

This report concer	ns (check one): ⊠Original Grant
Equipment : Model Name : Applicant :	1509C262 Android Main Board B.RK3288.1 Guangzhou Shirui Electronics Co.,Ltd 192Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, Guangdong, China
Date of Test : Issued Date :	Sep. 21, 2015 Sep. 21, 2015 ~ Nov. 17, 2015 Nov. 18, 2015 BTL Inc.
Testing Engineer	: Shawn Xiao)
Technical Manager	: David Mao (David Mao)
Authorized Signate	ory : <u>Seeen Lu</u> (Steven Lu)

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 the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C**, or National Institute of Standards and Technology (**NIST**) of **U.S.A**.

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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.

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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-3-1509C262	Original Issue.	Nov. 18, 2015

1. CERTIFICATION

Equipment : Brand Name : Model Name :	
	Guangzhou Shirui Electronics Co.,Ltd
	Guangzhou Shirui Electronics Co.,Ltd
Address :	192Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, Guangdong, China
Date of Test :	Sep. 21, 2015 ~ Nov. 17, 2015
	Engineering Sample
Standard(s) :	FCC Part15, Subpart C: 2014 (15.247) / ANSI C63.10-2013

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

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-3-1509C262) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

Test results included in this report is only for the WIFI 2.4GHz part.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

Applied Standard(s): FCC Part15 (15.247), Subpart C: 2014

Standard(s) Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247(d)	Antenna conducted Spurious Emission	PASS	
15.247(a)(2)	6dB Bandwidth	PASS	
15.247(b)(3)	Peak Output Power	PASS	
15.247(e)	Power Spectral Density	PASS	
15.203	Antenna Requirement	PASS	
15.209/15.205	Transmitter Radiated Emissions	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this test report.

2.1 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 number for FCC: 319330

2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{cispr} requirement.

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)
DG-C02	CISPR	150 KHz ~ 30MHz	2.32

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)				
		9KHz~30MHz	V	3.79				
		9KHz~30MHz	Н	3.57				
		30MHz ~ 200MHz	V	3.82				
	03 CISPR	CISPR	30MHz ~ 200MHz	Н	3.78			
DG-CB03			CIEDD	CIEDD		200MHz ~ 1,000MHz	V	4.10
DG-CB03			200MHz ~ 1,000MHz	Н	4.06			
		1GHz~18GHz	V	3.12				
				1GHz~18GHz	Н	3.68		
		18GHz~40GHz	V	4.15				
		18GHz~40GHz	Н	4.14				

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Android Main Board	
Brand Name	seewo	
Model Name	B.RK3288.1	
Model Difference	N/A	
	Operation Frequency	2412~2462 MHz
Product Description	Modulation Technology	802.11b:DSSS 802.11g:OFDM 802.11n:OFDM
	Bit Rate of Transmitter	802.11b: 11/5.5/2/1 Mbps 802.11g: 54/48/36/24/18/12/9/6 Mbps 802.11n up to 150 Mbps
	Output Power (Max.)	802.11b: 14.30dBm 802.11g: 21.83dBm 802.11n(20MHz): 20.02dBm 802.11n(40MHz): 19.87dBm
Power Source	Supplied from system.	
Power Rating	I/P:12V~20V 1500mA	

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 802.11b, 802.11g, 802.11n(20MHz) CH03 – CH11 for 802.11n(40MHz)						
		CH03	<u> – CH11 for</u>	802.11n(40	IMHZ)		
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel	(MHz)	Channel	(MHz)	Channel	(MHz)	Channel	(MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

3. Table for Filed Antenna

Ant.	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Dipole	N/A	2.55

3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

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-20MHZ MODE CHANNEL 01/06/11
Mode 4	TX N-40MHZ MODE CHANNEL 03/06/09
Mode 5	TX Mode

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

For Conducted Test		
Final Test Mode Description		
Mode 5	TX Mode	

For Radiated 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-20MHZ MODE CHANNEL 01/06/11	
Mode 4	TX N-40MHZ MODE CHANNEL 03/06/09	

Note:

(1) The measurements are performed at the high, middle, low available channels.

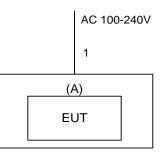
- (2) 802.11b mode: DBPSK (1Mbps) 802.11g mode: OFDM (6Mbps) 802.11n HT20 mode : BPSK (6.5Mbps) 802.11n HT40 mode : BPSK (13.5Mbps) For radiated emission tests, the highest output powers were set for final test.
 (3) For radiated below 1G test, the 802.11b is found to be the worst case and recorded.
- (4) The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing, channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN

Test software version	RFTEST TOOL		
Frequency (MHz)	2412	2437	2462
802.11b	N/A	N/A	N/A
802.11g	N/A	N/A	N/A
802.11n (20MHz)	N/A	N/A	N/A
Frequency	2422	2437	2452
802.11n (40MHz)	N/A	N/A	N/A

3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.
А	Android Module	seewo	SA02	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	1.8m	AC Main Cable

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION LIMITS (Frequency Range 150KHz-30MHz)

Frequency of Emission (MHz)	Conducted Limit (dBµV)		
Frequency of Emission (MHz)	Quasi-peak	Average	
0.15 -0.5	66 to 56*	56 to 46*	
0.50 -5.0	56	46	
5.0 -30.0	60	50	

Note:

- (1) The limit of " * " decreases with the logarithm of the frequency
- (2) The test result calculated as following:
 - Measurement Value = Reading Level + Correct Factor
 - Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
 - Margin Level = Measurement Value Limit Value

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

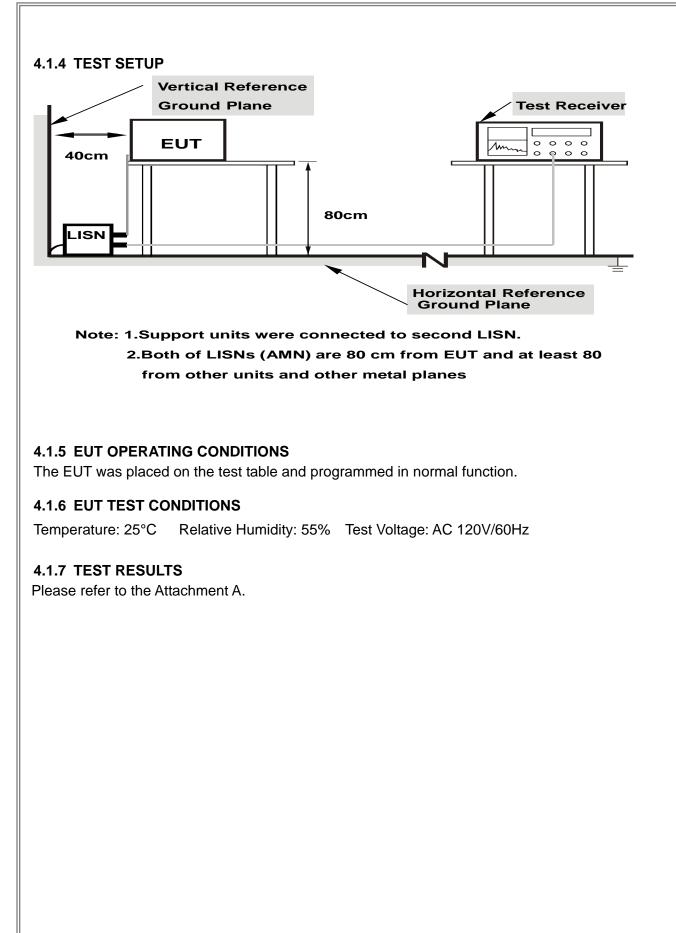
4.1.2 TEST PROCEDURE

- 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 equipments 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.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS

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 (9KHz-1000MHz)

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
960~1000	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

Frequency (MHz)	(dBuV/m) (at 3 meters)		
	PEAK	AVERAGE	
Above 1000	74	54	

Notes:

(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	1MHz / 3MHz for Peak,
(Emission in restricted band)	1MHz / 1/T for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9KHz~90KHz for PK/AVG detector
Start ~ Stop Frequency	90KHz~110KHz for QP detector
Start ~ Stop Frequency	110KHz~490KHz for PK/AVG detector
Start ~ Stop Frequency	490KHz~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector

4.2.2 TEST PROCEDURE

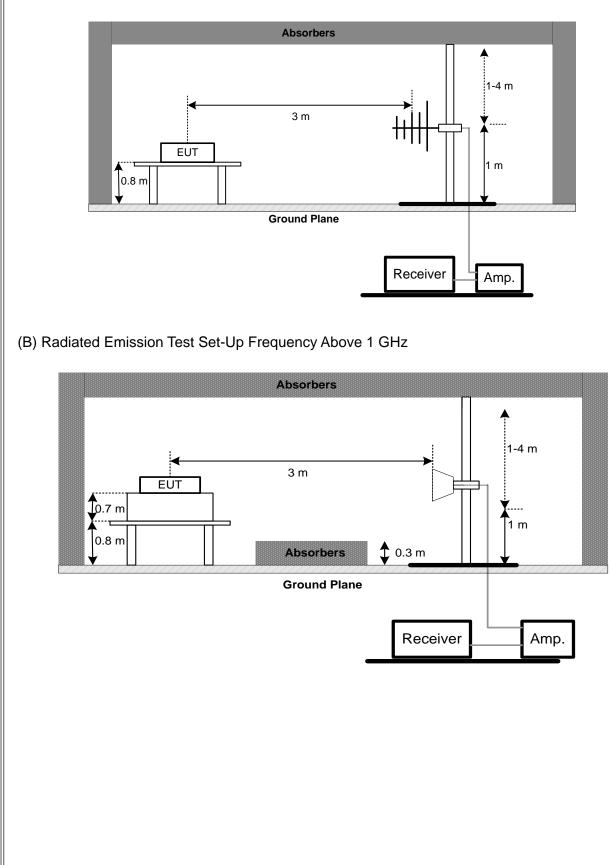
- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- b. The measuring distance 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 1GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8 m 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. 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.
- e. 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 1GHz)
- f. 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 1GHz)
- g. For the actual test configuration, please refer to the related Item -EUT Test Photos.

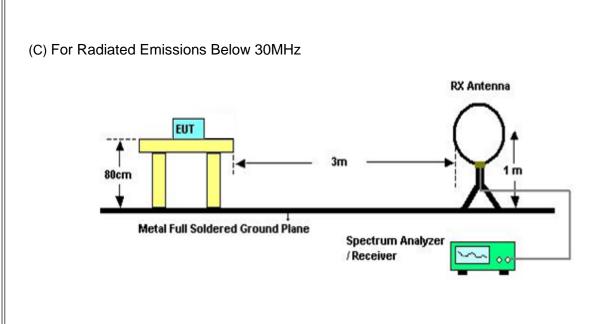
4.2.3 DEVIATION FROM TEST STANDARD

No deviation

4.2.4 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz





4.2.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.2.6 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: AC 120V/60Hz



4.2.7 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the Attachment B

Remark:

- (1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
- (2) Distance extrapolation factor = 40 log (specific distance / test distance) (dB).
- (3) Limit line = specific limits (dBuV) + distance extrapolation factor.

4.2.8 TEST RESULTS (30MHZ TO 1000 MHZ)

Please refer to the Attachment C.

4.2.9 TEST RESULTS (ABOVE 1000 MHZ)

Please refer to the Attachment 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 APPLIED PROCEDURES

FCC Part15 (15.247), Subpart C				
Section Test Item Frequency Range (MHz) Result				
15.247(a)(2) Bandwidth 2400-2483.5 PASS				

5.1.1 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= 100KHz, VBW=300KHz, Sweep time = 2.5 ms.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP

EUT	SPECTRUM
	ANALYZER

5.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: AC 120V/60Hz

5.1.6 TEST RESULTS

Please refer to the Attachment E.

6. MAXIMUM PEAK CONDUCTED OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

	FCC Part15 (15.247), Subpart C						
Section Test Item		Limit	Frequency Range (MHz)	Result			
	15.247(b)(3) Maximum Output Power		1 Watt or 30dBm	2400-2483.5	PASS		

6.1.1 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 peak conducted output power was performed in accordance with method 9.1.2 of FCC KDB 558074 D01 DTS Meas Guidance v03r03.

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

6.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: AC 120V/60Hz

6.1.6 TEST RESULTS

Please refer to the Attachment F.

7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 APPLIED PROCEDURES / LIMIT

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 conducted power limits.

7.1.1 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= 100KHz, VBW=300KHz, Sweep time = Auto.
- c. Offset=antenna gain+cable loss

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP



7.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

7.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: AC 120V/60Hz

7.1.6 TEST RESULTS

Please refer to the Attachment G.

8. POWER SPECTRAL DENSITY TEST

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247), Subpart C					
Section Test Item		Limit	Frequency Range (MHz)		
15.247(e)	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS	

8.1.1 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=3KHz, VBW=10KHz, Sweep time = Auto.

8.1.2 DEVIATION FROM STANDARD

No deviation.

8.1.3 TEST SETUP

EUT	SPECTRUM
	ANALYZER

8.1.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

8.1.5 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 55% Test Voltage: AC 120V/60Hz

8.1.6 TEST RESULTS

Please refer to the Attachment H.

9. MEASUREMENT INSTRUMENTS LIST

E.

	Conducted Emission Measurement							
	Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until		
	1	LISN	EMCO	699837	0052765	Mar. 28, 2016		
	2	LISN	R&S	ENV216	101447	Mar. 28, 2016		
	3	Test Cable	emci	RG223(9KHz-30 MHz)	C_17	Mar. 13, 2016		
	4	EMI Test Receiver	R&S	ESCS30	826547/022	Mar. 28, 2016		
	5	50Ω Terminator	SHX	TF2-3G-A	08122901	Mar. 28, 2016		
6		Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A		

Radiated Emission Measurement						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	
1	Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 28, 2016	
2	Amplifier	HP	8447D	2944A09673	Nov. 09, 2016	
3	Receiver	AGILENT	N9038A	MY52130039	Oct. 11, 2016	
4	Test Cable	emci	LMR-400(30MH z-1GHz)	C-01	Jun. 28, 2016	
5	Controller	СТ	SC100	N/A	N/A	
6	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A	
7	Antenna	ETS	3115	00075789	Mar. 28, 2016	
8	Amplifier	Agilent	8449B	3008A02274	Nov. 01, 2016	
9	Receiver	AGILENT	N9038A	MY52130039	Oct. 11, 2016	
10	Test Cable	emci	EMC104-SM-S M-10000(1GHz - 26.5GHz)	C-68	Jun. 28, 2016	
11	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Mar. 28, 2016	
12	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 28, 2016	
13	Active Loop		HFH2-Z2	830749/020	Sep. 07, 2016	



		6dB Bandwidt	h Measureme	ent	
ltem	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EXA Spectrum Analyzer	Agilent	N9010A	MY50520044	Mar. 28, 2016

Peak Output Power Measurement					
ltem	m Kind of Equipment Manufacturer		Type No.	Serial No.	Calibrated until
1	P-series Power meter	Agilent	N1911A	MY45100473	Mar. 28, 2016
2	Wireband Power sensor	Agilent		MY51100041	Mar. 28, 2016

Antenna Conducted Spurious Emission Measurement					
ltem	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	1 EXA Spectrum Agilent		N9010A	MY50520044	Mar. 28, 2016

Power Spectral Density Measurement					
ltem	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EXA Spectrum Analyzer	Agilent	N9010A	MY50520044	Mar. 28, 2016

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 Measurement Photos





Radiated Measurement Photos

9KHz to 30MHz





Radiated Measurement Photos

30MHz to 1000MHz





Radiated Measurement Photos

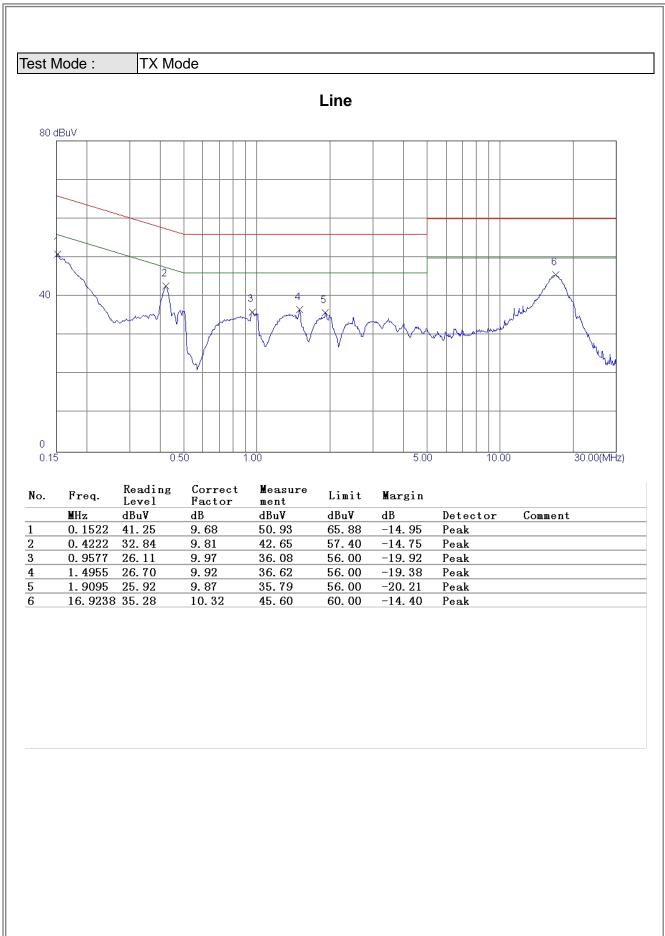
Above 1000MHz



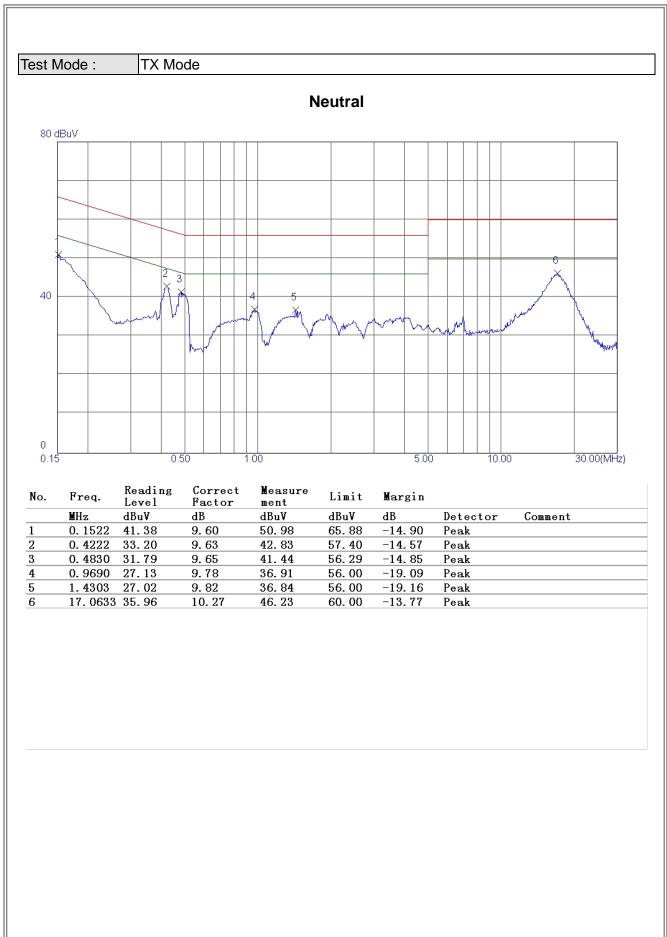


ATTACHMENT A - CONDUCTED EMISSION









ATTACHMENT B - RADIATED EMISSION (9KHZ TO 30MHZ)

