

FCC Radio Test Report

FCC ID:Q78-ZXV10B820CA15

This report concerns: Original Grant

Project No.	:	1912H040
Equipment	:	Hybrid STB
Brand Name	:	ZTE
Test Model	:	ZXV10 B820C-A15
Series Model	:	N/A
Applicant	:	ZTE Corporation
Address	:	ZTE Plaza, Hi-Tech Park, Nanshan District, Shenzhen, Guangdong,
		P.R.China
Manufacturer	:	ZTE Corporation
Address	:	ZTE Plaza, Hi-Tech Park, Nanshan District, Shenzhen, Guangdong,
		P.R.China
Date of Receipt	:	Jan. 13, 2020
Date of Test	:	Jan. 13, 2020~Feb. 16, 2020
Issued Date	:	Feb. 28, 2020
Report Version	:	R00
Test Sample	:	Engineering Sample No.: SH201912301
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.

scaa Min

Prepared by : Iscaa Min

Liam. Wu

Approved by : Krain Wu



Certificate # 5123.03

Add: No. 29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210, China TEL: +86-021-61765666 Web: www.newbtl.com



Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any agency of the U.S. Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

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	Page
REPORT ISSUED HISTORY	5
1 . SUMMARY OF TEST RESULTS	6
1.1 TEST FACILITY	7
1.2 MEASUREMENT UNCERTAINTY	7
1.3 TEST ENVIRONMENT CONDITIONS	7
2 . GENERAL INFORMATION	8
2.1 GENERAL DESCRIPTION OF EUT	8
2.2 DESCRIPTION OF TEST MODES	10
2.3 PARAMETERS OF TEST SOFTWARE	12
2.4 DUTY CYCLE	13
2.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	14
2.6 SUPPORT UNITS	14
3 . AC POWER LINE CONDUCTED EMISSIONS TEST	15
3.1 LIMIT	15
3.2 TEST PROCEDURE	15
3.3 DEVIATION FROM TEST STANDARD	15
3.4 TEST SETUP	16
3.5 EUT OPERATION CONDITIONS	16
3.6 TEST RESULTS	16
4 . RADIATED EMISSIONS TEST	17
4.1 LIMIT	17
4.2 TEST PROCEDURE	18
4.3 DEVIATION FROM TEST STANDARD	18
4.4 TEST SETUP	19
4.5 EUT OPERATION CONDITIONS	20
4.6 TEST RESULTS - 30 MHZ TO 1000 MHZ	20
4.7 TEST RESULTS - ABOVE 1000 MHZ	20
5 . BANDWIDTH TEST	21
5.1 LIMIT	21
5.2 TEST PROCEDURE	21
5.3 DEVIATION FROM STANDARD	21
5.4 TEST SETUP	21
5.5 EUT OPERATION CONDITIONS	21
5.6 TEST RESULTS	21



Table of Contents	Page
6 . MAXIMUM OUTPUT POWER TEST	22
6.1 LIMIT 6.2 TEST PROCEDURE	22 22
	22
6.3 DEVIATION FROM STANDARD	22
6.5 EUT OPERATION CONDITIONS	22
6.6 TEST RESULTS 7 . CONDUCTED SPURIOUS EMISSIONS	22 23
	23
7.2 TEST PROCEDURE	23
7.3 DEVIATION FROM STANDARD	23
	23
7.5 EUT OPERATION CONDITIONS	23
	23
8 . POWER SPECTRAL DENSITY TEST	24
8.1 LIMIT	24
8.2 TEST PROCEDURE	24
8.3 DEVIATION FROM STANDARD	24
8.4 TEST SETUP	24
8.5 EUT OPERATION CONDITIONS	24
8.6 TEST RESULTS	24
9 . MEASUREMENT INSTRUMENTS LIST	25
10 . EUT TEST PHOTO	27
APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS	30
APPENDIX B - RADIATED EMISSION - 30 MHZ TO 1000 MHZ	35
APPENDIX C - RADIATED EMISSION- ABOVE 1000 MHZ	40
APPENDIX D - BANDWIDTH	89
APPENDIX E - MAXIMUM OUTPUT POWER	92
APPENDIX F - CONDUCTED SPURIOUS EMISSIONS	95
APPENDIX G - POWER SPECTRAL DENSITY	102



REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Feb. 28, 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 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. 29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210, China BTL's Test Firm Registration Number for FCC: 476765 BTL's Designation Number for FCC: CN1241

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. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
		9 KHz~30 MHz	V	3.79
		9 KHz~30 MHz	Н	3.57
	CISPR	30 MHz~200 MHz	V	4.04
		30 MHz~200 MHz	Н	3.76
SH-CB01		200 MHz~1,000 MHz	V	4.24
3H-CDUI		200 MHz~1,000 MHz	Н	3.84
		1 GHz~18 GHz	V	4.46
		1 GHz~18 GHz	Н	4.40
		18 GHz~40 GHz	V	3.95
		18 GHz~40 GHz	Н	3.95

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	22°C	56%	AC 120V/60Hz	Forest Li
Radiated Emissions-30 MHz to 1GHz	22°C	42%	AC 120V/60Hz	Forest Li
Radiated Emissions-Above 1000 MHz	22°C	40%	AC 120V/60Hz	Forest Li
Bandwidth	22°C	56%	AC 120V/60Hz	Forest Li
Maximum output power & e.i.r.p.	22°C	56%	AC 120V/60Hz	Forest Li
Conducted Spurious Emissions	22°C	56%	AC 120V/60Hz	Forest Li
Power Spectral Density	22°C	56%	AC 120V/60Hz	Forest Li



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Hybrid STB
Brand Name	ZTE
Test Model	ZXV10 B820C-A15
Series Model	N/A
Model Difference(s)	N/A
Software Version	N/A
Hardware Version	N/A
Power Source	DC voltage supplied from AC/DC adapter. #1:Meic/MN012E-L120100 #2:Ruide/RD1201000-C55-35MGD
Power Rating	I/P: I/P:100-240~50/60Hz 0.6A max. O/P:12V 1A
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 Output Power	IEEE 802.11b: 17.12 dBm (0.0515 W) IEEE 802.11g: 25.14 dBm (0.3266 W) IEEE 802.11n (HT20): 27.34 dBm (0.5420 W) IEEE 802.11n (HT40): 27.38 dBm (0.5470 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	4.4
2	N/A	N/A	Internal	N/A	4.3

Note:

The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and receivers (2T2R), all transmit signals are completely correlated, then,

Direction gain= Directional gain = $10\log[(10^{G1/20}+10^{G2/20}+...10^{GN/20})^2/N]dBi$, that is

Directional gain=10log[(10^{4.4/20}+10^{4.3/20})²/2]dBi =7.36. So, the output power limit is 30-7.36+6=28.64,

the power spectral density limit is 8-7.36+6=6.64.

4. Table for Antenna Configuration:

Operating Mode TX Mode	1TX	2TX
802.11b	V (Ant. 1)	-
802.11g	V (Ant. 1)	-
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 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 N40 Mode Channel 03	

Radiated emissions test - Below 1GHz	
Final Test Mode:	Description
Mode 5	TX N40 Mode Channel 03

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	

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) 802.11b mode: CCK (1 Mbps) 802.11g mode: OFDM (6 Mbps) 802.11n HT20 mode : BPSK (13 Mbps) 802.11n HT40 mode : BPSK (27 Mbps)
 - For radiated emission tests, the highest output powers were set for final test.
- (3) For radiated emission below 1 GHz test, the IEEE 802.11n(HT40) Channel 03 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.
- (5) The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

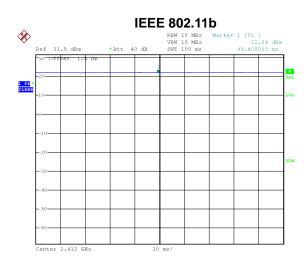
2.3 PARAMETERS OF TEST SOFTWARE

Test Software		cmd	
Frequency (MHz)	2412	2437	2462
IEEE 802.11b	69/78	71/80	72/82
IEEE 802.11g	61/67	62/68	65/70
IEEE 802.11n (HT20)	64/69	67/72	68/74
Frequency (MHz)	2422	2437	2452
IEEE 802.11n (HT40)	65/70	65/71	67/73



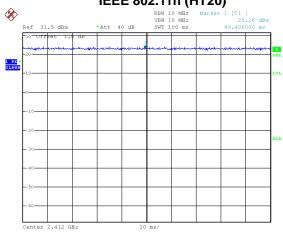
2.4 DUTY CYCLE

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.



Date: 3.JAN.2020 16:13:43

Duty cycle = 100.000 ms / 100.000 ms = 100% Duty Factor = 10 log(1/Duty cycle) = 0.00 IEEE 802.11n (HT20)

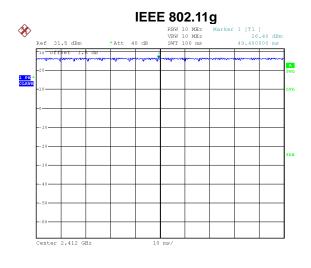


Date: 3.JAN.2020 16:16:21

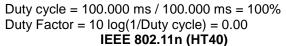
Duty cycle = 100.000 ms / 100.000 ms = 100% Duty Factor = 10 log(1/Duty cycle) = 0.00,

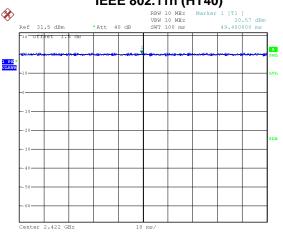
NOTE:

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



Date: 3.JAN.2020 16:14:51





Date: 3.JAN.2020 16:17:26

Duty cycle = 100.000 ms / 100.000 ms = 100% Duty Factor = 10 log(1/Duty cycle) = 0.00

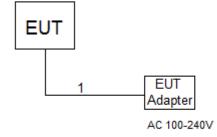
For radiated emissions frequency above 1 GHz, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 0.01 kHz (Duty cycle < 98%).

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 0.01 kHz (Duty cycle < 98%).



2.5 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.6 SUPPORT UNITS

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

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	DC Cable	N/A	N/A	1m



3. AC POWER LINE CONDUCTED EMISSIONS TEST

3.1 LIMIT

Frequency of Emission (MHz)	Limit (d	BμV)
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

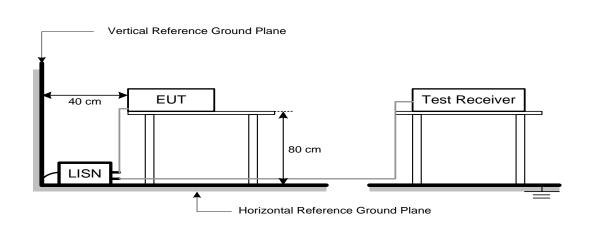
- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.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

Frequency (MHz)	(dBuV/m at 3 m)	
Frequency (Miriz)	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).
- (4) The test result calculated as following:
 - Measurement Value = Reading Level + Correct Factor Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use) Margin Level = Measurement Value - Limit Value



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.

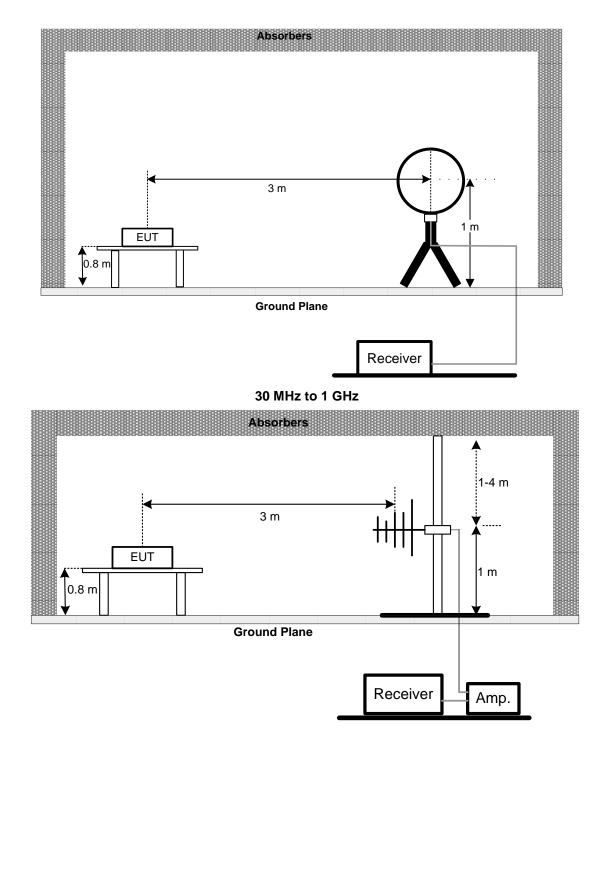
4.3 DEVIATION FROM TEST STANDARD

No deviation



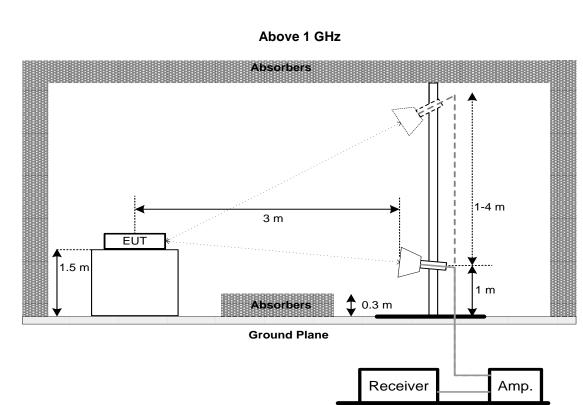
4.4 TEST SETUP

9 kHz-30 MHz









4.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6 TEST RESULTS - 30 MHZ TO 1000 MHZ

Please refer to the APPENDIX B.

4.7 TEST RESULTS - ABOVE 1000 MHZ

Please refer to the APPENDIX C.

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			
	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.

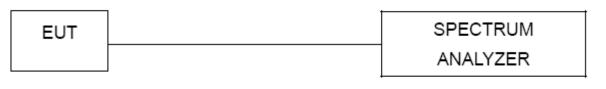
For 99% Emission Bandwidth B/G/N-20 Mode: RBW= 300 KHz, VBW=1 MHz, Sweep time = 2.5 ms. For 99% Emission Bandwidth N-40 Mode: RBW= 1 MHz, VBW=3 MHz, Sweep time = 2.5 ms.

