

Project No. : 1501C01	one): ⊠Original Grant ⊡Class II Chang
Equipment : Standard	
Model Name:XAP-310Applicant:Luxul Wi	Power Wireless 300N Low Profile Access
Date of Receipt:Jan. 04,Date of Test:Jan. 04,Issued Date:Jan. 23,Tested by:BTL Inc.	2015 ~ Jan. 16, 2015 2015
Testing Engineer	: David Mao (David Mao)
Technical Manager	:(Leo Hung)
Authorized Signatory	: Seenen In (Steven Lu)
втт	INC.
	ad, Shixia, Dalang Town, Donggu

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**.

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.

BTL's reports must not be used by the client to claim product endorsement by the authorities or any agency of the Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **BTL-self**, extracts from the test report shall not be reproduced except in full with **BTL**'s authorized written approval.

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

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.

Table of Contents	Page
1. CERTIFICATION	6
2 . SUMMARY OF TEST RESULTS	7
2.1 TEST FACILITY	8
2.2 MEASUREMENT UNCERTAINTY	8
3 . GENERAL INFORMATION	9
3.1 GENERAL DESCRIPTION OF EUT	9
3.2 DESCRIPTION OF TEST MODES	11
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING	12
3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TE	
3.5 DESCRIPTION OF SUPPORT UNITS	13
4. EMC EMISSION TEST	14
4.1 CONDUCTED EMISSION MEASUREMENT	14 14
4.1.1 POWER LINE CONDUCTED EMISSION LIMITS 4.1.2 TEST PROCEDURE	14
4.1.3 DEVIATION FROM TEST STANDARD	14
4.1.4 TEST SETUP 4.1.5 EUT OPERATING CONDITIONS	15 15
4.1.6 EUT TEST CONDITIONS	15
4.1.7 TEST RESULTS	15
4.2 RADIATED EMISSION MEASUREMENT	16
4.2.1 RADIATED EMISSION LIMITS 4.2.2 TEST PROCEDURE	16 17
4.2.3 DEVIATION FROM TEST STANDARD	17
4.2.4 TEST SETUP	17
4.2.5 EUT OPERATING CONDITIONS 4.2.6 EUT TEST CONDITIONS	18 18
4.2.7 TEST RESULTS (9KHZ TO 30MHZ)	19
4.2.8 TEST RESULTS (BETWEEN 30MHZ TO 1000 MHZ)	19
4.2.9 TEST RESULTS (ABOVE 1000 MHZ)	19
5. BANDWIDTH TEST	20
5.1 APPLIED PROCEDURES 5.1.1 TEST PROCEDURE	20 20
5.1.2 DEVIATION FROM STANDARD	20
5.1.3 TEST SETUP	20
5.1.4 EUT OPERATION CONDITIONS 5.1.5 EUT TEST CONDITIONS	20 20
5.1.6 TEST RESULTS	20

3TL

Table of Contents	Page
6 . MAXIMUM PEAK CONDUCTED OUTPUT POWER TEST	21
6.1 APPLIED PROCEDURES / LIMIT	21
6.1.1 TEST PROCEDURE	21
6.1.2 DEVIATION FROM STANDARD	21
6.1.3 TEST SETUP	21
6.1.4 EUT OPERATION CONDITIONS 6.1.5 EUT TEST CONDITIONS	21 21
6.1.6 TEST RESULTS	21
7 . ANTENNA CONDUCTED SPURIOUS EMISSION	22
7.1 APPLIED PROCEDURES / LIMIT	22
7.1.1 TEST PROCEDURE	22
7.1.2 DEVIATION FROM STANDARD	22
7.1.3 TEST SETUP 7.1.4 EUT OPERATION CONDITIONS	22 22
7.1.5 EUT TEST CONDITIONS	22
7.1.6 TEST RESULTS	22
8 . POWER SPECTRAL DENSITY TEST	23
8.1 APPLIED PROCEDURES / LIMIT	23
8.1.1 TEST PROCEDURE	23
8.1.2 DEVIATION FROM STANDARD 8.1.3 TEST SETUP	23 23
8.1.4 EUT OPERATION CONDITIONS	23
8.1.5 EUT TEST CONDITIONS	23
8.1.6 TEST RESULTS	23
9 . MEASUREMENT INSTRUMENTS LIST	24
10 . EUT TEST PHOTO	26
ATTACHMENT A - CONDUCTED EMISSION	30
ATTACHMENT B - RADIATED EMISSION (9KHZ TO 30MHZ)	33
ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)	35
ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)	42
ATTACHMENT E - BANDWIDTH	91
ATTACHMENT F – MAXIMUM PEAK CONDUCTED OUTPUT POWER	100
ATTACHMENT G - ANTENNA CONDUCTED SPURIOUS EMISSION	104
ATTACHMENT H - POWER SPECTRAL DENSITY	129

REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-1-1501C010	Original Issue.	Jan. 23, 2015

1. CERTIFICATION

Equipment : Standard Power Wireless 300N Low Profile Access Point Brand Name : LUXUL Model Name : XAP-310
Applicant : Luxul Wireless
Manufacturer: Luxul Wireless
Address : 14203 Minuteman Drive, Suite 201, Draper, UT USA
Date of Test : Jan. 04, 2015 ~ Jan. 16, 2015
Test Sample : ENGINEERING SAMPLE
Standard(s) : FCC Part15, Subpart C: 2013 (15.247) / ANSI C63.4-2009

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-1-1501C010) 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).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

Applied Standard(s): FCC Part15 (15.247), Subpart C: 2013

Standard(s) Section FCC	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) The test follows FCC KDB Publication No. 558074 D01 DTS Meas Guidance v03r02 (Measurement Guidelines of DTS)

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-C02/DG-CB03** at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.523792 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 reported uncertainty of measurement y $\pm\,$ U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $\,$ k=2, providing a level of confidence of approximately 95 % $^\circ$

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
DG-C02	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V U, (dB) NOTE		NOTE
		9KHz~30MHz	V	3.79	
		9KHz~30MHz	Н	3.57	
		30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	Н	3.60	
DG-CB03	CISPR	200MHz ~ 1,000MHz	V	3.86	
DG-CD03	CIGEN	200MHz ~ 1,000MHz	Н	3.94	
		1GHz~18GHz	V	3.12	
		1GHz~18GHz	Н	3.68	
	18GHz~40GHz	V	4.15		
		18GHz~40GHz	H	4.14	