Test	Mode:

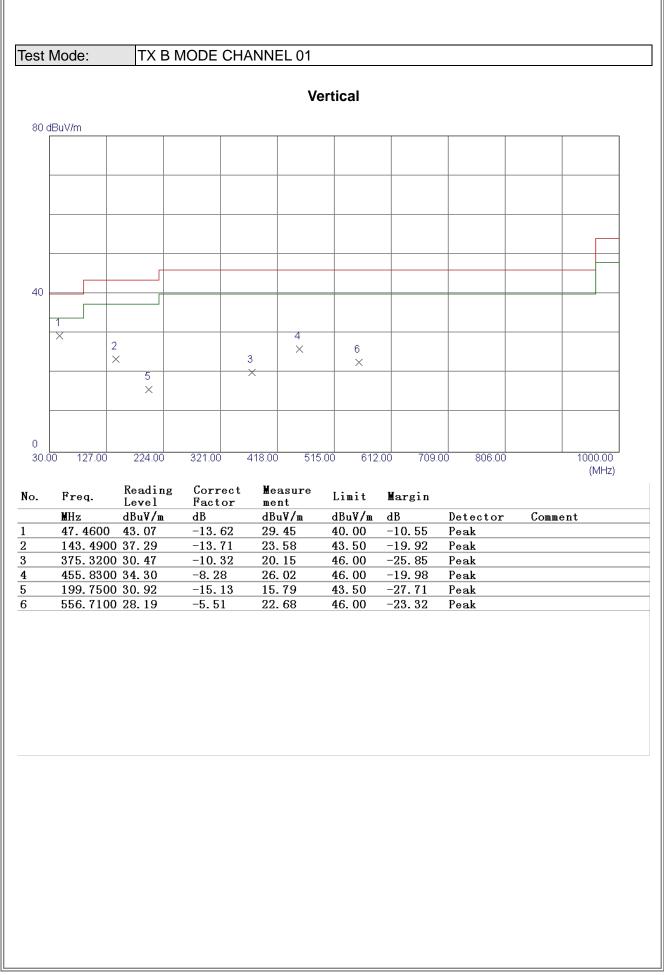
TX B MODE CHANNEL 01

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0128	0°	13.52	24.7560	38.2760	125.4600	-87.1840	AVG
0.0128	0°	14.67	24.7560	39.4260	145.4600	-106.0340	PEAK
0.0297	0°	6.92	23.6857	30.6057	118.1491	-87.5434	AVG
0.0297	0°	8.42	23.6857	32.1057	138.1491	-106.0434	PEAK
0.0375	0°	3.45	23.1917	26.6417	116.1236	-89.4819	AVG
0.0375	0°	5.73	23.1917	28.9217	136.1236	-107.2019	PEAK
0.0593	0°	1.42	22.2140	23.6340	112.1431	-88.5091	AVG
0.0593	0°	2.91	22.2140	25.1240	132.1431	-107.0191	PEAK
0.512	0°	19.44	19.8384	39.2784	73.4188	-34.1404	QP
1.9567	0°	24.46	19.5043	43.9643	69.5400	-25.5757	QP
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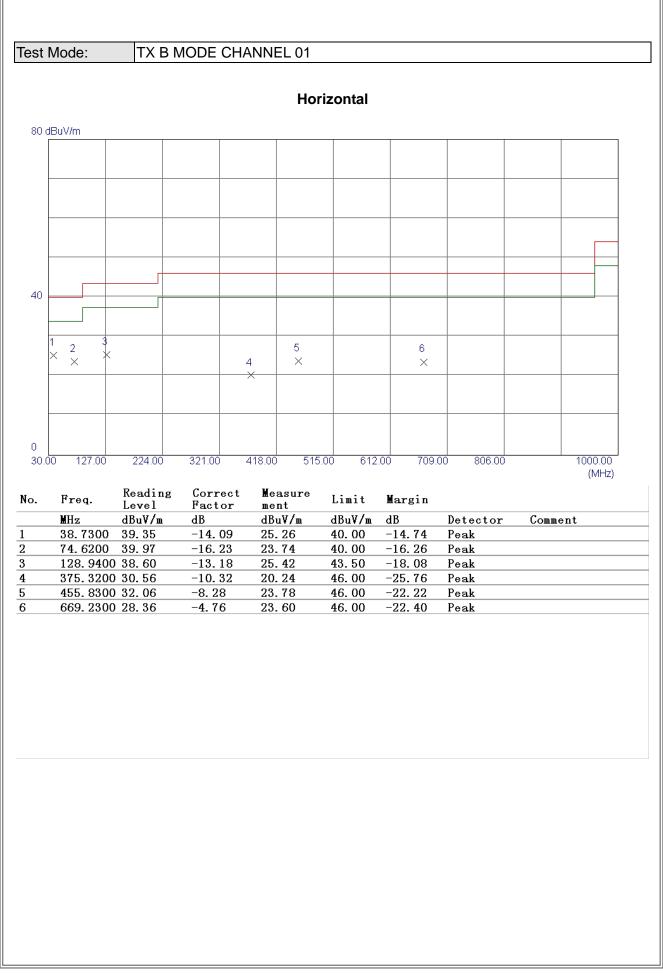
Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0137	90°	13.27	24.3000	37.5700	124.8698	-87.2998	AVG
0.0137	90°	14.91	24.3000	39.2100	144.8698	-105.6598	PEAK
0.0288	90°	7.44	23.7427	31.1827	118.4164	-87.2337	AVG
0.0288	90°	9.03	23.7427	32.7727	138.4164	-105.6437	PEAK
0.0457	90°	5.37	22.6723	28.0423	114.4059	-86.3636	AVG
0.0457	90°	6.43	22.6723	29.1023	134.4059	-105.3036	PEAK
0.0593	90°	1.73	22.2140	23.9440	112.1431	-88.1991	AVG
0.0593	90°	2.91	22.2140	25.1240	132.1431	-107.0191	PEAK
0.623	90°	22.27	20.1936	42.4636	71.7145	-29.2509	QP
2.0519	90°	24.36	19.4689	43.8289	69.5400	-25.7111	QP

ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)

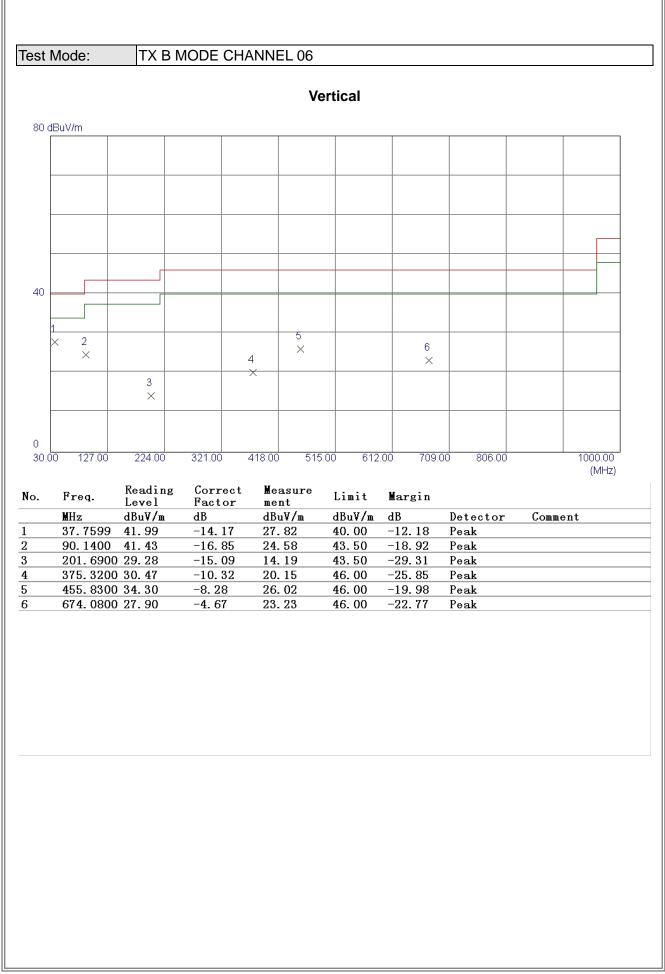




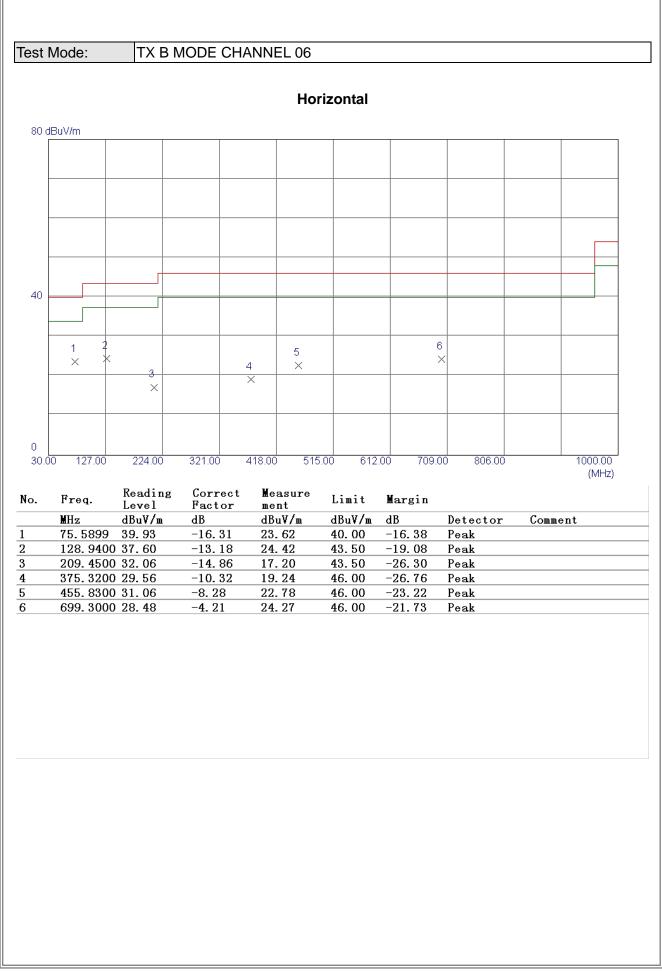




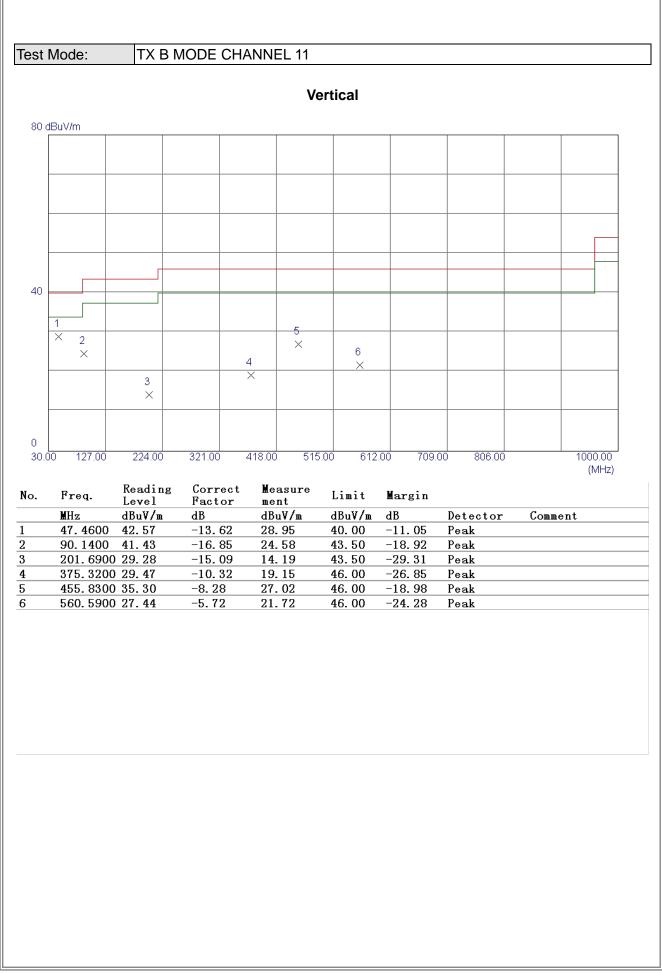




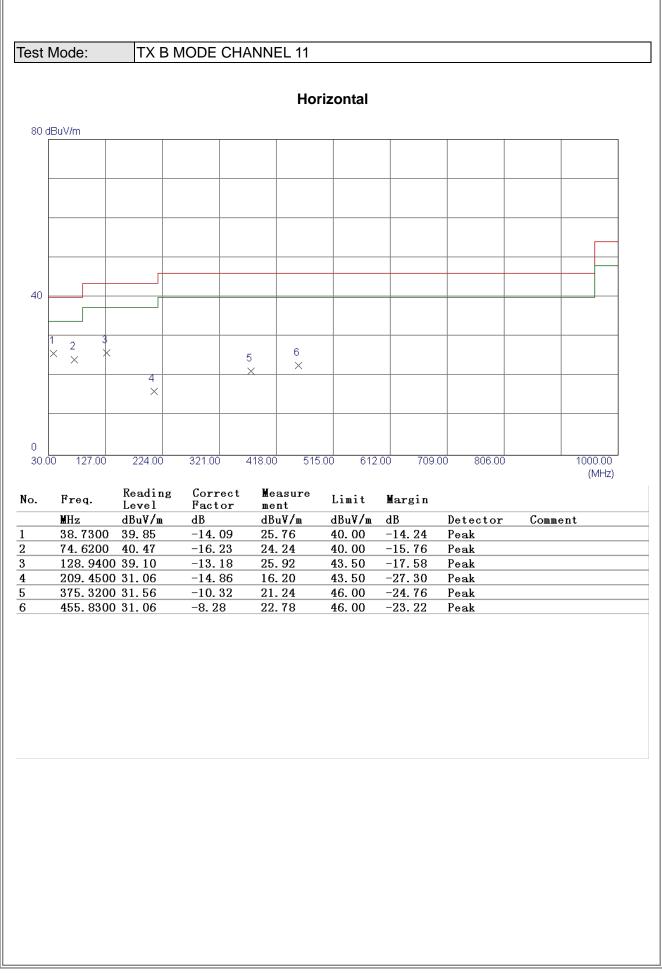






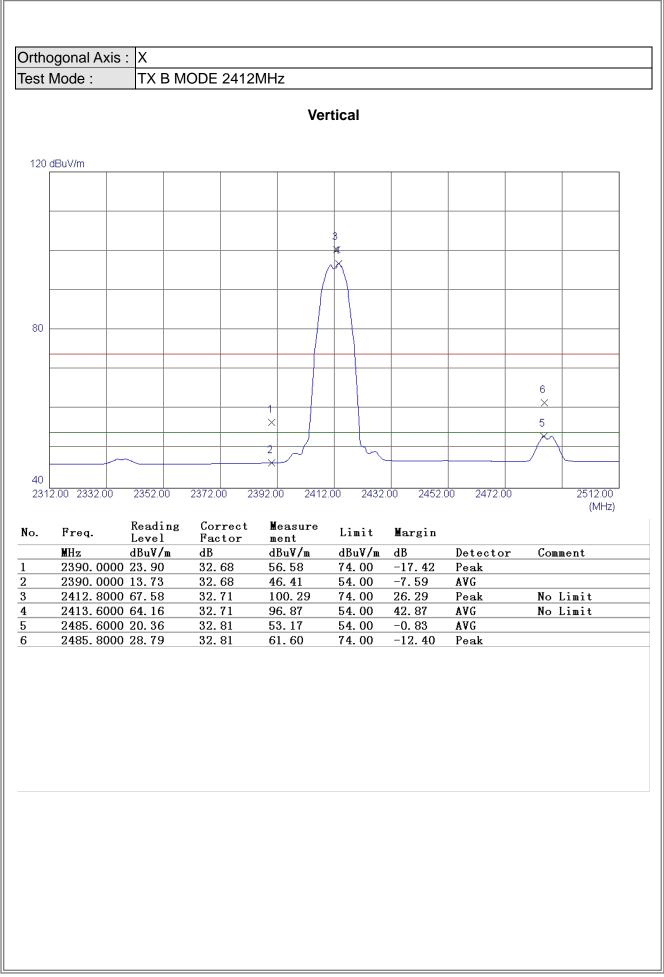




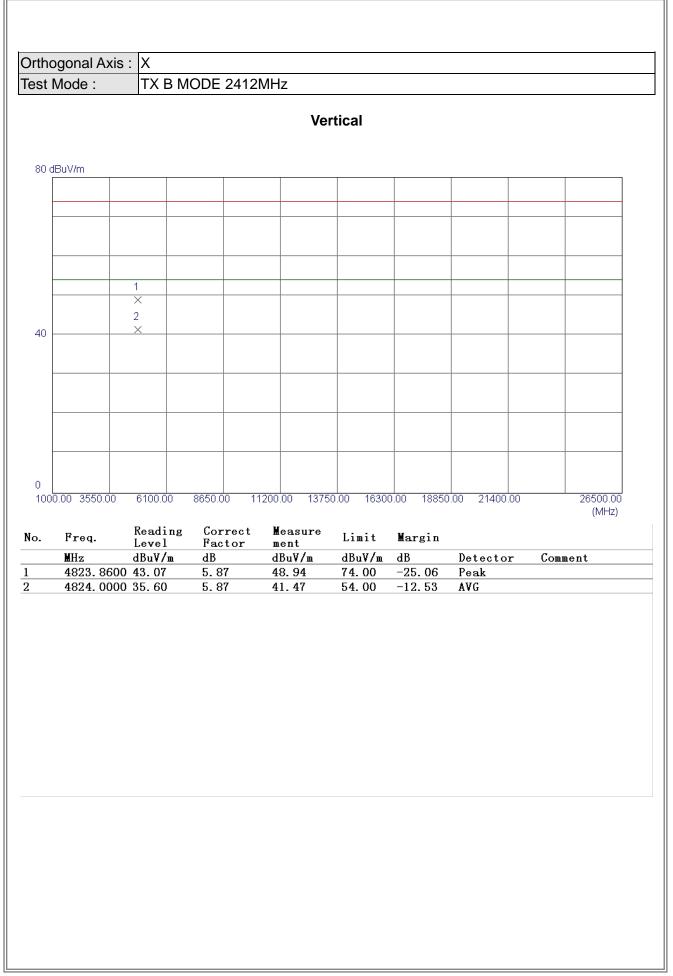


ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)