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



5.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6 TEST RESULTS

Please refer to the APPENDIX D.



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 (for peak power) or 11.9.2.3.1 (for AVG power) of ANSI C63.10-2013.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP

EUT	Power Meter

6.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

6.6 TEST RESULTS

Please refer to the APPENDIX E.



7. CONDUCTED SPURIOUS EMISSIONS

7.1 LIMIT

For FCC

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.

For ISED

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak Output Power limits. If the transmitter complies with the Output Power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen 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



7.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.6 TEST RESULTS

Please refer to the APPENDIX F.



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			
	Fower 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

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 G.



9. MEASUREMENT INSTRUMENTS LIST

	AC Power Line Conducted Emissions					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	
1	Line Impedance Stabilisation Network	Schwarzbeck	NNLK 8121	8121-822	Mar. 29, 2020	
2	TWO-LINE V-NETWORK	R&S	ENV216	101340	Sep. 01, 2020	
3	Test Cable	emci	EMCRG400-BM-N M-10000	170628	Apr. 17, 2020	
4	EMI Test Receiver	R&S	ESCI	100082	Mar. 29, 2020	
5	50Ω Terminator	SHX	TF2-1G-A	17051602	Mar. 29, 2020	
6	50Ω coaxial switch	Anritsu	MP59B	6201750902	Mar. 29, 2020	
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A	

	Radiated Emissions - 9 kHz to 30 MHz						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until		
1	Loop Antenna	EMCI	EMCI LPA600	275	Mar. 29, 2020		
2	EMI Test Receiver	R&S	ESCI	100082	Mar. 29, 2020		
3	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	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	719	Mar. 29, 2020		
2	Pre-Amplifier	emci	EMC9135	980400	Mar. 29, 2020		
3	MXE EMI Receiver	Keysight	N9038A	MY57150106	Mar. 29, 2020		
4	Test Cable	emci	EMC104-SM-SM-7 000	170330	Apr. 17, 2020		
5	Test Cable	emci	EMC104-SM-SM-1 000	170331	Apr. 17, 2020		
6	Test Cable	emci	EMC104-SM-NM-3 500	170621	Apr. 17, 2020		
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A		



			Emissions - Above 1		T	
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	
1	Double-Ridged Waveguide Horn Antenna	ETS-Lindgren	9120D	00206960	Mar. 29, 2020	
2	Pre-Amplifier	emci	EMC012645SE	980421	Mar. 29, 2020	
3	EXA Spectrum Analyzer	Keysight	N9010A	MY56480545	Mar. 29, 2020	
4	Test Cable	emci	EMC104-SM-SM-7 000	170330	Apr. 17, 2020	
5	Test Cable	emci	EMC104-SM-SM-1 000	170331	Apr. 17, 2020	
6	Test Cable	emci	EMC104-SM-NM-3 500	170621	Apr. 17, 2020	
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A	
8	MXE EMI Receiver	Keysight	N9038A	MY57150106	Mar. 29, 2020	
9	Double-Ridged Waveguide Horn Antenna	ETS-Lindgren	3116C	00203919	Mar. 29, 2020	
10	Pre-Amplifier	emci	EMC184045SE	980409	Mar. 29, 2020	
11	EXA Spectrum Analyzer	Keysight	N9010A	MY56480579	Mar. 29, 2020	
12	Test Cable	emci	EMC102-KM-KM-8 00	170654	Apr. 17, 2020	
13	Test Cable	emci	Super Reliable-40G-SS11- 7000	W0030860001	Apr. 17, 2020	
14	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A	

			Bandwidth		
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100626	Mar. 29, 2020

	Maximum Output Power					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	
1	Peak Power Analyze	Keysight	8990B	MY51000507	Mar. 29, 2020	
2	Wideband Power Sensor	Keysight	N9123A	MY58310003	Mar. 29, 2020	

Antenna Conducted Spurious Emissions									
Item	em Kind of Equipment Manufacturer Type No. Serial No. Calibrat								
1	Spectrum Analyzer	R&S	FSP40	100626	Mar. 29, 2020				

Power Spectral Density										
Item	Kind of Equipment	Manufacturer	Serial No.	Calibrated until						
1	Spectrum Analyzer	R&S	FSP40	100626	Mar. 29, 2020					

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

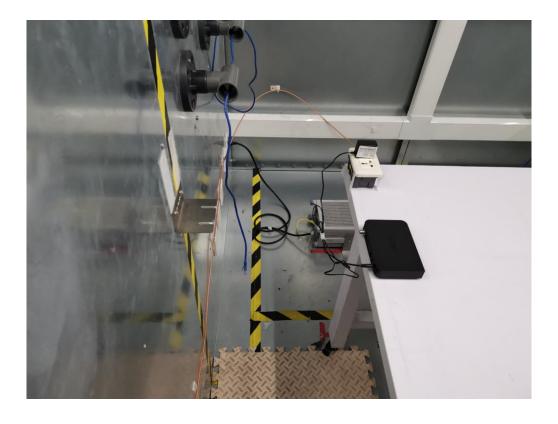
All calibration period of equipment list is one year.



10. EUT TEST PHOTO

Conducted Emissions Test Photos

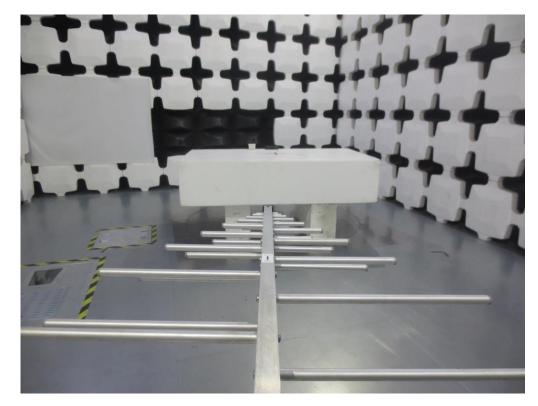




3TL

Radiated Emissions Test Photos

30 MHz to 1 GHz







Radiated Emissions Test Photos

Above 1 GHz

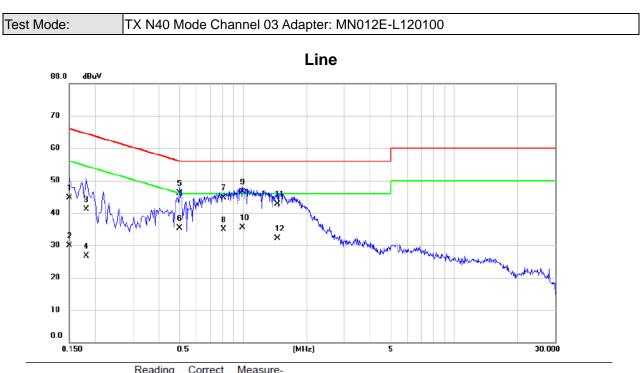






APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

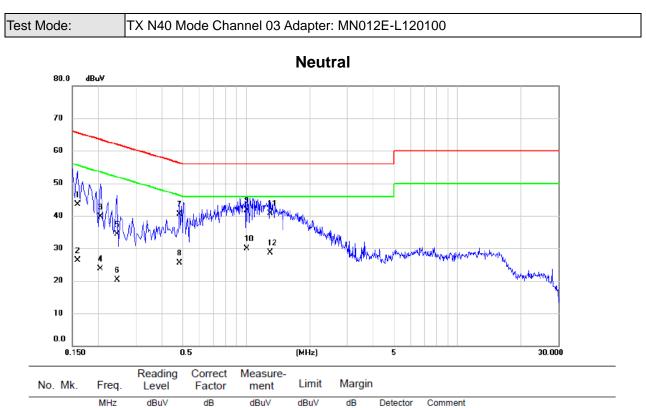




No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1500	34.90	9.76	44.66	66.00	-21.34	QP	
2	0.1500	20.10	9.76	29.86	56.00	-26.14	AVG	
3	0.1815	31.20	9.81	41.01	64.42	-23.41	QP	
4	0.1815	16.80	9.81	26.61	54.42	-27.81	AVG	
5	0.5010	36.10	10.00	46.10	56.00	-9.90	QP	
6	0.5010	25.30	10.00	35.30	46.00	-10.70	AVG	
7	0.8115	34.90	9.82	44.72	56.00	-11.28	QP	
8	0.8115	25.00	9.82	34.82	46.00	-11.18	AVG	
9 *	0.9915	36.60	9.86	46.46	56.00	-9.54	QP	
10	0.9915	25.70	9.86	35.56	46.00	-10.44	AVG	
11	1.4550	32.90	9.82	42.72	56.00	-13.28	QP	
12	1.4550	22.30	9.82	32.12	46.00	-13.88	AVG	

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

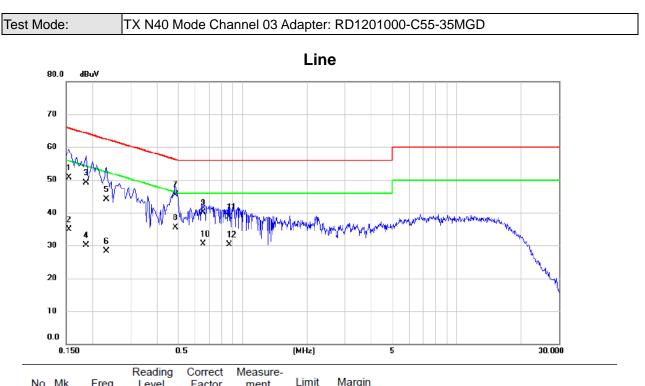




MHz dBuV dB dBuV dBuV dB Detector Comment 1 0.1590 33.90 9.60 43.50 65.52 -22.02 QP 2 0.1590 16.80 9.60 26.40 55.52 -29.12 AVG 3 0.2040 30.00 9.66 39.66 63.45 -23.79 QP 4 0.2040 14.00 9.66 23.66 53.45 -29.79 AVG 5 0.2445 24.60 9.71 34.31 61.94 -27.63 QP 6 0.2445 10.50 9.71 20.21 51.94 -31.73 AVG 7 0.4830 30.60 9.82 40.42 56.29 -15.87 QP 8 0.4830 15.70 9.82 25.52 46.29 -20.77 AVG 9 * 1.0095 31.90 9.72 41.62 56.00 -14.38 QP 10 1.0095 <th>NO. MIN.</th> <th>ricq.</th> <th>Level</th> <th>racior</th> <th>ment</th> <th>2</th> <th>margin</th> <th></th> <th></th>	NO. MIN.	ricq.	Level	racior	ment	2	margin		
2 0.1590 16.80 9.60 26.40 55.52 -29.12 AVG 3 0.2040 30.00 9.66 39.66 63.45 -23.79 QP 4 0.2040 14.00 9.66 23.66 53.45 -29.79 AVG 5 0.2445 24.60 9.71 34.31 61.94 -27.63 QP 6 0.2445 10.50 9.71 20.21 51.94 -31.73 AVG 7 0.4830 30.60 9.82 40.42 56.29 -15.87 QP 8 0.4830 15.70 9.82 25.52 46.29 -20.77 AVG 9 * 1.0095 31.90 9.72 41.62 56.00 -14.38 QP 10 1.0095 20.10 9.72 29.82 46.00 -16.18 AVG 11 1.2975 30.90 9.80 40.70 56.00 -15.30 QP		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
3 0.2040 30.00 9.66 39.66 63.45 -23.79 QP 4 0.2040 14.00 9.66 23.66 53.45 -29.79 AVG 5 0.2445 24.60 9.71 34.31 61.94 -27.63 QP 6 0.2445 10.50 9.71 20.21 51.94 -31.73 AVG 7 0.4830 30.60 9.82 40.42 56.29 -15.87 QP 8 0.4830 15.70 9.82 25.52 46.29 -20.77 AVG 9 * 1.0095 31.90 9.72 41.62 56.00 -14.38 QP 10 1.0095 20.10 9.72 29.82 46.00 -16.18 AVG 11 1.2975 30.90 9.80 40.70 56.00 -15.30 QP	1	0.1590	33.90	9.60	43.50	65.52	-22.02	QP	
4 0.2040 14.00 9.66 23.66 53.45 -29.79 AVG 5 0.2445 24.60 9.71 34.31 61.94 -27.63 QP 6 0.2445 10.50 9.71 20.21 51.94 -31.73 AVG 7 0.4830 30.60 9.82 40.42 56.29 -15.87 QP 8 0.4830 15.70 9.82 25.52 46.29 -20.77 AVG 9 * 1.0095 31.90 9.72 41.62 56.00 -14.38 QP 10 1.0095 20.10 9.72 29.82 46.00 -16.18 AVG 11 1.2975 30.90 9.80 40.70 56.00 -15.30 QP	2	0.1590	16.80	9.60	26.40	55.52	-29.12	AVG	
5 0.2445 24.60 9.71 34.31 61.94 -27.63 QP 6 0.2445 10.50 9.71 20.21 51.94 -31.73 AVG 7 0.4830 30.60 9.82 40.42 56.29 -15.87 QP 8 0.4830 15.70 9.82 25.52 46.29 -20.77 AVG 9 * 1.0095 31.90 9.72 41.62 56.00 -14.38 QP 10 1.0095 20.10 9.72 29.82 46.00 -16.18 AVG 11 1.2975 30.90 9.80 40.70 56.00 -15.30 QP	3	0.2040	30.00	9.66	39.66	63.45	-23.79	QP	
6 0.2445 10.50 9.71 20.21 51.94 -31.73 AVG 7 0.4830 30.60 9.82 40.42 56.29 -15.87 QP 8 0.4830 15.70 9.82 25.52 46.29 -20.77 AVG 9 * 1.0095 31.90 9.72 41.62 56.00 -14.38 QP 10 1.0095 20.10 9.72 29.82 46.00 -16.18 AVG 11 1.2975 30.90 9.80 40.70 56.00 -15.30 QP	4	0.2040	14.00	9.66	23.66	53.45	-29.79	AVG	
7 0.4830 30.60 9.82 40.42 56.29 -15.87 QP 8 0.4830 15.70 9.82 25.52 46.29 -20.77 AVG 9 * 1.0095 31.90 9.72 41.62 56.00 -14.38 QP 10 1.0095 20.10 9.72 29.82 46.00 -16.18 AVG 11 1.2975 30.90 9.80 40.70 56.00 -15.30 QP	5	0.2445	24.60	9.71	34.31	61.94	-27.63	QP	
8 0.4830 15.70 9.82 25.52 46.29 -20.77 AVG 9 * 1.0095 31.90 9.72 41.62 56.00 -14.38 QP 10 1.0095 20.10 9.72 29.82 46.00 -16.18 AVG 11 1.2975 30.90 9.80 40.70 56.00 -15.30 QP	6	0.2445	10.50	9.71	20.21	51.94	-31.73	AVG	
9 * 1.0095 31.90 9.72 41.62 56.00 -14.38 QP 10 1.0095 20.10 9.72 29.82 46.00 -16.18 AVG 11 1.2975 30.90 9.80 40.70 56.00 -15.30 QP	7	0.4830	30.60	9.82	40.42	56.29	-15.87	QP	
10 1.0095 20.10 9.72 29.82 46.00 -16.18 AVG 11 1.2975 30.90 9.80 40.70 56.00 -15.30 QP	8	0.4830	15.70	9.82	25.52	46.29	-20.77	AVG	
11 1.2975 30.90 9.80 40.70 56.00 -15.30 QP	9 *	1.0095	31.90	9.72	41.62	56.00	-14.38	QP	
	10	1.0095	20.10	9.72	29.82	46.00	-16.18	AVG	
12 1.2975 19.00 9.80 28.80 46.00 -17.20 AVG	11	1.2975	30.90	9.80	40.70	56.00	-15.30	QP	
	12	1.2975	19.00	9.80	28.80	46.00	-17.20	AVG	