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Standard Power Wireless 300N Low Profile Access Point				
Brand Name	LUXUL				
Model Name	XAP-310				
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 300 Mbps			
	Output Power (Max.) 802.11b: 19.72 dBm 802.11g: 25.38 dBm 802.11n(20MHz): 26.96 dBm 802.11n(40MHz): 26.86 dBm				
Power Source	Supplied from PoE Brand/Model: LUXUL/XPE-1500				
Power Rating	I/P: AC 100-240V 0.6A 50/60Hz O/P: DC 48V 15.4W				

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 – CH09 for 802.11n(40MHz)						
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. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Note
1	LUXUL	50000963	PCB	N/A	3.81	TX/RX
2	LUXUL	50001379	PCB	N/A	3.09	TX/RX
Mater						

Note:

(1) The EUT incorporates a MIMO function. Physically, the EUT provides two completed two transmitters and two receivers (2T2R), all transmit signals are completely uncorrelated, then, **Direction gain = G**ANT, that is Directional gain=3.81.

(2) ANT 1 was the worst case for 1TX.

4.

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

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 (13Mbps) 802.11n HT40 mode : BPSK (27Mbps) 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		MTool_2.0.1.1	
Frequency (MHz)	2412	2437	2462
802.11b	65	65	65
802.11g	61	65	65
802.11n (20MHz)	55	55	55
Frequency	2422	2437	2452
802.11n (40MHz)	46	55	55

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/IC	Series No.	Note
-	-	-	-	-	-	

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	

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.	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

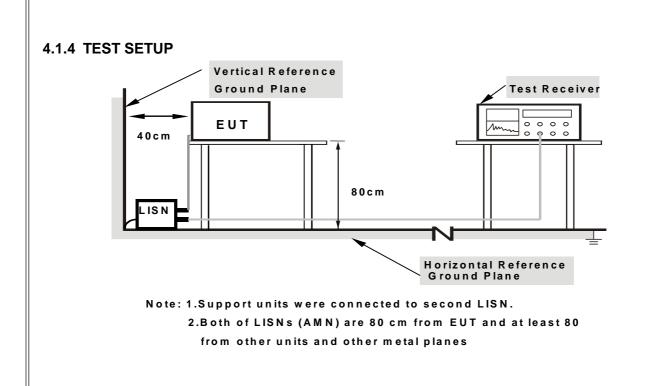
Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 KHz

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



4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

4.1.6 EUT TEST CONDITIONS

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

4.1.7 TEST RESULTS

Please refer to the Attachment A.

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS

20dB in any 100 KHz bandwidth outside the operating frequency band. 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	RBW 1MHz VBW 3MHz peak detector for Pk value
(Emission in restricted band)	RMS detector for AV value



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

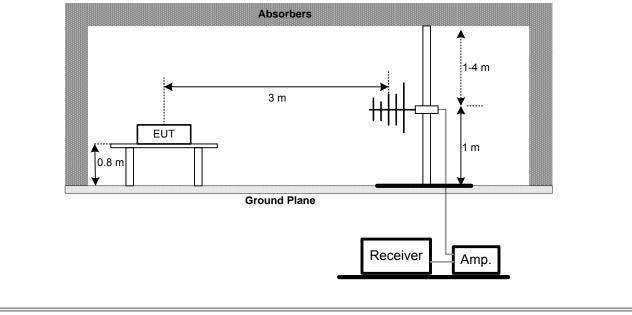
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter fully-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; 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 conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item -EUT Test Photos.

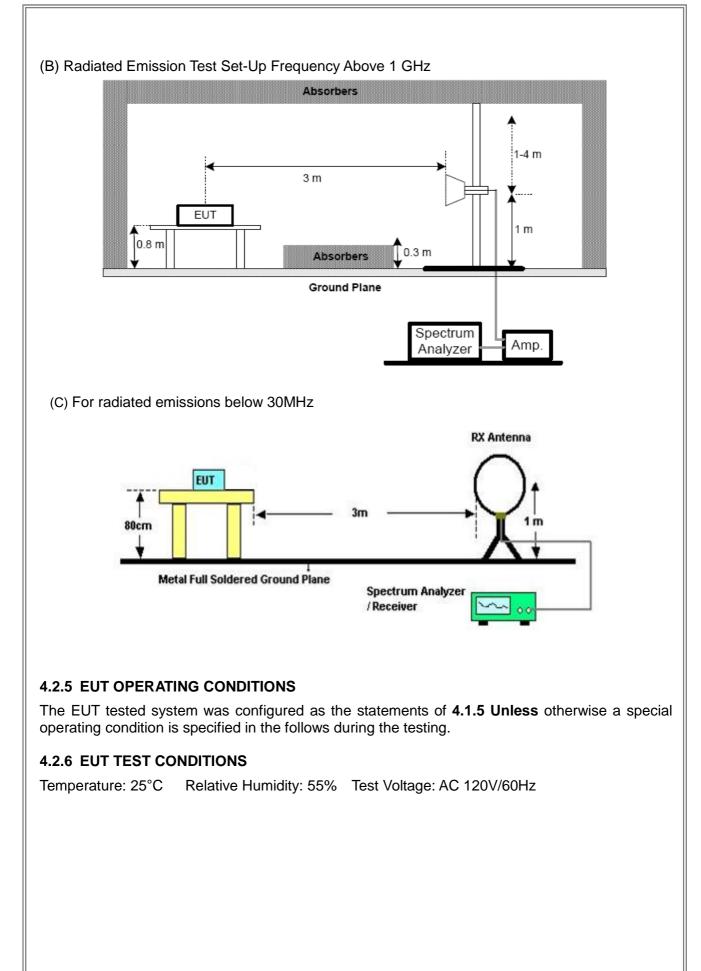
4.2.3 DEVIATION FROM TEST STANDARD

No deviation

4.2.4 TEST SETUP

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





BTL

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 (BETWEEN 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 tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

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	t Frequency Range (MHz) Res			
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 v03r02.

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

Transmit output power was measured while the host equipment supply voltage was varied from 85 % to 115 % of the nominal rated supply voltage. No change in transmit output power was observed.

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 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 measurement, provided 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.

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP



7.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

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)	Result		
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 tested system was configured as the statements of 4.1.5 Unless otherwise a special operating condition is specified in the follows during the testing.