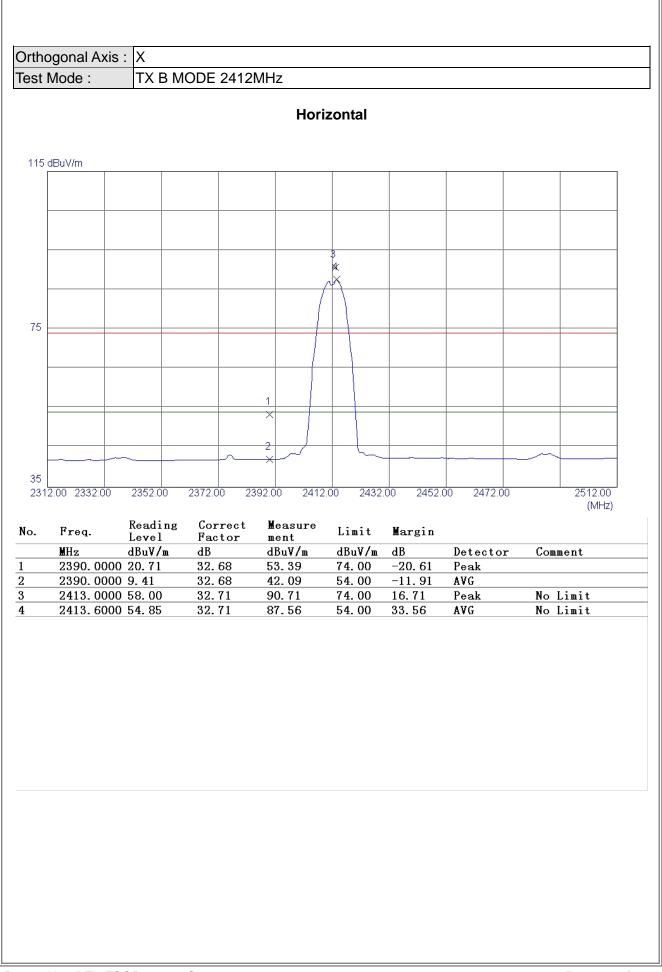








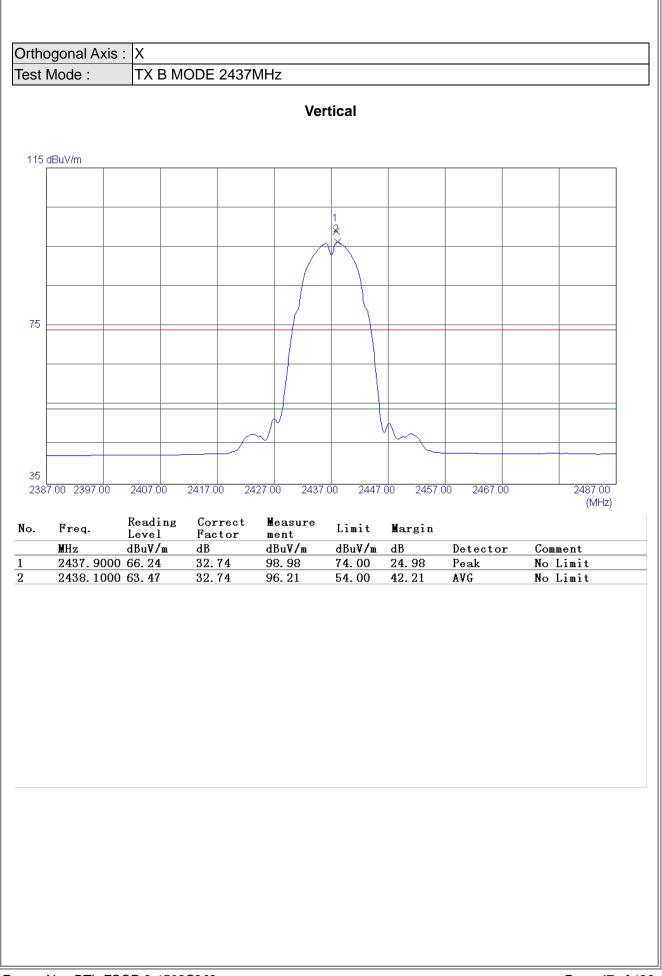






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1000	Freq.	Readin Level dBuV/m 40.59	ig Co: Fac	rrect l ctor c 37 4	Measure ment	Limit	Margin			(MHz)
000	Freq. MHz 4823.9800	Readin Level dBuV/m 40.59	ig Co: Fad dB 5.8	rrect l ctor c 37 4	Measure ment dBuV/m 46.46	Limit dBuV/m 74.00	Margin dB -27.54	Detector Peak		(MHz)
1000	Freq. MHz 4823.9800	Readin Level dBuV/m 40.59	ig Co: Fad dB 5.8	rrect l ctor c 37 4	Measure ment dBuV/m 46.46	Limit dBuV/m 74.00	Margin dB -27.54	Detector Peak		(MHz)
1000	Freq. MHz 4823.9800	Readin Level dBuV/m 40.59	ig Co: Fad dB 5.8	rrect l ctor c 37 4	Measure ment dBuV/m 46.46	Limit dBuV/m 74.00	Margin dB -27.54	Detector Peak		(MHz)
1000	Freq. MHz 4823.9800	Readin Level dBuV/m 40.59	ig Co: Fad dB 5.8	rrect l ctor c 37 4	Measure ment dBuV/m 46.46	Limit dBuV/m 74.00	Margin dB -27.54	Detector Peak		(MHz)
1000	Freq. MHz 4823.9800	Readin Level dBuV/m 40.59	ig Co: Fad dB 5.8	rrect l ctor c 37 4	Measure ment dBuV/m 46.46	Limit dBuV/m 74.00	Margin dB -27.54	Detector Peak		(MHz)
- 	Freq. MHz 4823.9800	Readin Level dBuV/m 40.59	ig Co: Fad dB 5.8	rrect l ctor c 37 4	Measure ment dBuV/m 46.46	Limit dBuV/m 74.00	Margin dB -27.54	Detector Peak		(MHz)
1000	Freq. MHz 4823.9800	Readin Level dBuV/m 40.59	ig Co: Fad dB 5.8	rrect l ctor c 37 4	Measure ment dBuV/m 46.46	Limit dBuV/m 74.00	Margin dB -27.54	Detector Peak		(MHz)
1000	Freq. MHz 4823.9800	Readin Level dBuV/m 40.59	ig Co: Fad dB 5.8	rrect l ctor c 37 4	Measure ment dBuV/m 46.46	Limit dBuV/m 74.00	Margin dB -27.54	Detector Peak		(MHz)
1000	Freq. MHz 4823.9800	Readin Level dBuV/m 40.59	ig Co: Fad dB 5.8	rrect l ctor c 37 4	Measure ment dBuV/m 46.46	Limit dBuV/m 74.00	Margin dB -27.54	Detector Peak		(MHz)

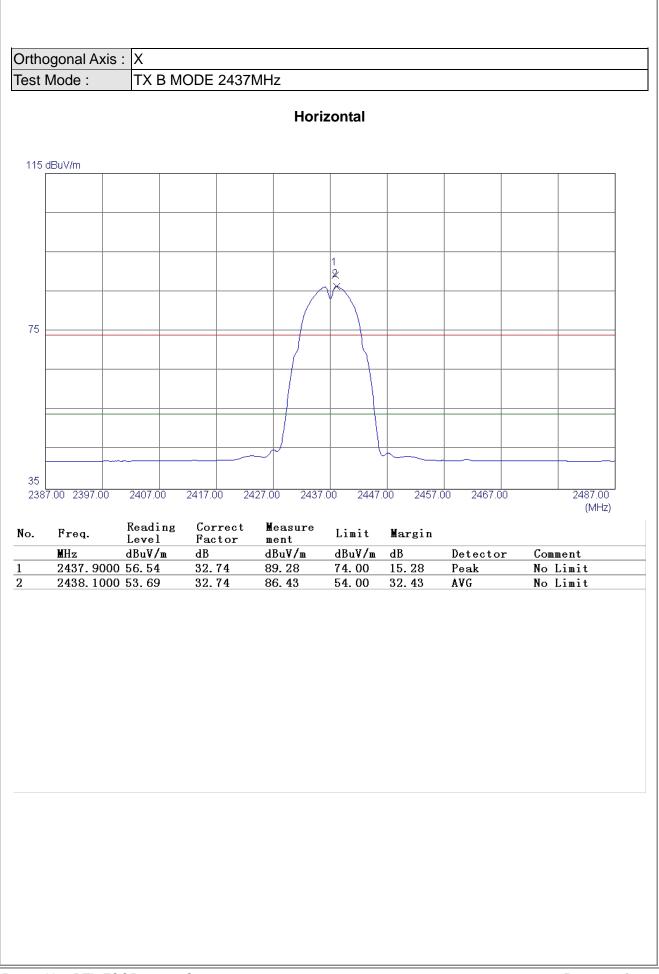






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1000	Freq. MHz 4874.0000	Reading Level dBuV/m 42.96	Correct Factor dB 6.00	Measure ment dBuV/m 48.96	Limit dBuV/m 74.00	Margin dB -25.04	Detector Peak	(MHz)	
1000	Freq. MHz 4874.0000	Reading Level dBuV/m 42.96	Correct Factor dB 6.00	Measure ment dBuV/m 48.96	Limit dBuV/m 74.00	Margin dB -25.04	Detector Peak	(MHz)	
1000	Freq. MHz 4874.0000	Reading Level dBuV/m 42.96	Correct Factor dB 6.00	Measure ment dBuV/m 48.96	Limit dBuV/m 74.00	Margin dB -25.04	Detector Peak	(MHz)	
1000	Freq. MHz 4874.0000	Reading Level dBuV/m 42.96	Correct Factor dB 6.00	Measure ment dBuV/m 48.96	Limit dBuV/m 74.00	Margin dB -25.04	Detector Peak	(MHz)	
1000	Freq. MHz 4874.0000	Reading Level dBuV/m 42.96	Correct Factor dB 6.00	Measure ment dBuV/m 48.96	Limit dBuV/m 74.00	Margin dB -25.04	Detector Peak	(MHz)	

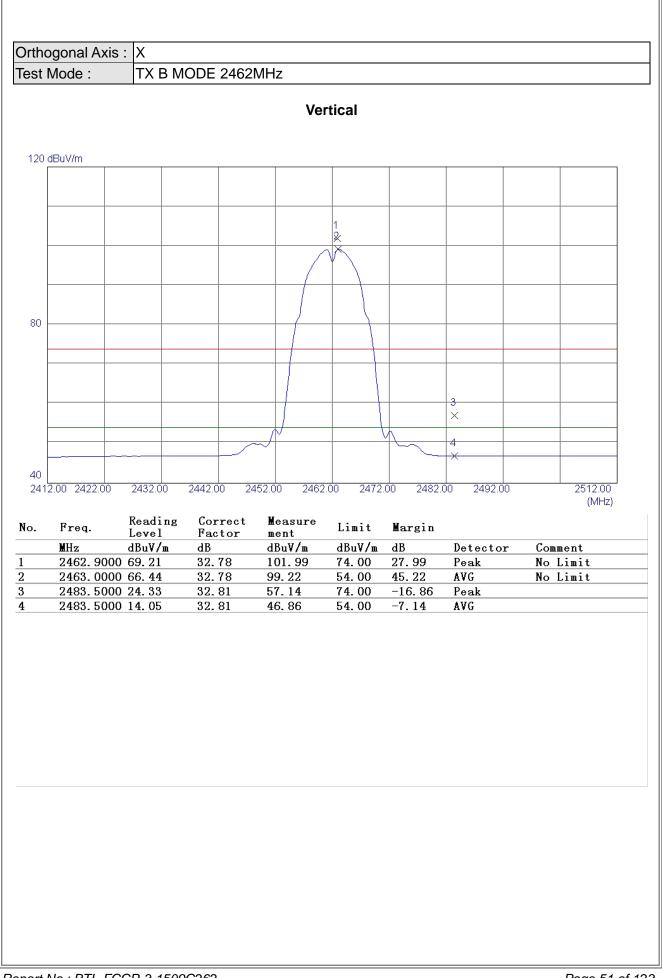






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000	Freq. MHz	Reading Level dBuV/m 40.88	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	(MH:	
1000	Freq. MHz 4873.9400	Reading Level dBuV/m 40.88	Correct Factor dB 6.00	Measure ment dBuV/m 46.88	Limit dBuV/m 74.00	Margin dB -27.12	Detector Peak	(MH:	
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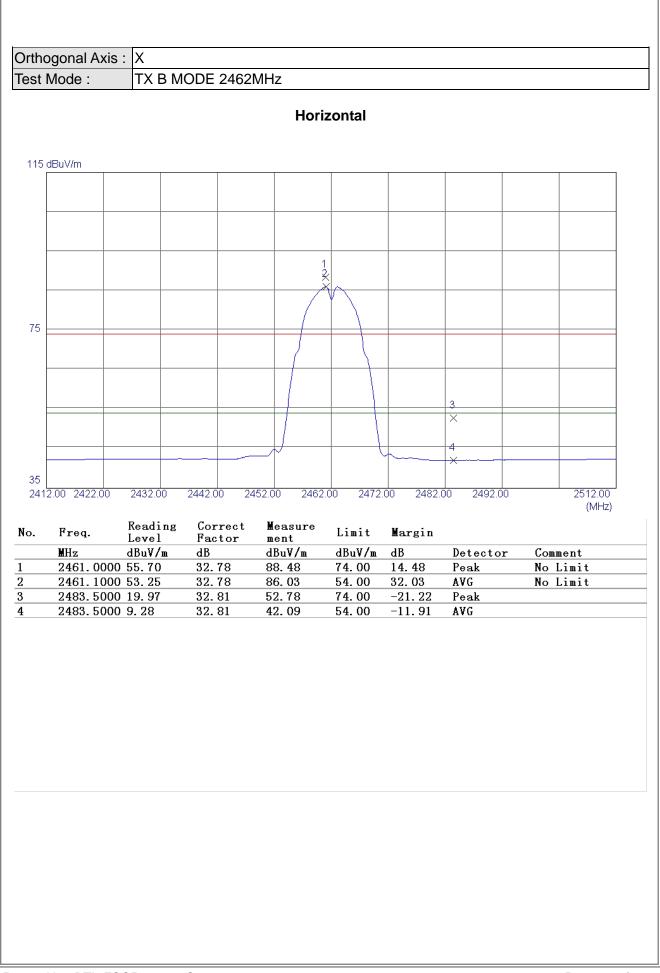




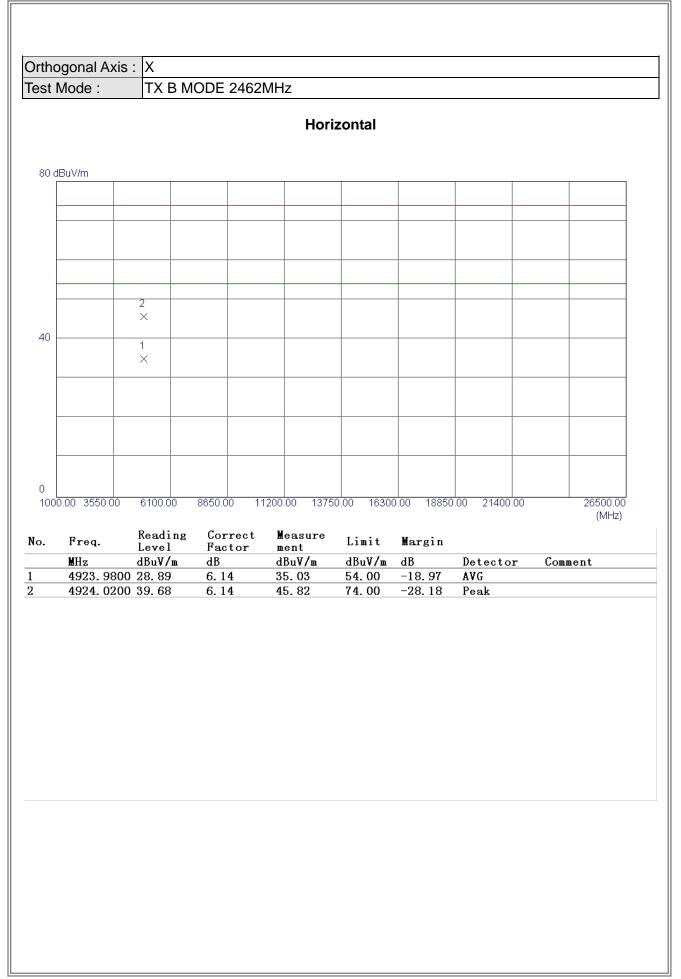


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1000	Freq.	Reading Level dBuV/m 40.71	Correct Factor	Measure ment	Limit	Margin	Detector	(M	0.00 Hz)
1000	Freq. MHz 4923.9400	Reading Level dBuV/m 40.71	Correct Factor dB 6.14	Measure ment dBuV/m 46.85	Limit dBuV/m 74.00	Margin dB -27.15	Detector Peak	(M	0.00 Hz)
1000	Freq. MHz 4923.9400	Reading Level dBuV/m 40.71	Correct Factor dB 6.14	Measure ment dBuV/m 46.85	Limit dBuV/m 74.00	Margin dB -27.15	Detector Peak	(M	0.00 Hz)
1000	Freq. MHz 4923.9400	Reading Level dBuV/m 40.71	Correct Factor dB 6.14	Measure ment dBuV/m 46.85	Limit dBuV/m 74.00	Margin dB -27.15	Detector Peak	(M	0.00 Hz)
1000	Freq. MHz 4923.9400	Reading Level dBuV/m 40.71	Correct Factor dB 6.14	Measure ment dBuV/m 46.85	Limit dBuV/m 74.00	Margin dB -27.15	Detector Peak	(M	0.00 Hz)
1000	Freq. MHz 4923.9400	Reading Level dBuV/m 40.71	Correct Factor dB 6.14	Measure ment dBuV/m 46.85	Limit dBuV/m 74.00	Margin dB -27.15	Detector Peak	(M	0.00 Hz)
0 1000 D .	Freq. MHz 4923.9400	Reading Level dBuV/m 40.71	Correct Factor dB 6.14	Measure ment dBuV/m 46.85	Limit dBuV/m 74.00	Margin dB -27.15	Detector Peak	(M	0.00 Hz)
1000	Freq. MHz 4923.9400	Reading Level dBuV/m 40.71	Correct Factor dB 6.14	Measure ment dBuV/m 46.85	Limit dBuV/m 74.00	Margin dB -27.15	Detector Peak	(M	0.00 Hz)
1000	Freq. MHz 4923.9400	Reading Level dBuV/m 40.71	Correct Factor dB 6.14	Measure ment dBuV/m 46.85	Limit dBuV/m 74.00	Margin dB -27.15	Detector Peak	(M	0.00 Hz)
1000	Freq. MHz 4923.9400	Reading Level dBuV/m 40.71	Correct Factor dB 6.14	Measure ment dBuV/m 46.85	Limit dBuV/m 74.00	Margin dB -27.15	Detector Peak	(M	0.00 Hz)

