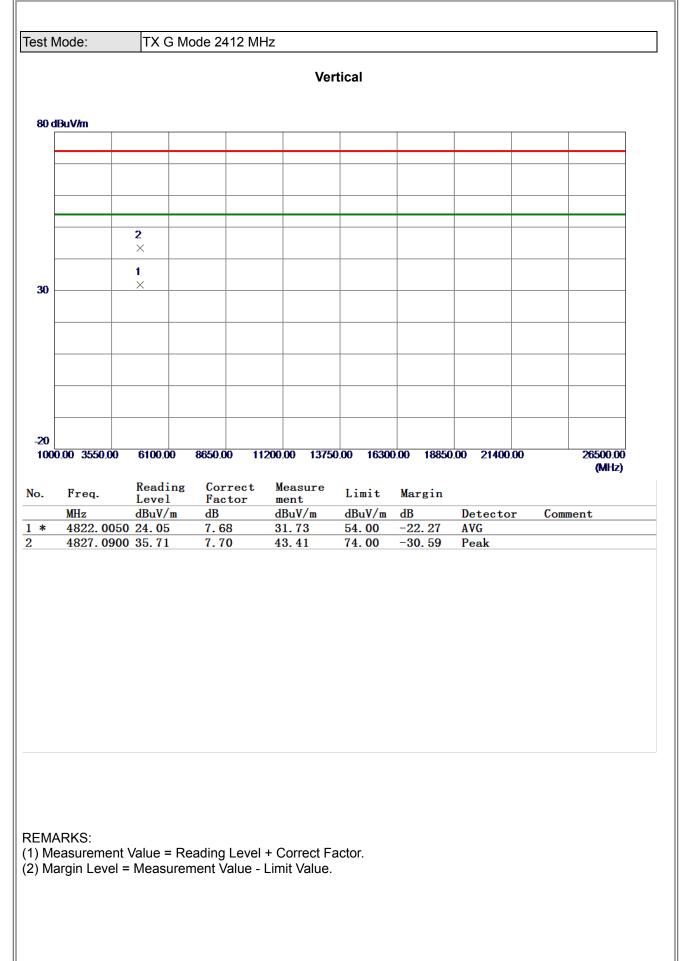


			Hor	izontal				
) dBuV/m								
	1 2							
	×							
	0 0100 00	0050.00	44000 00 497	-0.00 40304	0.00 40050	00 04400		20500.00
00.00 3550.0	0 6100.00	8650.00	11200.00 1375	60.00 16300	0.00 18850	0.00 21400	.00	26500.00 (MHz)
Freq.	Reading Level	Correc Factor	t Measure ment	Limit	Margin			
101		dB	dBuV/m	dBuV/m	dB	Detecto	r Com	ment
MHz	dBuV/m	0 10	40.00			D 1		
4924.17	dBuV/m 720 40.75 770 34.72	8. 10 8. 10	48.85 42.82	74.00 54.00	-25.15 -11.18	Peak AVG		
4924.17	20 40.75			74.00	-25.15			
4924.17	20 40.75			74.00	-25.15			
4924.17	20 40.75			74.00	-25.15			
4924.17	20 40.75			74.00	-25.15			
4924.17	20 40.75			74.00	-25.15			
4924.17	20 40.75			74.00	-25.15			
4924.17	20 40.75			74.00	-25.15			
4924.17	20 40.75			74.00	-25.15			
4924.17	20 40.75			74.00	-25.15			
4924.17	20 40.75			74.00	-25.15			
4924.17	20 40.75			74.00	-25.15			
4924. 17 4924. 17	20 40.75			74.00	-25.15			
4924. 17 4924. 17	720 40.75 770 34.72	8. 10	42.82	74.00 54.00	-25.15			
4924. 17 4924. 17 ARKS: leasureme	720 40. 75 70 34. 72	8. 10 eading Lev		74. 00 54. 00	-25.15			

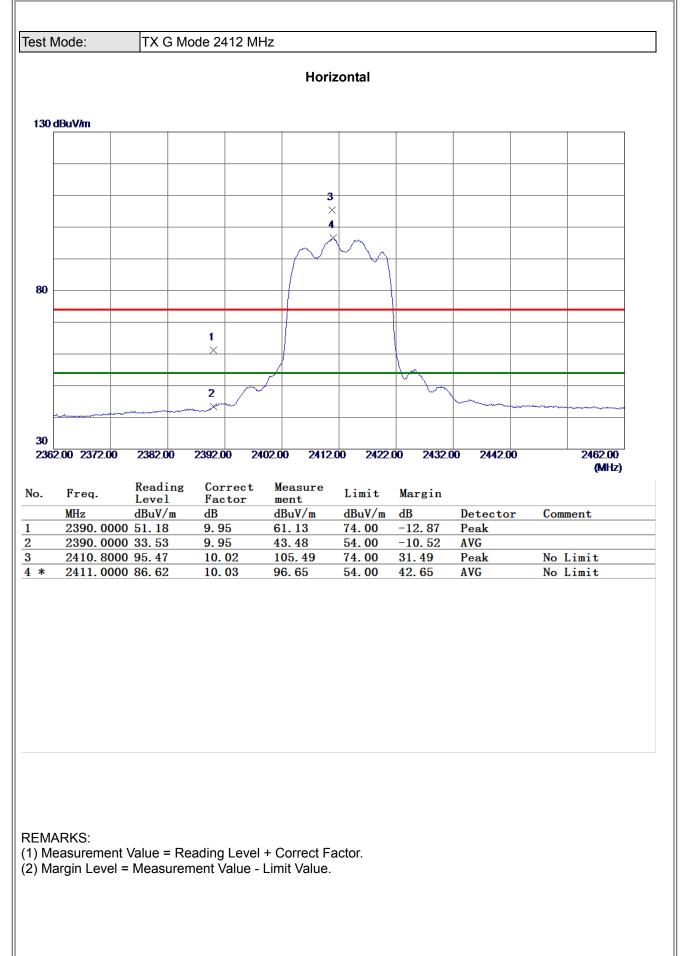








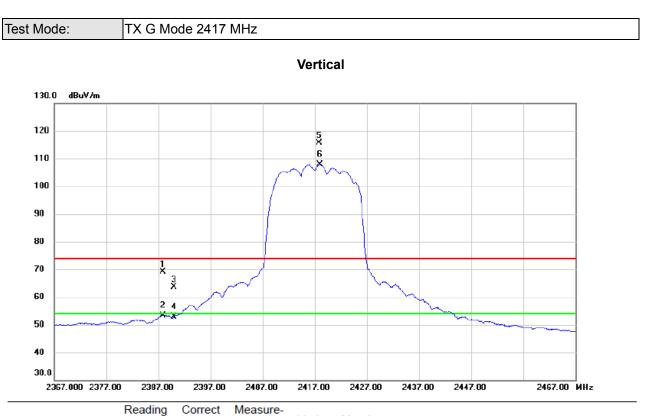






		iviode 24	12 MHz						
				Hori	zontal				
80 dBuV/m									
	2 ×								
20	1 ×								
30									
-20 1000.00 355	0.00 6100.00	8650.00	11200	.00 1375	0.00 16300	).00 18850	.00 21400	00	26500.00
									(MHz)
	Peedin		ant M						
	Level	Fact	or m	easure ent BuV/m	Limit dBuV/m	Margin	Detecto	ur Com	
MHz * 4824.	Level dBuV/m 3230 23.44	Fact dB 7.69	or m d	ent BuV/m 1.13	dBuV/m 54.00	dB -22. 87	Detecto AVG	or Com	ment
MHz * 4824.	Level dBuV/m	Fact dB	or m d	ent BuV/m	dBuV/m	dB		or Com	
MHz * 4824.	Level dBuV/m 3230 23.44	Fact dB 7.69	or m d	ent BuV/m 1.13	dBuV/m 54.00	dB -22. 87	AVG	or Com	
MHz * 4824.	Level dBuV/m 3230 23.44	Fact dB 7.69	or m d	ent BuV/m 1.13	dBuV/m 54.00	dB -22. 87	AVG	or Com	
MHz * 4824.	Level dBuV/m 3230 23.44	Fact dB 7.69	or m d	ent BuV/m 1.13	dBuV/m 54.00	dB -22. 87	AVG	o <u>r Com</u>	
MHz * 4824.	Level dBuV/m 3230 23.44	Fact dB 7.69	or m d	ent BuV/m 1.13	dBuV/m 54.00	dB -22. 87	AVG	or Com	
MHz * 4824.	Level dBuV/m 3230 23.44	Fact dB 7.69	or m d	ent BuV/m 1.13	dBuV/m 54.00	dB -22. 87	AVG	or Com	
MHz * 4824.	Level dBuV/m 3230 23.44	Fact dB 7.69	or m d	ent BuV/m 1.13	dBuV/m 54.00	dB -22. 87	AVG	or Com	
MHz * 4824.	Level dBuV/m 3230 23.44	Fact dB 7.69	or m d	ent BuV/m 1.13	dBuV/m 54.00	dB -22. 87	AVG	o <u>r Com</u>	
MHz * 4824.	Level dBuV/m 3230 23.44	Fact dB 7.69	or m d	ent BuV/m 1.13	dBuV/m 54.00	dB -22. 87	AVG	o <u>r Com</u>	
MHz * 4824.	Level dBuV/m 3230 23.44	Fact dB 7.69	or m d	ent BuV/m 1.13	dBuV/m 54.00	dB -22. 87	AVG	or Com	
MHz * 4824. 2 4825.	Level dBuV/m 3230 23.44	Fact dB 7.69	or m d	ent BuV/m 1.13	dBuV/m 54.00	dB -22. 87	AVG	o <u>r Com</u>	
MHz * 4824. 2 4825.	Level <u>dBuV/m</u> 3230 23.44 2900 35.95 nent Value = I	Fac1 dB 7.69 7.69	.or m d 3 4	ent BuV/m 1. 13 3. 64 Correct Fa	dBuV/m 54.00 74.00	dB -22. 87	AVG	o <u>r Com</u>	
MHz * 4824. 4825. EMARKS:	Level dBuV/m 3230 23.44 2900 35.95	Fac1 dB 7.69 7.69	.or m d 3 4	ent BuV/m 1. 13 3. 64 Correct Fa	dBuV/m 54.00 74.00	dB -22. 87	AVG	o <u>r Com</u>	





	No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1		2387.900	59.10	9.94	69.04	74.00	-4.96	peak	
	2		2387.900	43.38	9.94	53.32	54.00	-0.68	AVG	
	3		2390.000	53.77	9.95	63.72	74.00	-10.28	peak	
	4		2390.000	43.02	9.95	52.97	54.00	-1.03	AVG	
_	5	X	2417.900	105.67	10.05	115.72	74.00	41.72	peak	No Limit
_	6	*	2418.000	97.89	10.05	107.94	54.00	53.94	AVG	No Limit

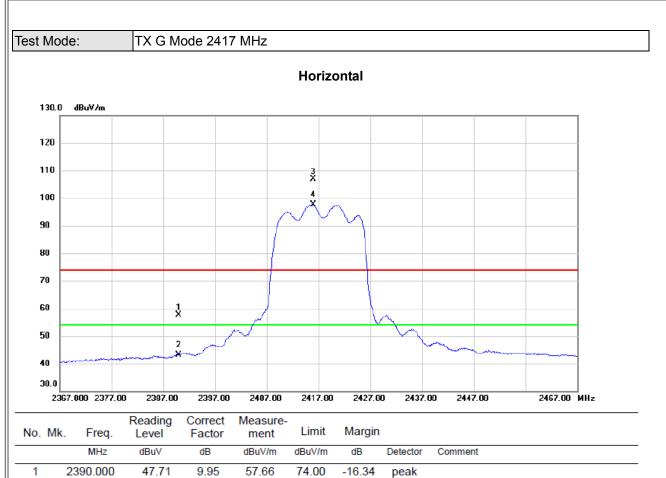
- (1) Measurement Value = Reading Level + Correct Factor.(2) Margin Level = Measurement Value Limit Value.





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





2

3 X

4 \*

2390.000

2415.950

2415.950

33.25

96.90

87.64

9.95

10.05

10.05

43.20

106.95

97.69

54.00

74.00

54.00

-10.80

32.95

43.69

AVG

peak

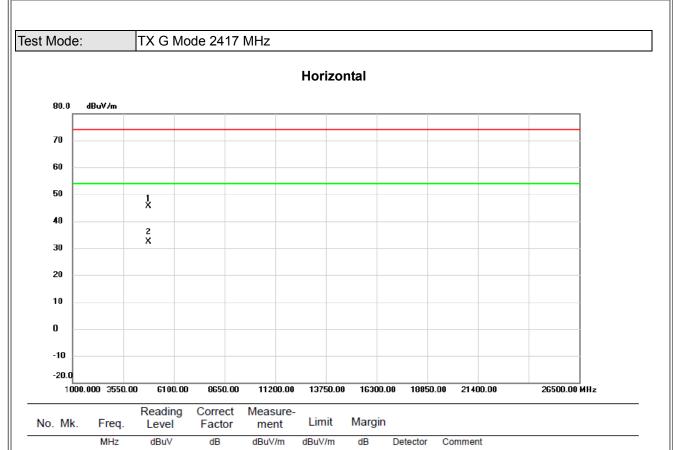
AVG

No Limit

No Limit

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





4833.025

4834.090

1

2 \*

(1) Measurement Value = Reading Level + Correct Factor.