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

	Conducted Emission Measurement								
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until				
1	LISN	EMCO	3816/2	00052765	Mar. 29, 2015				
2	LISN	R&S	ENV216	101447	Mar. 29, 2015				
3	Test Cable	N/A	C_17	N/A	Mar. 14, 2015				
4	EMI TEST RECEIVER	R&S	ESCS30	833364/017	Mar. 29, 2015				
5	50Ω Terminator	SHX	TF2-3G-A	08122902	Mar. 29, 2015				
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. 29, 2015				
2	Amplifier	HP	8447D	2944A09673	Mar. 29, 2015				
3	Receiver	AGILENT	N9038A	MY52130039	Sep. 30, 2015				
4	Test Cable	N/A	C-01_CB03	N/A	Jul. 01, 2015				
5	Antenna	ETS	3115	00075789	Mar. 29, 2015				
6	Amplifier	Agilent	8449B	3008A02274	Mar. 29, 2015				
7	Receiver	AGILENT	N9038A	MY52130039	Sep. 30, 2015				
8	Test Cable	HUBER+SUHNER	C-48	N/A	Apr. 30, 2015				
9	Controller	СТ	SC100	N/A	N/A				
10	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Feb. 22, 2015				
11	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Feb. 22, 2015				
12	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Mar. 29, 2015				
13	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A				

	6dB Bandwidth Measurement						
ltem	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until		
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 02, 2015		

	Peak Output Power Measurement							
ltem	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until			
1	power Meter	ANRITSU	ML2495A	1128009	May. 29, 2015			
2	Pulse Power Sensor	ANRITSU	MA 2411B	1027500	May. 29, 2015			

	Antenna Conducted Spurious Emission Measurement						
ltem	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until		
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 02, 2015		

	Power Spectral Density Measurement						
ltem	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until		
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 02, 2015		

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

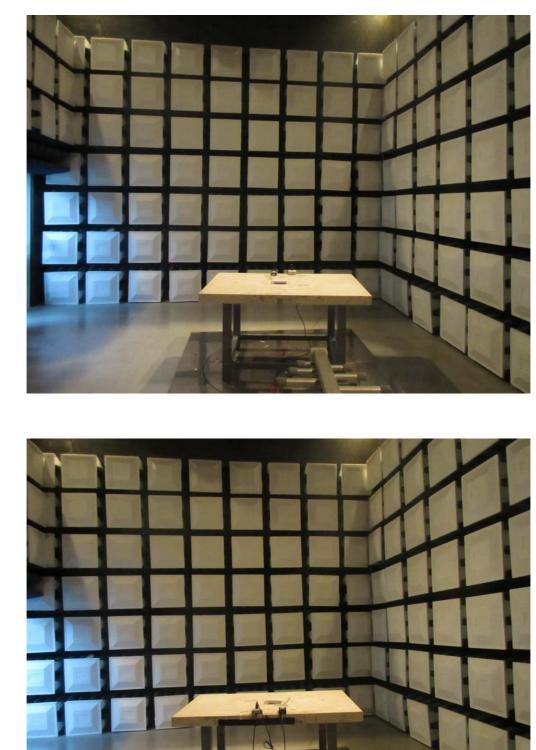
9KHz to 30MHz





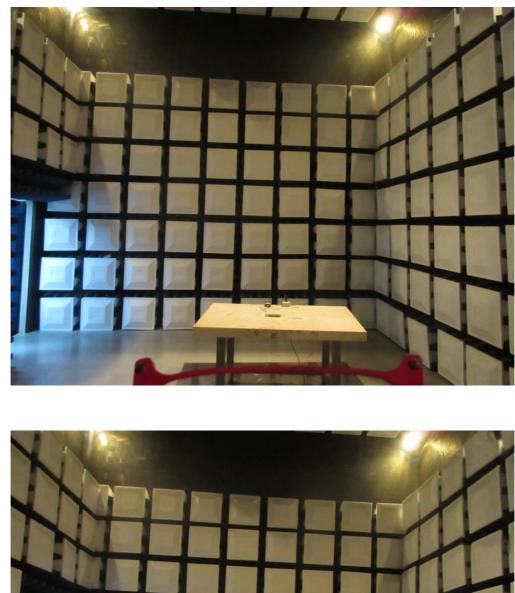
Radiated Measurement Photos

30MHz to 1000MHz



Radiated Measurement Photos

Above 1000MHz





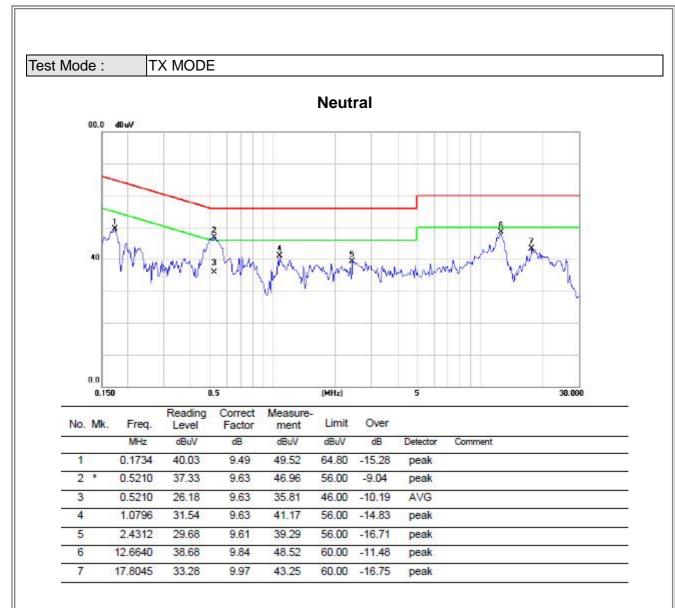
Report No.: BTL-FCCP-1-1501C010



BTL



BTL



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

Test Mode:

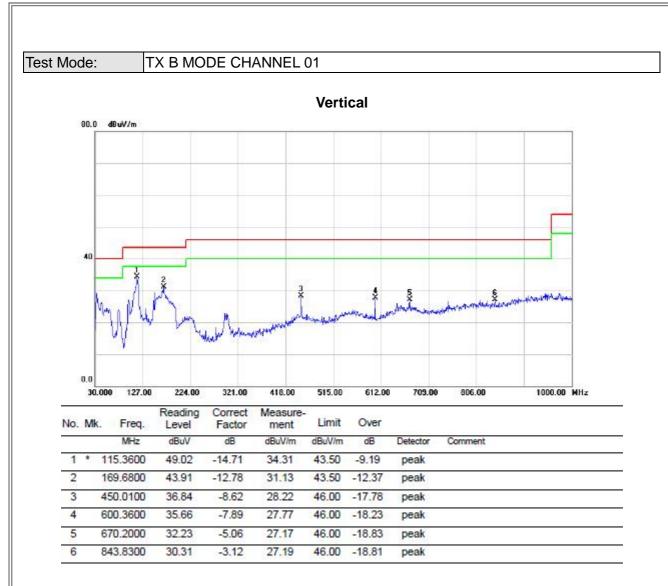
TX Mode 2412MHz

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit(QP) (dBuV/m)	Margin (dB)	Note
0.0069	0°	12.38	25.13	37.51	110.83	-73.32	AVG
0.0069	0°	14.11	25.13	39.24	130.83	-91.59	PEAK
0.0156	0°	5.17	24.58	29.75	103.74	-73.99	AVG
0.0156	0°	7.68	24.58	32.26	123.74	-91.48	PEAK
0.0283	0°	3.72	23.77	27.49	98.57	-71.07	AVG
0.0283	0°	5.47	23.77	29.24	118.57	-89.32	PEAK
0.0349	0°	0.82	23.36	24.18	96.75	-72.57	AVG
0.0349	0°	2.64	23.36	26.00	116.75	-90.75	PEAK
0.4810	0°	30.17	19.85	50.02	73.96	-23.95	QP
1.7620	0°	21.47	19.52	40.99	69.54	-28.55	QP

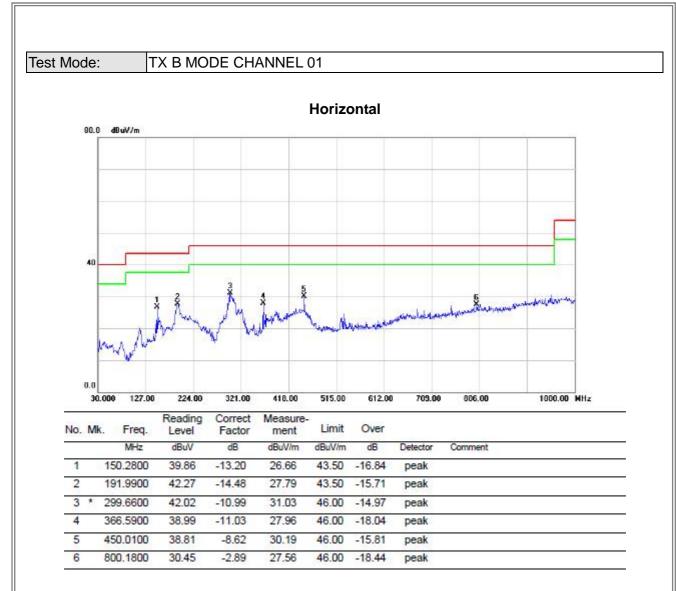
Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit(QP) (dBuV/m)	Margin (dB)	Note
0.0071	90°	12.17	24.30	36.47	130.58	-94.11	AVG
0.0071	90°	14.28	24.30	38.58	150.58	-112.00	PEAK
0.0362	90°	6.27	23.27	29.54	116.43	-86.89	AVG
0.0362	90°	8.11	23.27	31.38	136.43	-105.05	PEAK
0.0439	90°	3.38	22.79	26.17	114.75	-88.59	AVG
0.0439	90°	5.87	22.79	28.66	134.75	-106.10	PEAK
0.0491	90°	0.86	22.46	23.32	113.78	-90.47	AVG
0.0491	90°	2.65	22.46	25.11	133.78	-108.68	PEAK
0.4950	90°	30.27	19.81	50.08	73.71	-23.63	QP
1.8730	90°	21.63	19.51	41.14	69.54	-28.40	QP