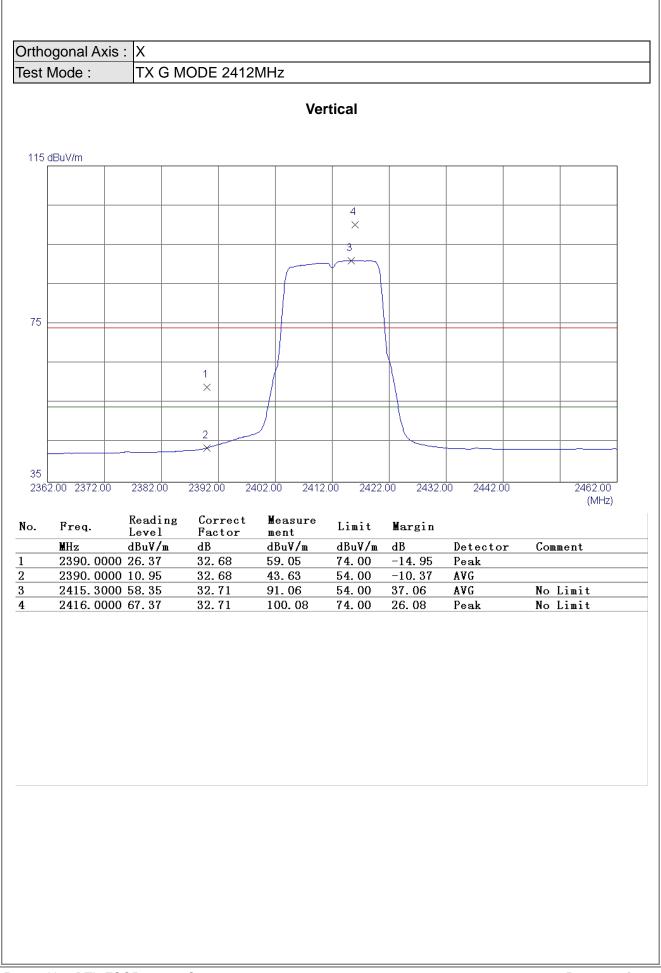








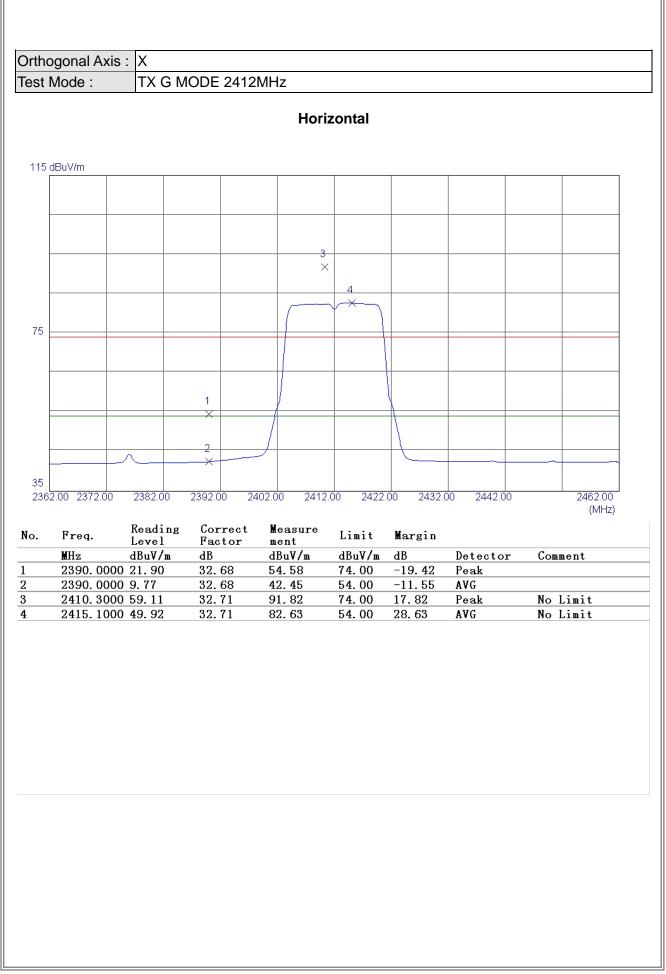




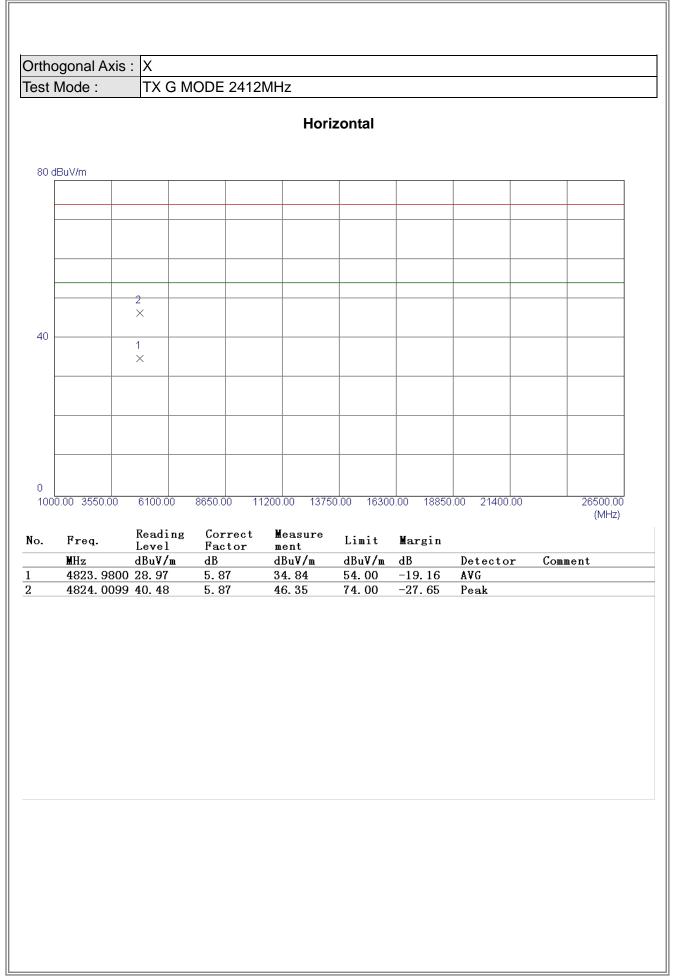


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000	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		26500.0 (MHz) Comment
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000	Freq. MHz 4826.0900	Reading Level dBuV/m 45.29	Correct Factor dB 5.88	Measure ment dBuV/m 51.17	Limit dBuV/m 74.00	Margin dB -22.83	Detector Peak	(MHz)
000	Freq. MHz 4826.0900	Reading Level dBuV/m 45.29	Correct Factor dB 5.88	Measure ment dBuV/m 51.17	Limit dBuV/m 74.00	Margin dB -22.83	Detector Peak	(MHz)
1000	Freq. MHz 4826.0900	Reading Level dBuV/m 45.29	Correct Factor dB 5.88	Measure ment dBuV/m 51.17	Limit dBuV/m 74.00	Margin dB -22.83	Detector Peak	(MHz)
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000	Freq. MHz 4826.0900	Reading Level dBuV/m 45.29	Correct Factor dB 5.88	Measure ment dBuV/m 51.17	Limit dBuV/m 74.00	Margin dB -22.83	Detector Peak	(MHz)
-	Freq. MHz 4826.0900	Reading Level dBuV/m 45.29	Correct Factor dB 5.88	Measure ment dBuV/m 51.17	Limit dBuV/m 74.00	Margin dB -22.83	Detector Peak	(MHz)
1000	Freq. MHz 4826.0900	Reading Level dBuV/m 45.29	Correct Factor dB 5.88	Measure ment dBuV/m 51.17	Limit dBuV/m 74.00	Margin dB -22.83	Detector Peak	(MHz)
1000	Freq. MHz 4826.0900	Reading Level dBuV/m 45.29	Correct Factor dB 5.88	Measure ment dBuV/m 51.17	Limit dBuV/m 74.00	Margin dB -22.83	Detector Peak	(MHz)
1000	Freq. MHz 4826.0900	Reading Level dBuV/m 45.29	Correct Factor dB 5.88	Measure ment dBuV/m 51.17	Limit dBuV/m 74.00	Margin dB -22.83	Detector Peak	(MHz)

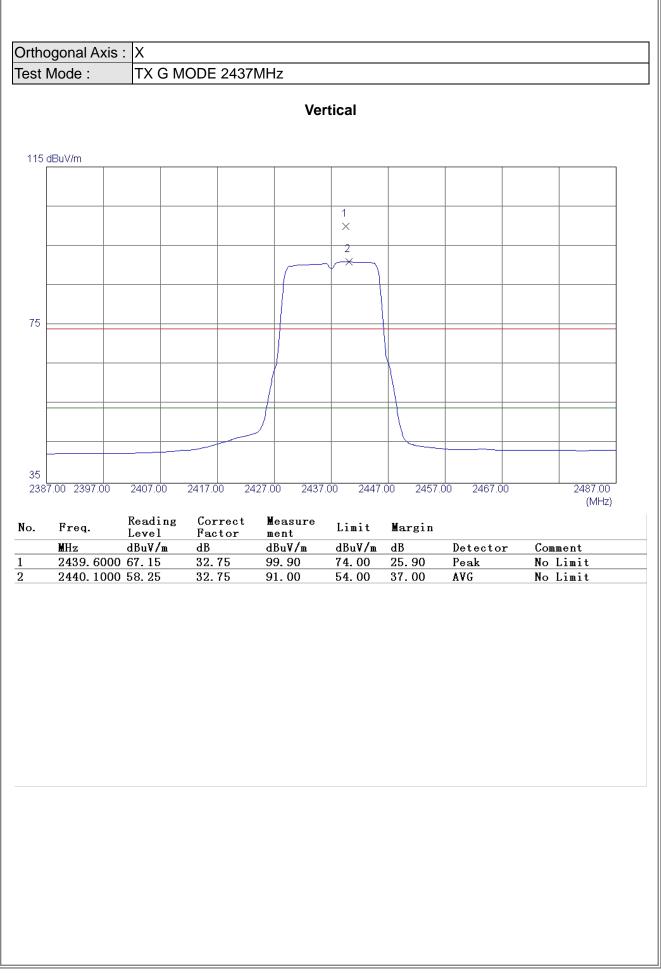








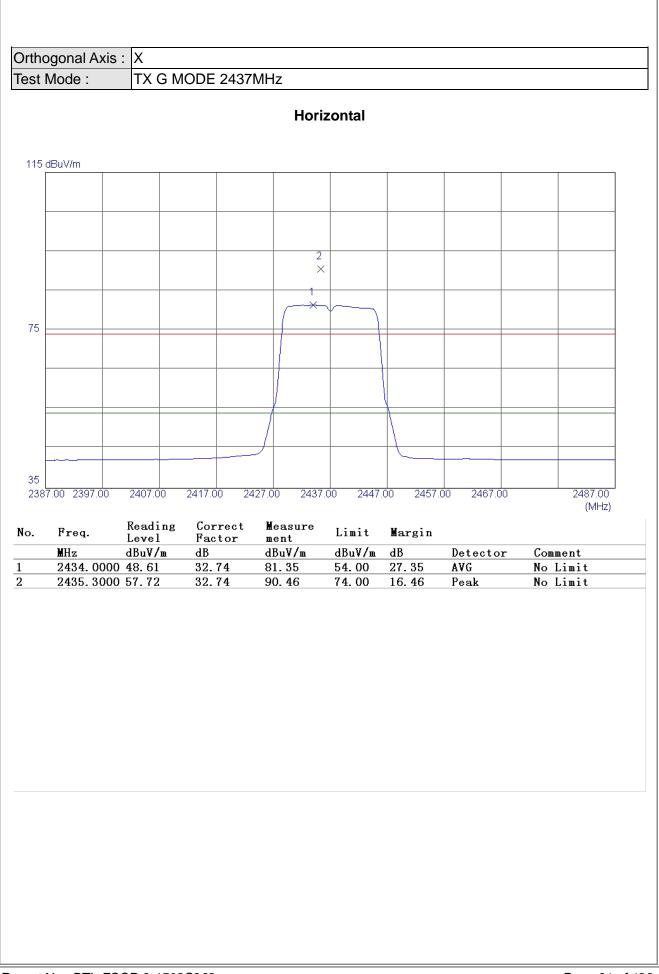






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1000	Freq. MHz 4874.1000	Reading Level dBuV/m 42.88	Correct Factor dB 6.00	Measure ment dBuV/m 48.88	Limit dBuV/m 74.00	Margin dB -25.12	Detector Peak	(MF	
1000	Freq. MHz	Reading Level dBuV/m 42.88	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	(MF	
1000	Freq. MHz 4874.1000	Reading Level dBuV/m 42.88	Correct Factor dB 6.00	Measure ment dBuV/m 48.88	Limit dBuV/m 74.00	Margin dB -25.12	Detector Peak	(MF	
0	Freq. MHz 4874.1000	Reading Level dBuV/m 42.88	Correct Factor dB 6.00	Measure ment dBuV/m 48.88	Limit dBuV/m 74.00	Margin dB -25.12	Detector Peak	(MF	
1000	Freq. MHz 4874.1000	Reading Level dBuV/m 42.88	Correct Factor dB 6.00	Measure ment dBuV/m 48.88	Limit dBuV/m 74.00	Margin dB -25.12	Detector Peak	(MF	
1000	Freq. MHz 4874.1000	Reading Level dBuV/m 42.88	Correct Factor dB 6.00	Measure ment dBuV/m 48.88	Limit dBuV/m 74.00	Margin dB -25.12	Detector Peak	(MF	
1000	Freq. MHz 4874.1000	Reading Level dBuV/m 42.88	Correct Factor dB 6.00	Measure ment dBuV/m 48.88	Limit dBuV/m 74.00	Margin dB -25.12	Detector Peak	(MF	
1000	Freq. MHz 4874.1000	Reading Level dBuV/m 42.88	Correct Factor dB 6.00	Measure ment dBuV/m 48.88	Limit dBuV/m 74.00	Margin dB -25.12	Detector Peak	(MF	
1000	Freq. MHz 4874.1000	Reading Level dBuV/m 42.88	Correct Factor dB 6.00	Measure ment dBuV/m 48.88	Limit dBuV/m 74.00	Margin dB -25.12	Detector Peak	(MF	
1000	Freq. MHz 4874.1000	Reading Level dBuV/m 42.88	Correct Factor dB 6.00	Measure ment dBuV/m 48.88	Limit dBuV/m 74.00	Margin dB -25.12	Detector Peak	(MF	
1000	Freq. MHz 4874.1000	Reading Level dBuV/m 42.88	Correct Factor dB 6.00	Measure ment dBuV/m 48.88	Limit dBuV/m 74.00	Margin dB -25.12	Detector Peak	(MF	

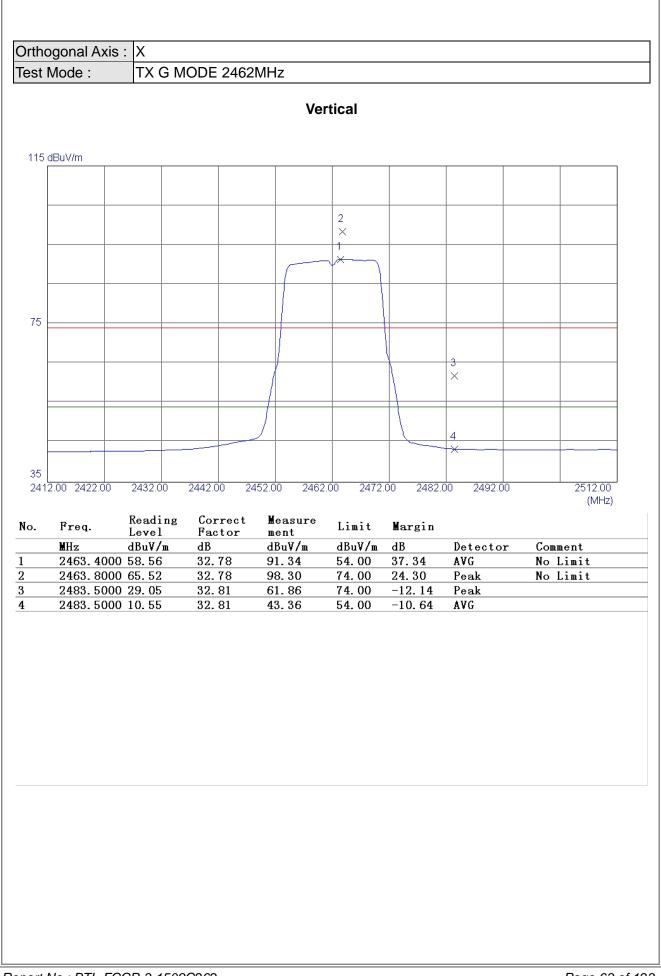






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	4873.6700		6.00			-18.75		
	4873.6700		6.00			-18.75		
	4873.6700		6.00			-18.75		