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

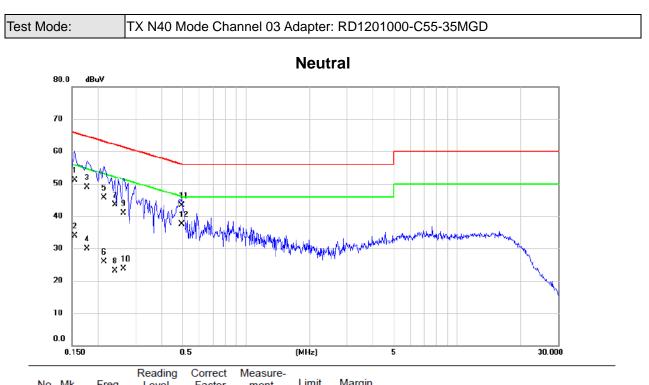




No. Mk.	Freq.	Level	Factor	ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1545	41.00	9.77	50.77	65.75	-14.98	QP	
2	0.1545	25.10	9.77	34.87	55.75	-20.88	AVG	
3	0.1860	39.20	9.81	49.01	64.21	-15.20	QP	
4	0.1860	20.30	9.81	30.11	54.21	-24.10	AVG	
5	0.2310	34.20	9.85	44.05	62.41	-18.36	QP	
6	0.2310	18.50	9.85	28.35	52.41	-24.06	AVG	
7 *	0.4875	35.60	9.99	45.59	56.21	-10.62	QP	
8	0.4875	25.50	9.99	35.49	46.21	-10.72	AVG	
9	0.6540	30.20	9.93	40.13	56.00	-15.87	QP	
10	0.6540	20.60	9.93	30.53	46.00	-15.47	AVG	
11	0.8700	28.90	9.82	38.72	56.00	-17.28	QP	
12	0.8700	20.50	9.82	30.32	46.00	-15.68	AVG	

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





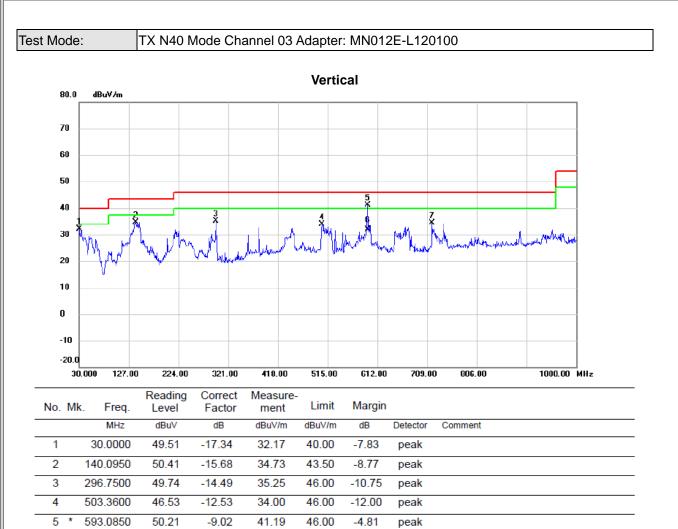
No. Mk.	Freq.	Level	Factor	ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1545	41.50	9.62	51.12	65.75	-14.63	QP	
2	0.1545	24.20	9.62	33.82	55.75	-21.93	AVG	
3	0.1770	39.30	9.60	48.90	64.63	-15.73	QP	
4	0.1770	20.40	9.60	30.00	54.63	-24.63	AVG	
5	0.2130	36.10	9.68	45.78	63.09	-17.31	QP	
6	0.2130	16.20	9.68	25.88	53.09	-27.21	AVG	
7	0.2400	33.80	9.71	43.51	62.10	-18.59	QP	
8	0.2400	13.40	9.71	23.11	52.10	-28.99	AVG	
9	0.2630	31.20	9.74	40.94	61.34	-20.40	QP	
10	0.2630	13.90	9.74	23.64	51.34	-27.70	AVG	
11	0.4965	33.40	9.83	43.23	56.06	-12.83	QP	
12 *	0.4965	27.60	9.83	37.43	46.06	-8.63	AVG	

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



APPENDIX B - RADIATED EMISSION - 30 MHZ TO 1000 MHZ





6

7

593.0850

719.1850

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

-9.02

-7.84

31.76

34.27

46.00

46.00

-14.24

-11.73

QP

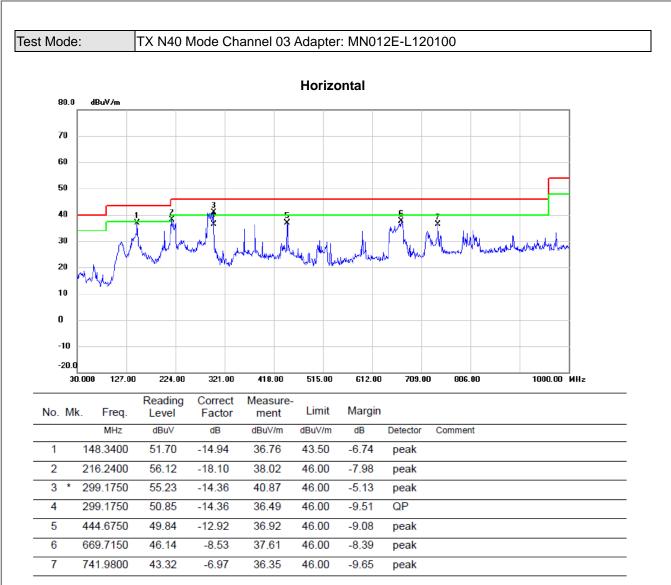
peak

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

40.78

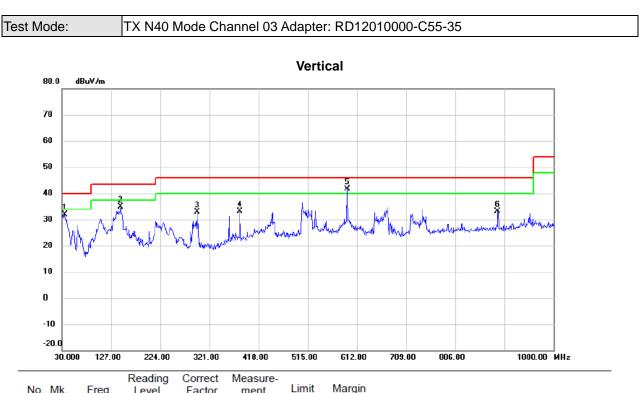
42.11





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

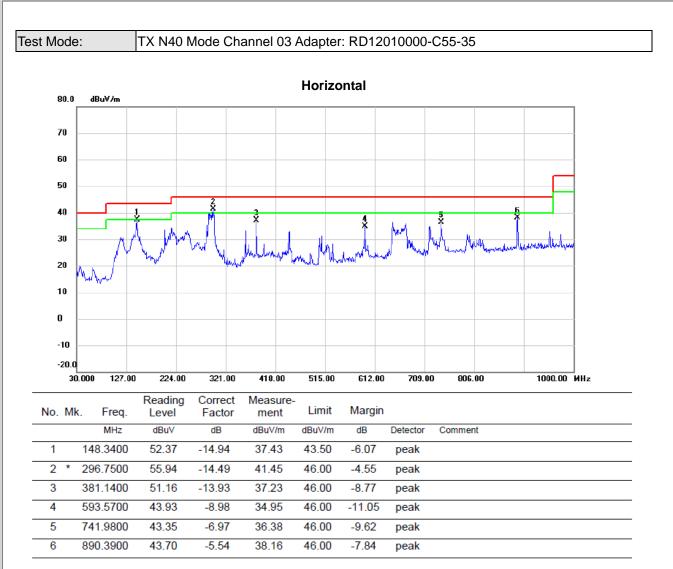




No.	Mk.	Freq.	Level	Factor	ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		35.3350	49.05	-17.18	31.87	40.00	-8.13	peak	
2	1	45.4300	50.12	-15.21	34.91	43.50	-8.59	peak	
3	2	296.7500	47.28	-14.49	32.79	46.00	-13.21	peak	
4	3	381.1400	47.09	-13.93	33.16	46.00	-12.84	peak	
5	* 5	593.0850	50.58	-9.02	41.56	46.00	-4.44	peak	
6	8	389.9050	38.59	-5.54	33.05	46.00	-12.95	peak	

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



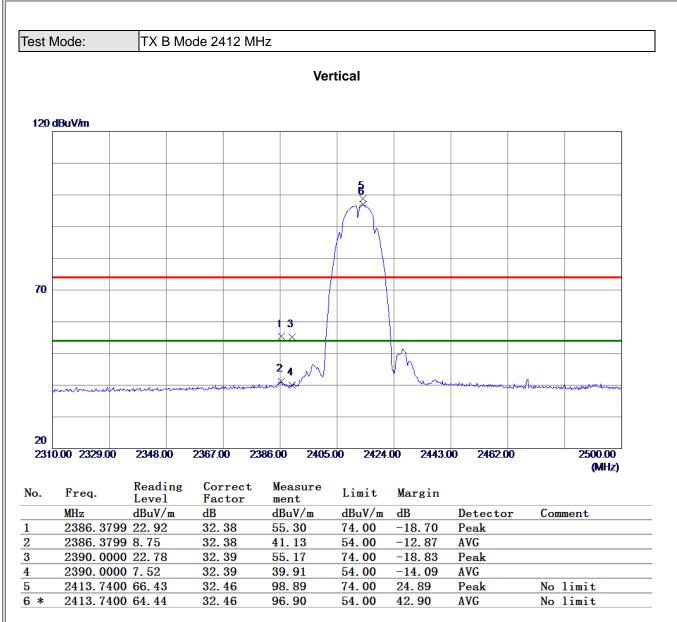


- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.



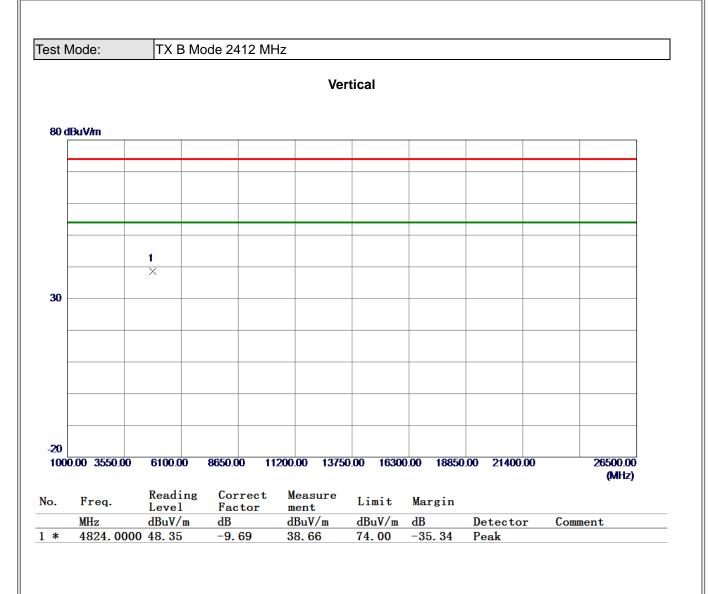
APPENDIX C - RADIATED EMISSION- ABOVE 1000 MHZ





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

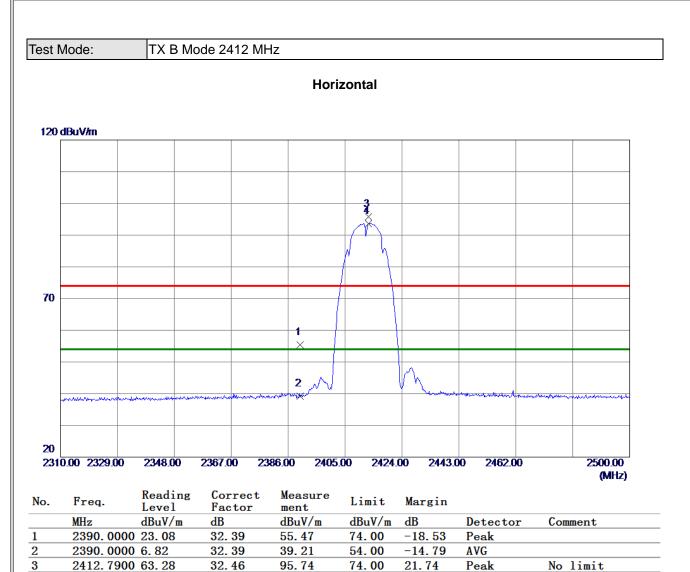




(1) Measurement Value = Reading Level + Correct Factor.