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

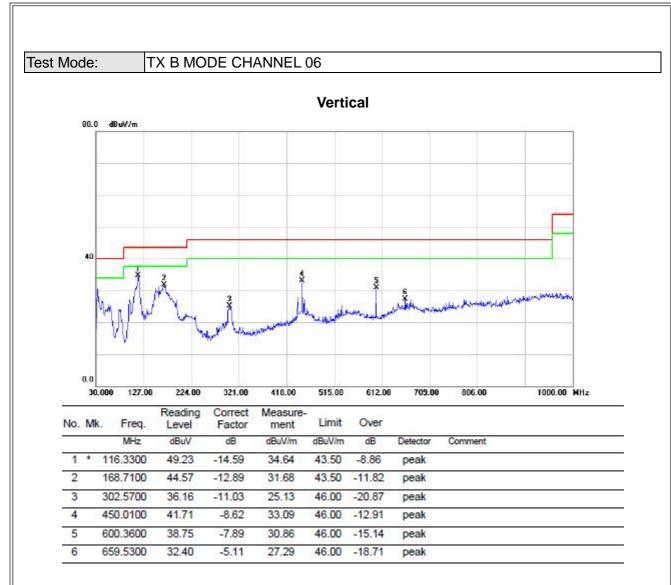








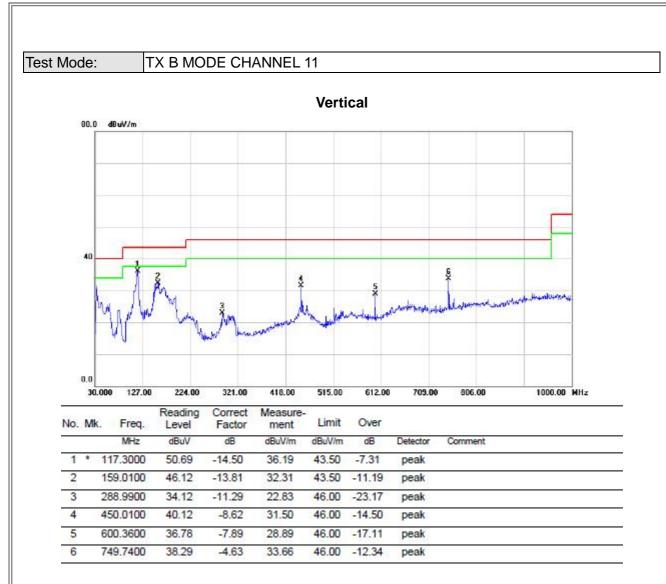




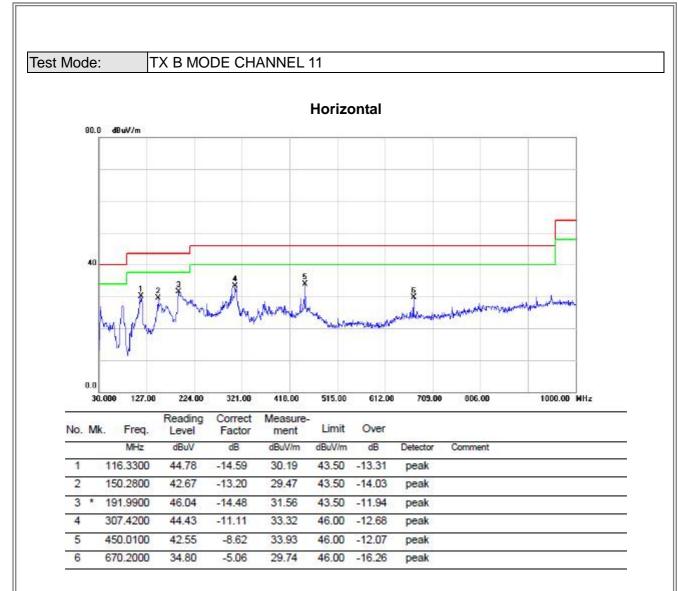


Test Mode: TX B MODE CHANNEL 06 Horizontal 90.0 dBuV/m 40 5 marin 0.0 1000.00 MHz 612.00 709.00 806.00 30.000 127.00 224.00 321.00 418.00 515.00 Reading Correct Measure-Limit Over No. Mk. Freq. Level Factor ment dBuV/m MHz dBuV dB dBuV/m dB Detector Comment 77.5300 -16.87 27.19 1 44.06 40.00 -12.81 peak 2 156.1000 43.53 -13.62 29.91 43.50 -13.59 peak 3 195.8700 45.39 -14.73 30.66 43.50 -12.84 peak 4 299.6600 43.53 -10.99 32.54 46.00 -13.46 peak 5 * 450.0100 42.30 -8.62 33.68 46.00 -12.32 peak 749.7400 32.02 -4.63 27.39 46.00 -18.61 6 peak



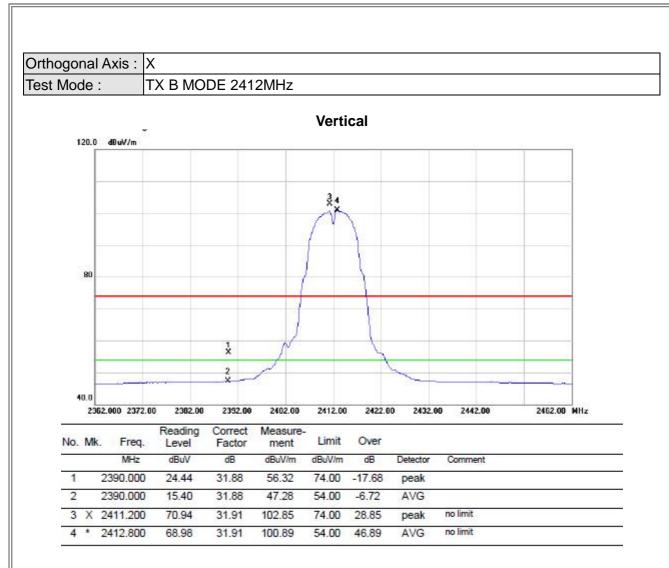




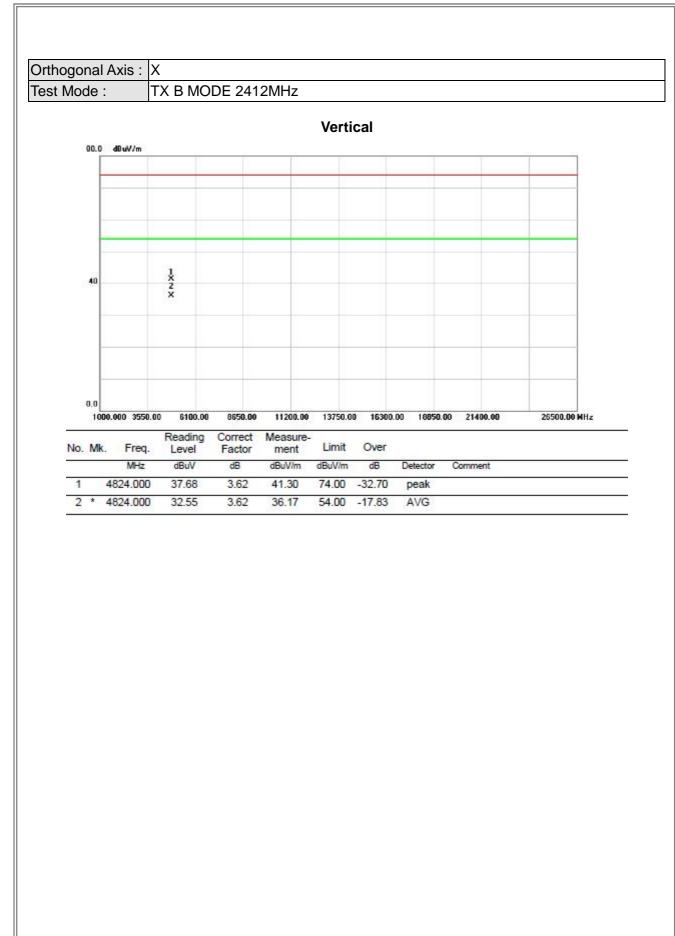


ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)