7.72

7.72

38.01

24.66

45.73

32.38

74.00

54.00

-28.27

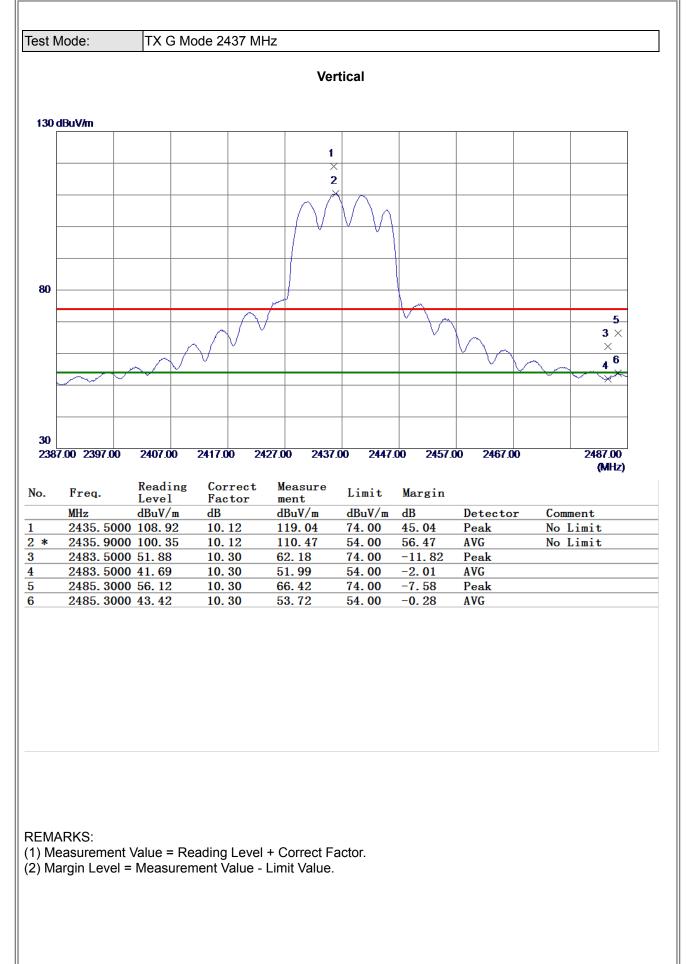
-21.62

peak

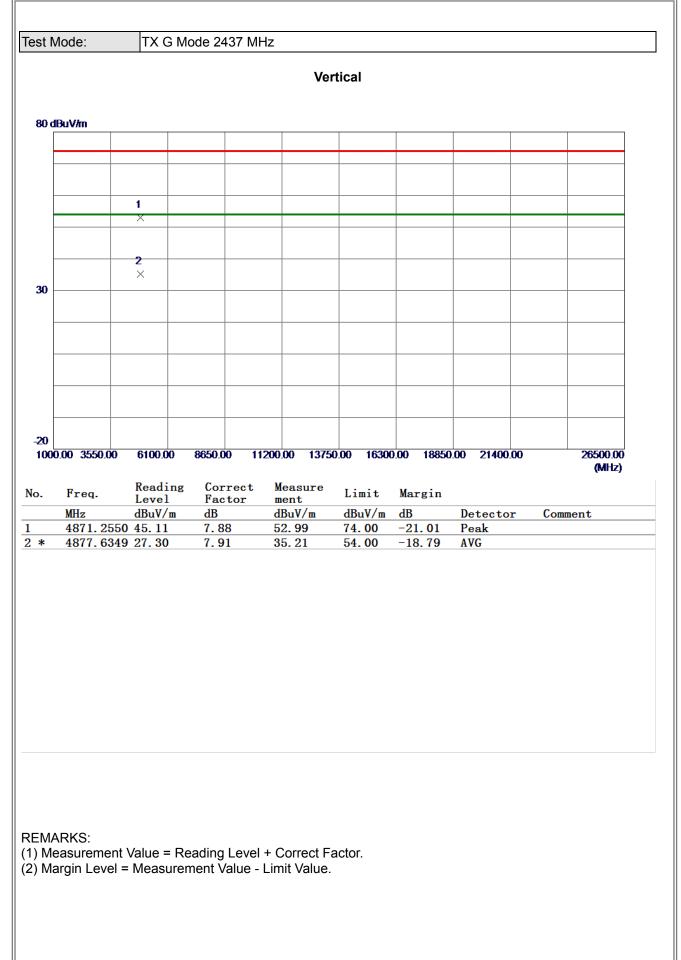
AVG

(2) Margin Level = Measurement Value - Limit Value.

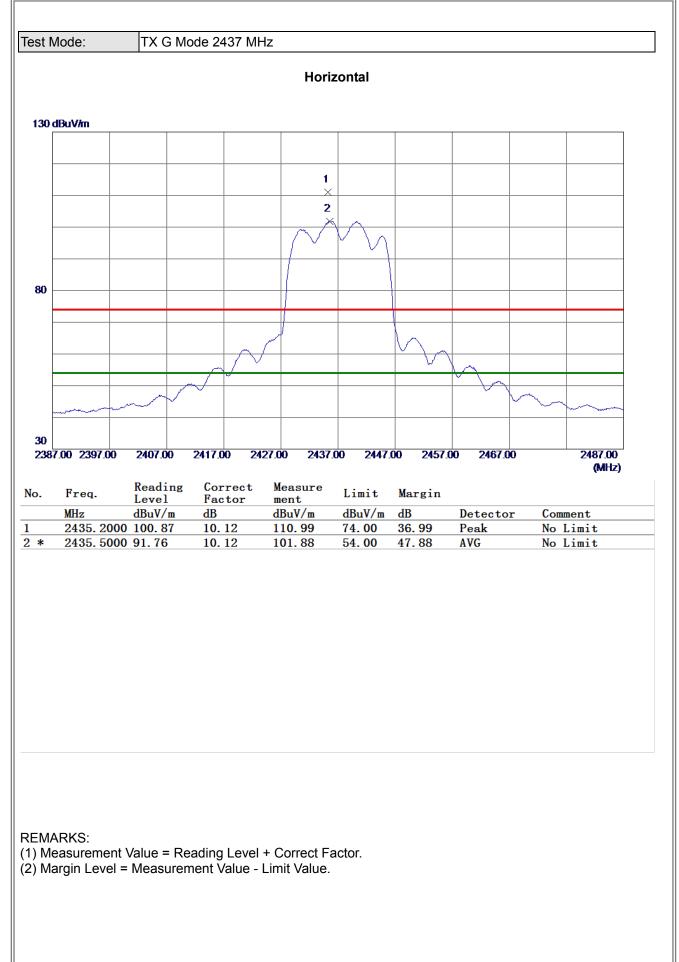




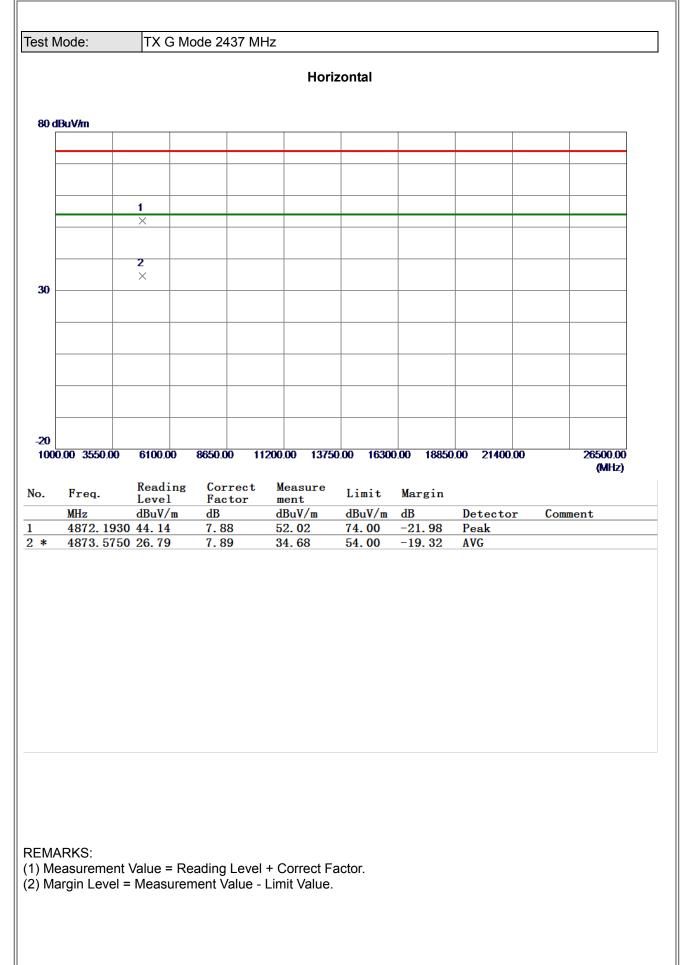




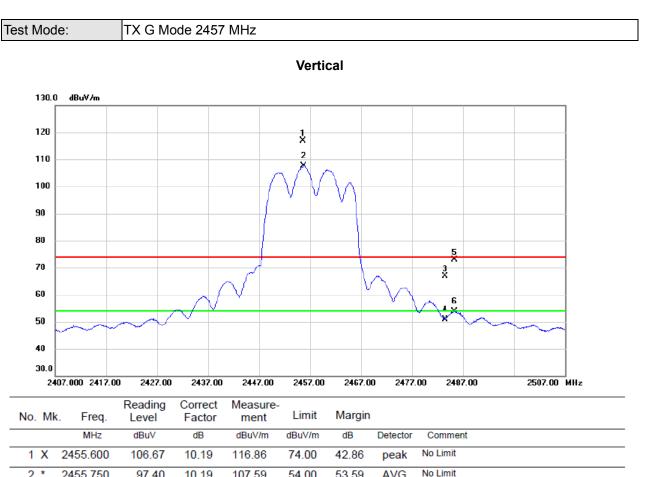












1 X	2455.600	106.67	10.19	116.86	74.00	42.80	реак	NO LINIC
2 *	2455.750	97.40	10.19	107.59	54.00	53.59	AVG	No Limit
3	2483.500	56.49	10.29	66.78	74.00	-7.22	peak	
4	2483.500	40.53	10.29	50.82	54.00	-3.18	AVG	
5	2485.350	62.57	10.30	72.87	74.00	-1.13	peak	
6	2485.350	43.64	10.30	53.94	54.00	-0.06	AVG	

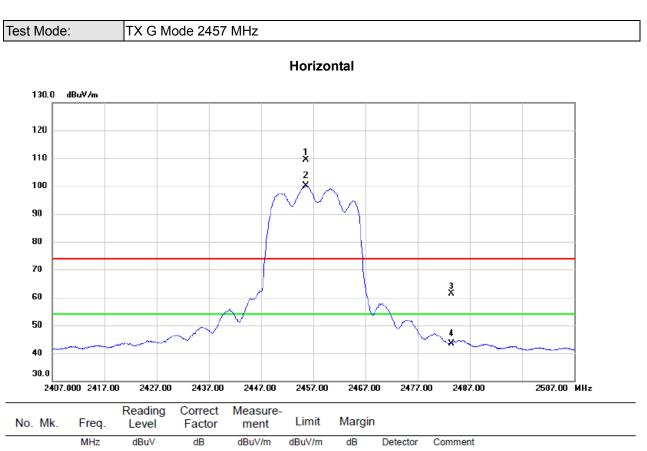
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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

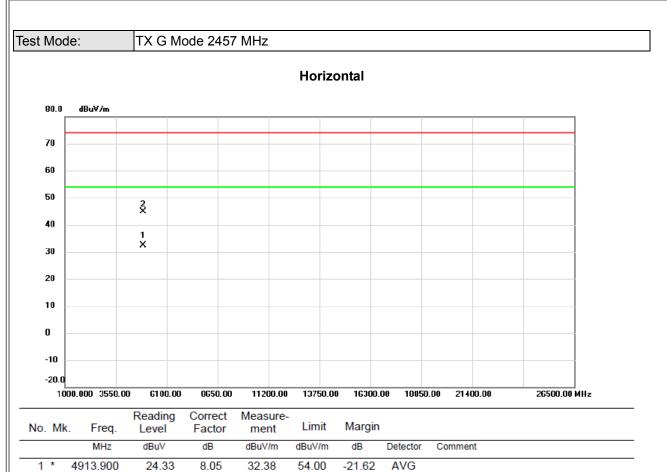




	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 X	2455.550	99.31	10.19	109.50	74.00	35.50	peak	No Limit
2 *	2455.600	89.83	10.19	100.02	54.00	46.02	AVG	No Limit
3	2483.500	51.02	10.29	61.31	74.00	-12.69	peak	
4	2483.500	33.14	10.29	43.43	54.00	-10.57	AVG	