No limit



54.00

39.65

AVG

REMARKS:

4 *

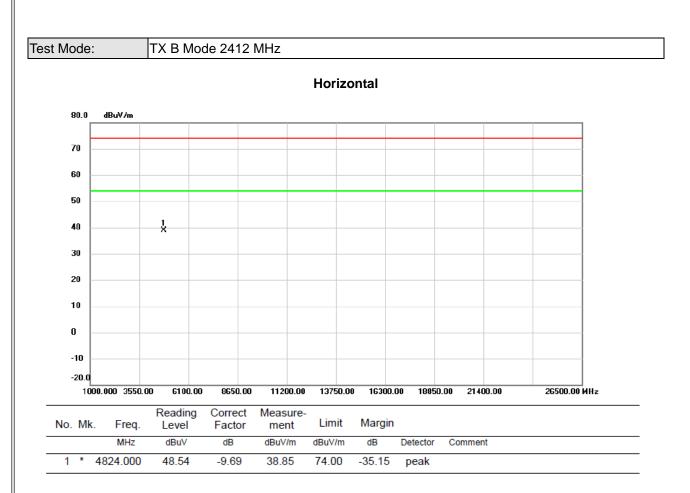
2412.7900 61.19

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

32.46

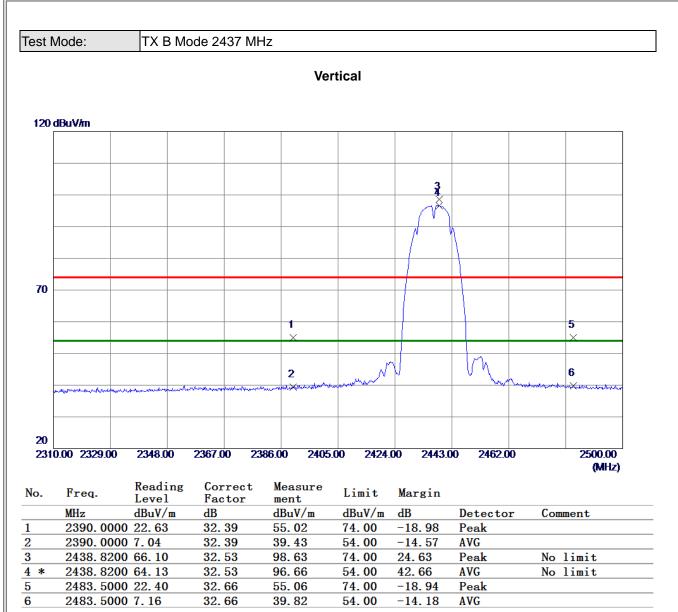
93.65





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





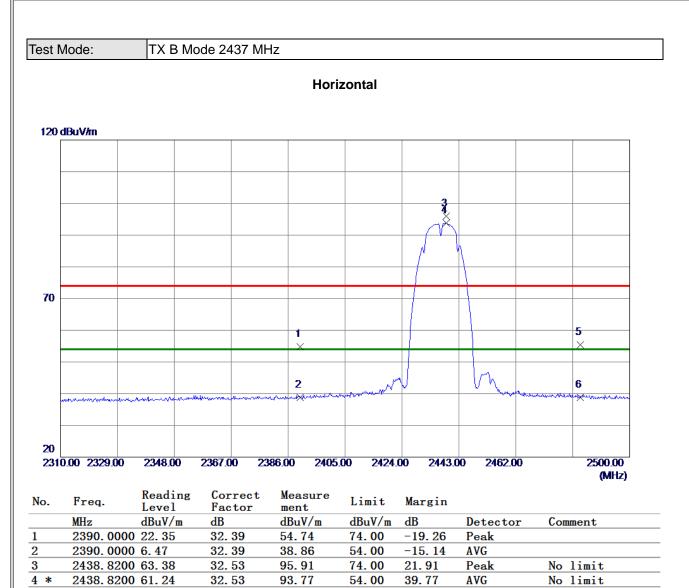
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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





74.00

54. **00**

-18.55

-15.16

Peak AVG

REMARKS:

5

6

2483. 5000 22. 79

2483. 5000 6. 18

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

32.66

32.66

55.45

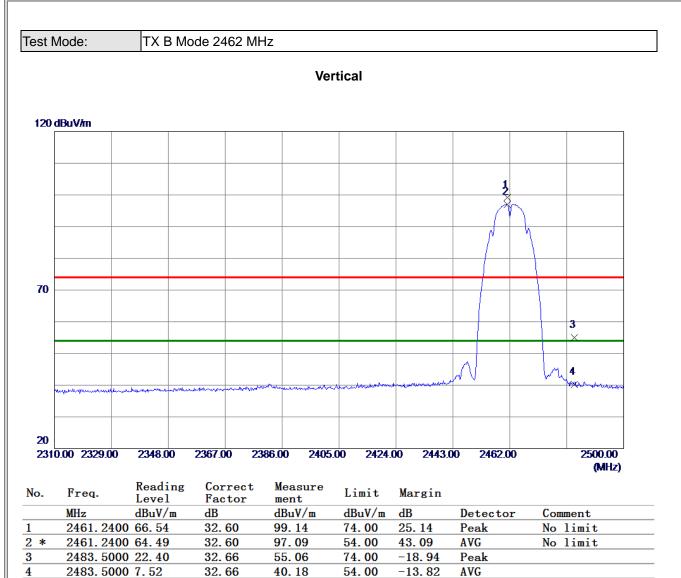
38.84





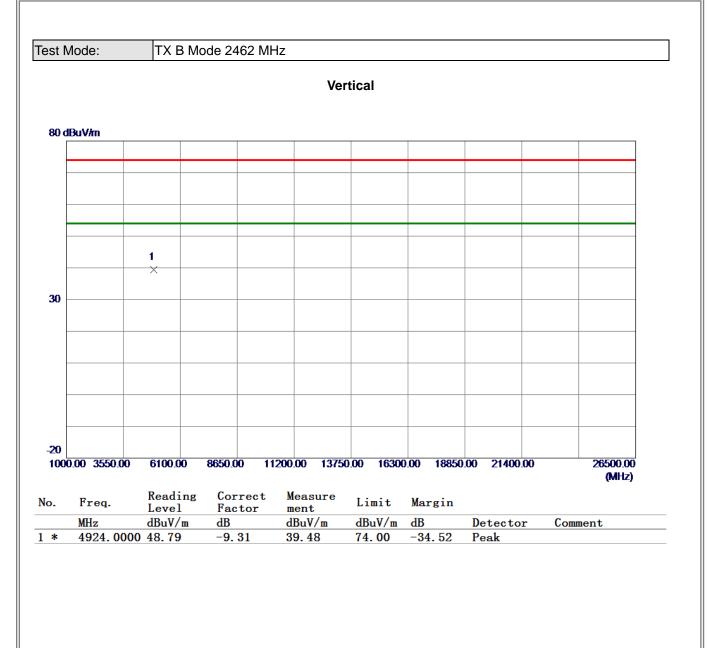
(1) Measurement Value = Reading Level + Correct Factor.





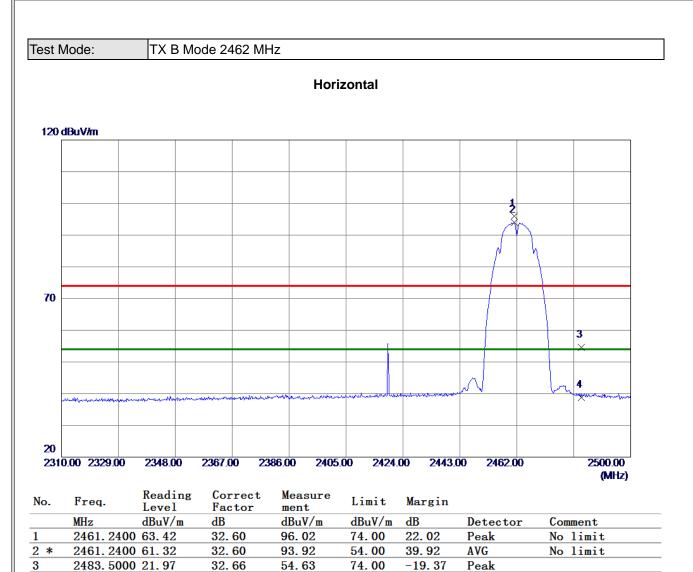
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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





54. **00**

AVG

-15.15

REMARKS:

4

2483. 5000 6. 19

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

32.66

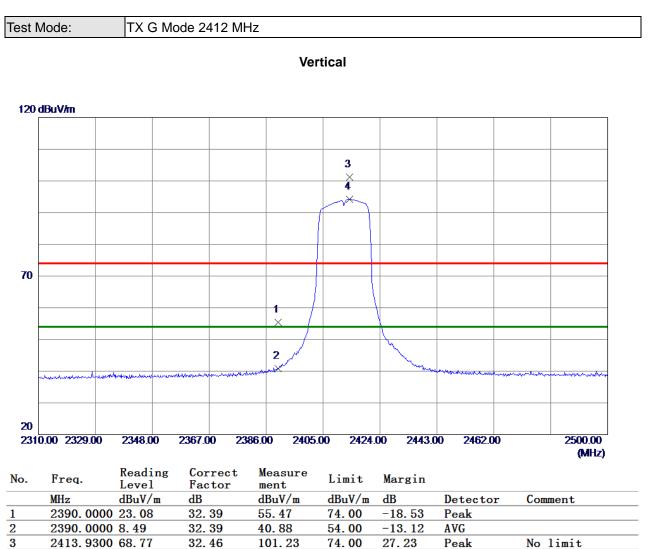
38.85





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

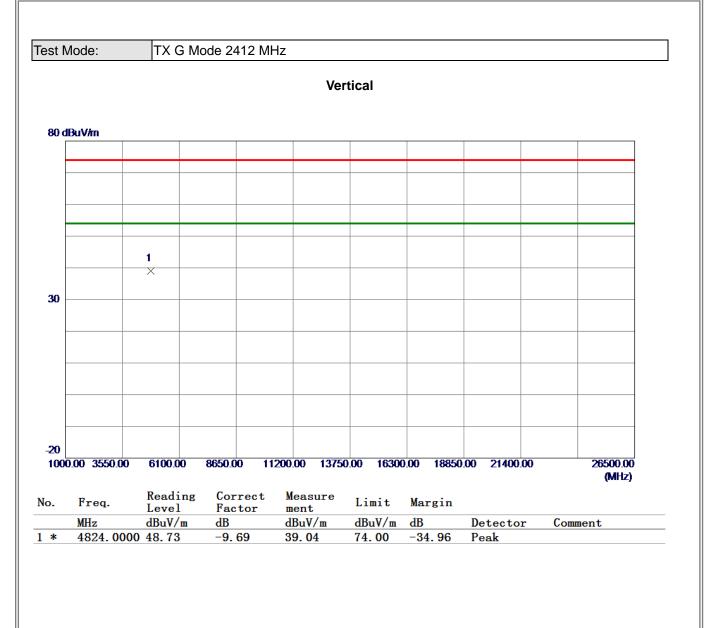




4 * 2413.9300 61.81 32.46 94.27 54.00 40.27 AVG No limit

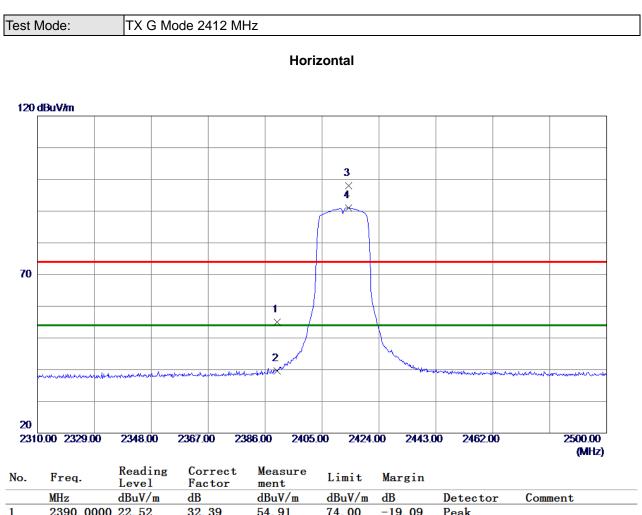
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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





	MITZ	abuv/m	ab	abuv/m	abuv/m	ab	Detector	Comment
1	2390.0000	22. 52	32.39	54.9 1	74.00	-1 9.09	Peak	
2	2390.0000	7.27	32.39	39.66	54. 00	-14.34	AVG	
3	2413.9300	65.61	32.46	98.07	74.00	24.07	Peak	No limit
4 *	2413.9300	58.60	32.46	91.06	54. 00	37.06	AVG	No limit

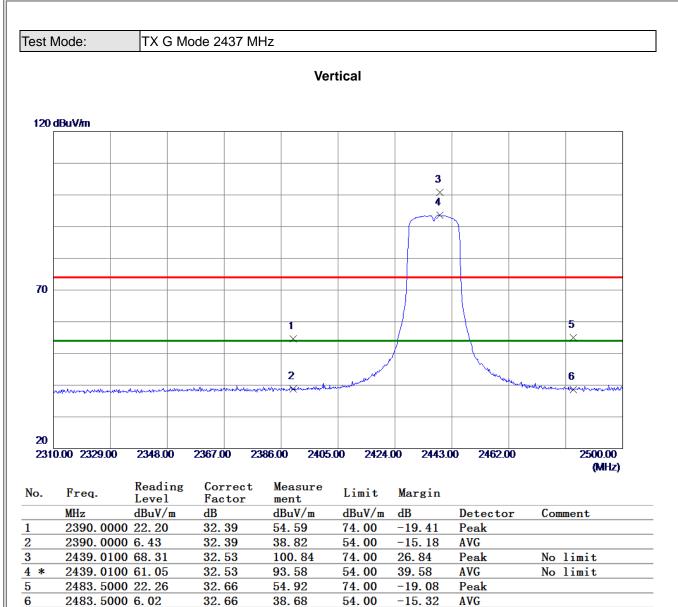
(1) Measurement Value = Reading Level + Correct Factor.