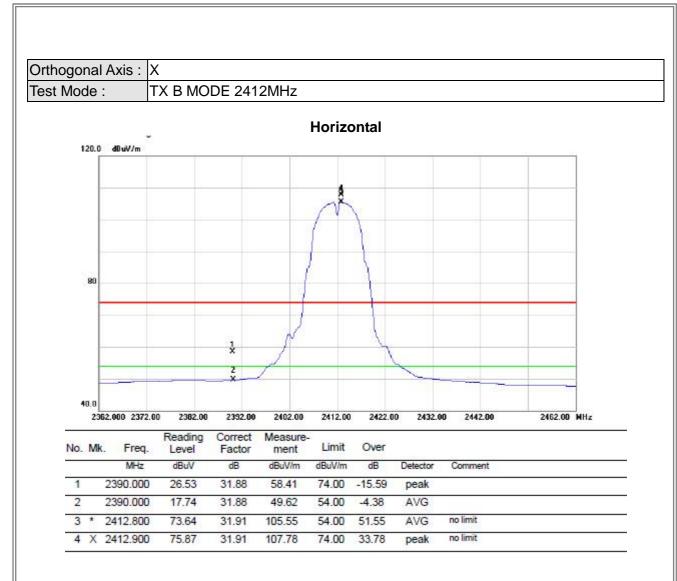




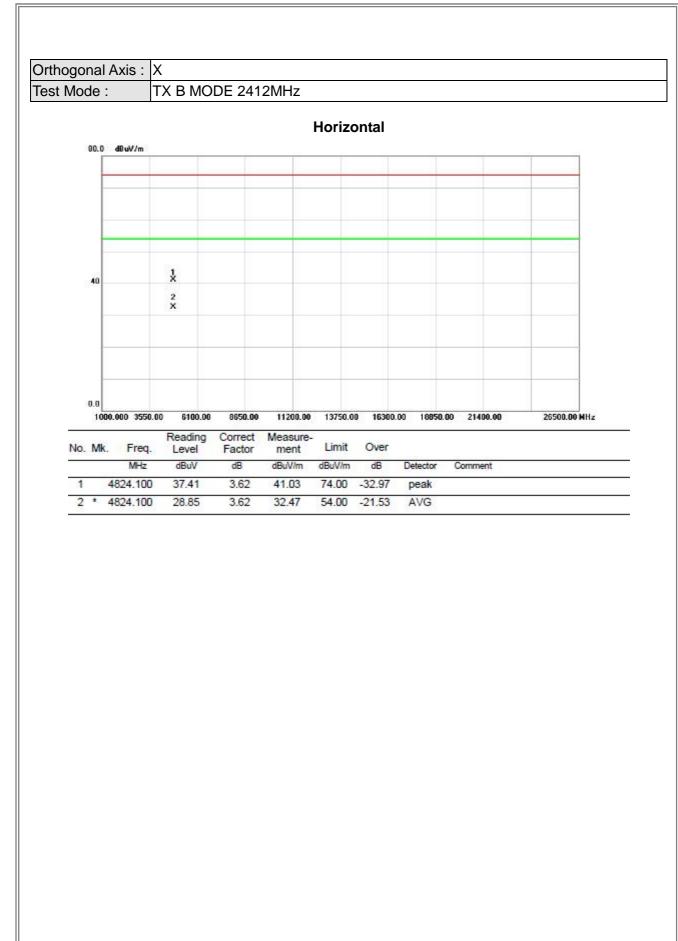




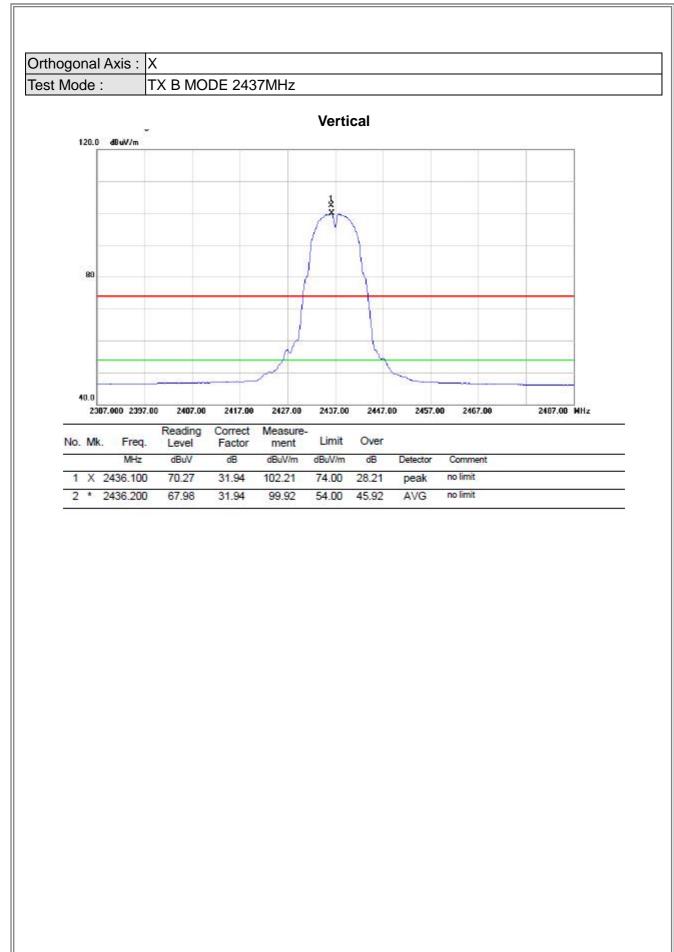




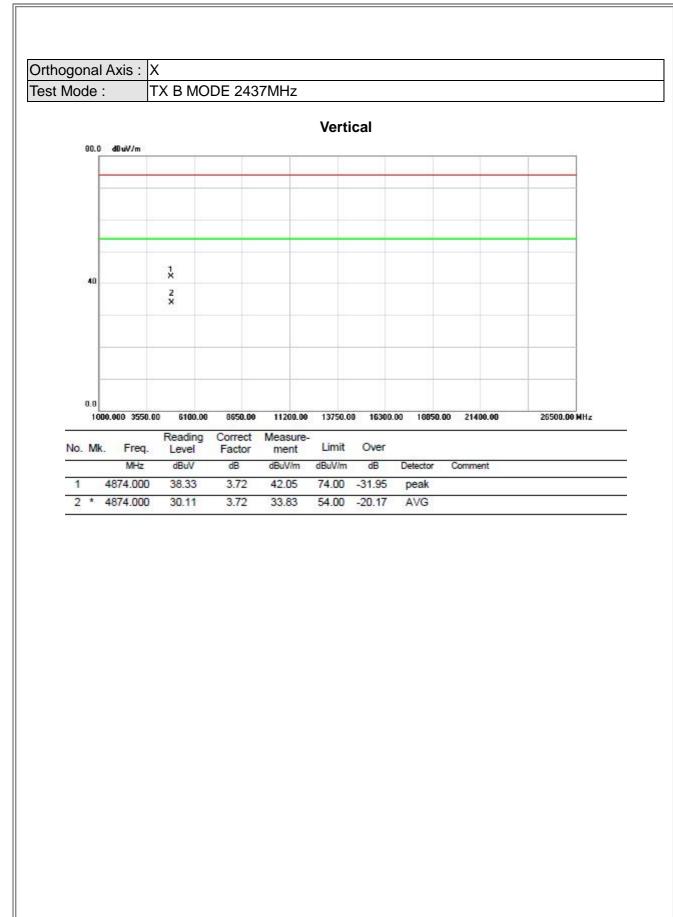