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





4914.052

2

36.73

8.05

44.78

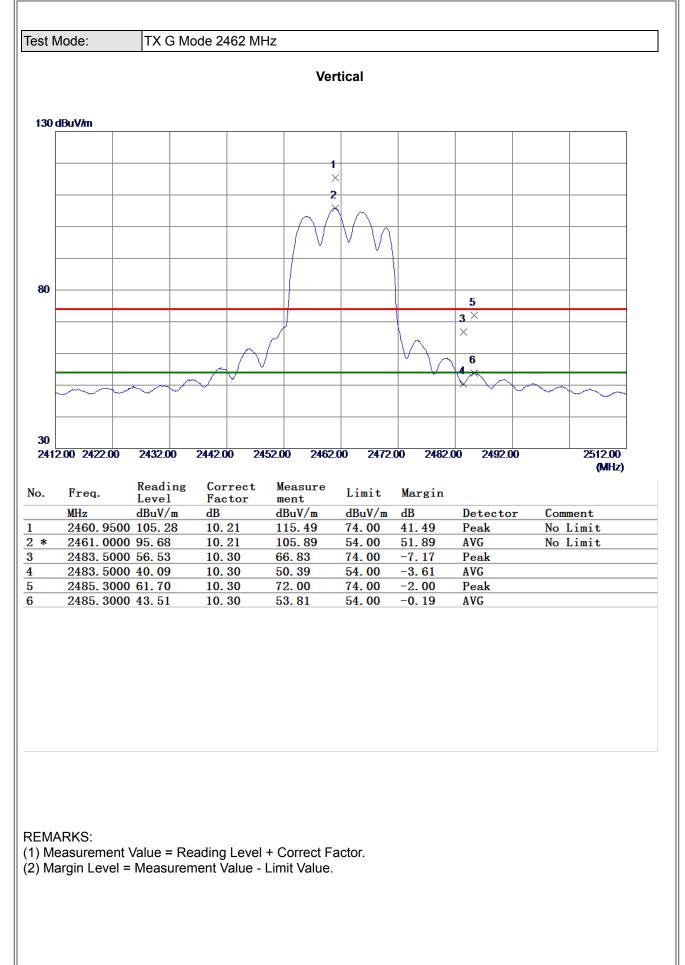
74.00

-29.22

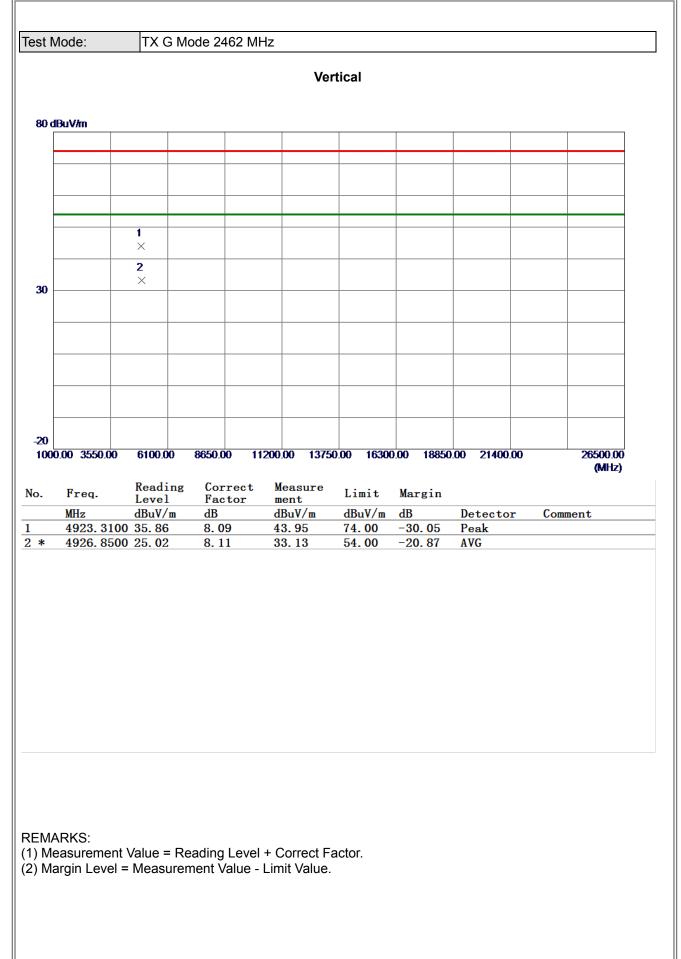
peak

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

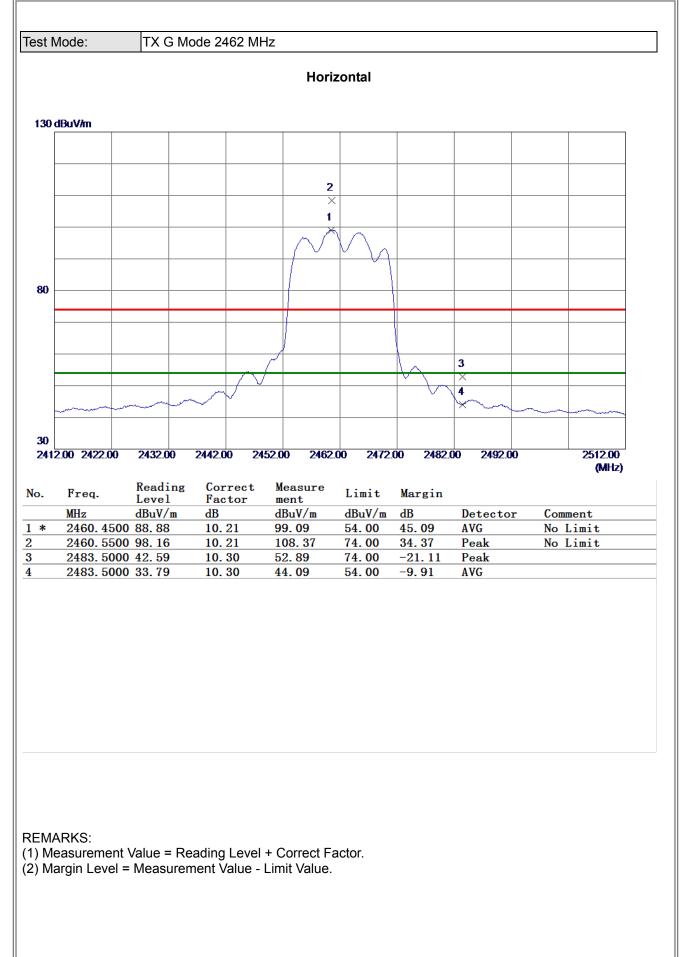




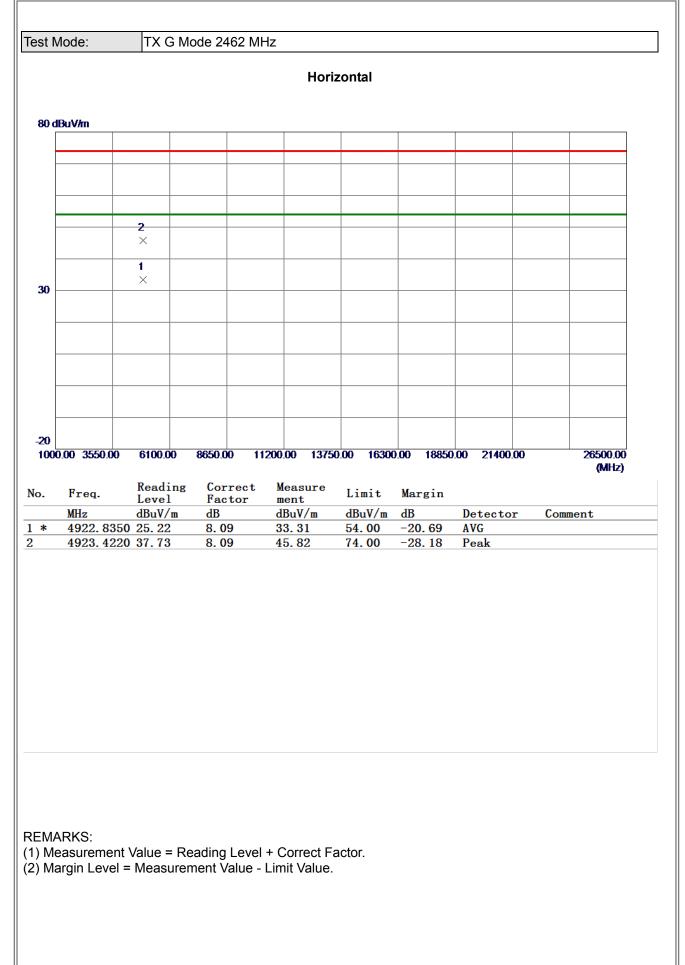




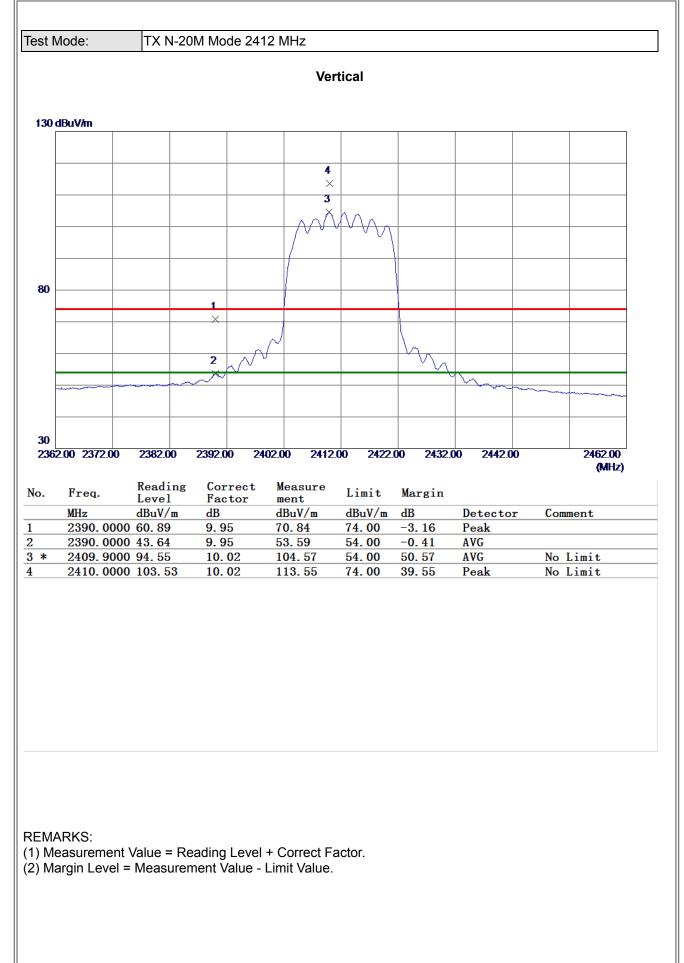




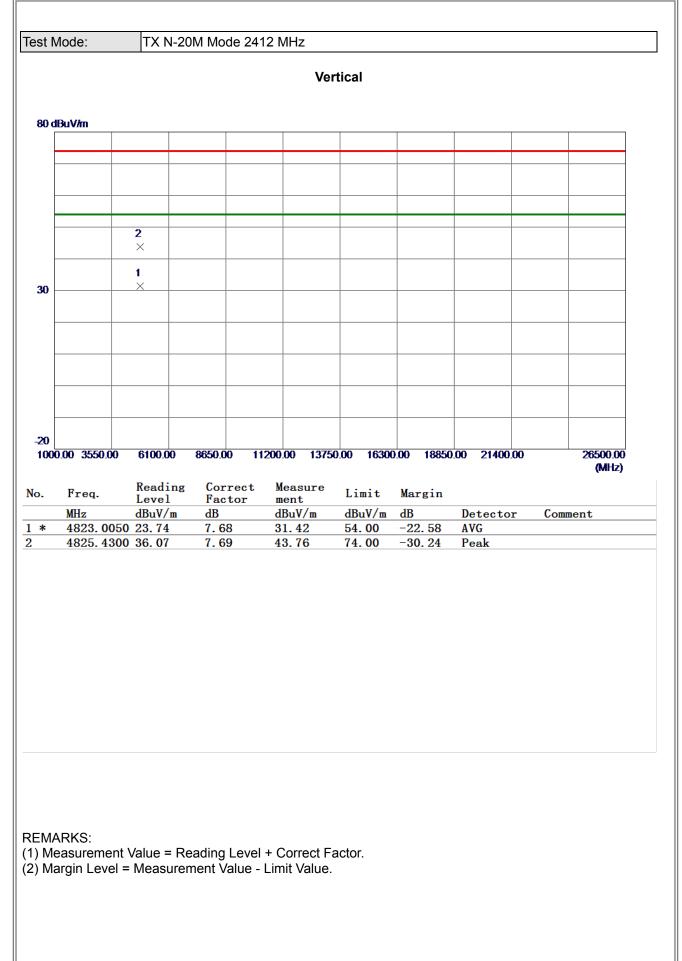




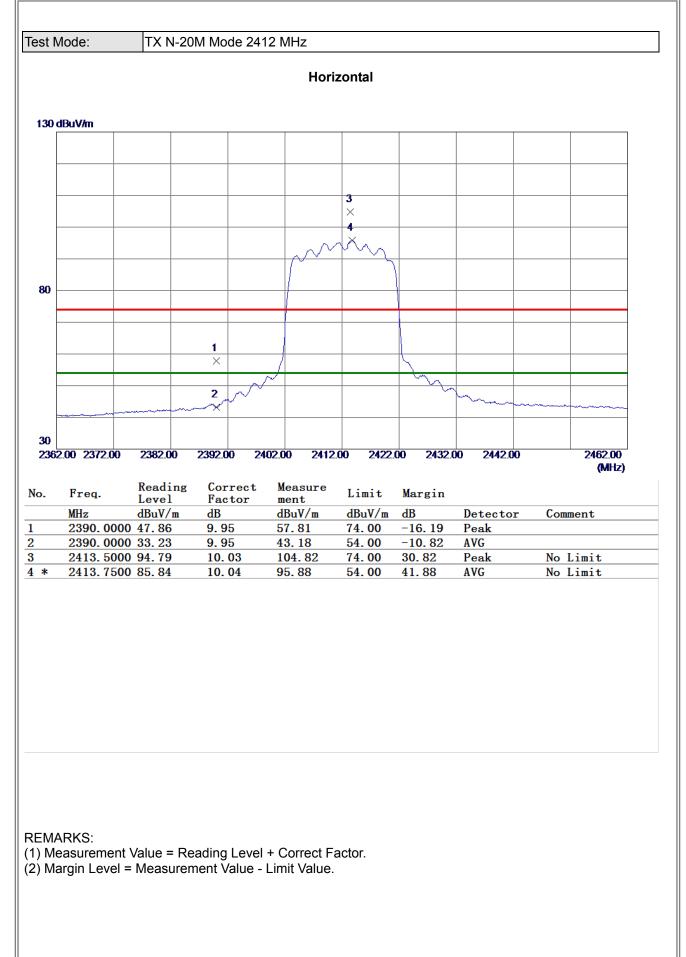




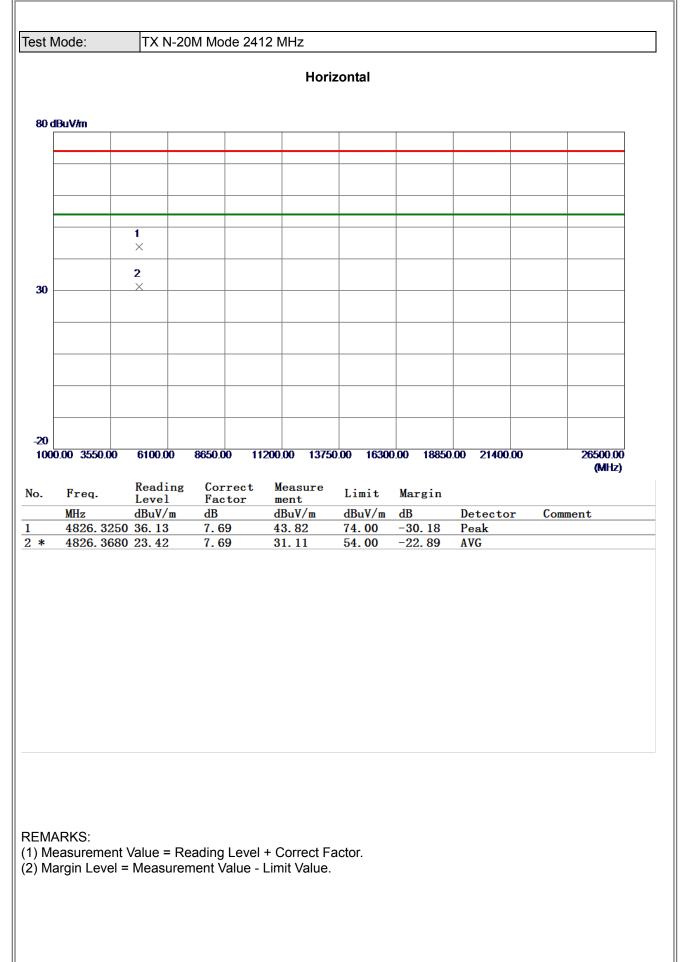




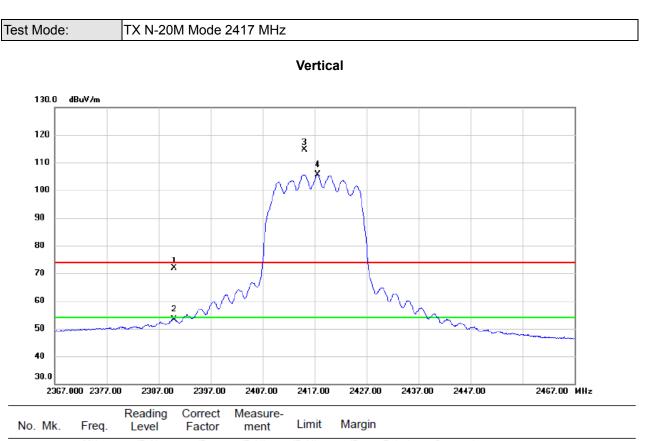








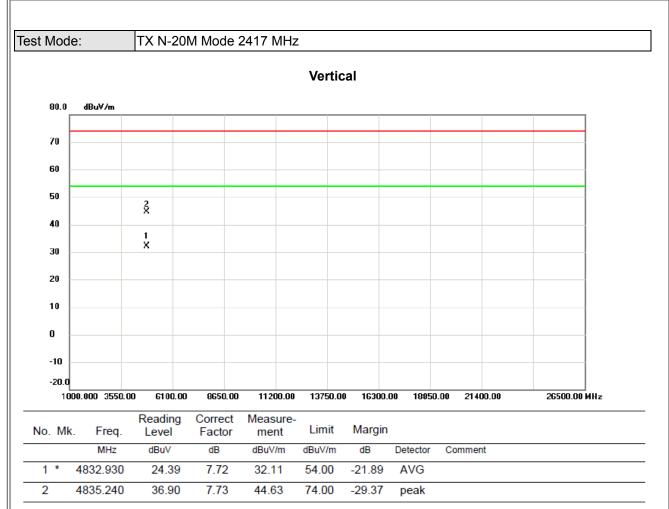




	NO. 1	VIN.	Fleq.	Level	Factor	ment	Linin	margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
_	1	23	390.000	61.87	9.95	71.82	74.00	-2.18	peak	
	2	23	390.000	43.53	9.95	53.48	54.00	-0.52	AVG	
	3 X	( 24	15.000	104.65	10.04	114.69	74.00	40.69	peak	No Limit
	4 *	24	17.550	95.63	10.05	105.68	54.00	51.68	AVG	No Limit

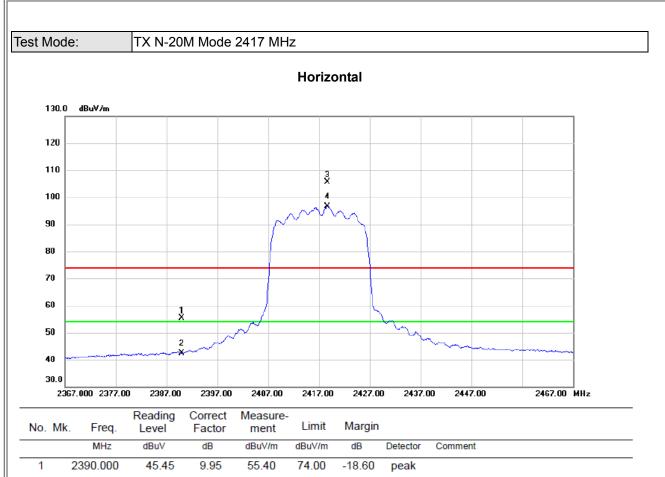
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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





2390.000

2418.700

2418.700

2

3 X

4 \*

32.39

95.64

86.65

9.95

10.06

10.06

42.34

105.70

96.71

54.00

74.00

54.00

-11.66

31.70

42.71

AVG

peak

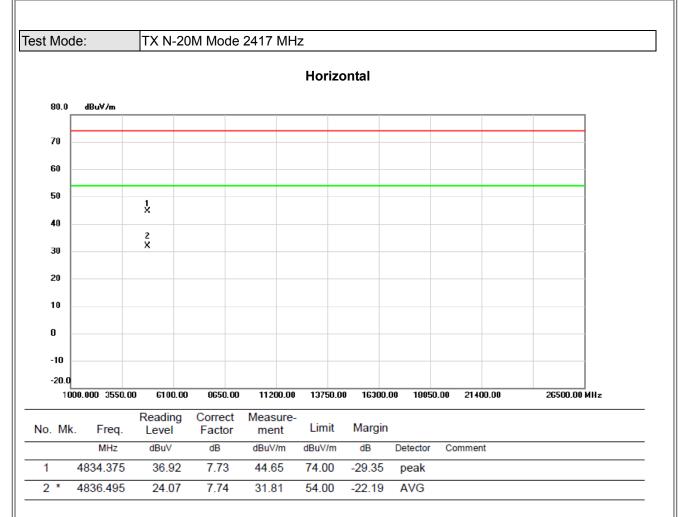
AVG