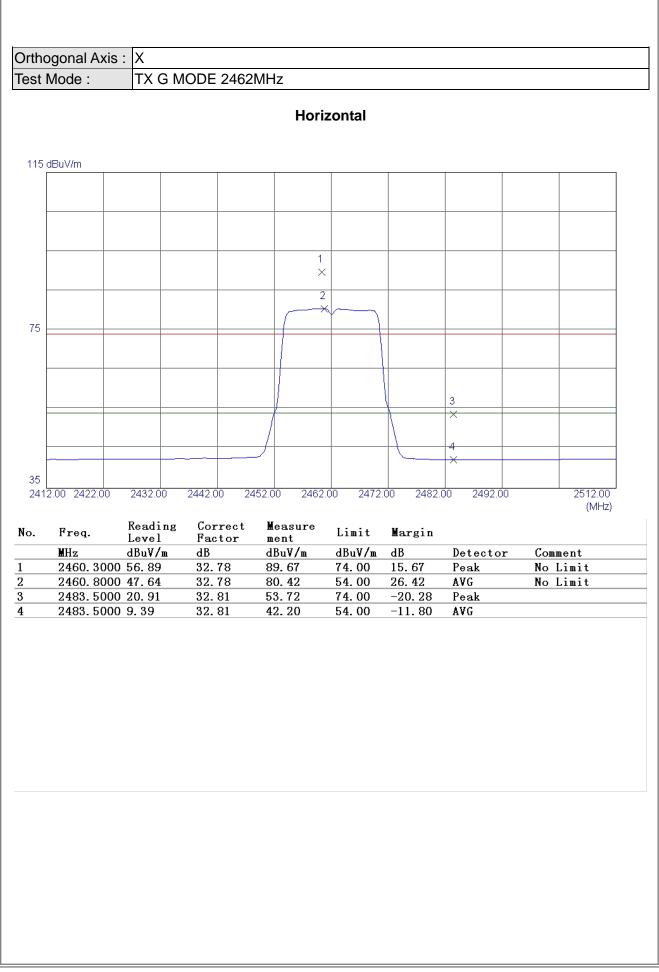




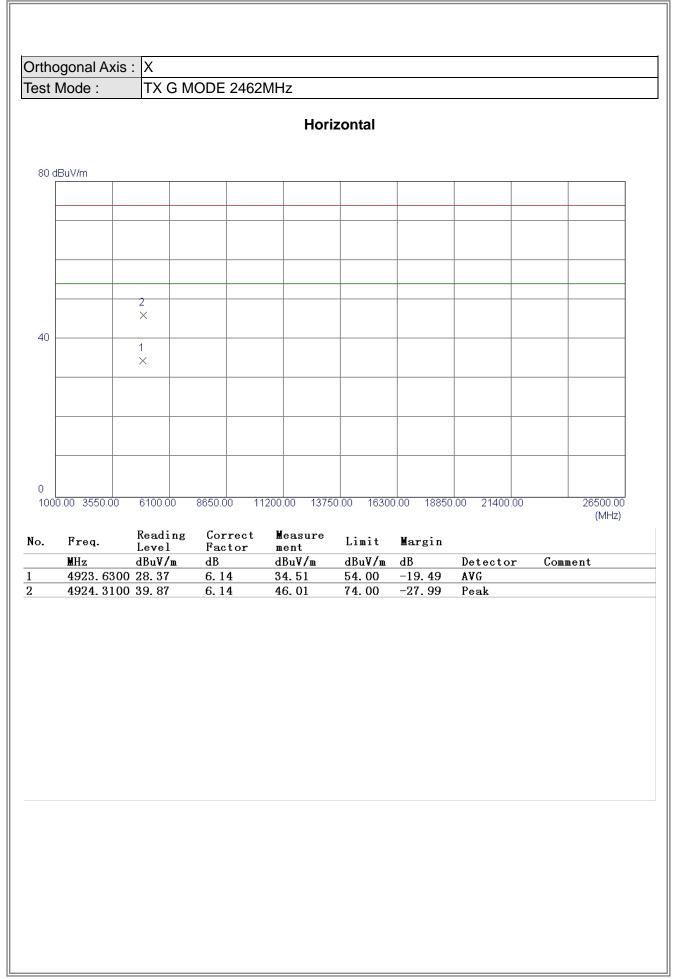


thogonal Ax st Mode :		ODE 2462	MHz				
			Vei	rtical			
30 dBuV/m							
	1						
	×						
10	2 ×						
						1 1	
	6100.00	8650.00 11	1200.00 1375	0.00 1630	0.00 18850	0.00 21400.0	
000.00 3550.00	Reading	Correct	Measure			0.00 21400.0	0 26500.0 (MHz
0000.00 3550.00 . Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure ment dBuV/m	Limit dBuV/m	Margin dB	Detector	(MHz
000.00 3550.00 Freq. MHz 4924.340	Reading Level	Correct Factor	Measure ment	Limit	Margin		(MHz
000.00 3550.00 Freq. MHz 4924.34	Reading Level dBuV/m 20 40.95	Correct Factor dB 6.14	Measure ment dBuV/m 47.09	Limit dBuV/m 74.00	Margin dB -26.91	Detector Peak	(MHz
000.00 3550.00 . Freq. MHz 4924.34	Reading Level dBuV/m 20 40.95	Correct Factor dB 6.14	Measure ment dBuV/m 47.09	Limit dBuV/m 74.00	Margin dB -26.91	Detector Peak	(MHz
000.00 3550.00 . Freq. MHz 4924.34	Reading Level dBuV/m 20 40.95	Correct Factor dB 6.14	Measure ment dBuV/m 47.09	Limit dBuV/m 74.00	Margin dB -26.91	Detector Peak	(MHz
000.00 3550.00 . Freq. MHz 4924.34	Reading Level dBuV/m 20 40.95	Correct Factor dB 6.14	Measure ment dBuV/m 47.09	Limit dBuV/m 74.00	Margin dB -26.91	Detector Peak	(MHz
000.00 3550.00 . Freq. MHz 4924.34	Reading Level dBuV/m 20 40.95	Correct Factor dB 6.14	Measure ment dBuV/m 47.09	Limit dBuV/m 74.00	Margin dB -26.91	Detector Peak	(MHz
1000.00 3550.00 . Freq. MHz 4924.344	Reading Level dBuV/m 20 40.95	Correct Factor dB 6.14	Measure ment dBuV/m 47.09	Limit dBuV/m 74.00	Margin dB -26.91	Detector Peak	(MHz
MHz 4924.34	Reading Level dBuV/m 20 40.95	Correct Factor dB 6.14	Measure ment dBuV/m 47.09	Limit dBuV/m 74.00	Margin dB -26.91	Detector Peak	(MHz
000.00 3550.00 . Freq. MHz 4924.34	Reading Level dBuV/m 20 40.95	Correct Factor dB 6.14	Measure ment dBuV/m 47.09	Limit dBuV/m 74.00	Margin dB -26.91	Detector Peak	(MHz
000.00 3550.00 . Freq. MHz 4924.34	Reading Level dBuV/m 20 40.95	Correct Factor dB 6.14	Measure ment dBuV/m 47.09	Limit dBuV/m 74.00	Margin dB -26.91	Detector Peak	(MHz