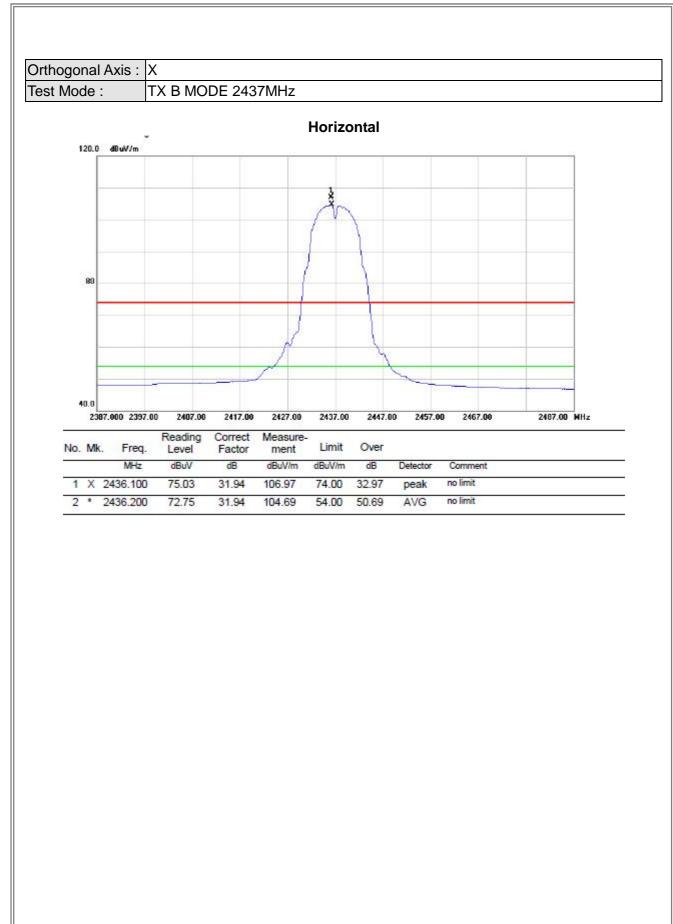




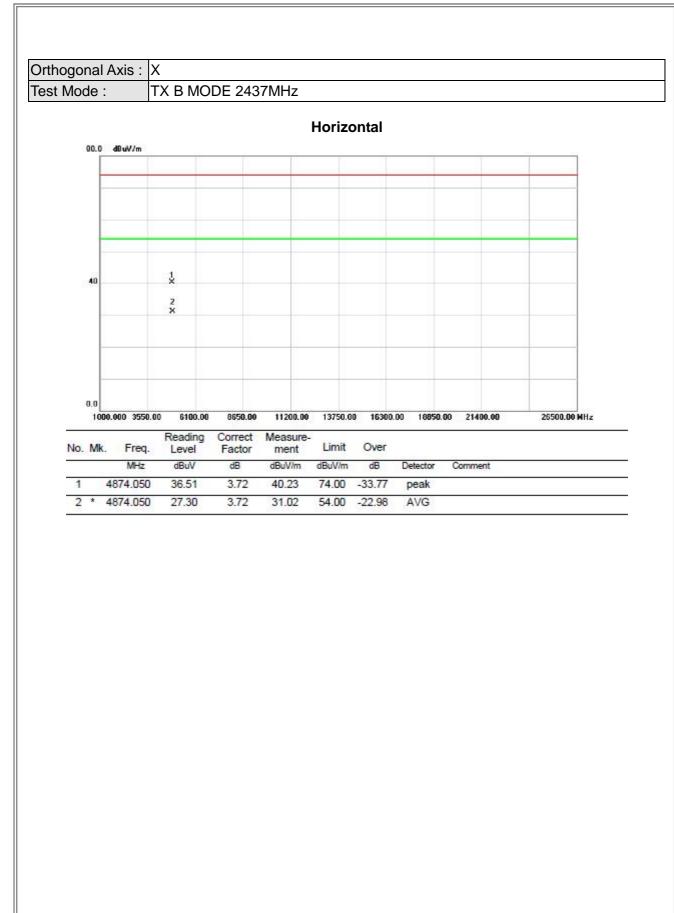




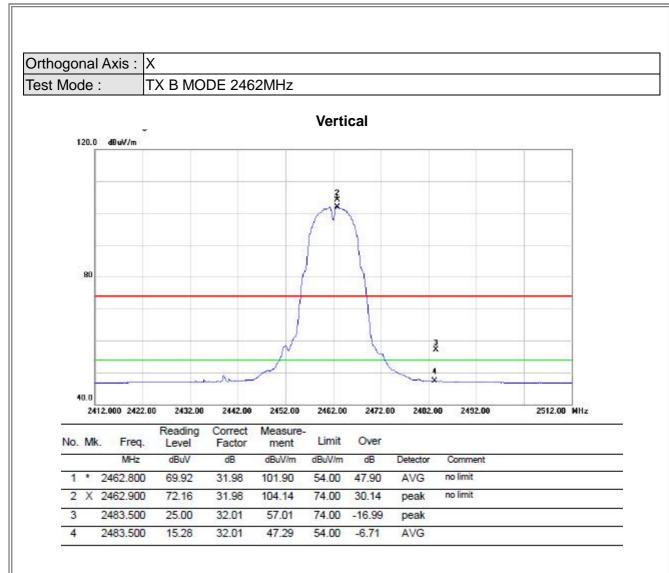