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





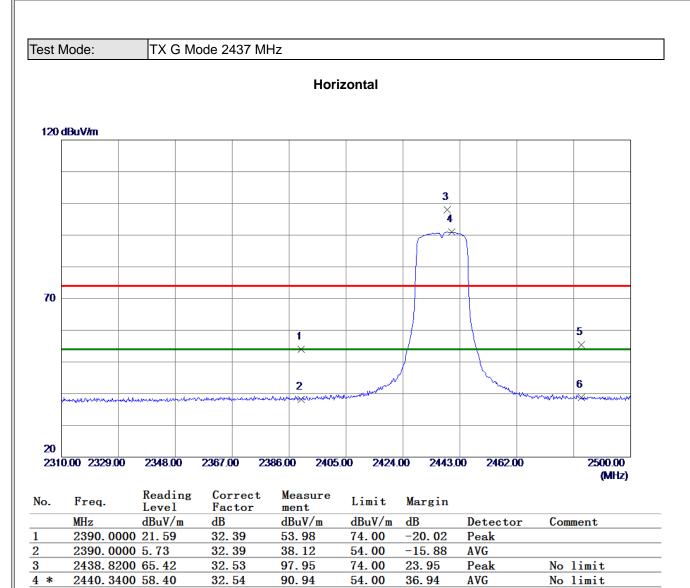
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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





5

6

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

32.66

32.66

55. <mark>39</mark>

38.88

74.00

54. **00**

-18.61

-15.12

Peak

AVG

2483. 5000 22. 73

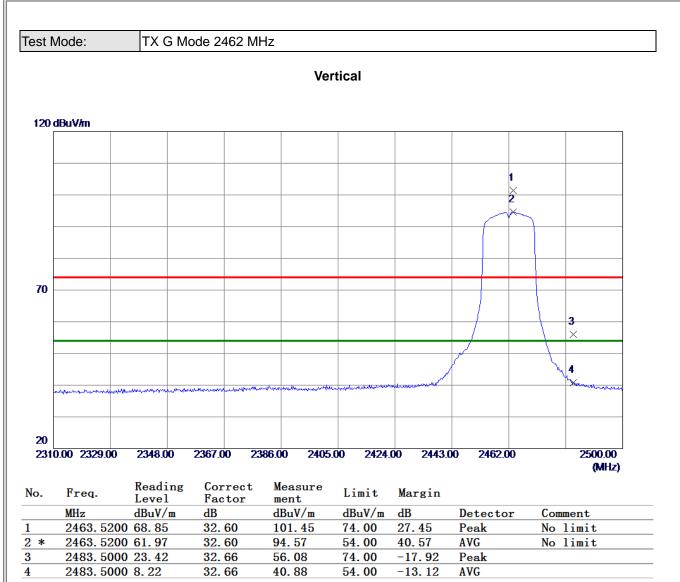
2483. 5000 6. 22





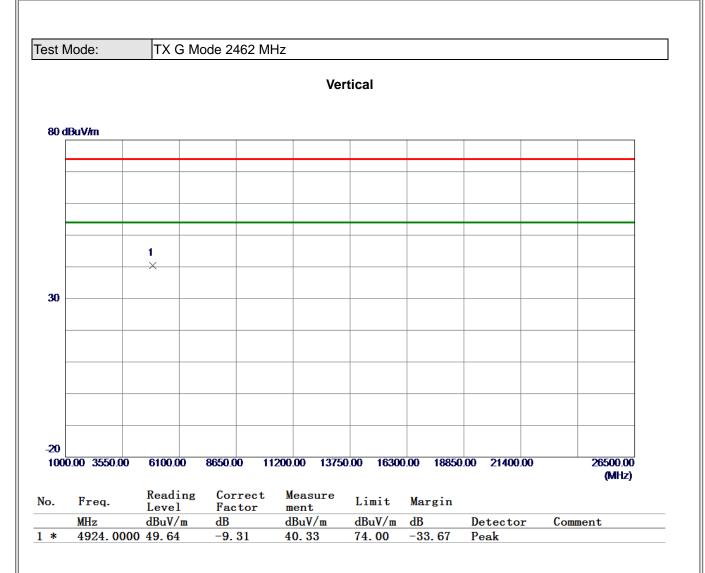
(1) Measurement Value = Reading Level + Correct Factor.





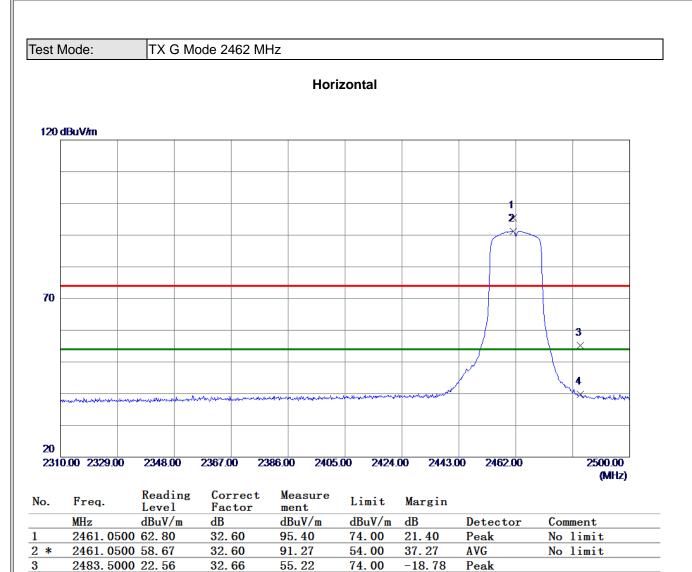
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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





54. **00**

-14.18

AVG

REMARKS:

4

2483.5000 7.16

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

32.66

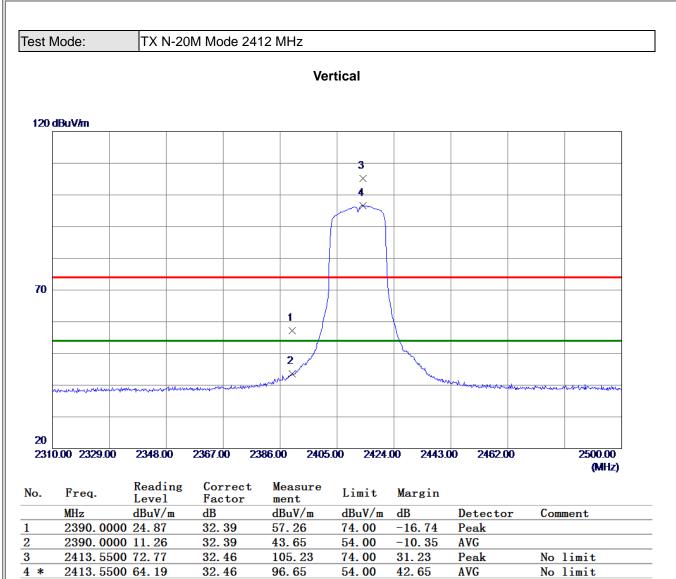
39.82





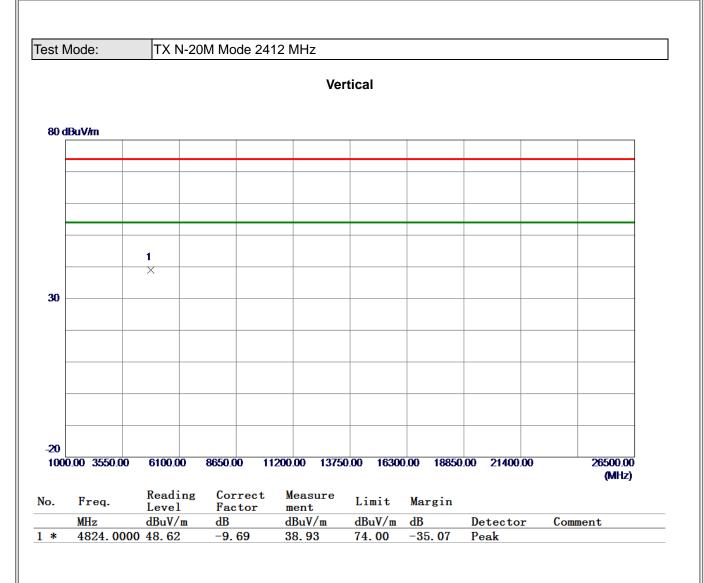
(1) Measurement Value = Reading Level + Correct Factor.





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

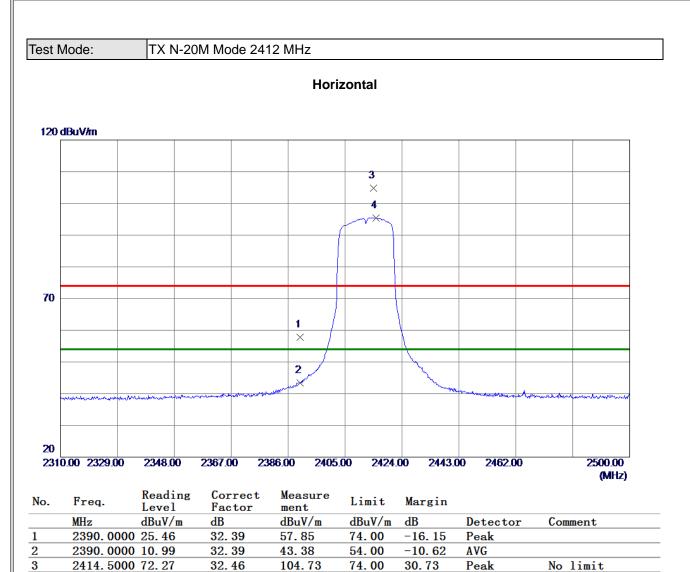




(1) Measurement Value = Reading Level + Correct Factor.



No limit



95.47

32.47

54.00

41.47

AVG

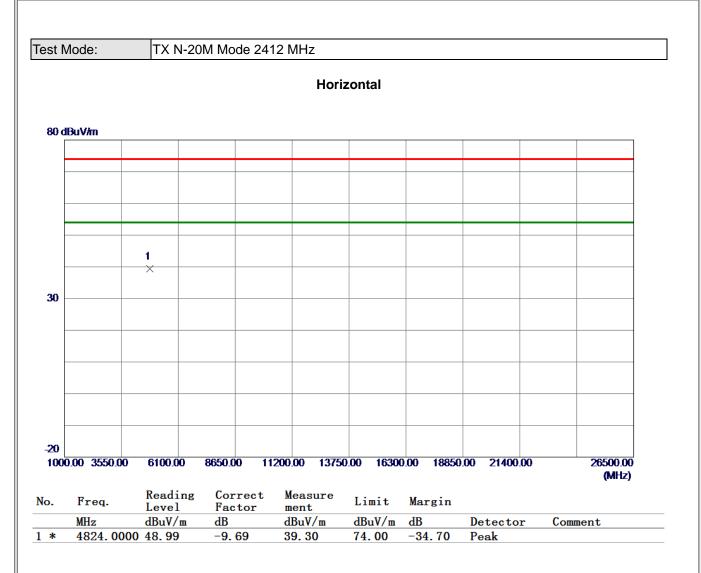
REMARKS:

4 *

2415.2600 63.00

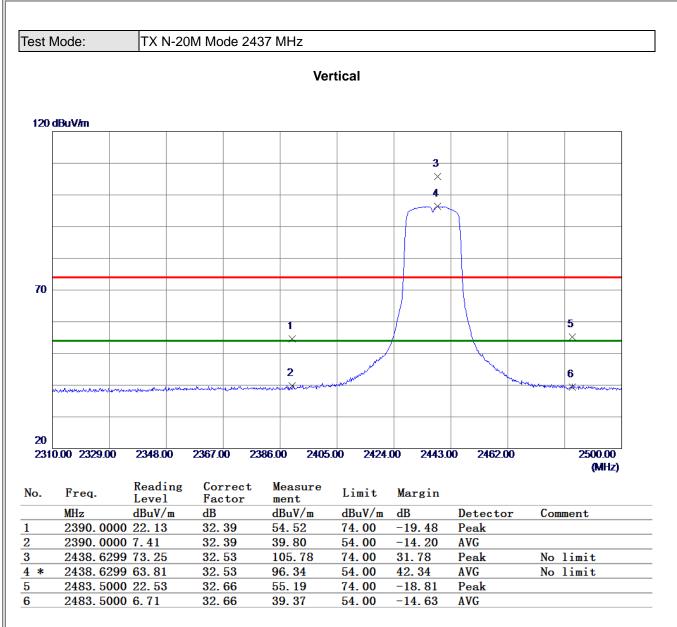
(1) Measurement Value = Reading Level + Correct Factor.





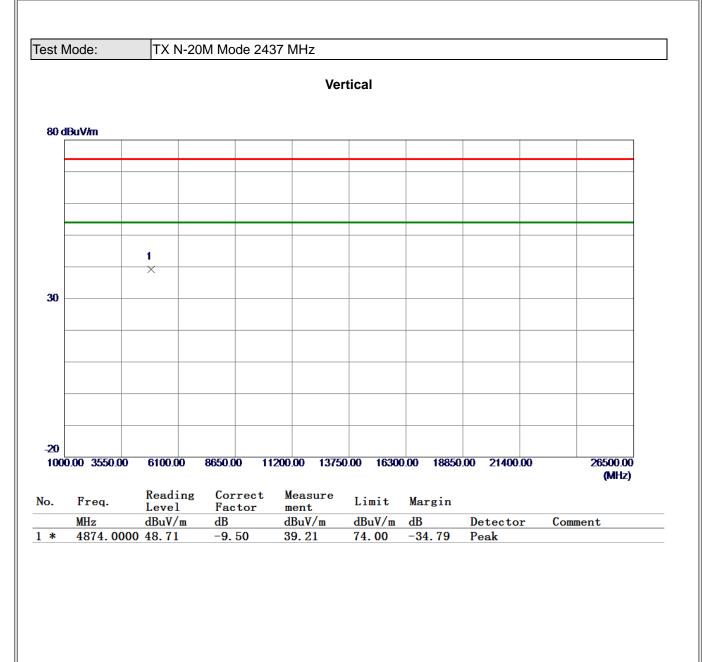
(1) Measurement Value = Reading Level + Correct Factor.