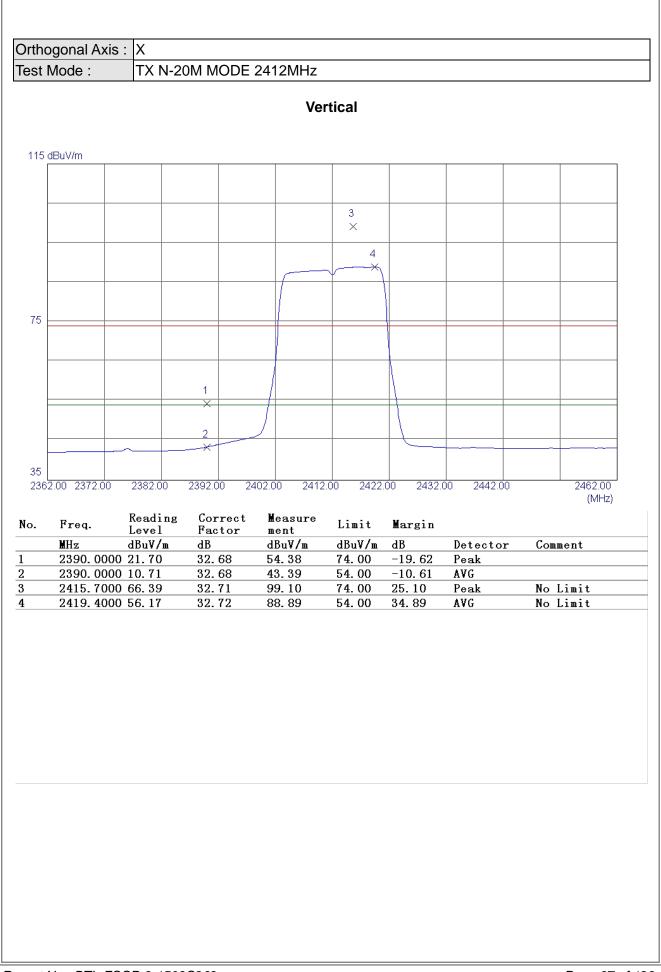




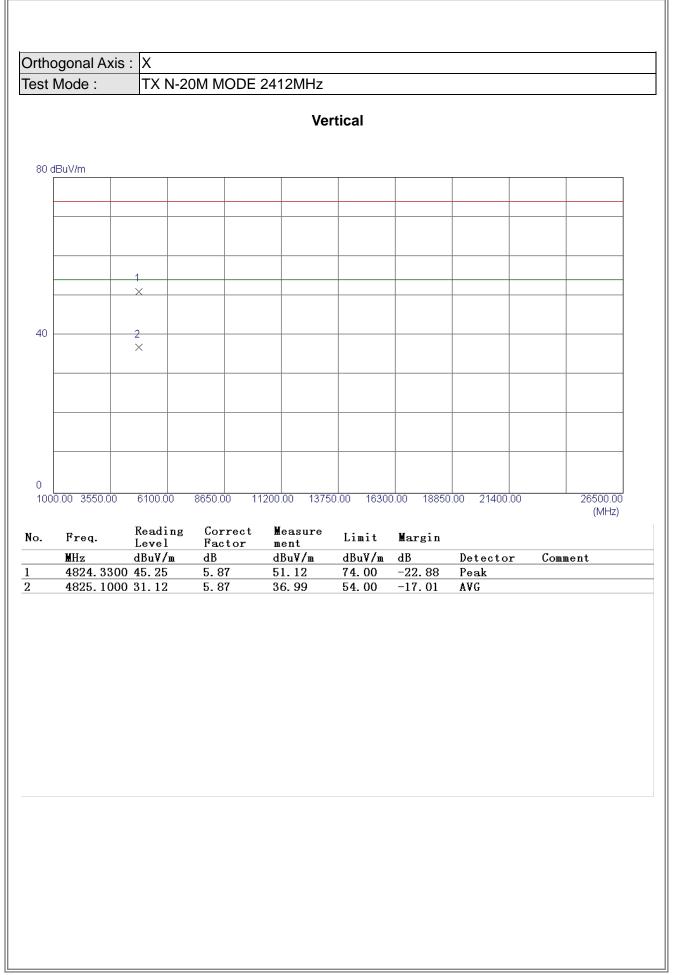




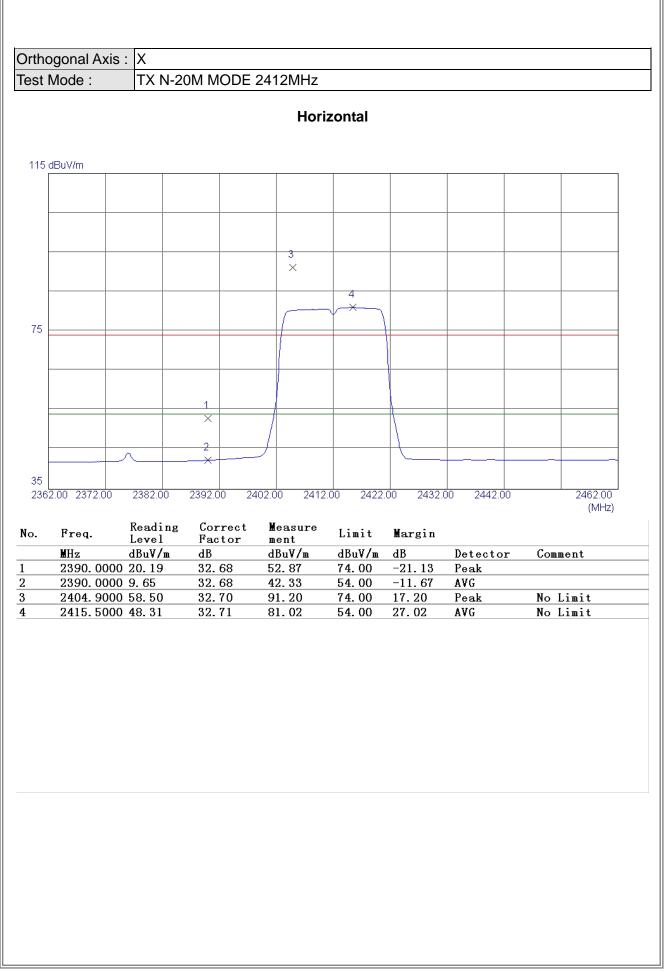




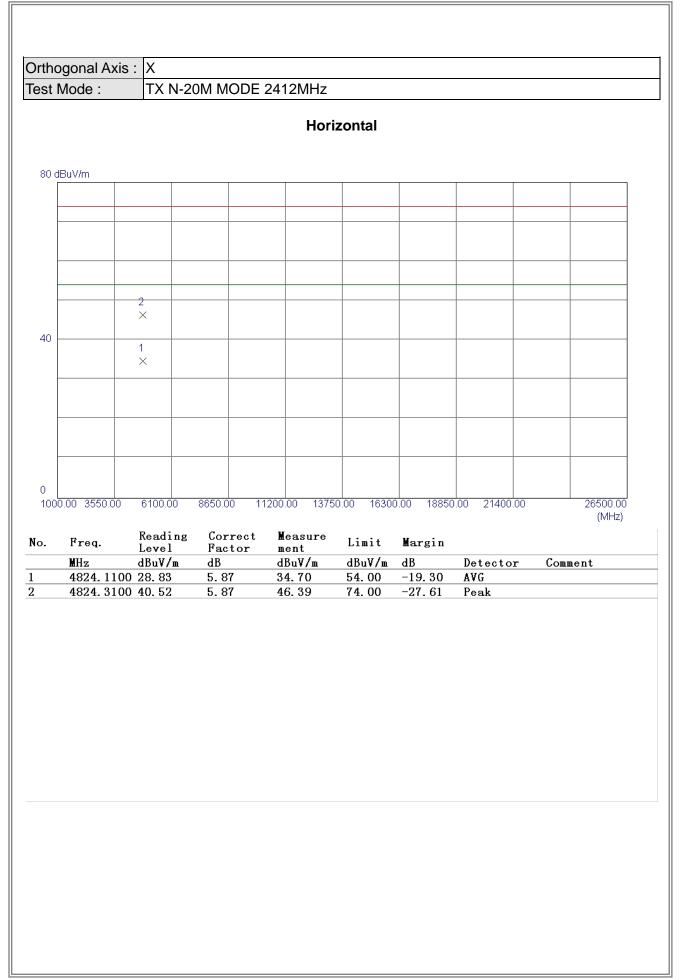




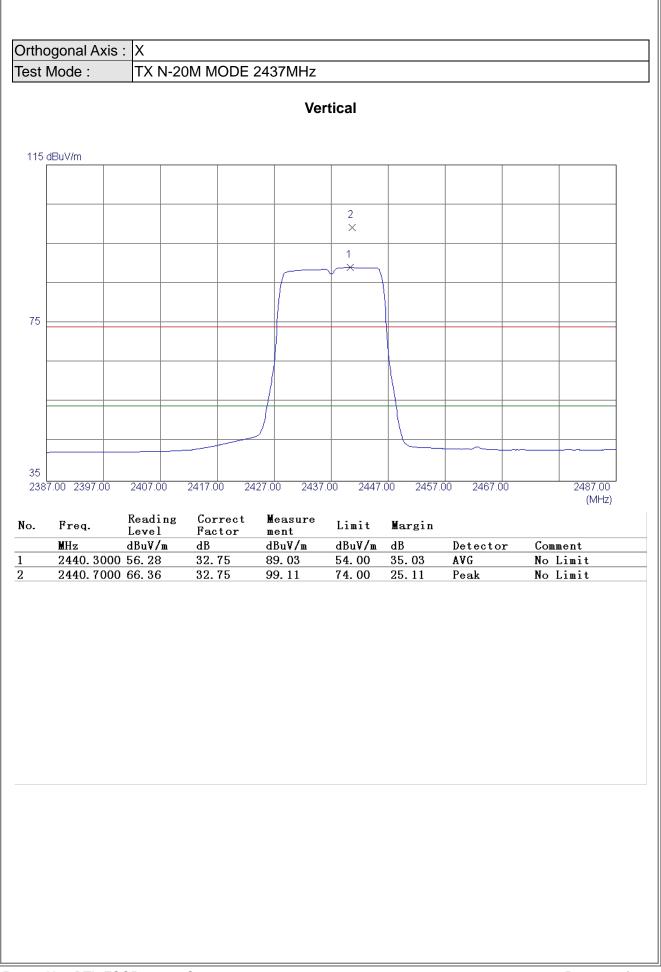




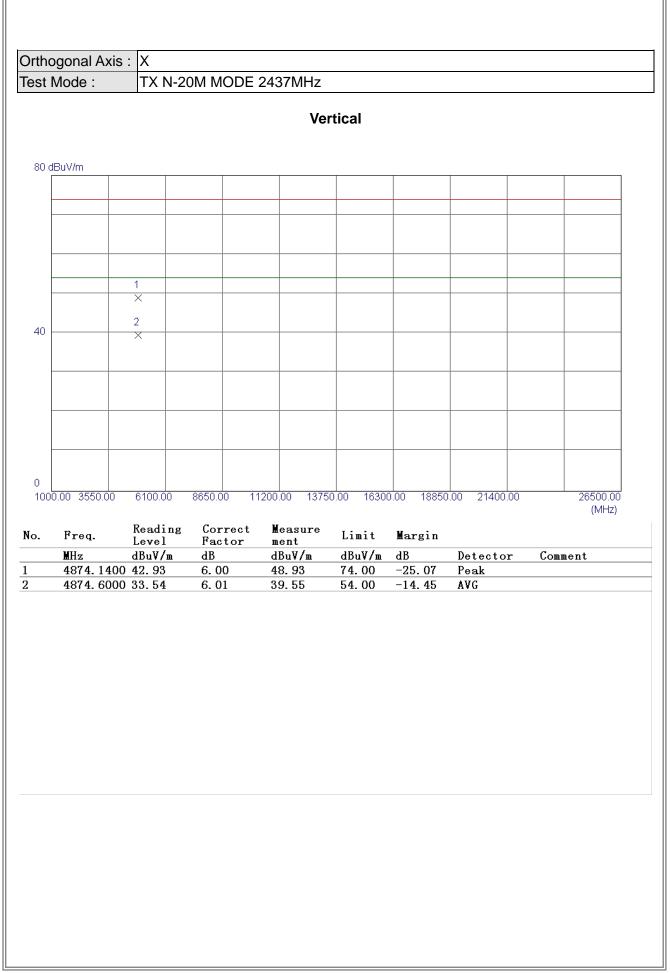




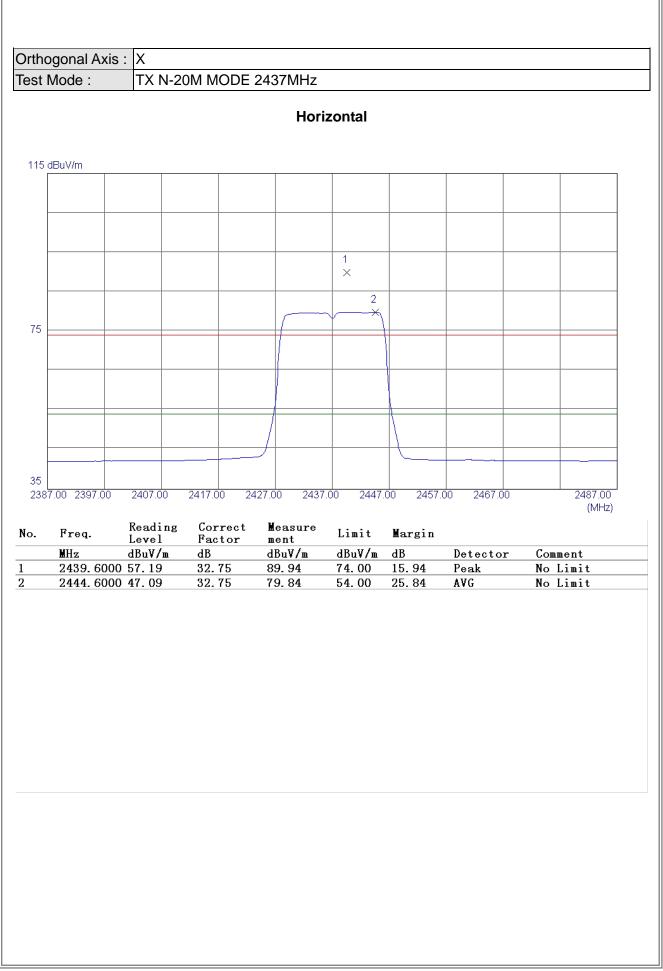




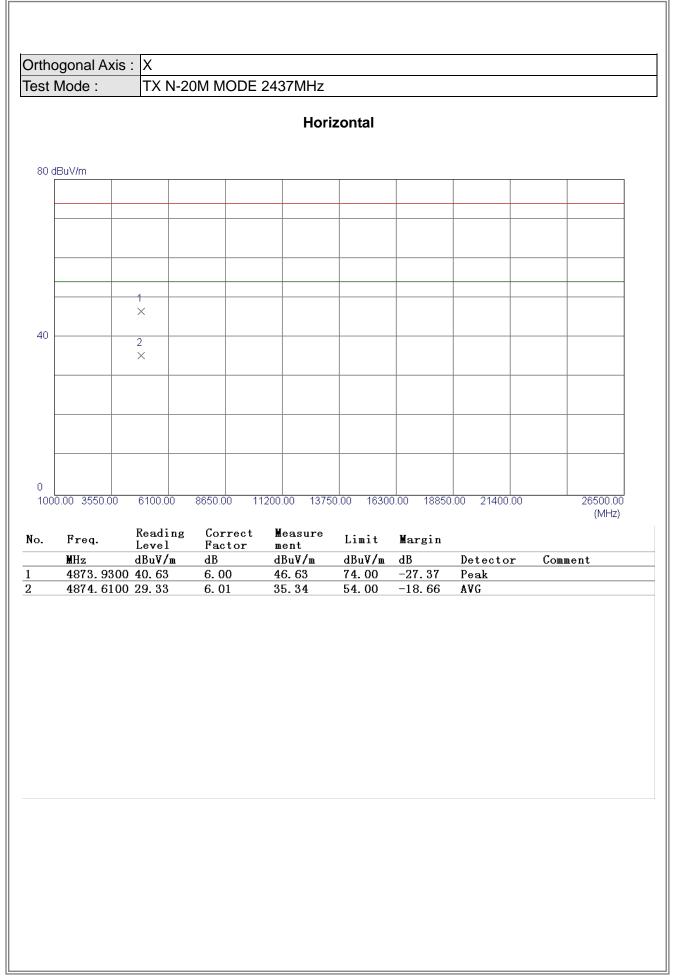




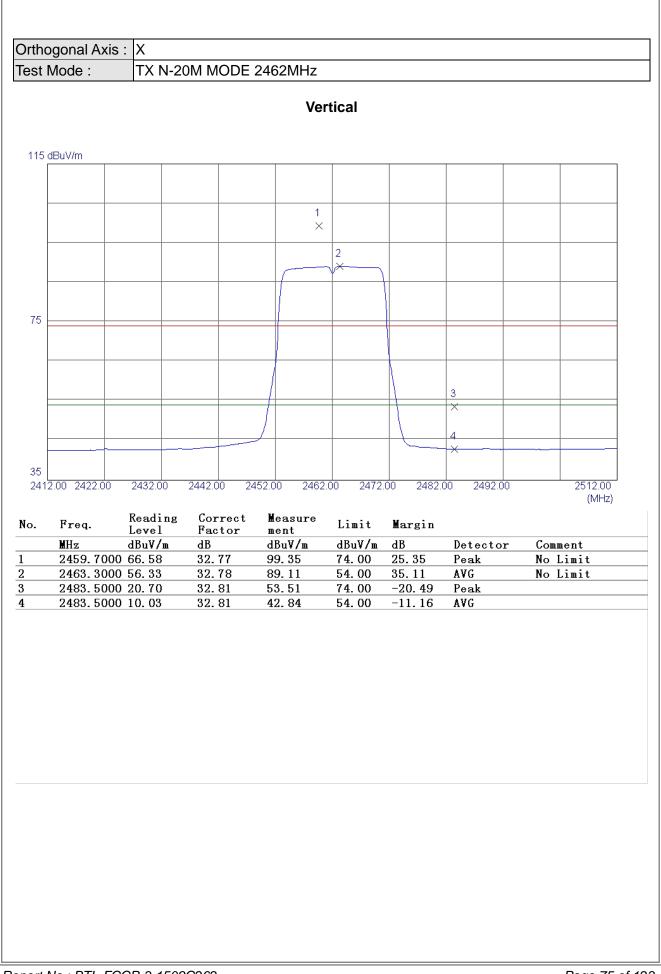




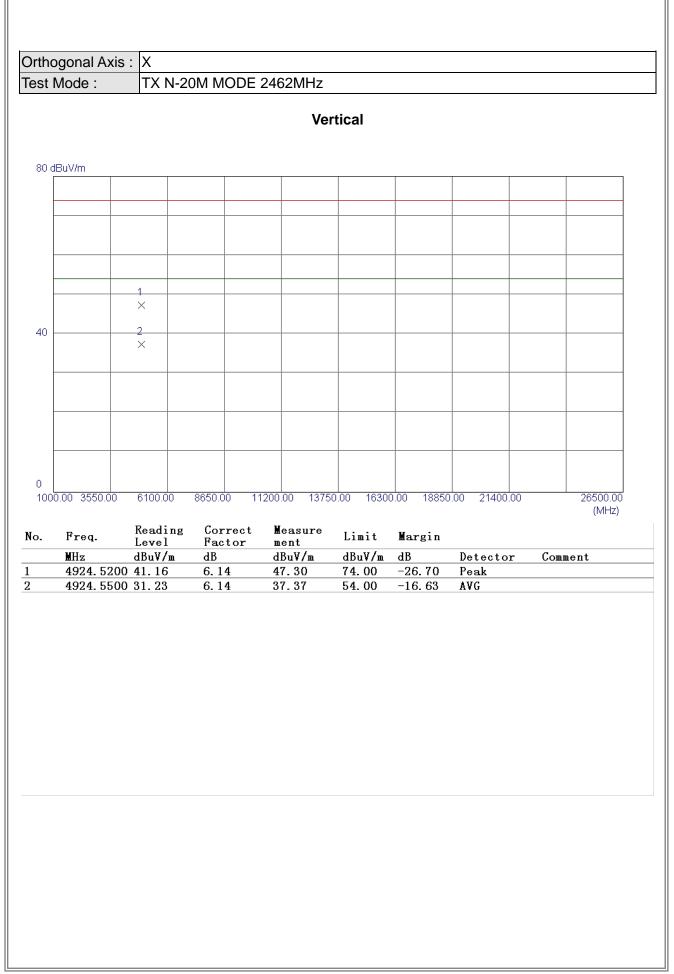




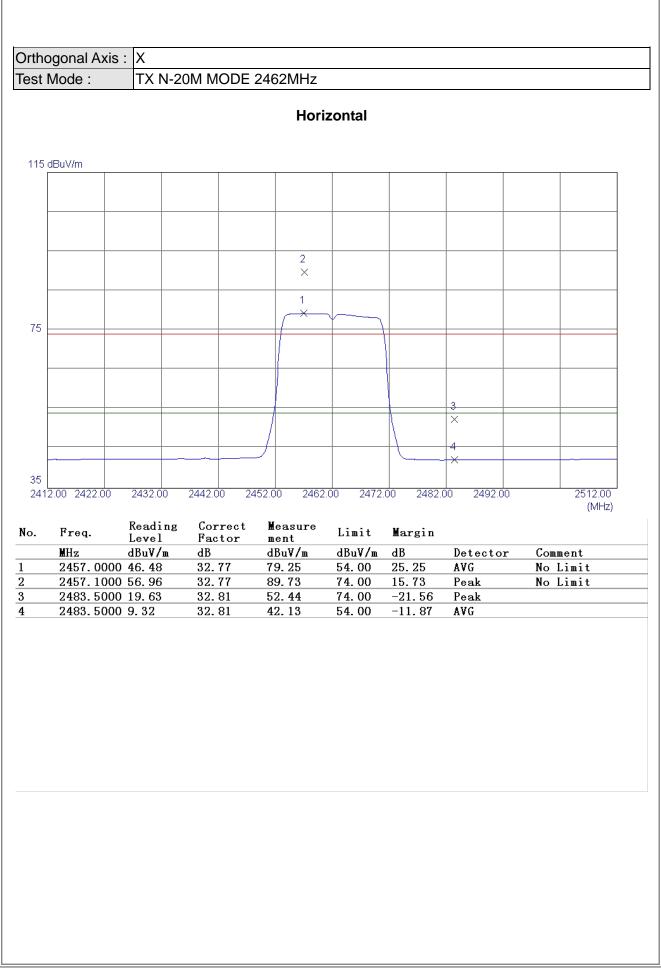




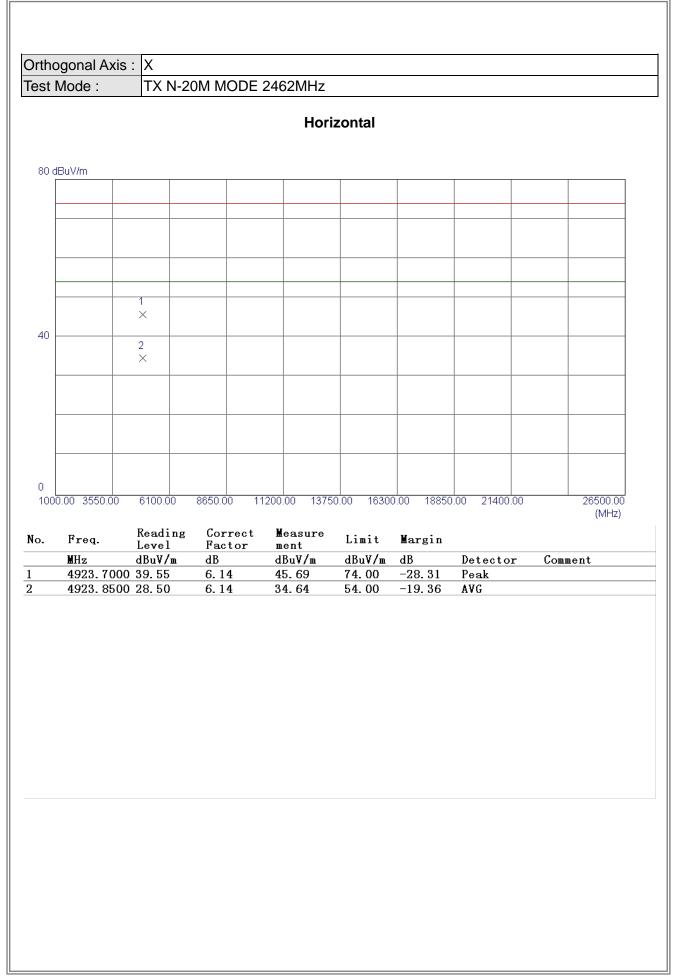




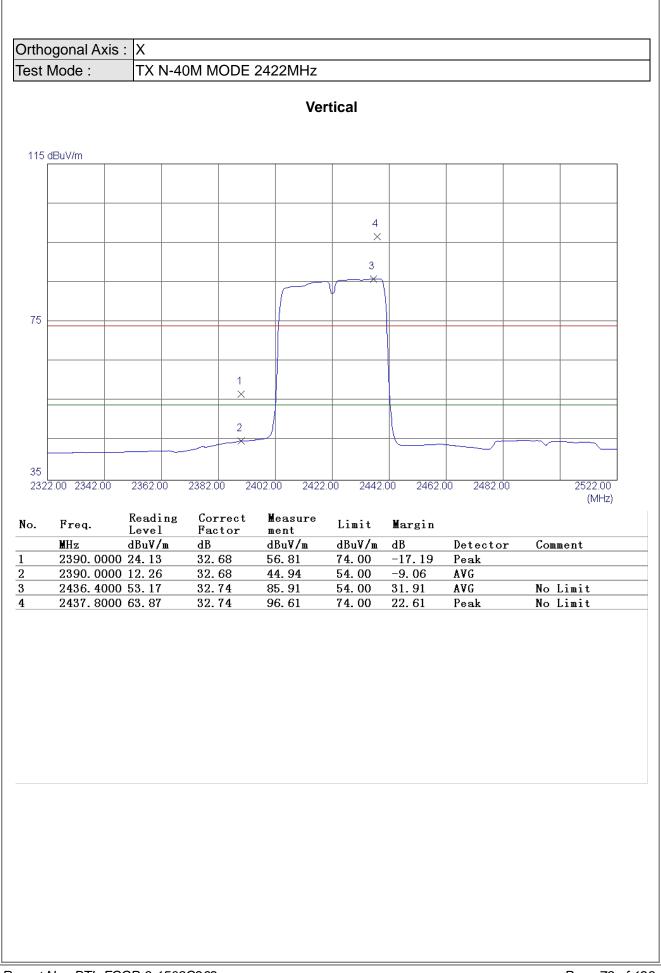




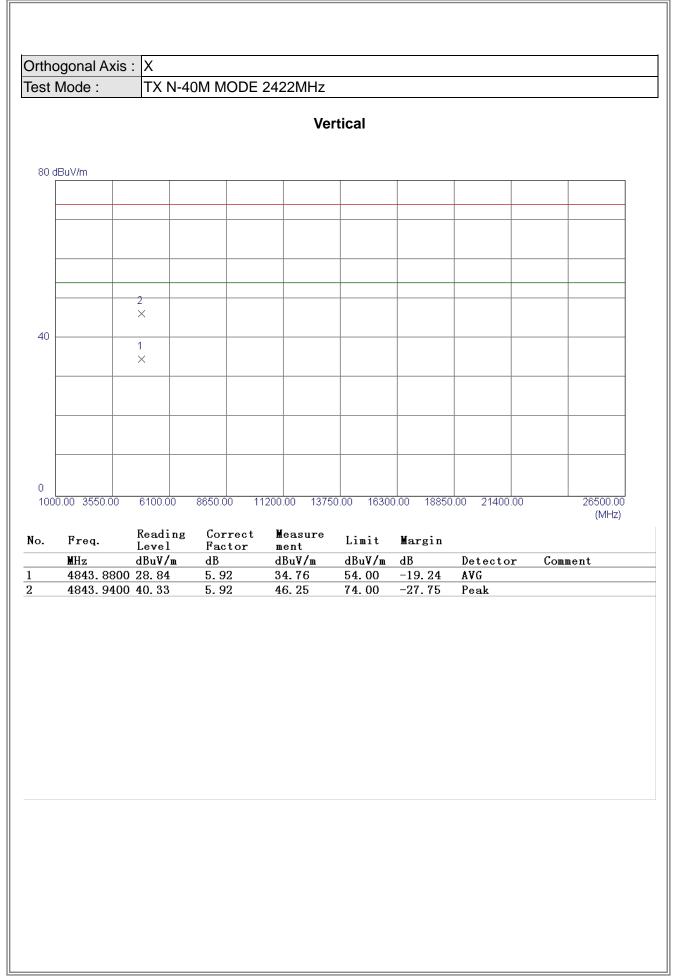




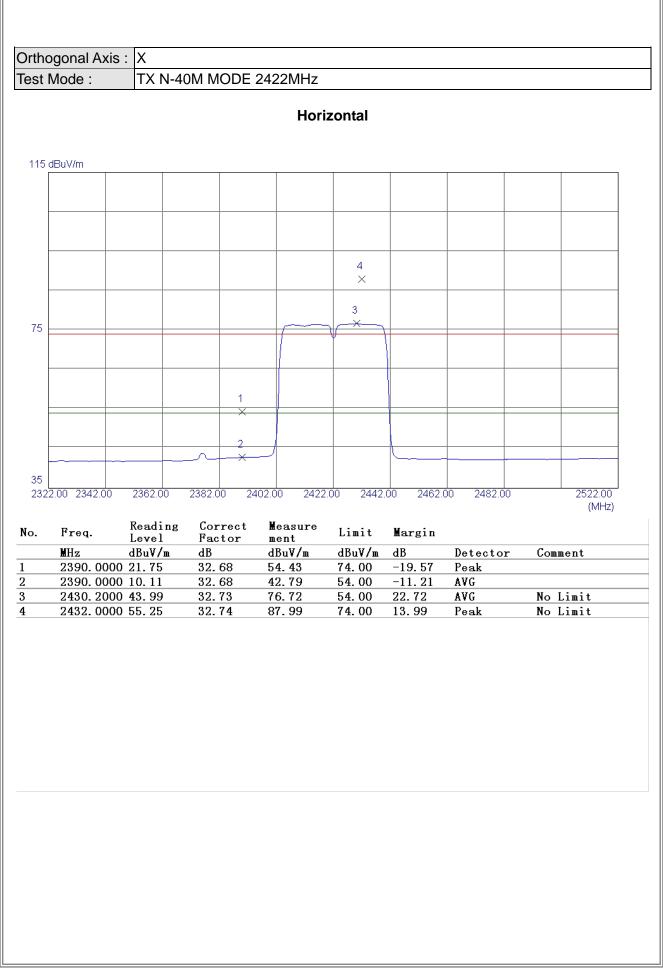




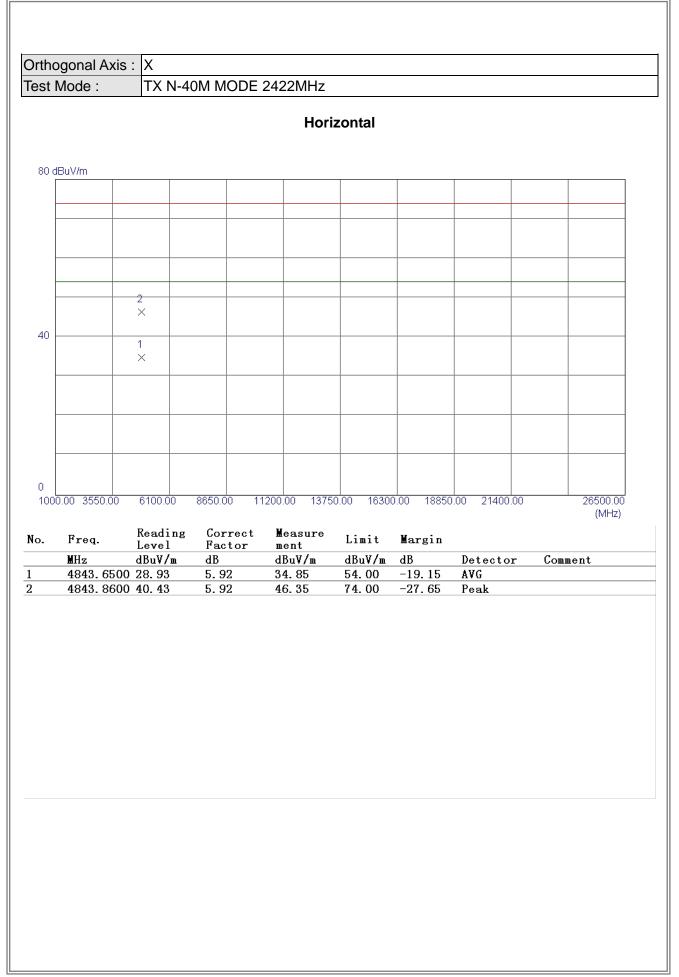




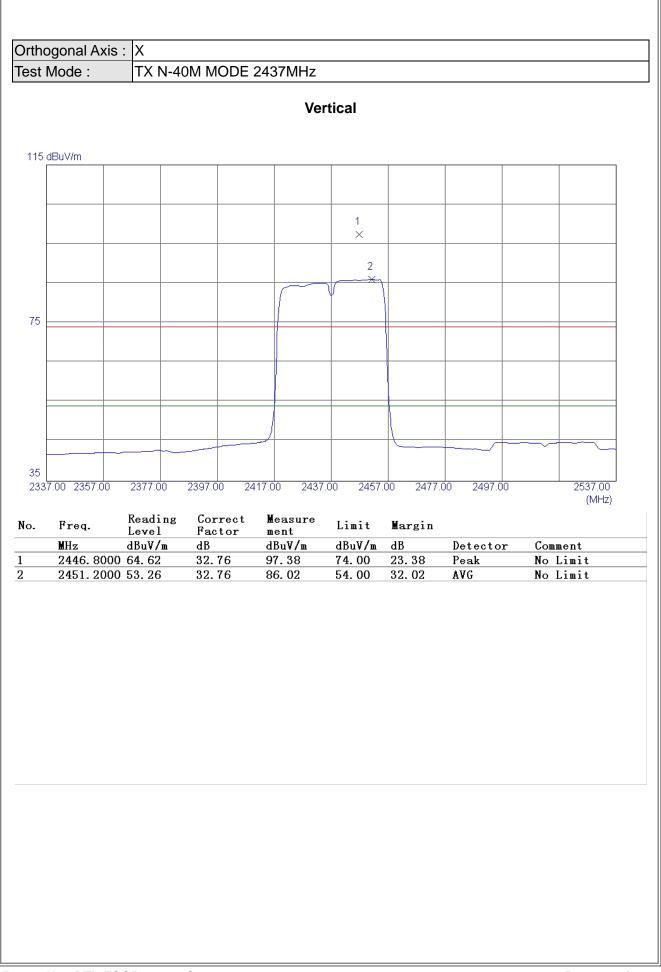




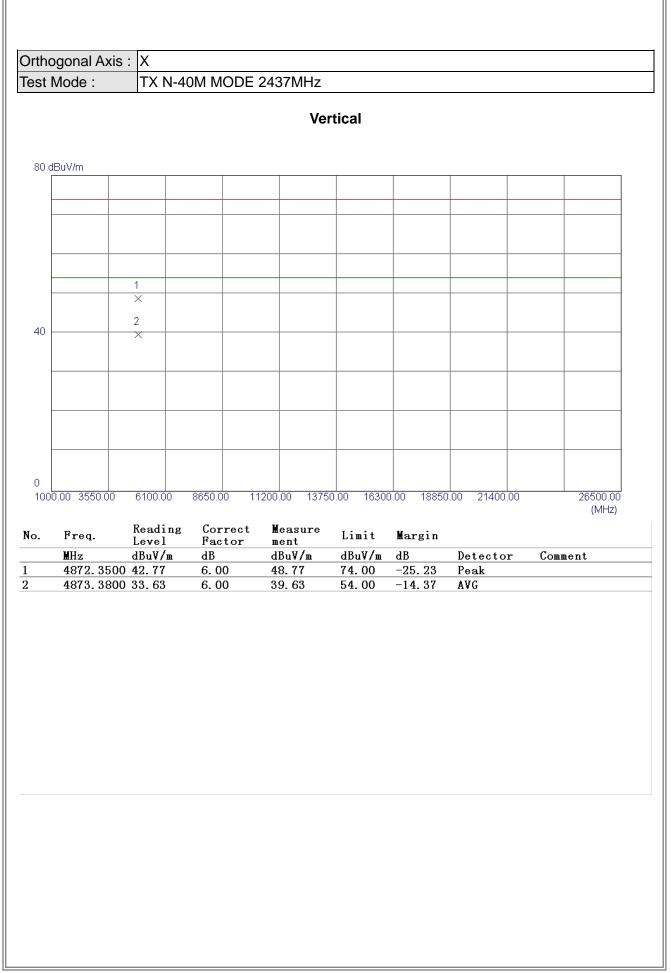