No Limit

No Limit

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

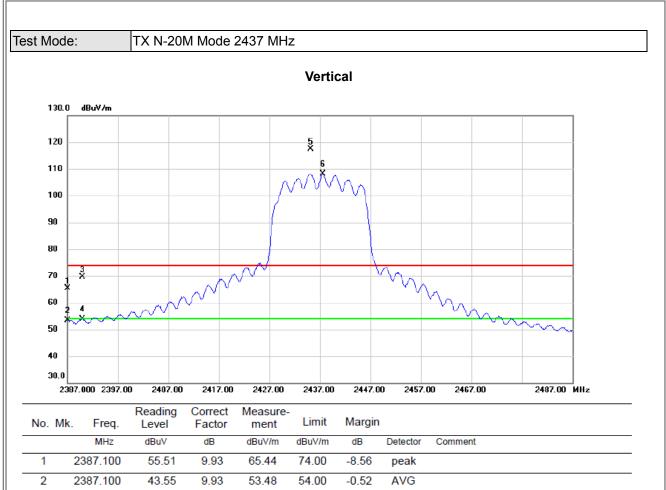




(1) Measurement Value = Reading Level + Correct Factor.

(2) Margin Level = Measurement Value - Limit Value.





2390.000

2390.000

2435.150

2437.650

3

4

5 X

6 \*

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

59.72

43.82

107.23

97.98

9.95

9.95

10.11

10.13

69.67

53.77

117.34

108.11

74.00

54.00

74.00

54.00

-4.33

-0.23

43.34

54.11

peak

AVG

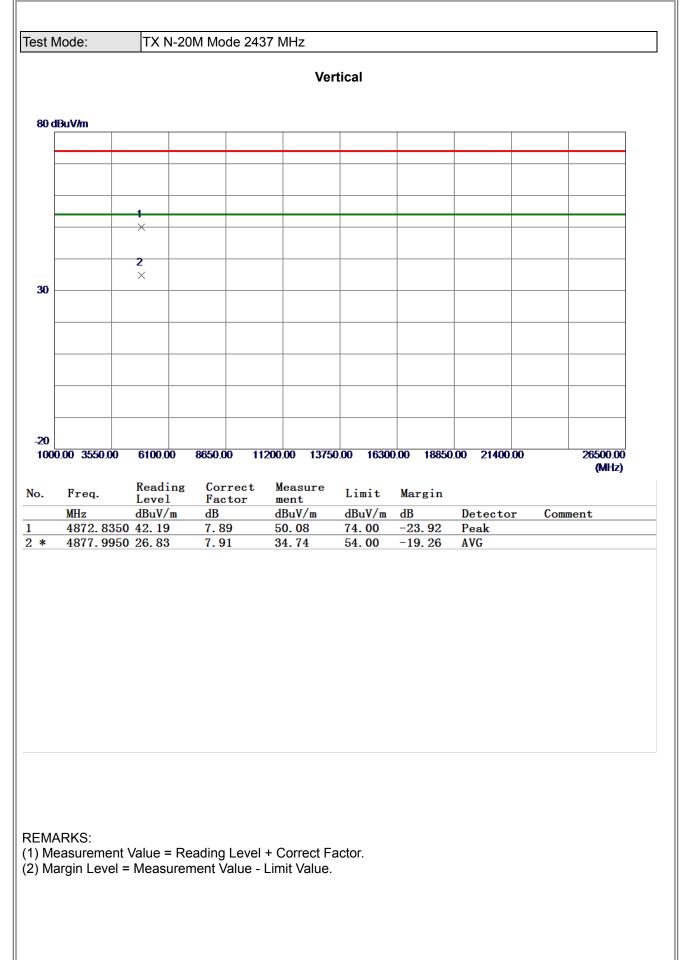
peak

AVG

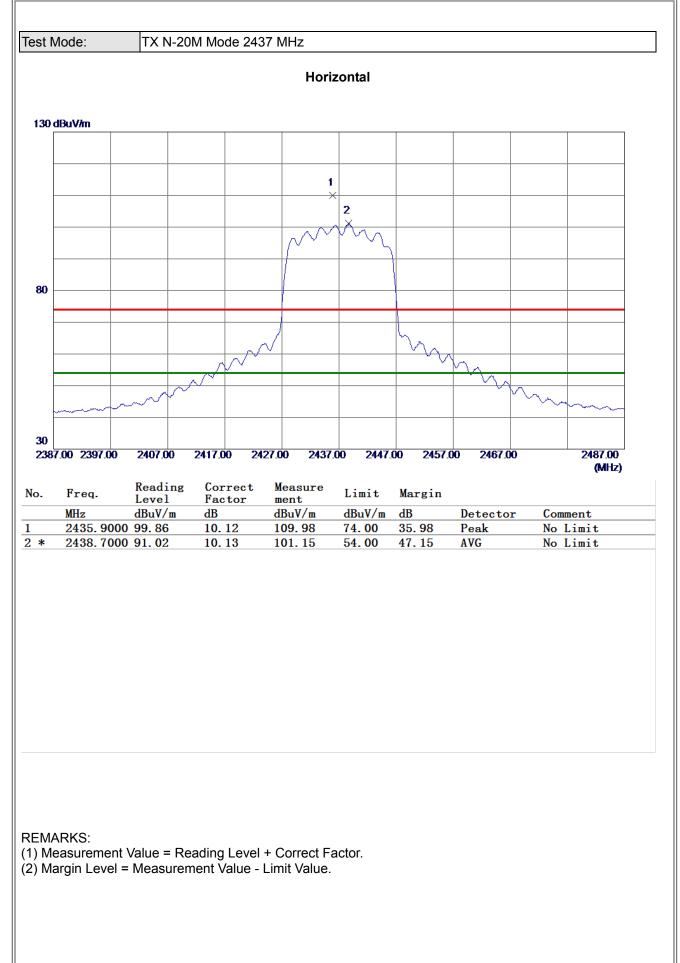
No Limit

No Limit

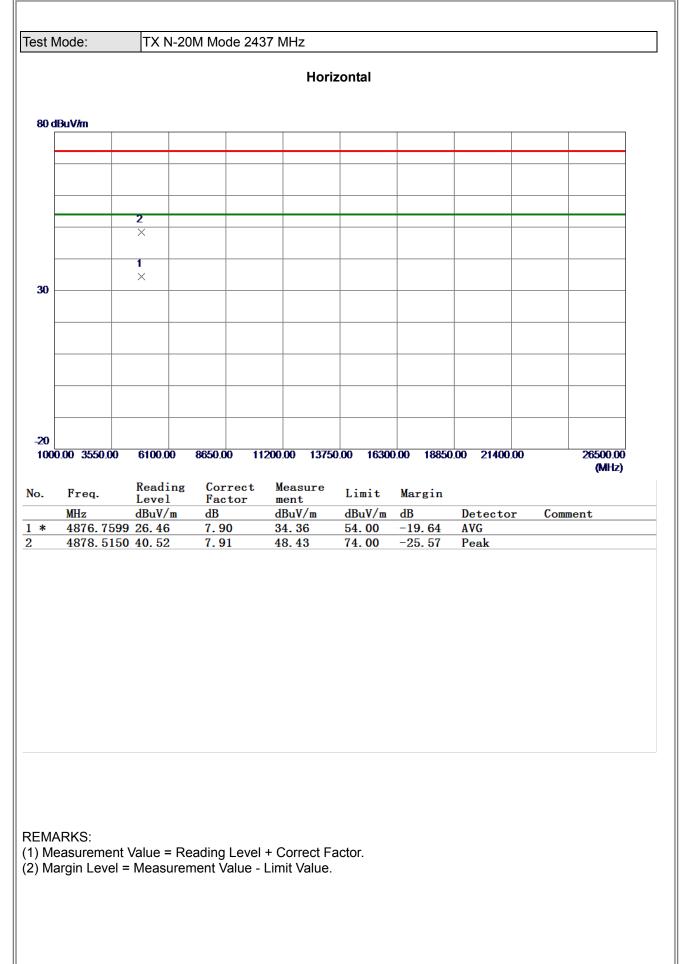




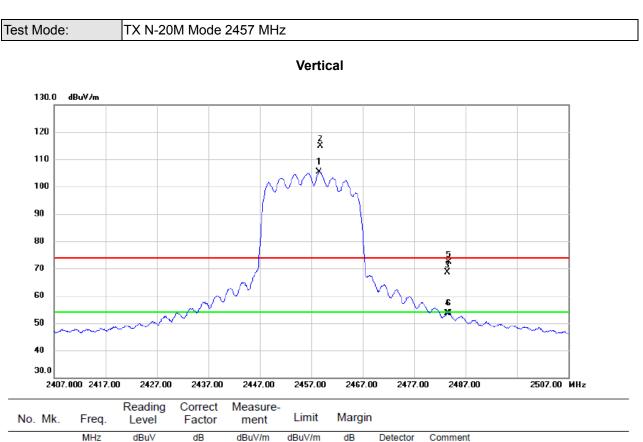








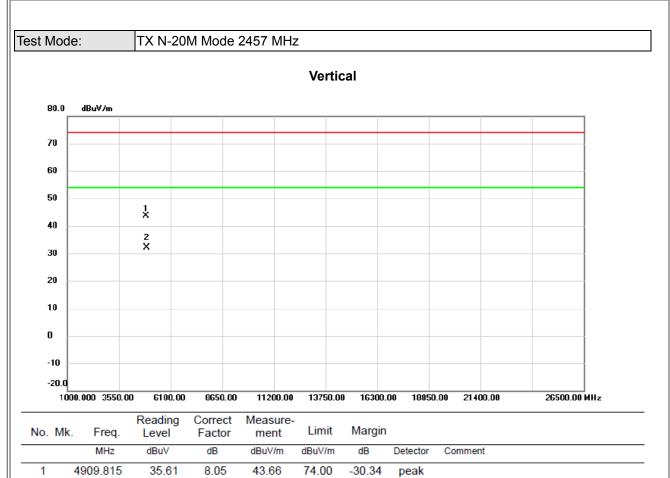




140. mix.	ricq.	LEVEI	racior	ment				
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 *	2458.550	95.20	10.20	105.40	54.00	51.40	AVG	No Limit
2 X	2458.850	104.71	10.20	114.91	74.00	40.91	peak	No Limit
3	2483.500	58.27	10.29	68.56	74.00	-5.44	peak	
4	2483.500	43.28	10.29	53.57	54.00	-0.43	AVG	
5	2483.750	62.04	10.29	72.33	74.00	-1.67	peak	
6	2483.750	43.40	10.29	53.69	54.00	-0.31	AVG	

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





AVG

-21.92

**REMARKS**:

2 \*

4917.940

(1) Measurement Value = Reading Level + Correct Factor.