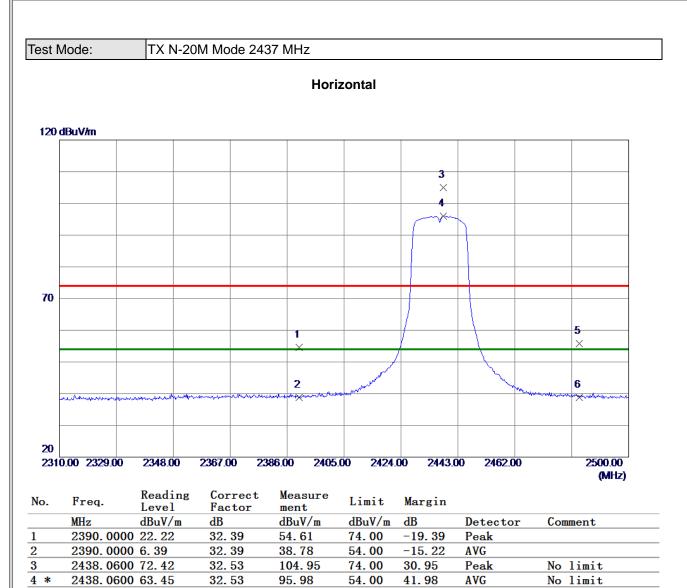
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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





5

6

2483.5000 23.21

2483. 5000 6. 13

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

32.66

32.66

55.87

38.79

74.00

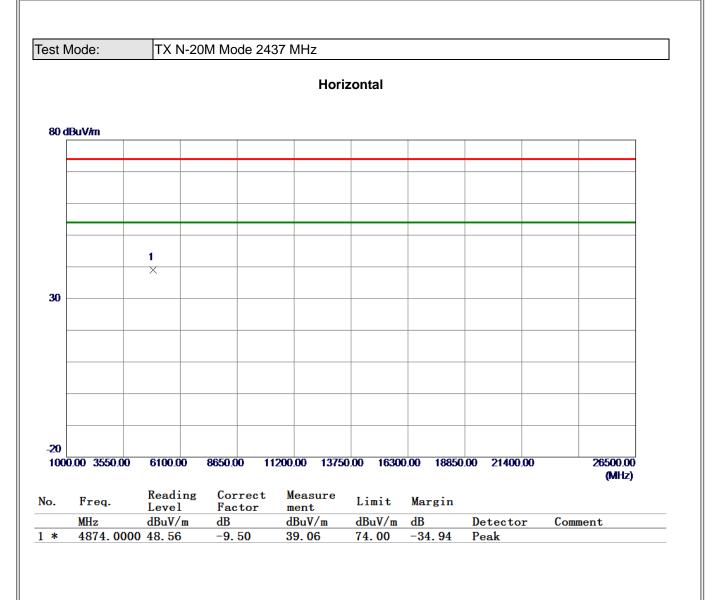
54. **00**

-18.13

-15.21

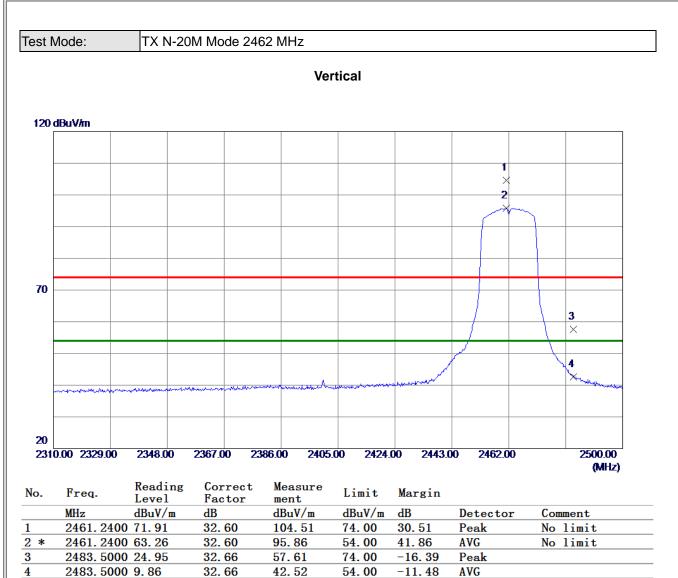
Peak AVG





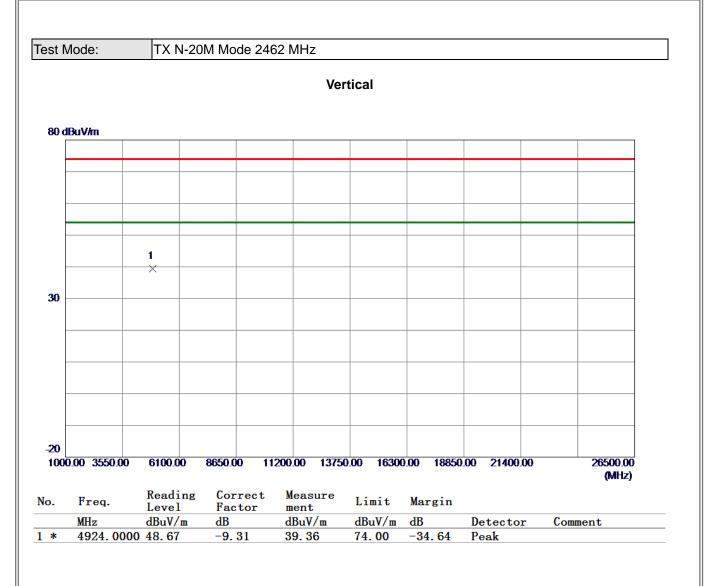
(1) Measurement Value = Reading Level + Correct Factor.





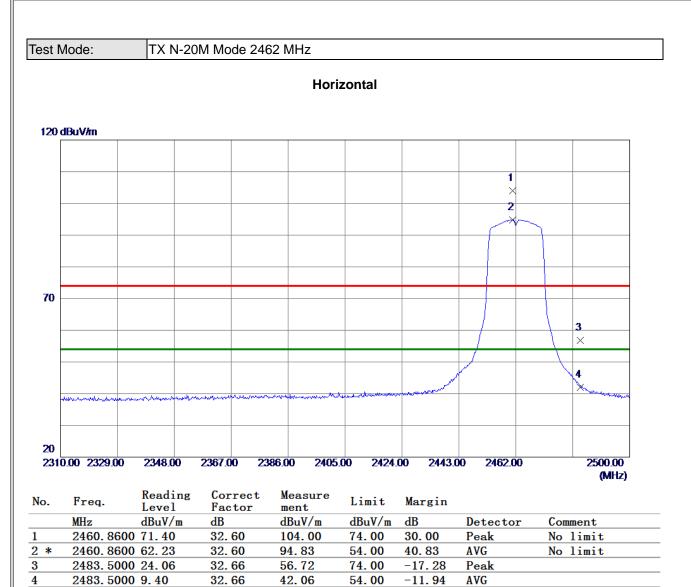
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





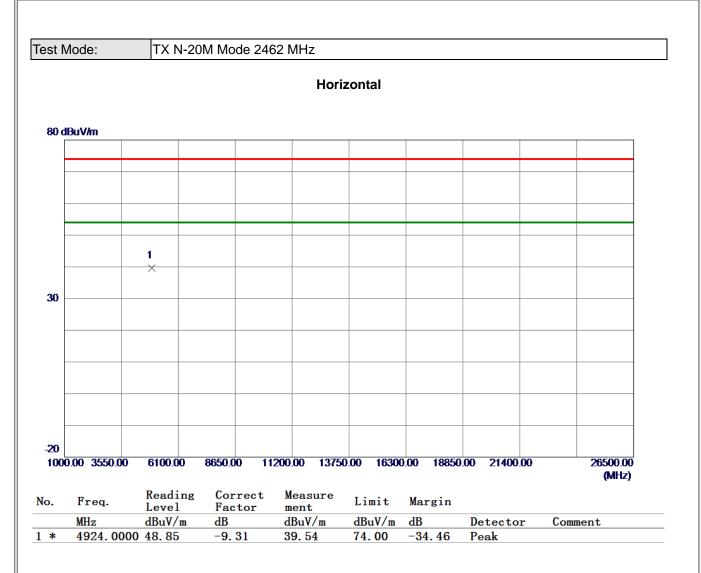
(1) Measurement Value = Reading Level + Correct Factor.





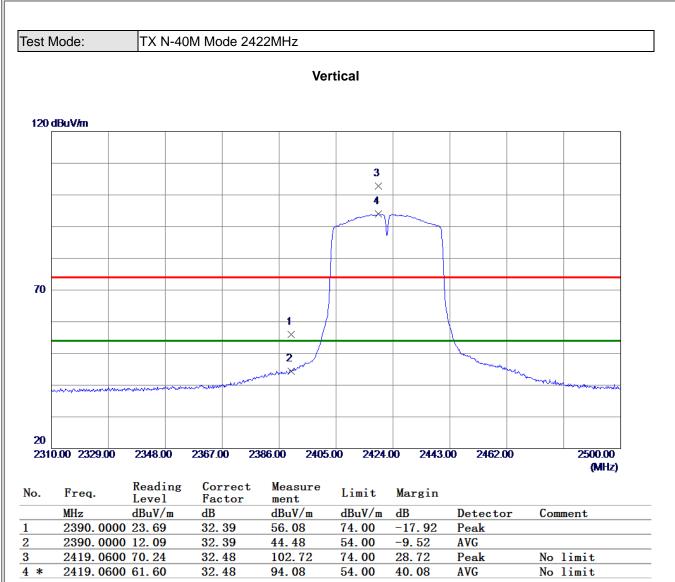
(1) Measurement Value = Reading Level + Correct Factor.





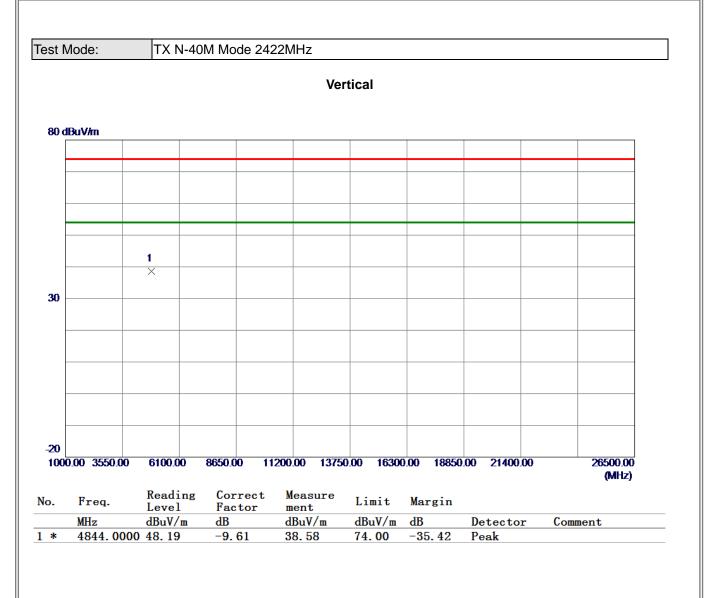
(1) Measurement Value = Reading Level + Correct Factor.





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

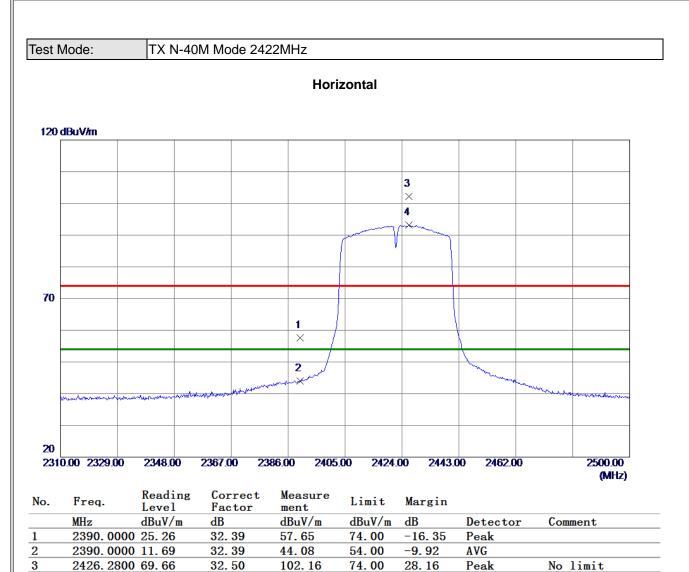




(1) Measurement Value = Reading Level + Correct Factor.