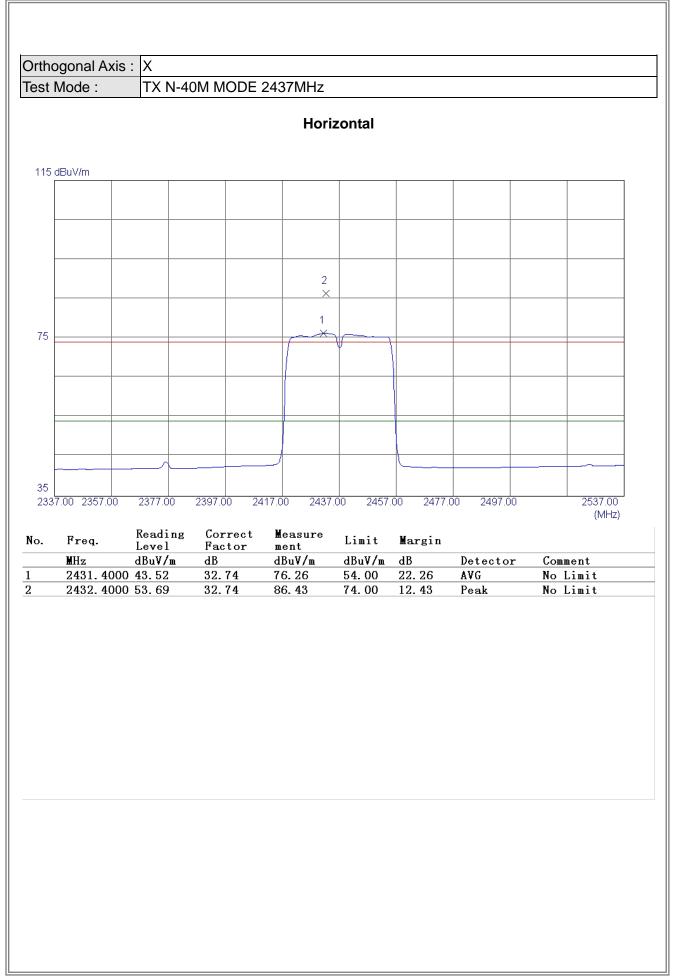




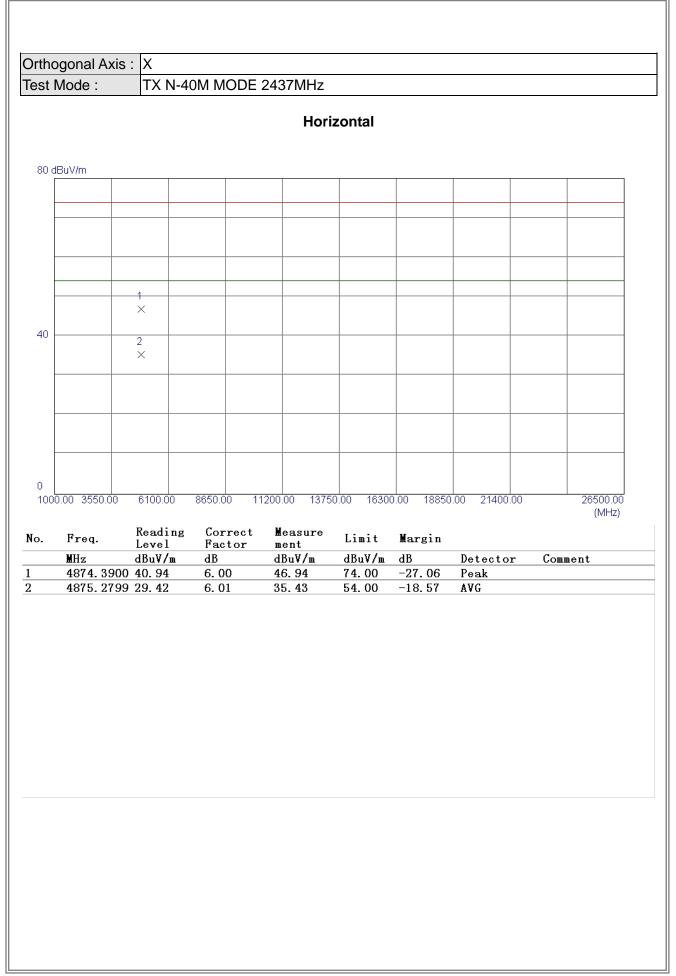




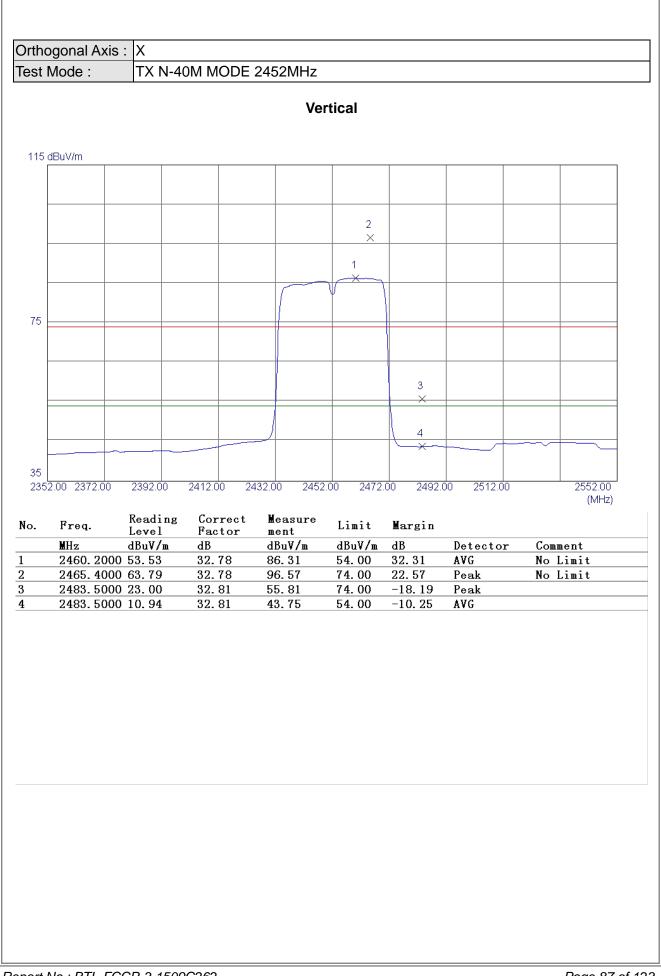




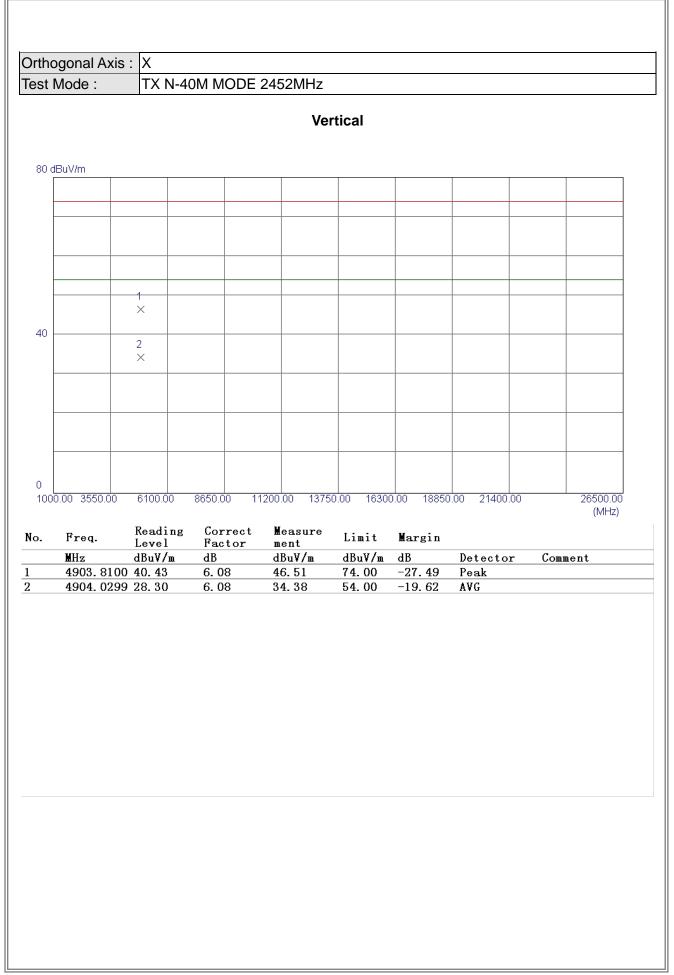




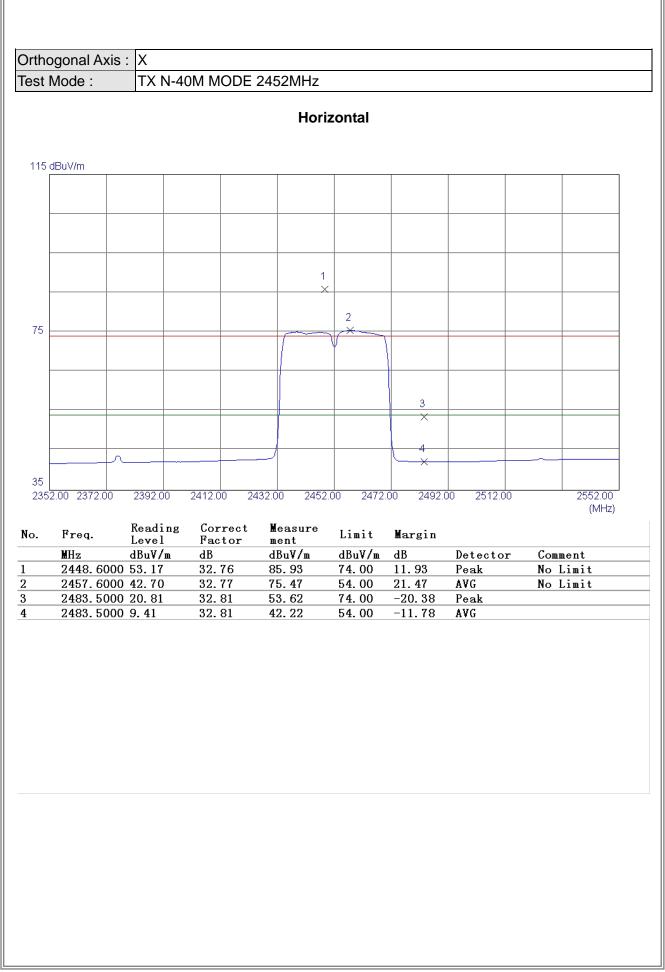




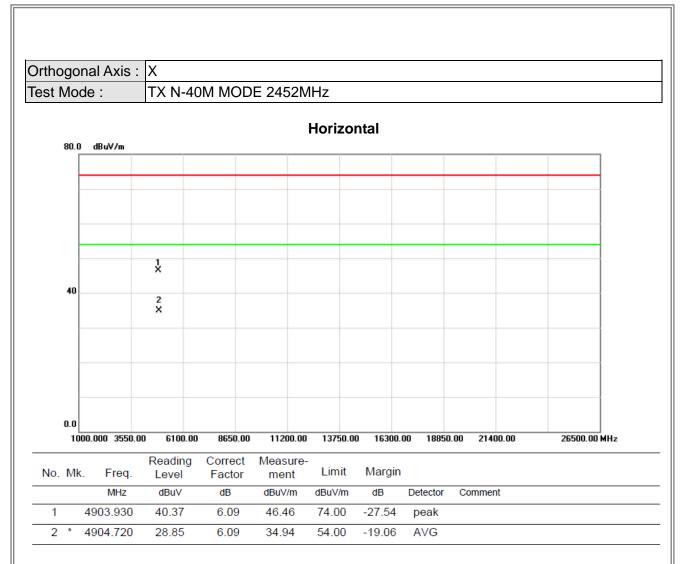












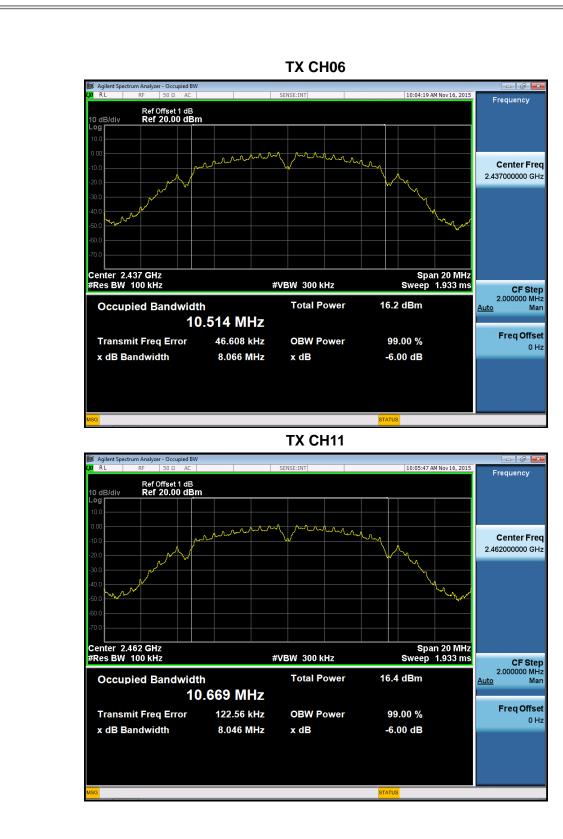
ATTACHMENT E - BANDWIDTH

Test Mode : TX B Mode_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	8.06	10.55	500	Complies
2437	8.07	10.51	500	Complies
2462	8.05	10.67	500	Complies



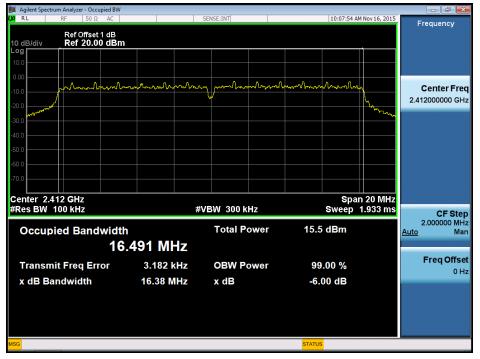




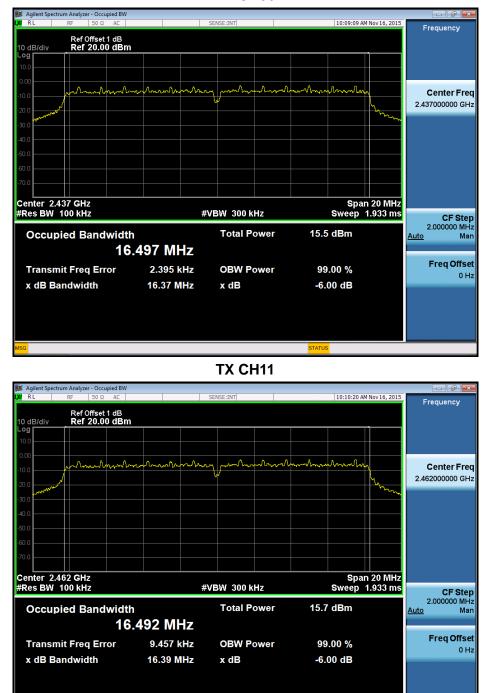
	Test	Mode:	TX G	Mode_	_CH01/06/11	
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Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	16.38	16.49	500	Complies
2437	16.37	16.50	500	Complies
2462	16.39	16.49	500	Complies