8.07

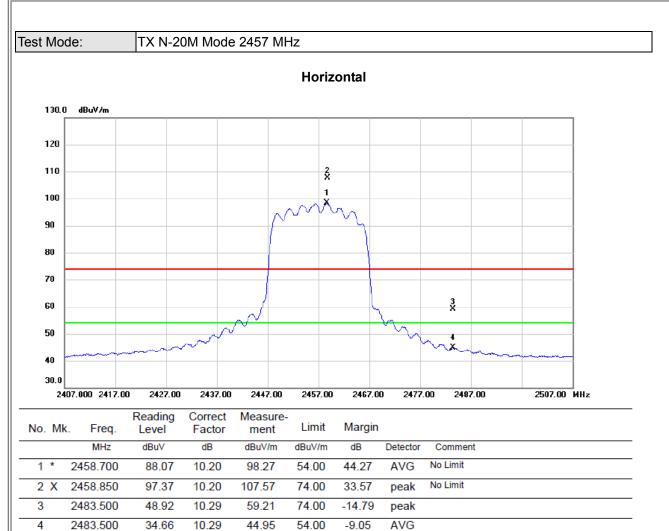
32.08

54.00

24.01

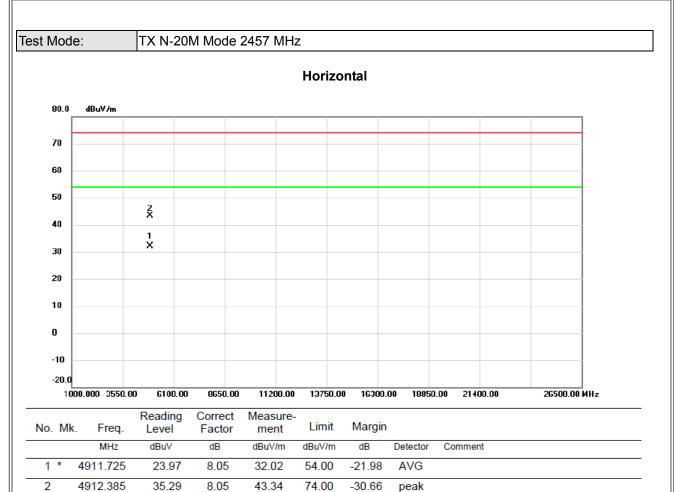
(2) Margin Level = Measurement Value - Limit Value.





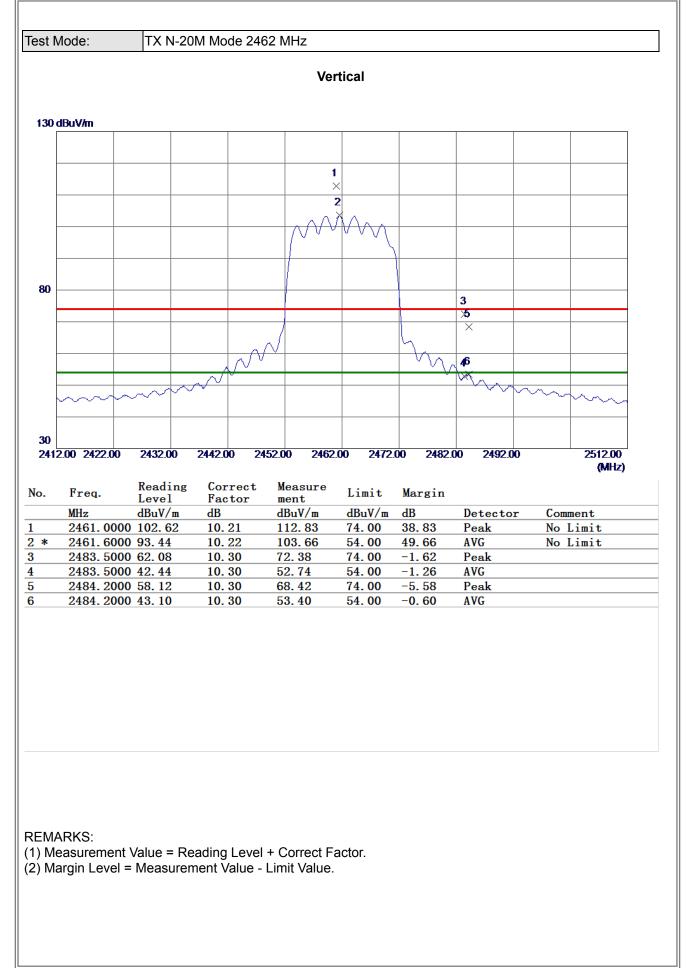
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



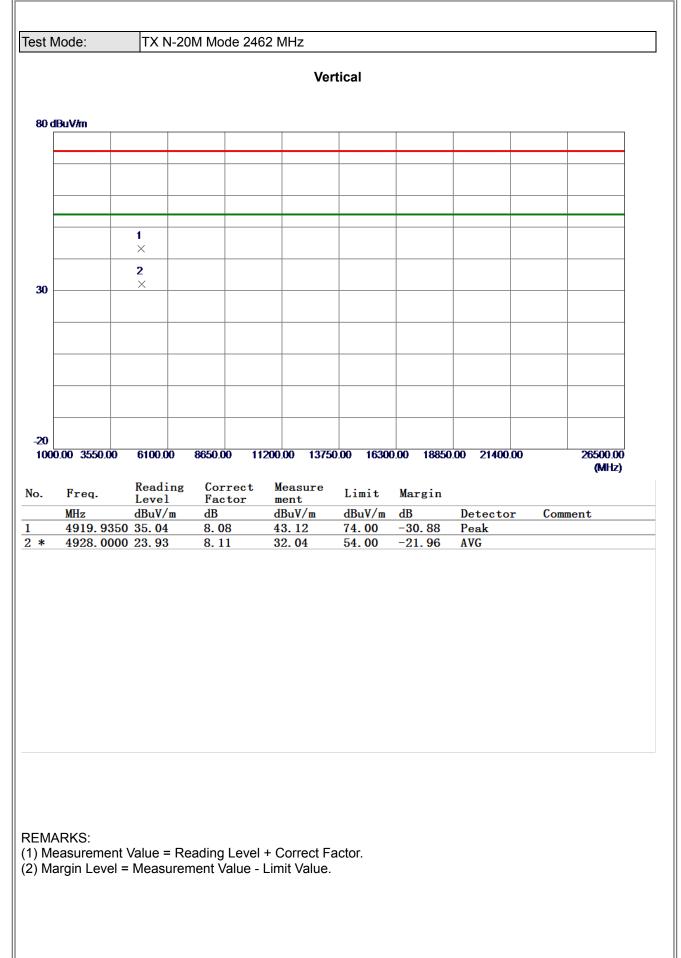


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.