No limit



REMARKS:

4 *

2426. 2800 60. 64

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

32.50

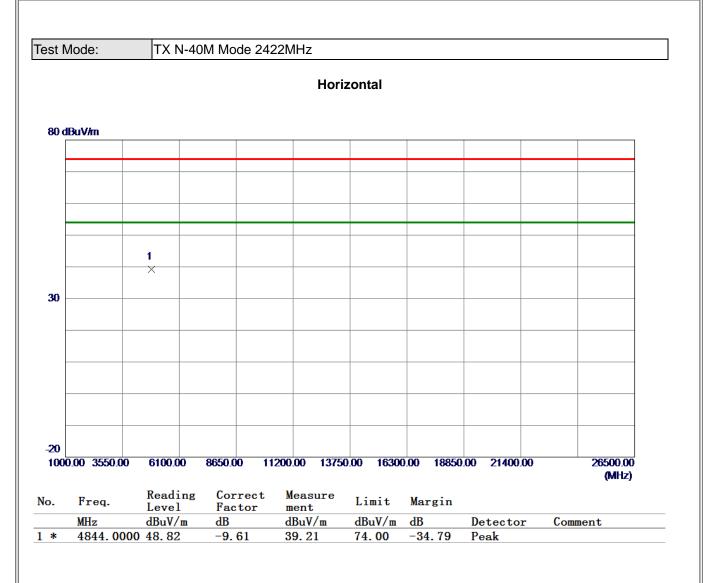
93.14

54.00

39.14

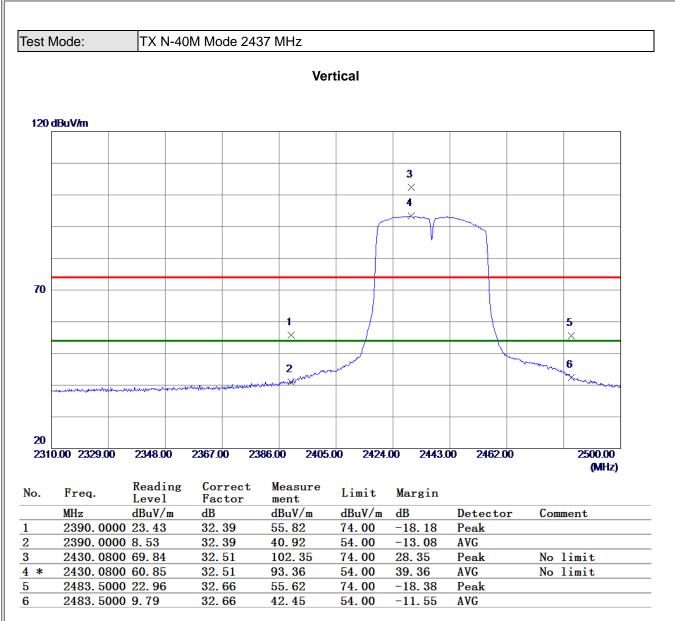
AVG





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





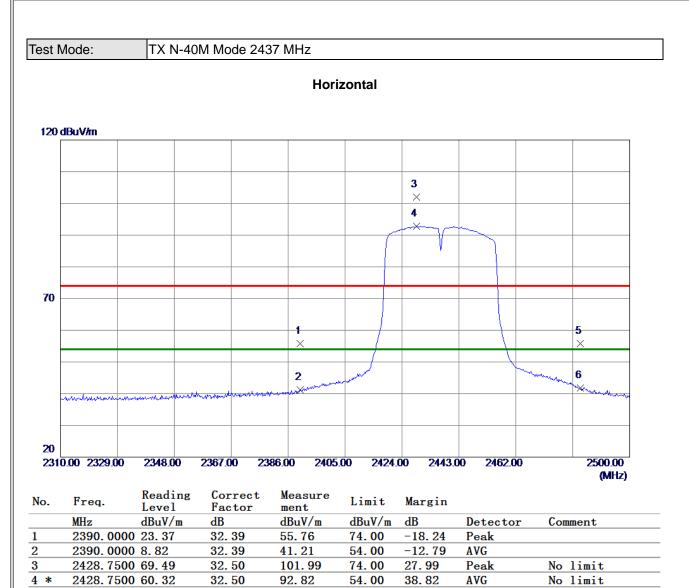
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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





74.00

54. **00**

-18.12

-12.26

Peak

AVG

REMARKS:

5

6

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

32.66

32.66

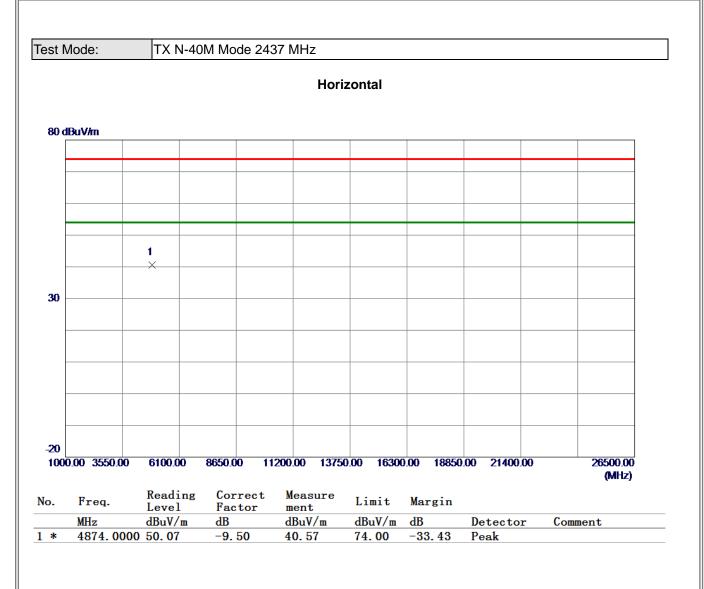
55.88

41.74

2483.5000 23.22

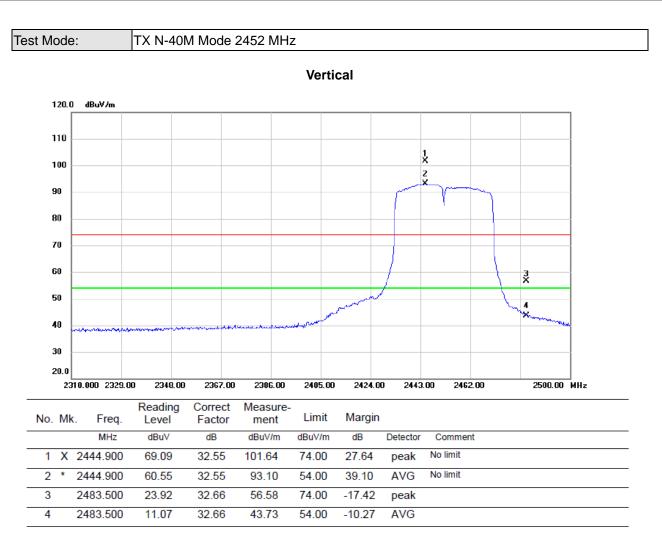
2483. 5000 9. 08





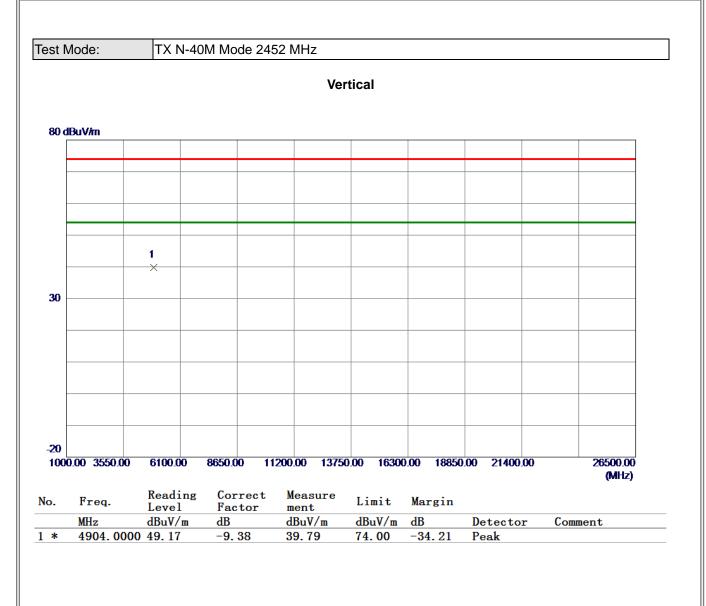
(1) Measurement Value = Reading Level + Correct Factor.





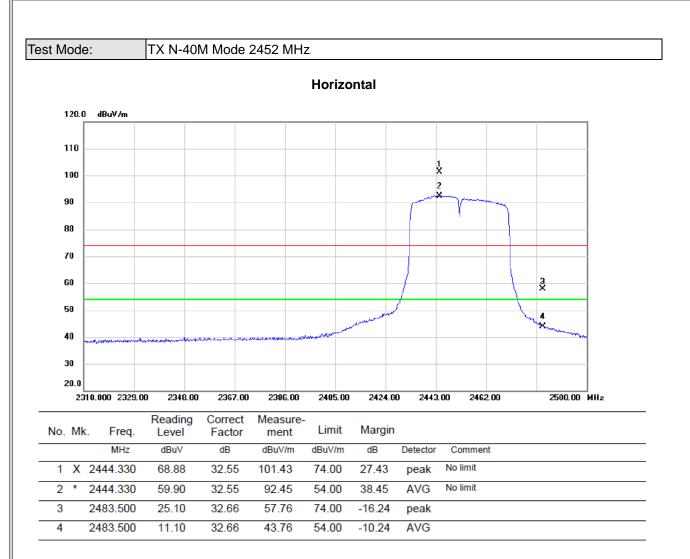
- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value Limit Value.





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





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





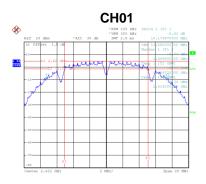
(1) Measurement Value = Reading Level + Correct Factor.



APPENDIX D - BANDWIDTH



Test Mode	TX B Mode			
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	10.18	500	Complies
06	2437	10.18	500	Complies
11	2462	10.18	500	Complies



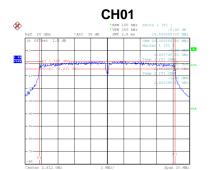




8.JAN.2020 16:59:44

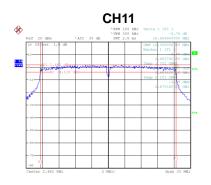
TX G Mode Test Mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	16.50	500	Complies
06	2437	16.50	500	Complies
11	2462	16.49	500	Complies



CH06 8 1 PK V288

Date: 8.JAN.2020 16:01:42

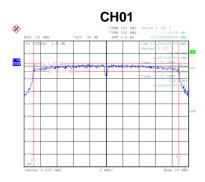


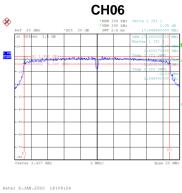
Date: 8.JAN.2020 16:03:21

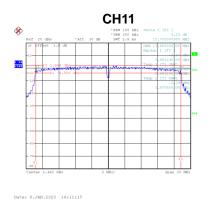
Date: 8.JAN.2020 15:56:11



Test Mode TX N-20M Mode				
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
01	2412	17.69	500	Complies
06	2437	17.65	500	Complies
11	2462	17.70	500	Complies



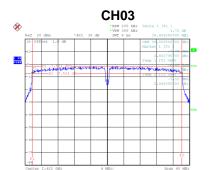




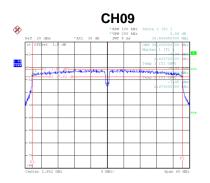
8.JAN.2020 16:06:33

Test Mode TX N-40M Mode

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	6 dB Bandwidth Min. Limit (kHz)	Result
03	2422	36.41	500	Complies
06	2437	36.49	500	Complies
09	2452	36.56	500	Complies



CH06 8 1 PK V288



Date: 8.JAN.2020 16:31:00

Date: 8.JAN.2020 16:21:39

Date: 8.JAN.2020 16:26:40



APPENDIX E - MAXIMUM OUTPUT POWER



Result

Complies

Complies

Complies

BIL

Test Mode TX B Mode Frequency **Output Power** Max. Limit Max. Limit Channel (MHz) (dBm) (dBm) (W) 01 2412 17.09 30.00 1.0000 17.12 06 2437 30.00 1.0000 11 17.07 30.00 2462 1.0000 Test Mode TX G Mode **Output Power** Frequency Max. Limit Max. Limit Channel (MHz) (dBm) (dBm) (W) 01 2412 25.10 30.00 1.0000 06 2437 25.14 30.00 1.0000 24.94 30.00 11 2462 1.0000 Test Mode TX N-20M Mode_Ant. 1 Frequency **Output Power** Max. Limit Max. Limit Channel (MHz) (dBm) (dBm) (W) 2412 0.731 01 24.59 28.64 24.44 06 2437 28.64 0.731 0.731 11 2462 24.86 28.64 Test Mode TX N-20M Mode_Ant. 2 Frequency **Output Power** Max. Limit Max. Limit Channel (MHz) (dBm) (dBm) (W) 01 2412 23.84 28.64 0.731 06 2437 23.93 28.64 0.731 11 2462 23.73 28.64 0.731 Test Mode TX N-20M Mode_Total Peak Output Power Max. Limit Frequency Max. Limit Channel (dBm) (MHz) (dBm) (W) 01 2412 27.24 28.64 0.731 06 2437 27.20 0.731 28.64 11 27.34 0.731 2462 28.64





Test Mode

TX N-40M Mode_Ant. 1

Channel	Frequency (MHz)	Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
03	2422	24.35	28.64	0.731	Complies
06	2437	24.30	28.64	0.731	Complies
09	2452	24.05	28.64	0.731	Complies

Test Mode TX N-40M Mode_Ant. 2

Channel	Frequency (MHz)	Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
03	2422	24.38	28.64	0.731	Complies
06	2437	24.30	28.64	0.731	Complies
09	2452	24.24	28.64	0.731	Complies

Test Mode

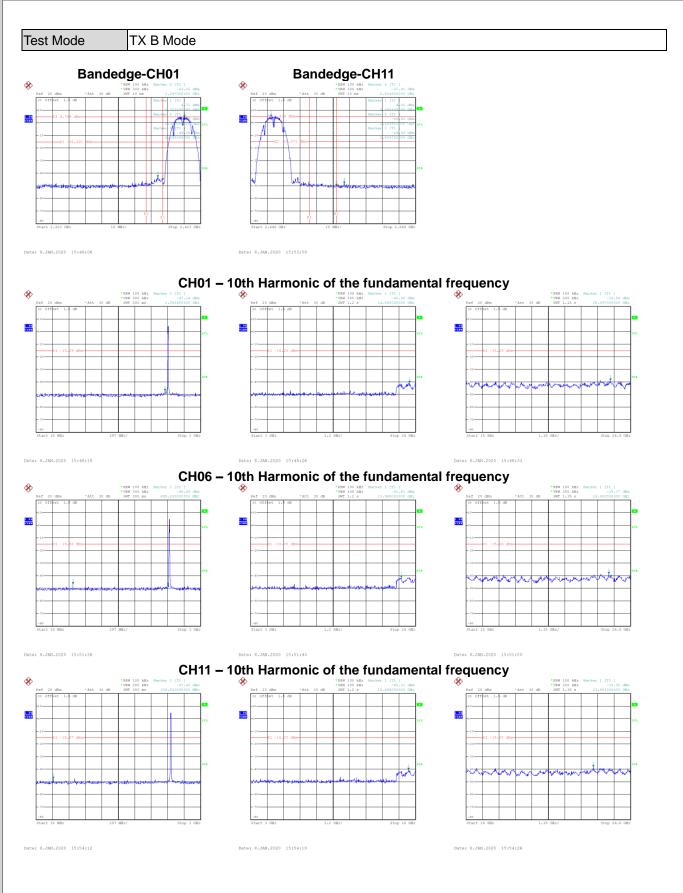
TX N-40M Mode_Total

Channel	Frequency (MHz)	Peak Output Power (dBm)	Max. Limit (dBm)	Max. Limit (W)	Result
03	2422	27.38	28.64	0.731	Complies
06	2437	27.31	28.64	0.731	Complies
09	2452	27.16	28.64	0.731	Complies