TX CH01

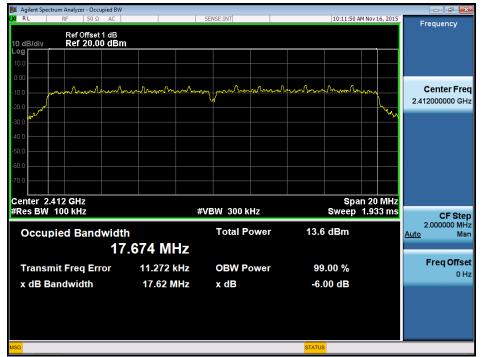






Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	17.62	17.67	500	Complies
2437	17.62	17.69	500	Complies
2462	17.63	17.68	500	Complies



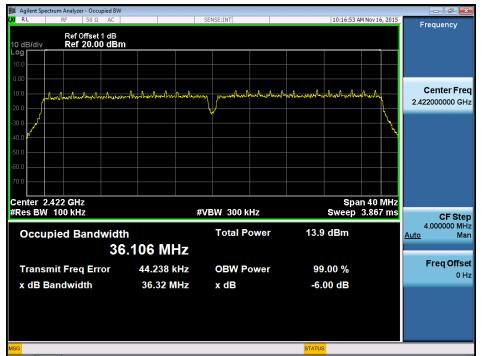




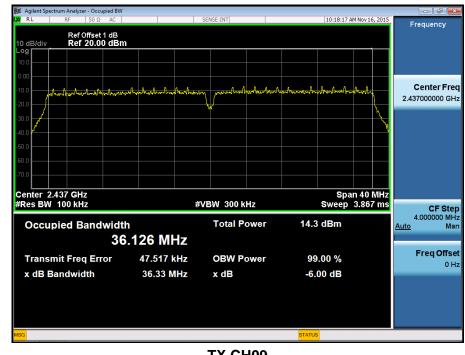


Test Mode : TX N-40MHz Mode_CH03/06/09							
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result			
2422	36.32	36.11	500	Complies			
2437	36.33	36.13	500	Complies			
2452	36.07	36.13	500	Complies			

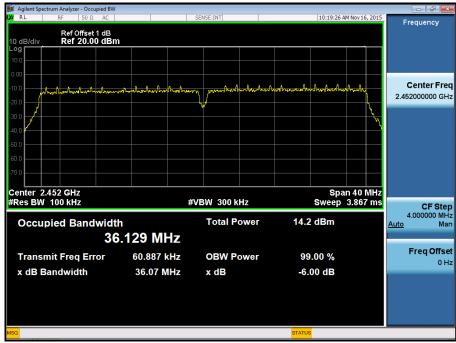
TX CH03



TX CH06



TX CH09



ATTACHMENT F – MAXIMUM PEAK CONDUCTED OUTPUT POWER

Test Mode :TX B Mode_CH01/06/11							
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result		
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result		
2412	13.35	0.02	30.00	1.00	Complies		
2437	14.14	0.03	30.00	1.00	Complies		
2462	14.30	0.03	30.00	1.00	Complies		

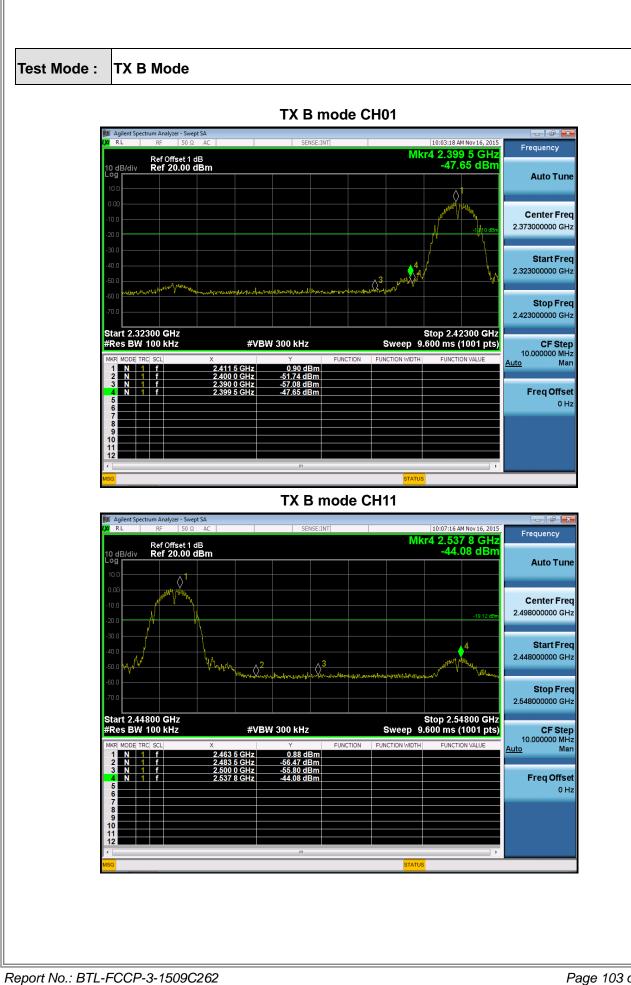
Test Mode :TX G Mode_CH01/06/11						
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result	
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result	
2412	20.88	0.12	30.00	1.00	Complies	
2437	21.68	0.15	30.00	1.00	Complies	
2462	21.83	0.15	30.00	1.00	Complies	

Test Mode :TX N20 Mode_CH01/06/11							
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result		
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result		
2412	18.52	0.07	30.00	1.00	Complies		
2437	19.89	0.10	30.00	1.00	Complies		
2462	20.02	0.10	30.00	1.00	Complies		

Test Mode :TX N40 Mode_CH03/06/09							
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result		
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result		
2422	19.27	0.08	30.00	1.00	Complies		
2437	19.87	0.10	30.00	1.00	Complies		
2452	19.67	0.09	30.00	1.00	Complies		

ATTACHMENT G - ANTENNA CONDUCTED SPURIOUS EMISSION







TX B mode CH01 (10 Harmonic of the frequency)

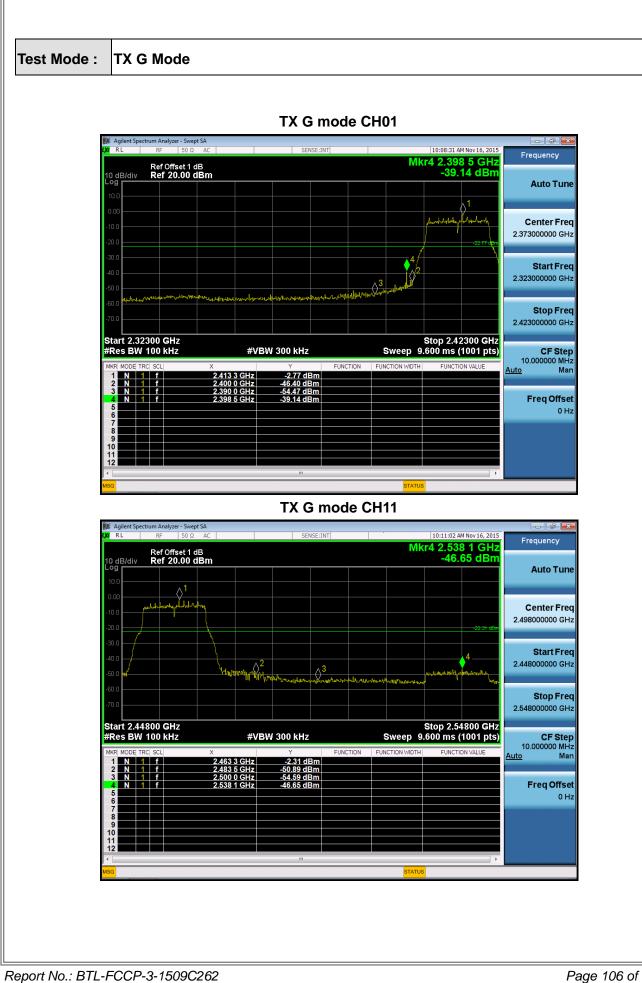
TX B mode CH06 (10 Harmonic of the frequency)





TX B mode CH11 (10 Harmonic of the frequency)







TX G mode CH01 (10 Harmonic of the frequency)

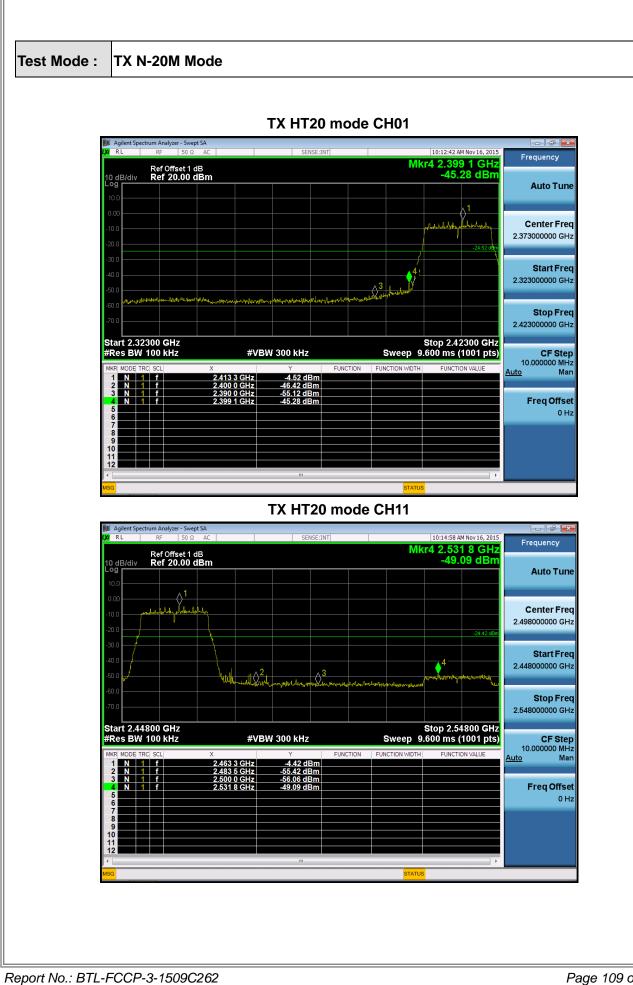
TX G mode CH06 (10 Harmonic of the frequency)





TX G mode CH11 (10 Harmonic of the frequency)







TX HT20 mode CH01 (10 Harmonic of the frequency)

TX HT20 mode CH06 (10 Harmonic of the frequency)





TX HT20 mode CH11 (10 Harmonic of the frequency)







TX HT40 mode CH03 (10 Harmonic of the frequency)

TX HT40 mode CH06 (10 Harmonic of the frequency)





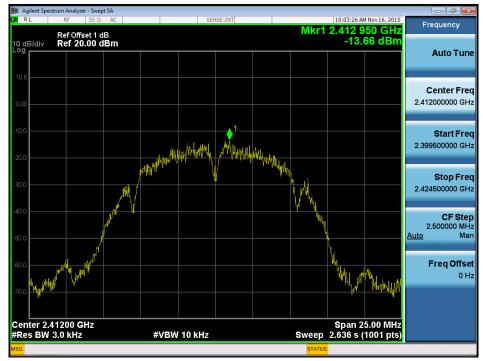
TX HT40 mode CH09 (10 Harmonic of the frequency)

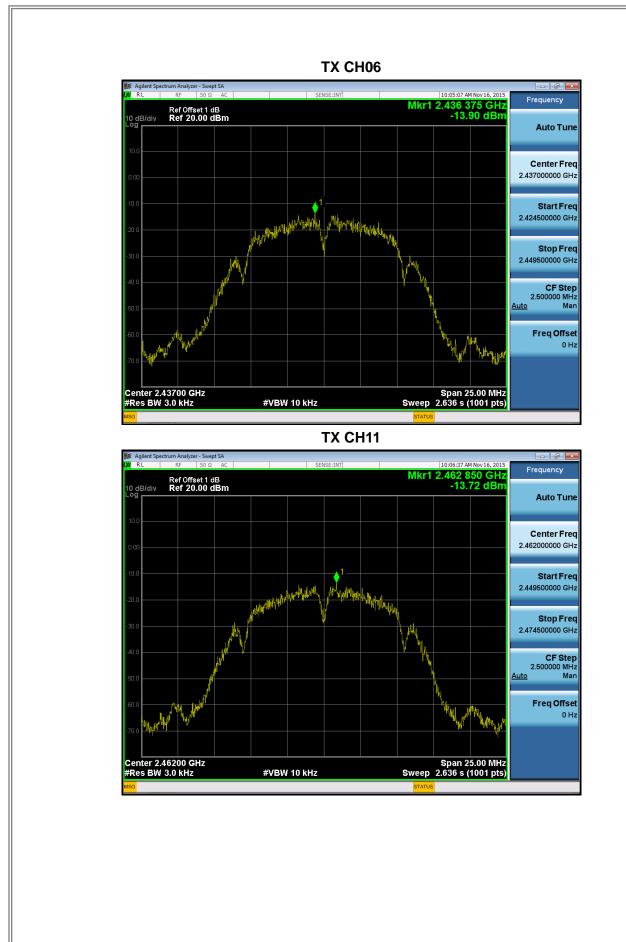
ATTACHMENT H - POWER SPECTRAL DENSITY

Test Mode :TX B Mode_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-13.66	0.04	8.00	Complies
2437	-13.90	0.04	8.00	Complies
2462	-13.72	0.04	8.00	Complies



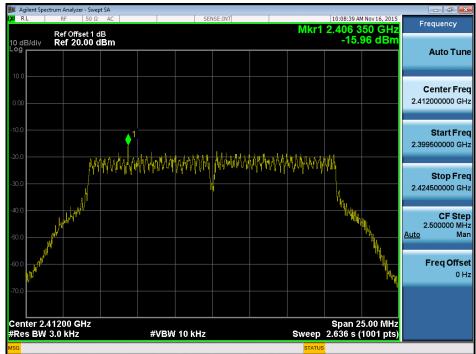


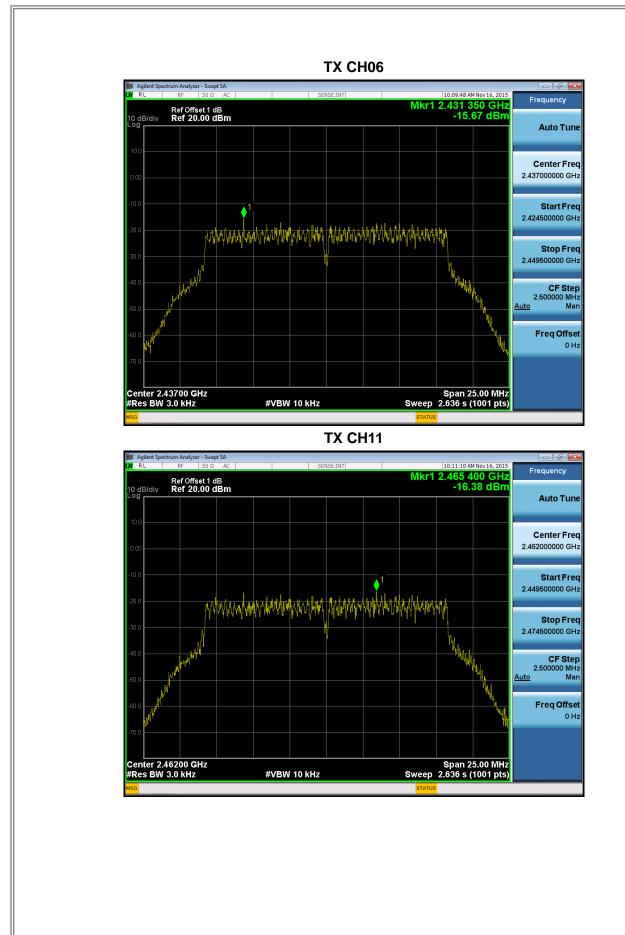


Test Mode :TX G Mode_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-15.96	0.03	8.00	Complies
2437	-15.67	0.03	8.00	Complies
2462	-16.38	0.02	8.00	Complies

TX CH01

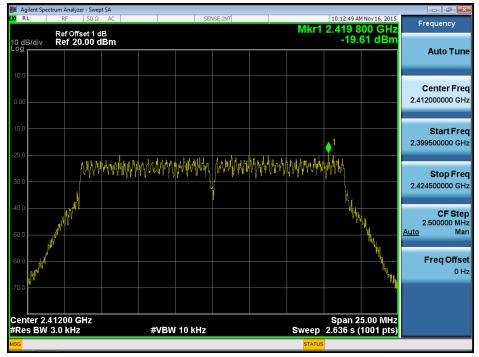


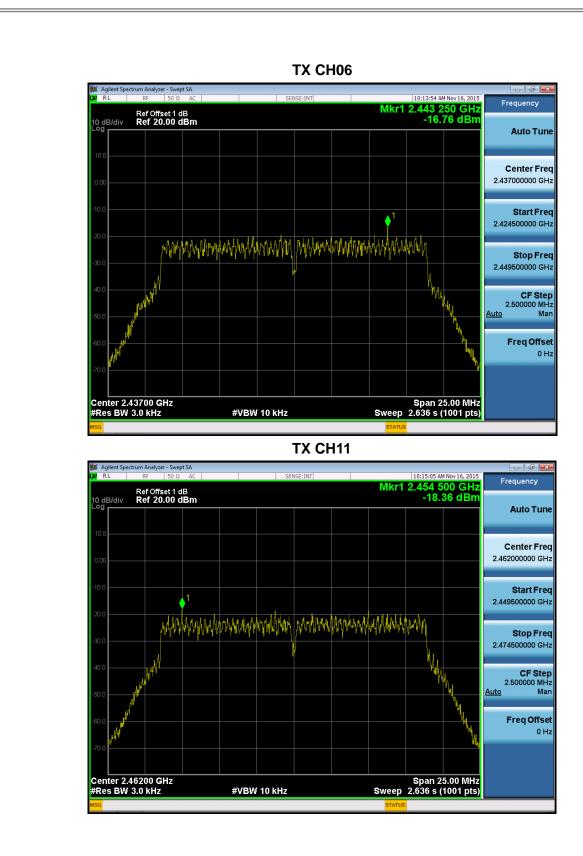


Test Mode : TX N-20M Mode_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-19.61	0.01	8.00	Complies
2437	-16.76	0.02	8.00	Complies
2462	-18.36	0.01	8.00	Complies







Test Mode : TX N-40M Mode_CH03/06/09

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2422	-22.49	0.01	8.00	Complies
2437	-21.62	0.01	8.00	Complies
2452	-21.93	0.01	8.00	Complies