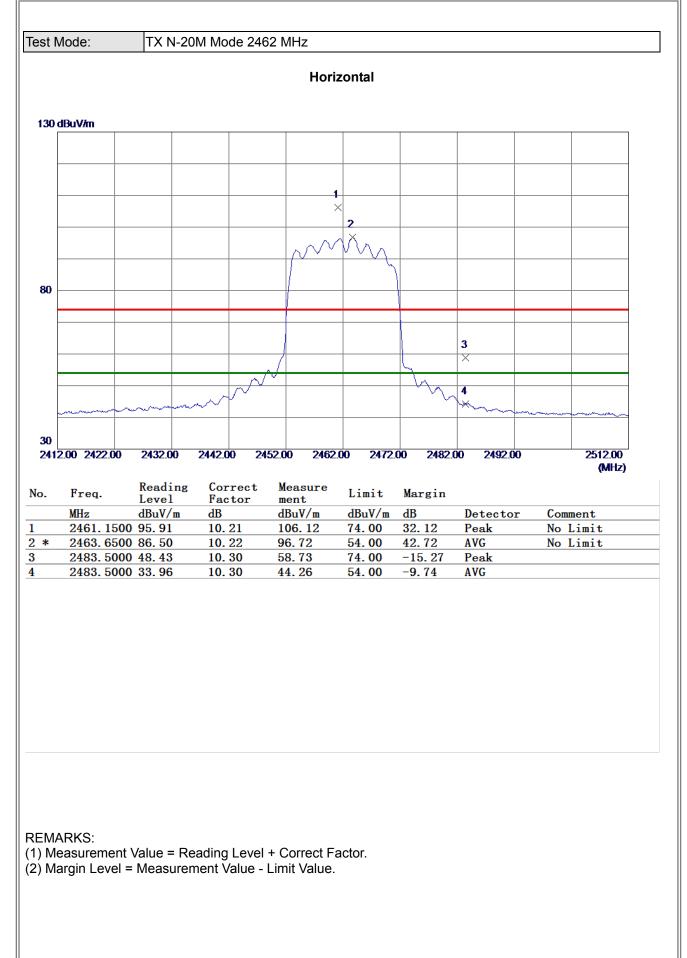




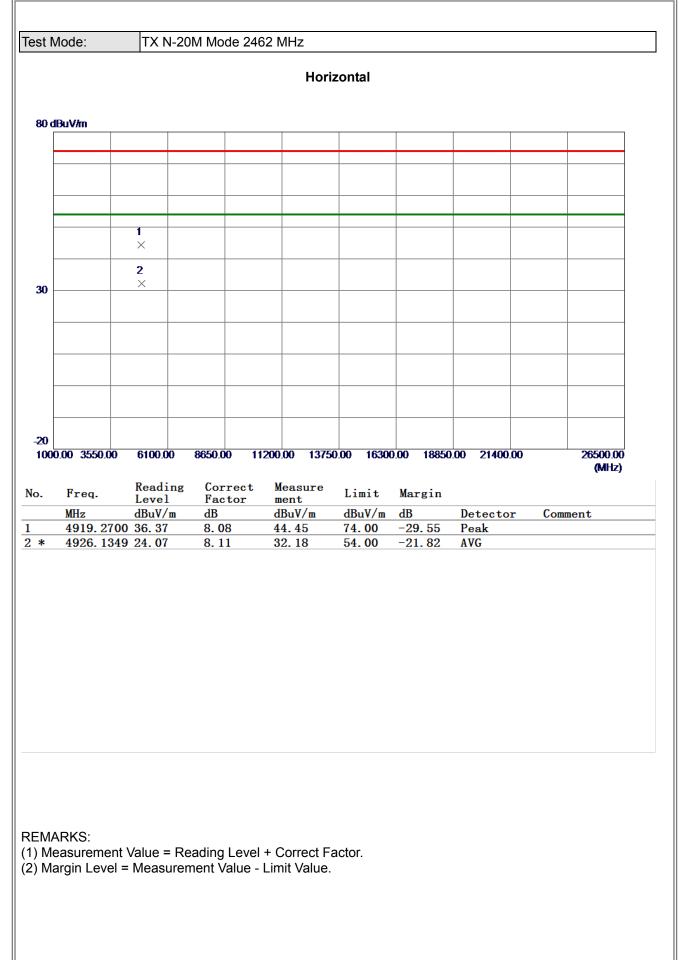




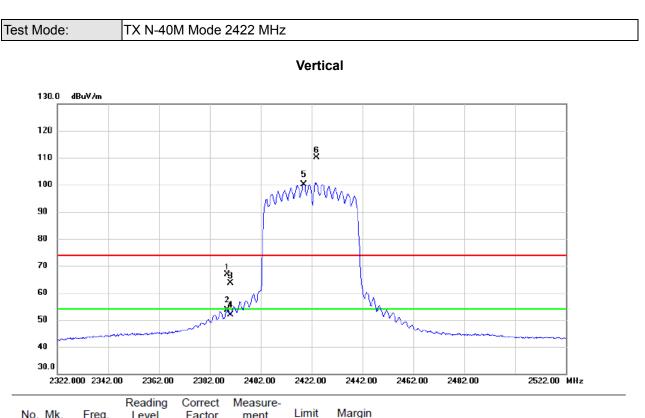








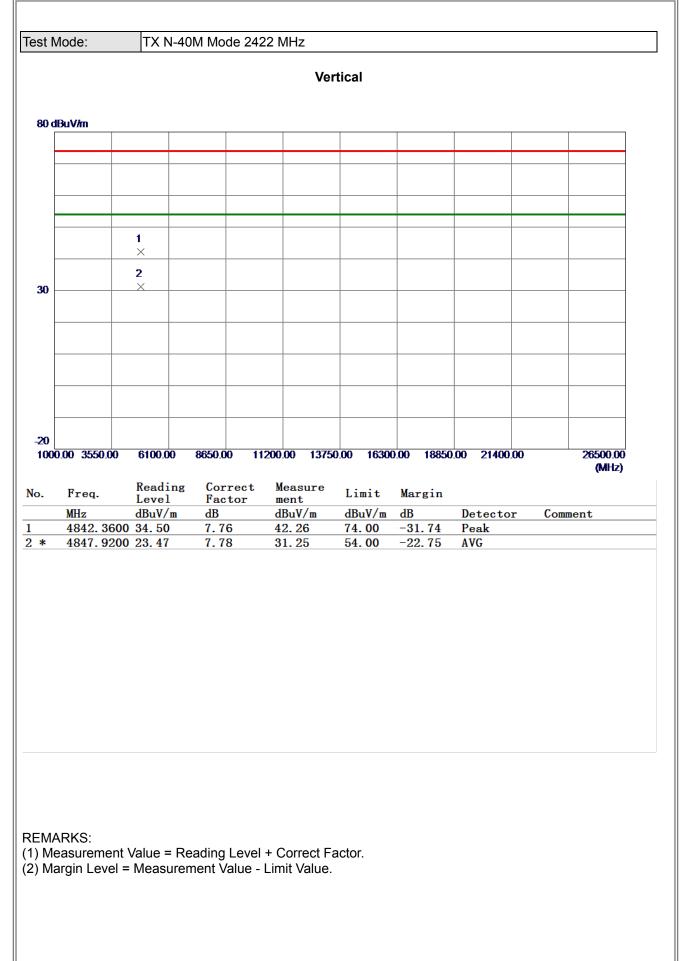




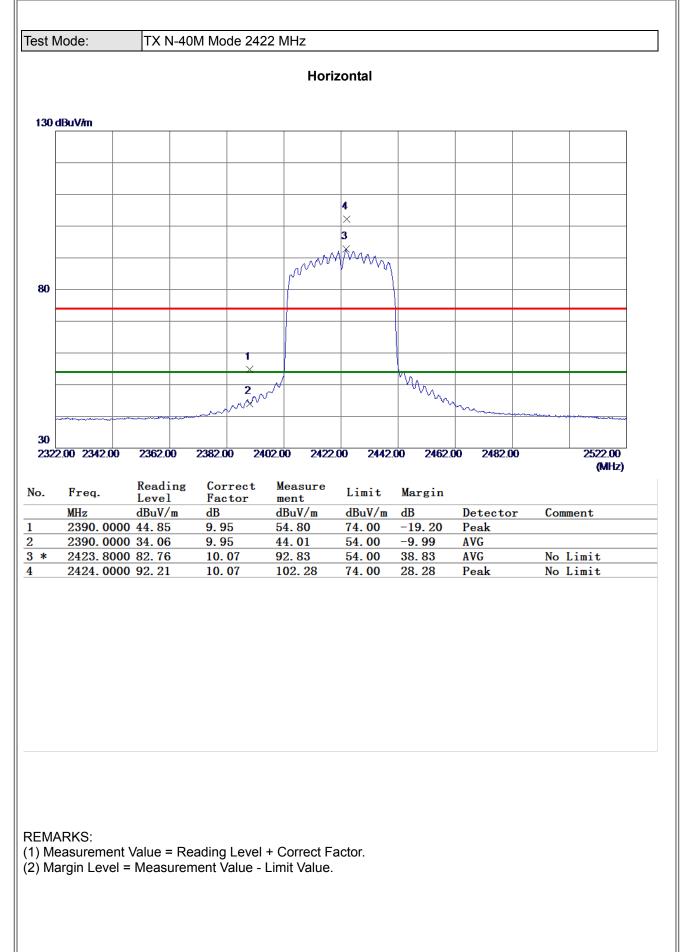
No.	Mk	. Freq.	Level	Factor	ment	Limit	Margin	I	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2388.800	56.94	9.95	66.89	74.00	-7.11	peak	
2		2388.800	43.70	9.95	53.65	54.00	-0.35	AVG	
3		2390.000	53.67	9.95	63.62	74.00	-10.38	peak	
4		2390.000	41.88	9.95	51.83	54.00	-2.17	AVG	
5	*	2419.000	90.13	10.06	100.19	54.00	46.19	AVG	No Limit
6	Х	2424.000	100.07	10.07	110.14	74.00	36.14	peak	No Limit