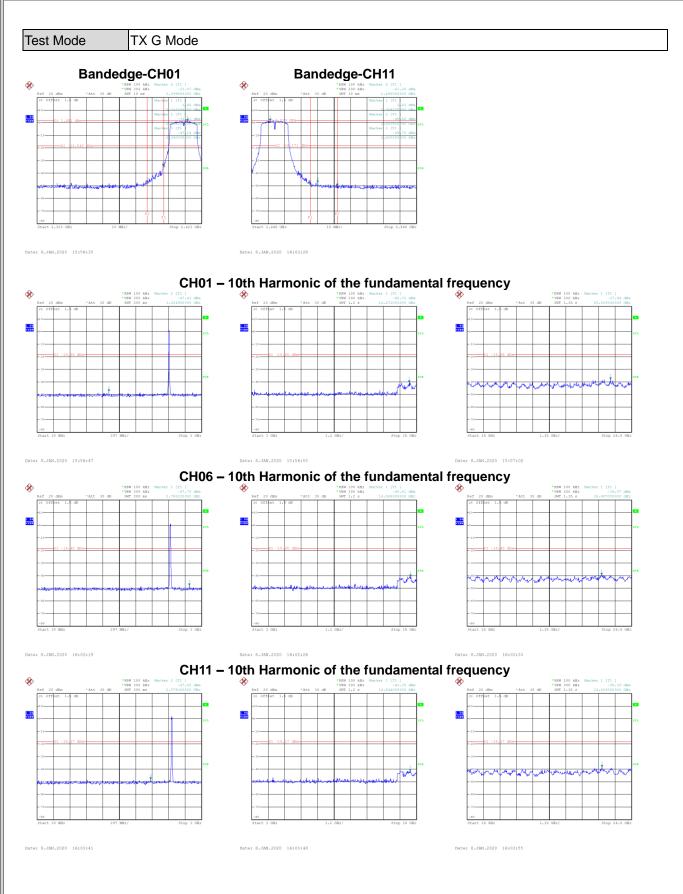


APPENDIX F - CONDUCTED SPURIOUS EMISSIONS

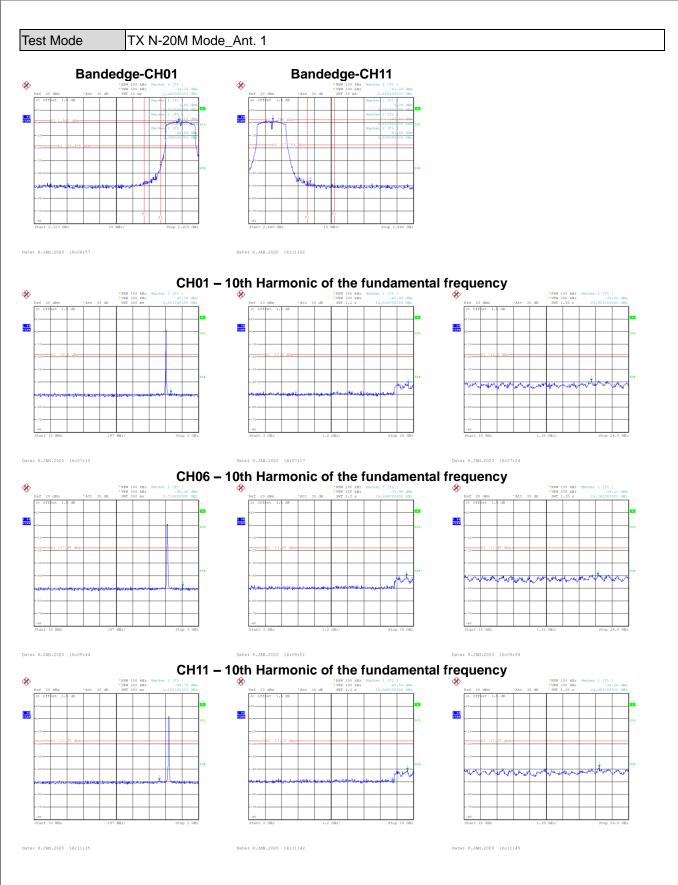




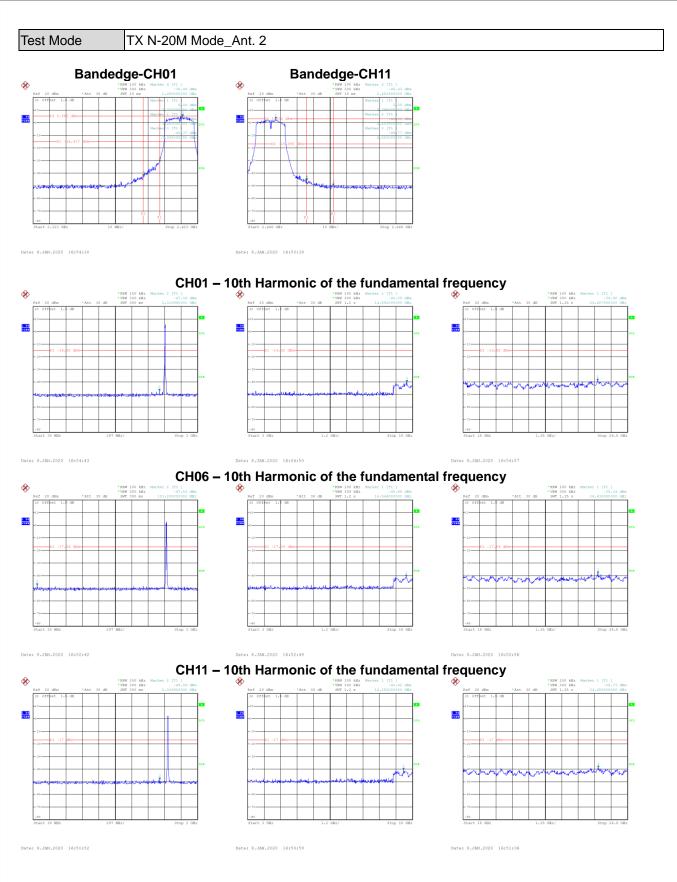




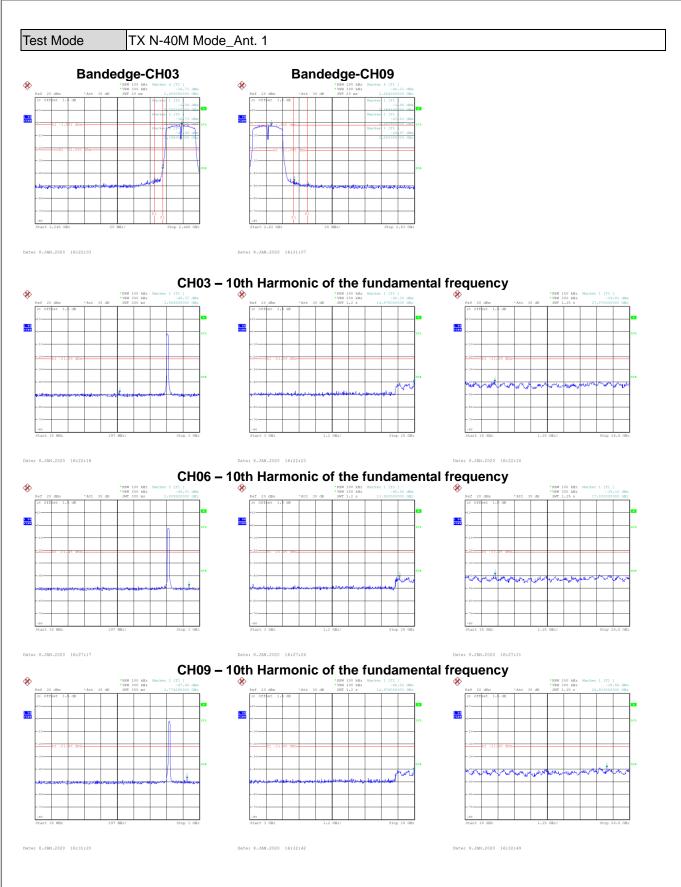




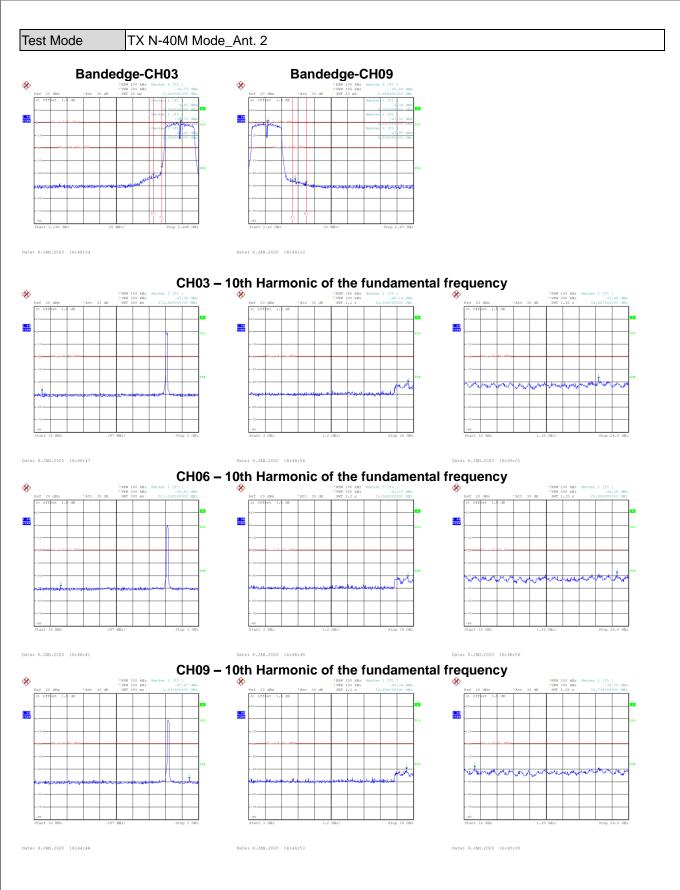














APPENDIX G - POWER SPECTRAL DENSITY



Test Mode TX B Mode

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-15.31	8	Complies
06	2437	-15.06	8	Complies
11	2462	-15.06	8	Complies



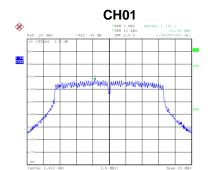


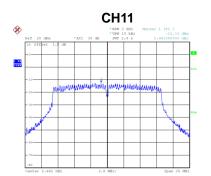


Date: 8.JAN.2020 15:38:10

Test Mode TX G Mode

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-12.64	8	Complies
06	2437	-12.28	8	Complies
11	2462	-12.13	8	Complies





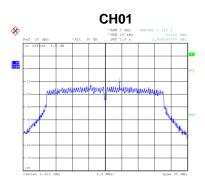
Date: 8.JAN.2020 15:40:34

Date: 8.JAN.2020 15:41:09

Date: 8.JAN.2020 15:37:12



Test Mode	TX N-20M Mode_An	it. 1		
Channel	Frequency	Power Spectral Density	Max. Limit	Result
Ondriner	(MHz)	(dBm/3kHz)	(dBm/3kHz)	
01	2412	-11.40	6.64	Complies
06	2437	-11.33	6.64	Complies
11	2462	-12.26	6.64	Complies



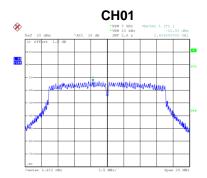


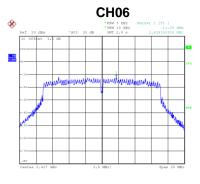


Date: 8.JAN.2020 16:37:58

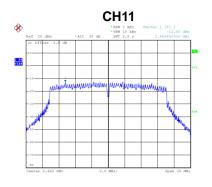
Test Mode TX N-20M Mode_Ant. 2

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-12.93	6.64	Complies
06	2437	-11.38	6.64	Complies
11	2462	-12.60	6.64	Complies





Date: 8.JAN.2020 16:40:12



Date: 8.JAN.2020 16:40:56

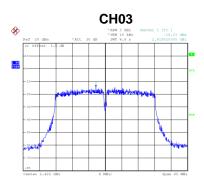
Date: 8.JAN.2020 16:39:32

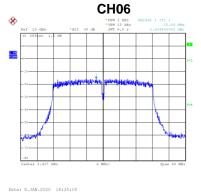
Test Mode	TX N-20M Mode_Total
-----------	---------------------

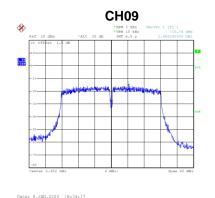
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
01	2412	-9.09	6.64	Complies
06	2437	-8.34	6.64	Complies
11	2462	-9.42	6.64	Complies



Test Mode	TX N-40M Mode_Ant. 1					
Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result		
03	2422	-14.23	6.64	Complies		
06	2437	-15.69	6.64	Complies		
09	2452	-15.76	6.64	Complies		



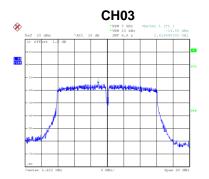


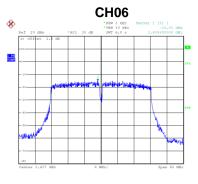


Date: 8.JAN.2020 16:35:55

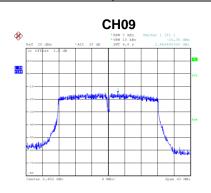
Test Mode TX N-40M Mode_Ant. 2

Power Spectral Density Frequency Max. Limit Channel Result (MHz) (dBm/3kHz) (dBm/3kHz) 03 2422 -14.88 6.64 Complies 06 2437 -15.01 6.64 Complies 09 2452 -15.05 6.64 Complies





Date: 8.JAN.2020 16:43:07



Date: 8.JAN.2020 16:43:34

Date: 8.JAN.2020 16:42:17

Test Mode TX N-40M Mode_Total

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Max. Limit (dBm/3kHz)	Result
03	2422	-11.53	6.64	Complies
06	2437	-12.33	6.64	Complies
09	2452	-12.38	6.64	Complies

End of Test Report