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

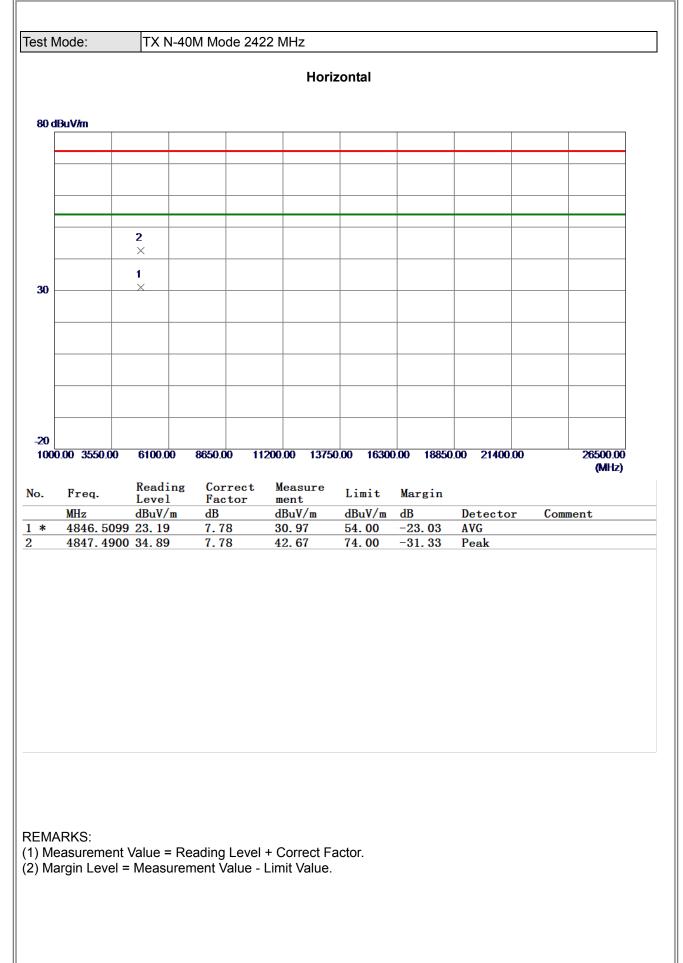




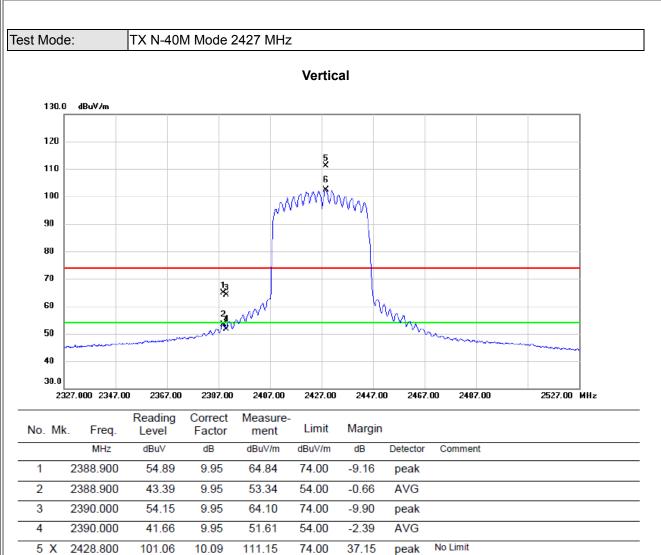












6 \*

2428.800

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

92.24

10.09

102.33

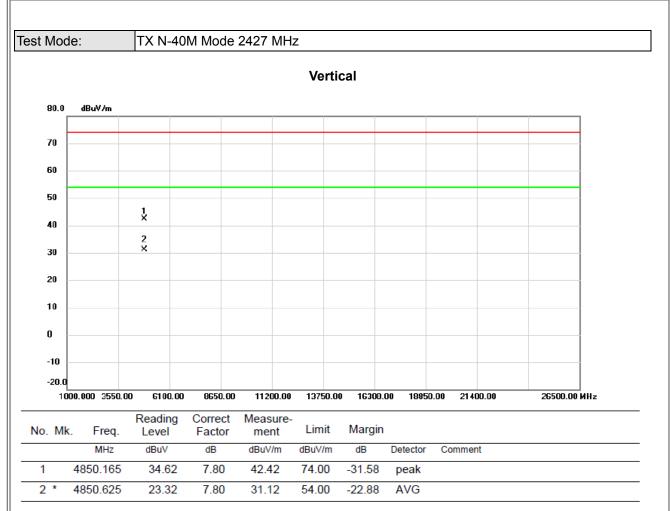
54.00

48.33

AVG

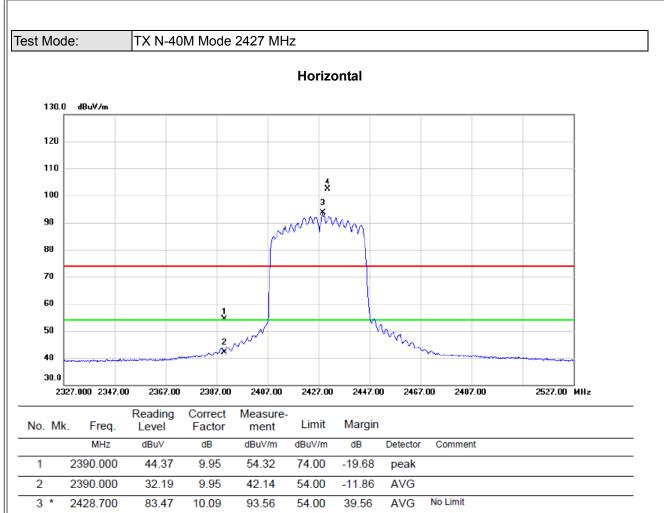
No Limit





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





4 X

2430.500

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

92.17

10.10

102.27

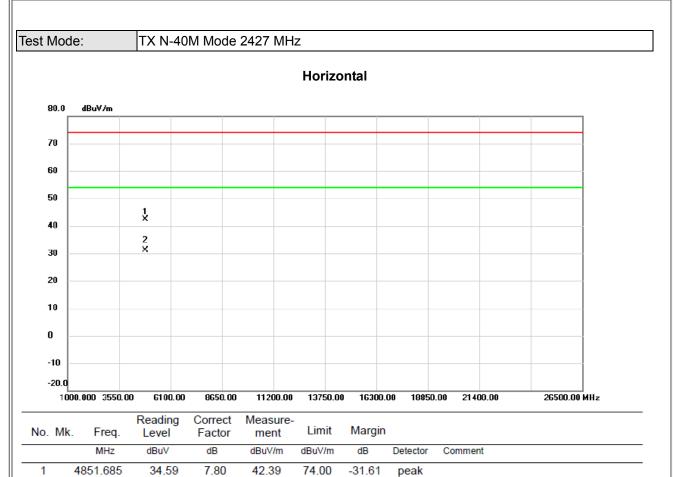
74.00

28.27

peak

No Limit





2 \*

4854.175

23.20

7.81

31.01

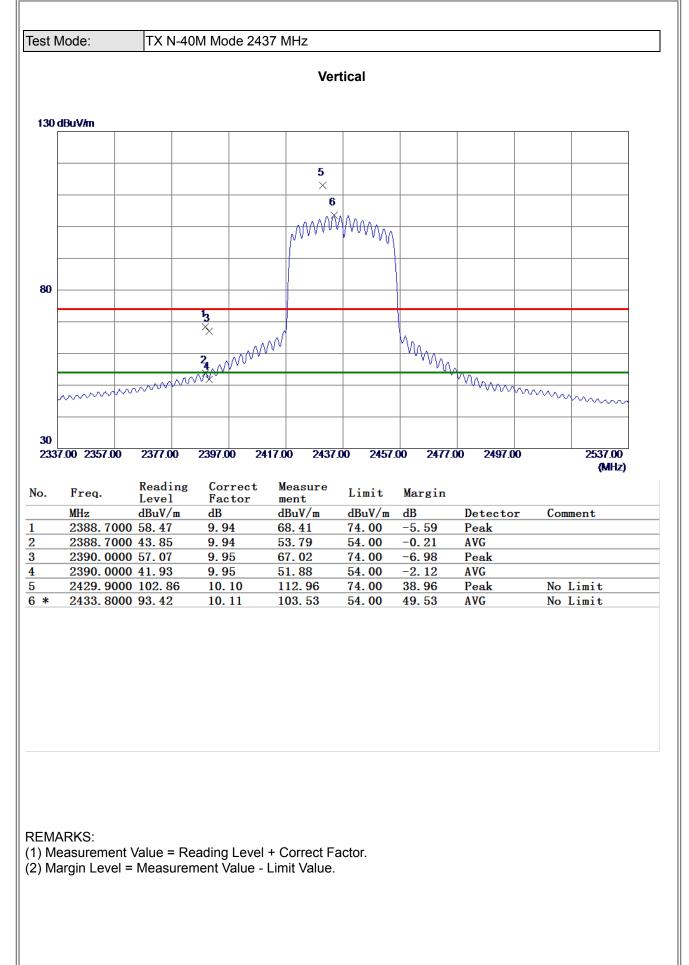
54.00

-22.99

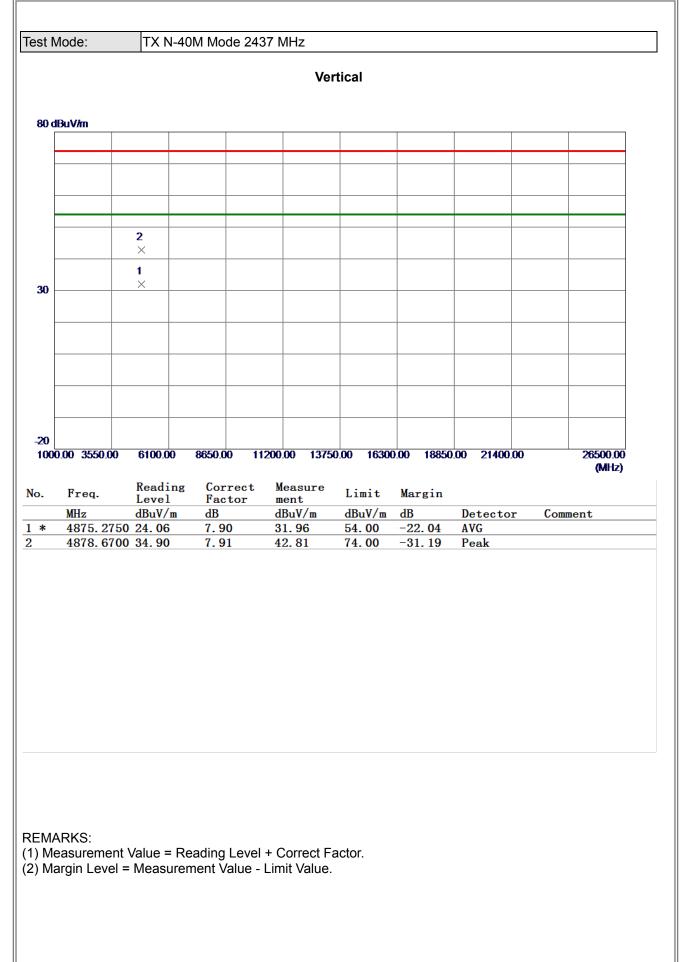
AVG

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

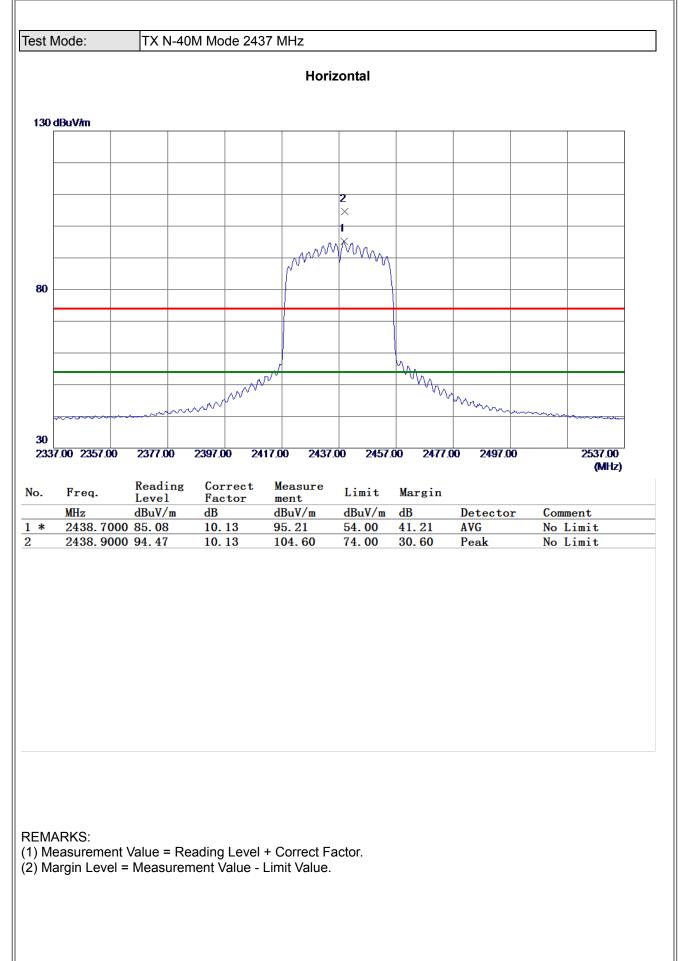




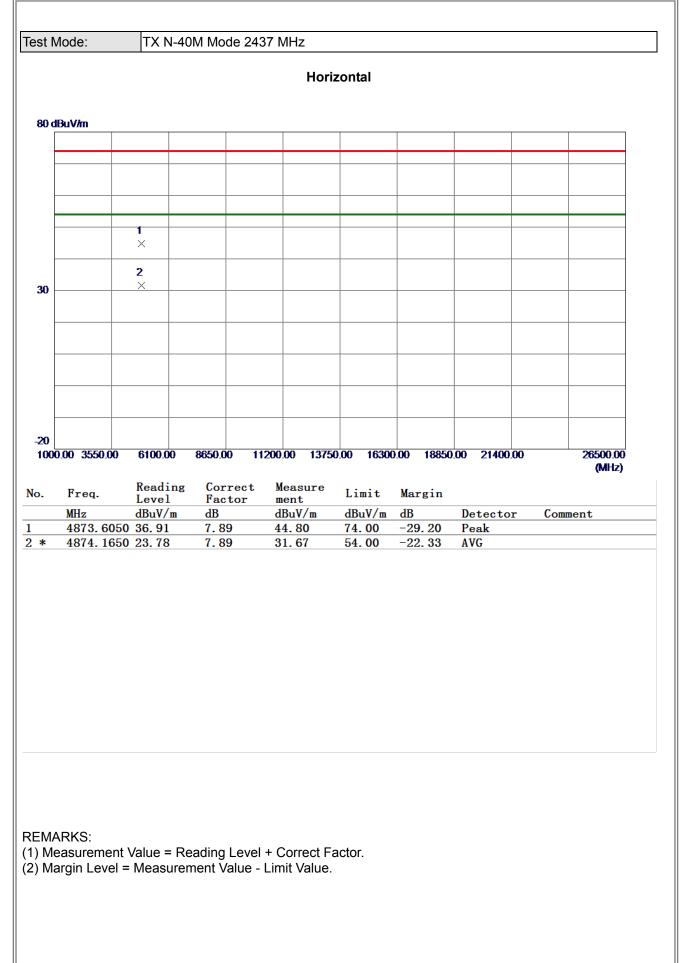




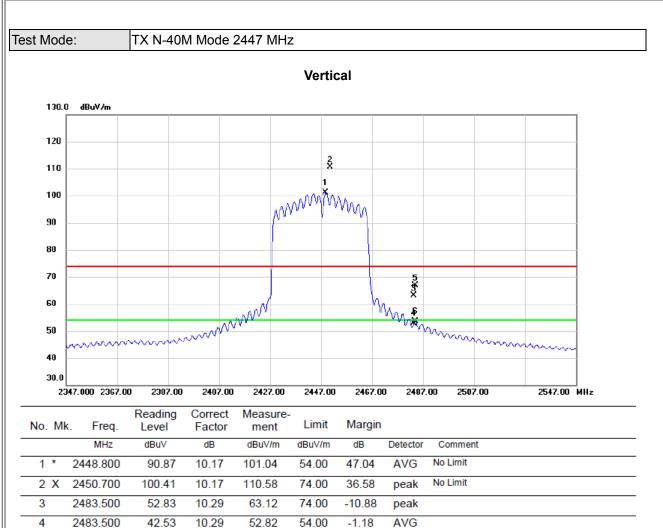












-7.08

-0.35

peak

AVG

74.00

54.00

REMARKS:

5

6

2483.900

2483.900

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

56.63

43.36

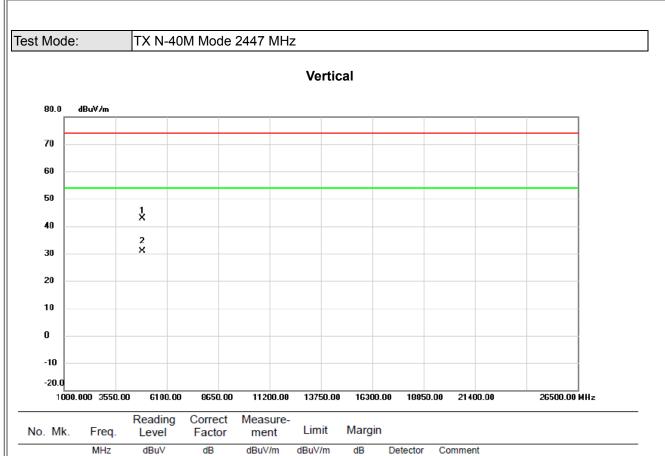
10.29

10.29

66.92

53.65





1

2 \*

4891.655

4894.885

35.00

22.81

7.97

7.97

42.97

30.78

74.00

54.00

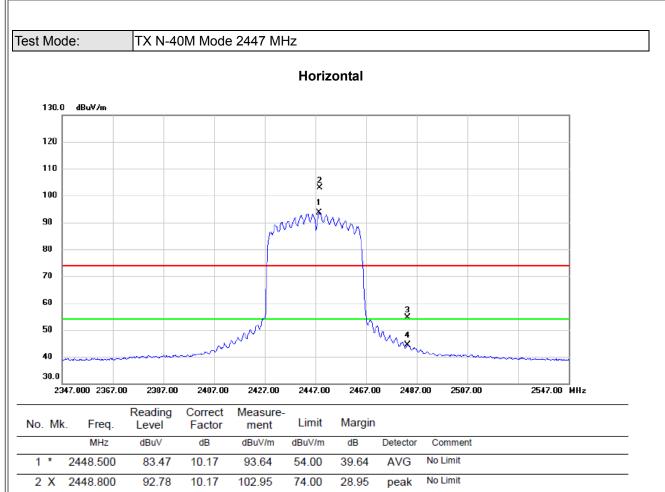
-31.03

-23.22

peak AVG

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





2483.500

2483.500

3

4

44.38

34.15

10.29

10.29

54.67

44.44

74.00

54.00

-19.33

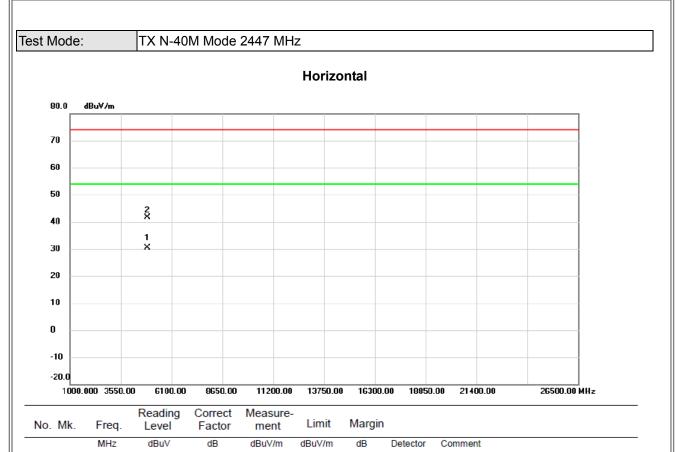
-9.56

peak

AVG

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





1 \*

2

4890.500

4896.995

22.47

33.63

7.95

7.99

30.42

41.62

54.00

74.00

-23.58

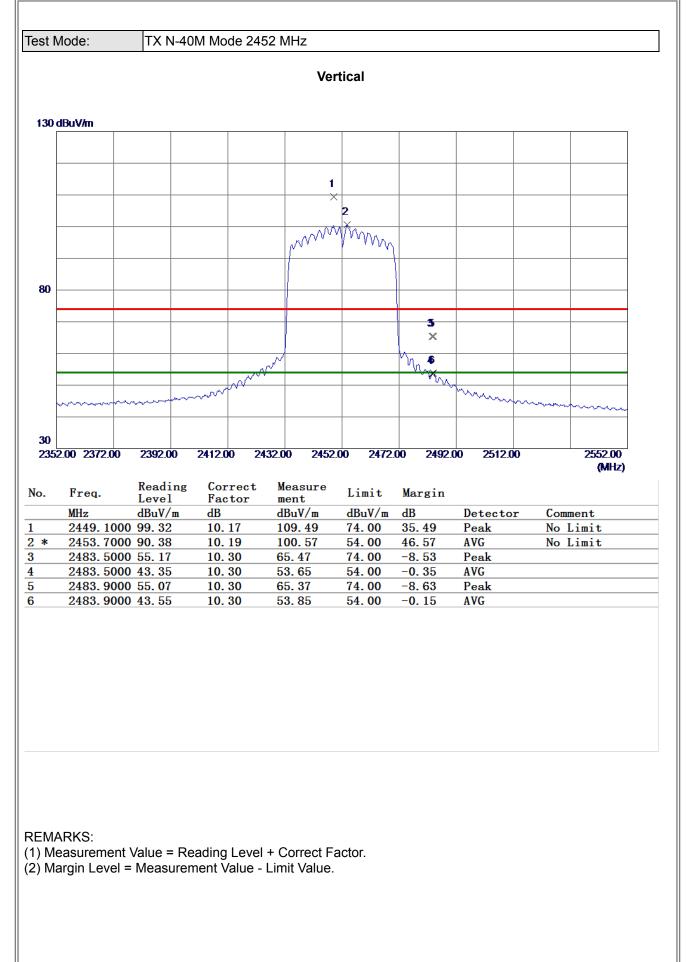
-32.38

AVG

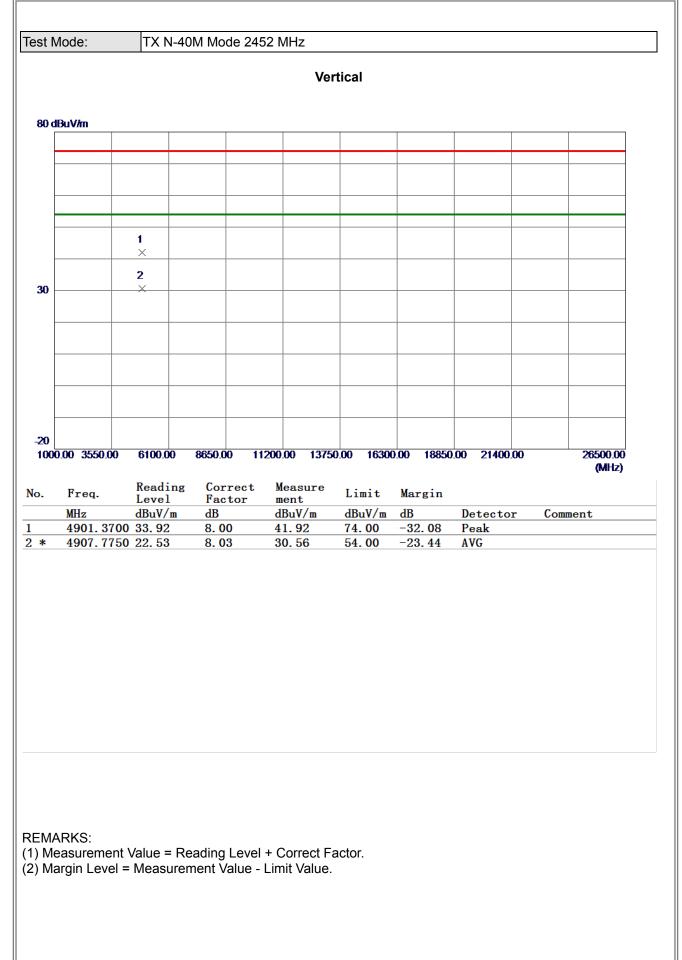
peak

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

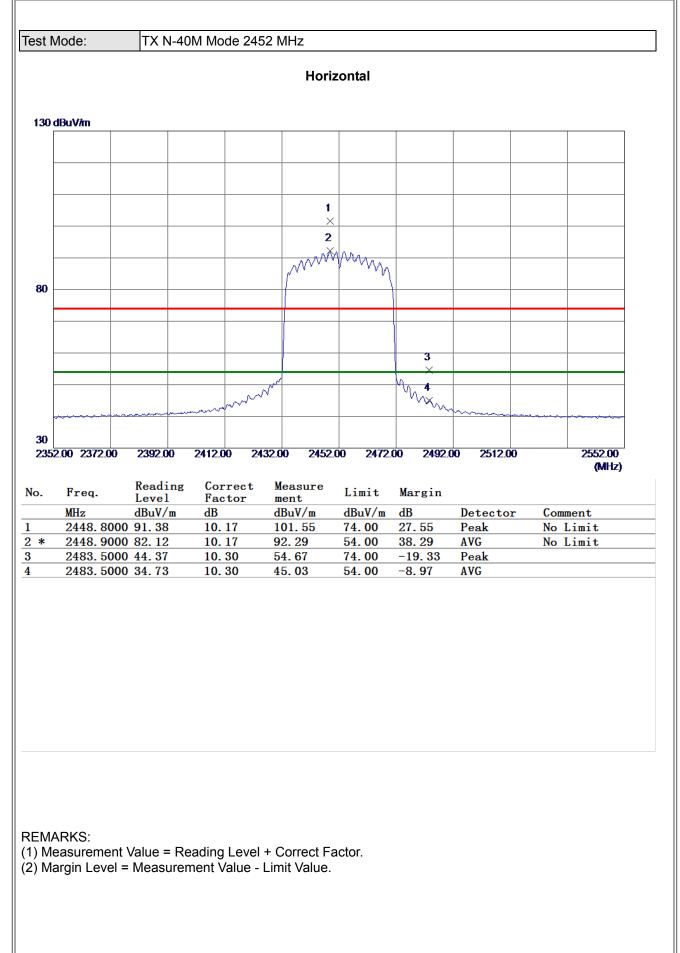




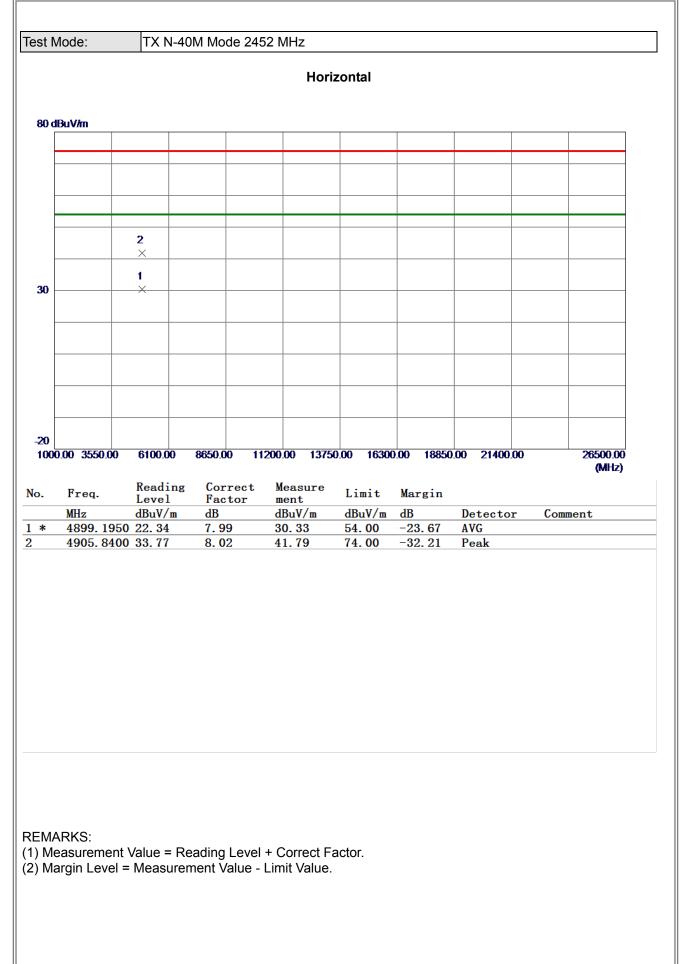












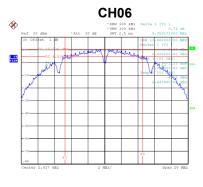


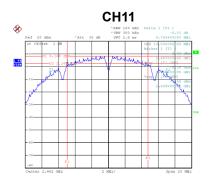
## **APPENDIX E - BANDWIDTH**



Test Mode TX B Mode							
Channel	ChannelFrequency (MHz)6 dB Bandwidth (MHz)6 dB Bandwidth Min. Limit (kHz)Res						
01	2412	9.13	500	Complies			
06	2437	9.36	500	Complies			
11	2462	9.76	500	Complies			





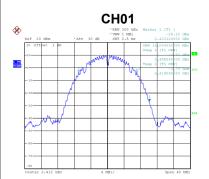


Date: 6.MAR.2020 14:18:38

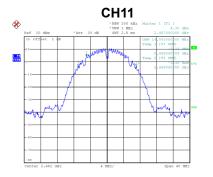
Date: 6.MAR.2020 14:20:05

Date: 6.MAR.2020 14:21:48

Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	14.00	Complies
06	2437	14.00	Complies
11	2462	14.00	Complies







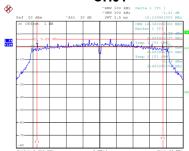
Date: 6.MAR.2020 15:13:52

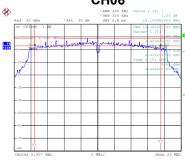
Date: 6.MAR.2020 15:14:21

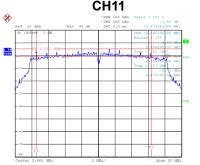
Date: 6.MAR.2020 15:14:38



Test Mode	TX G Mode			
	•			
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	15.14	500	Complies
06	2437	15.16	500	Complies
11	2462	13.88	500	Complies
	<b>101</b> av 100 km = Delta 1 (71 )	CH06	-	H11
· · ·	MA 100 KHZ Delta 1 [T1] HW 300 KHZ -1.41 dB MT 2.5 ms 15.139963000 MHZ CBW 16.360000100 MHZ Harkor1 [T]	*VBM 300 kHz Ref 20 dBm *Att 30 dB SWT 2.5 ms 1 20 0ffbet 1 dB 0 0000 1		FRM 100 kHz Delta 1 [71] VSM 300 kHz1.55 dB SWT 2.5 ms 13.873953000 MHz GBW 14.50000000 MHz Market [71]







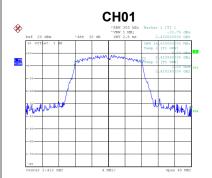
Date: 6.MAR.2020 14:25:02

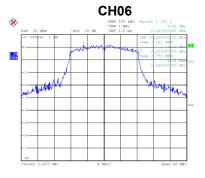
Date: 6.MAR.2020 14:28:47

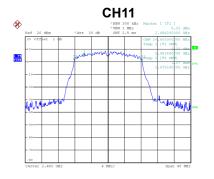
Date: 6.MAR.2020 14:30:09

Date: 6.MAR.2020 15:15:32

Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	16.40	Complies
06	2437	16.56	Complies
11	2462	16.40	Complies







Date: 6.MAR.2020 15:14:57

Date: 6.MAR.2020 15:15:14



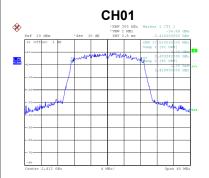
Test Mode	TX N-20M Mode			
	1	1		
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	15.14	500	Complies
06	2437	15.06	500	Complies
11	2462	15.74 500		Complies
	H01	CH06	•	H11
Ref 20 dBm         *Att 30 dB         s           20 Offset 1 dB	24M 300 KHZ −1.49 08 MT 2.5 m a 15.13994300 MHZ Marker 1 (T1 5.6 mm 4 m km km 1 (T1 5.6 mm)	• VBW 300 kHz	-0-74 GB 56597500 MBs 1-2000/00 MBs 1-2000/00 MBs 1-1 TT 1-1 TT 1-1 TT 1-2 CBS 1-2 CB	

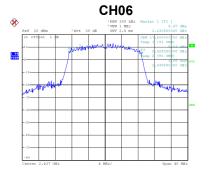




Date: 6.MAR.2020 14:31:31

Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
01	2412	17.52	Complies
06	2437	17.60	Complies
11	2462	17.52	Complies







Date: 6.MAR.2020 15:15:51

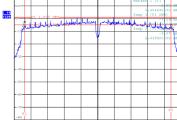
Date: 6.MAR.2020 15:16:11

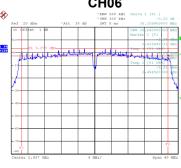
Date: 6.MAR.2020 14:32:45

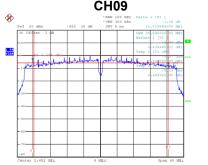
Date: 6.MAR.2020 15:16:31



Test Mode	TX N-40M Mode			
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
03	2422	35.16	500	Complies
06	2437	35.16	500	Complies
09	2452	32.72	500	Complies
	H03	CH06		H09
Pef 20 dBm         *Att 30 dB         2           10 0fflet 1 dB	949 10 0 32	*VEW 300 kHz Ref 20 dBm *Att 30 dB SWT 5 ms 3 20 0ffpet 1 dB 000 3		

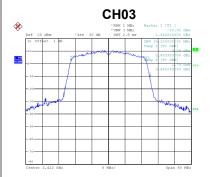


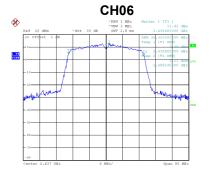


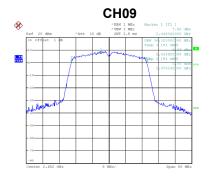


Date: 6.MAR.2020 14:35:38

Channel	Frequency (MHz)	99 % Emission Bandwidth (MHz)	Result
03	2422	36.32	Complies
06	2437	36.32	Complies
09	2452	36.32	Complies







Date: 6.MAR.2020 15:16:51

Date: 6.MAR.2020 15:17:07

Date: 6.MAR.2020 14:36:58

Date: 6.MAR.2020 15:17:24

Date: 6.MAR.2020 14:38:24



# **APPENDIX F - MAXIMUM AVERAGE OUTPUT POWER**



Test Mode TX B Mode_Ant. 1								
Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result	
01	2412	18.89	0.00	18.89	30.00	1.0000	Complies	
06	2437	21.88	0.00	21.88	30.00	1.0000	Complies	
11	2462	19.61	0.00	19.61	30.00	1.0000	Complies	

#### Test Mode TX B Mode\_Ant. 2

Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)		Max. Limit (W)	Result
01	2412	18.92	0.00	18.92	30.00	1.0000	Complies
06	2437	21.71	0.00	21.71	30.00	1.0000	Complies
11	2462	19.73	0.00	19.73	30.00	1.0000	Complies

### Test Mode TX B Mode\_Total

Channel	Frequency Average Output Po (MHz) (dBm)		Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	21.92	30.00	1.0000	Complies
06	2437	24.81	30.00	1.0000	Complies
11	2462	22.68	30.00	1.0000	Complies



Test Mode TX G Mode_Ant. 1							
Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	17.02	0.29	17.31	30.00	1.0000	Complies
06	2437	20.98	0.29	21.27	30.00	1.0000	Complies
11	2462	16.84	0.29	17.13	30.00	1.0000	Complies

Test Mode TX G Mode\_Ant. 2

Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)		Max. Limit (W)	Result
01	2412	16.91	0.29	17.20	30.00	1.0000	Complies
06	2437	21.02	0.29	21.31	30.00	1.0000	Complies
11	2462	16.95	0.29	17.24	30.00	1.0000	Complies

### Test Mode TX G Mode\_Total

Channel	Frequency (MHz)	Average Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	20.27	30.00	1.0000	Complies
06	2437	24.30	30.00	1.0000	Complies
11	2462	20.20	30.00	1.0000	Complies



Test Mode	Test Mode TX N-20M Mode_Ant. 1						
Channel	Frequency	Average Output Power	Duty	Average Output Power	Max. Limit	Max. Limit	Result
	(MHz)	(dBm)	Factor	+ Duty Factor (dBm)	(dBm)	(W)	
01	2412	17.11	0.29	17.40	30.00	1.0000	Complies
06	2437	20.66	0.29	20.95	30.00	1.0000	Complies
11	2462	16.18	0.29	16.47	30.00	1.0000	Complies

Test Mode TX N-20M Mode\_Ant. 2

Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)		Max. Limit (W)	Result
01	2412	17.19	0.29	17.48	30.00	1.0000	Complies
06	2437	20.51	0.29	20.80	30.00	1.0000	Complies
11	2462	16.23	0.29	16.52	30.00	1.0000	Complies

### Test Mode TX N-20M Mode\_Total

Channel	Frequency (MHz)	Average Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
01	2412	20.45	30.00	1.0000	Complies
06	2437	23.88	30.00	1.0000	Complies
11	2462	19.50	30.00	1.0000	Complies



Test Mode	TX N-40M Mode_Ant. 1						
Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
03	2422	14.88	0.33	15.21	30.00	1.0000	Complies
06	2437	17.89	0.33	18.22	30.00	1.0000	Complies
09	2452	14.15	0.33	14.48	30.00	1.0000	Complies

Test Mode TX N-40M Mode\_Ant. 2

Channel	Frequency (MHz)	Average Output Power (dBm)	Duty Factor	Average Output Power + Duty Factor (dBm)		Max. Limit (W)	Result
03	2422	14.69	0.33	15.02	30.00	1.0000	Complies
06	2437	18.01	0.33	18.34	30.00	1.0000	Complies
09	2452	14.68	0.33	15.01	30.00	1.0000	Complies

### Test Mode TX N-40M Mode\_Total

Channel	Frequency (MHz)	Average Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
03	2422	18.13	30.00	1.0000	Complies
06	2437	21.30	30.00	1.0000	Complies
09	2452	17.77	30.00	1.0000	Complies



# **APPENDIX G - CONDUCTED SPURIOUS EMISSIONS**