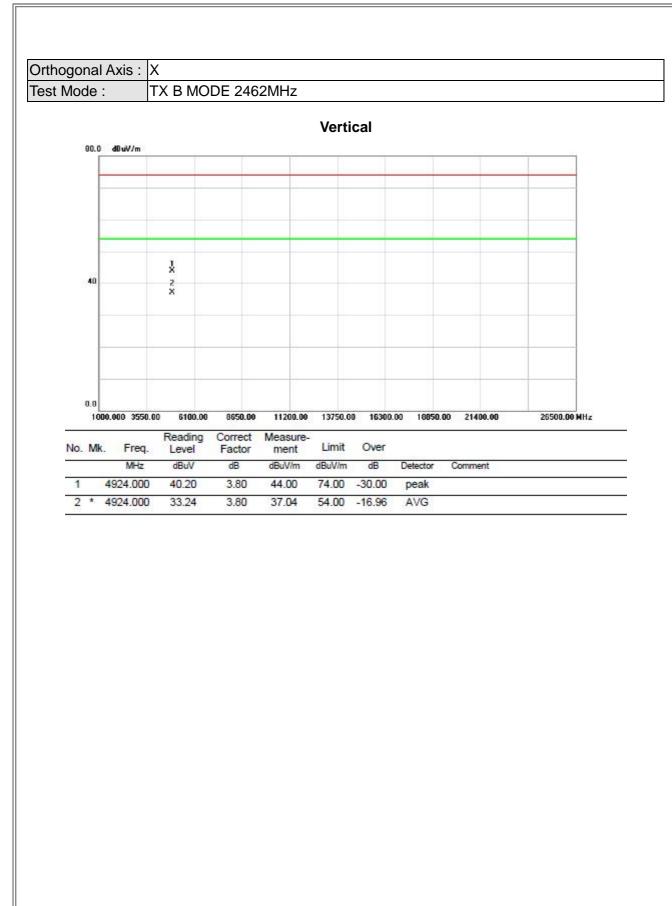




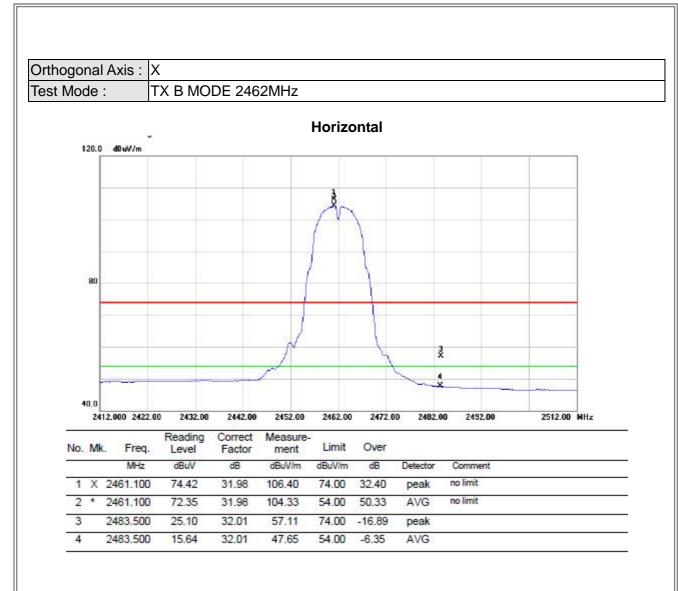




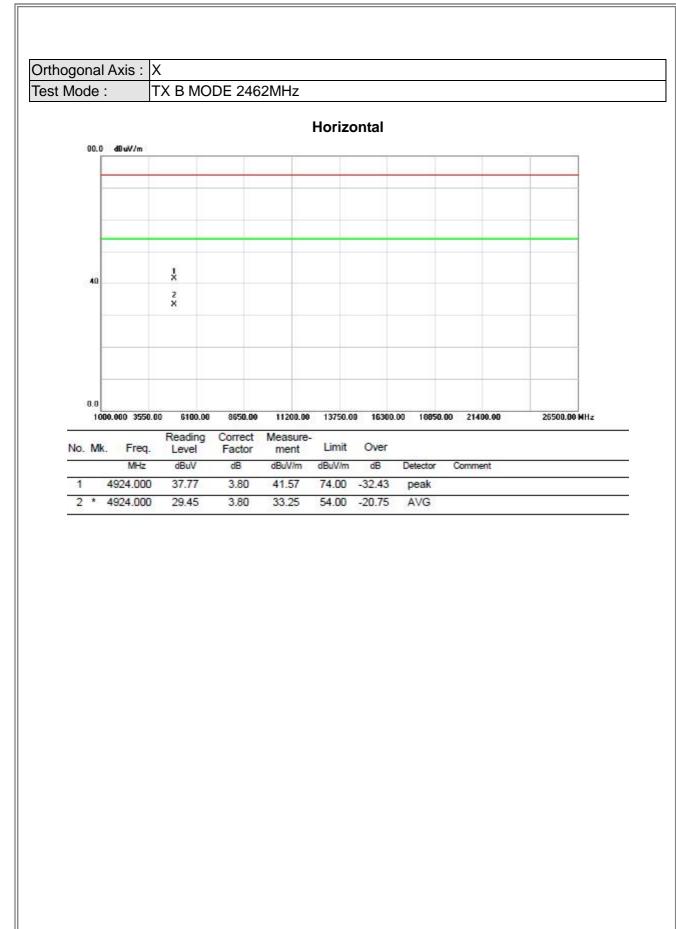




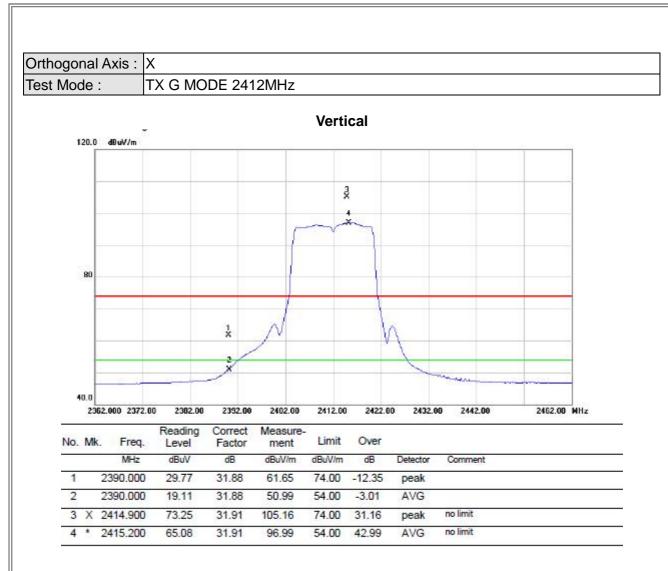




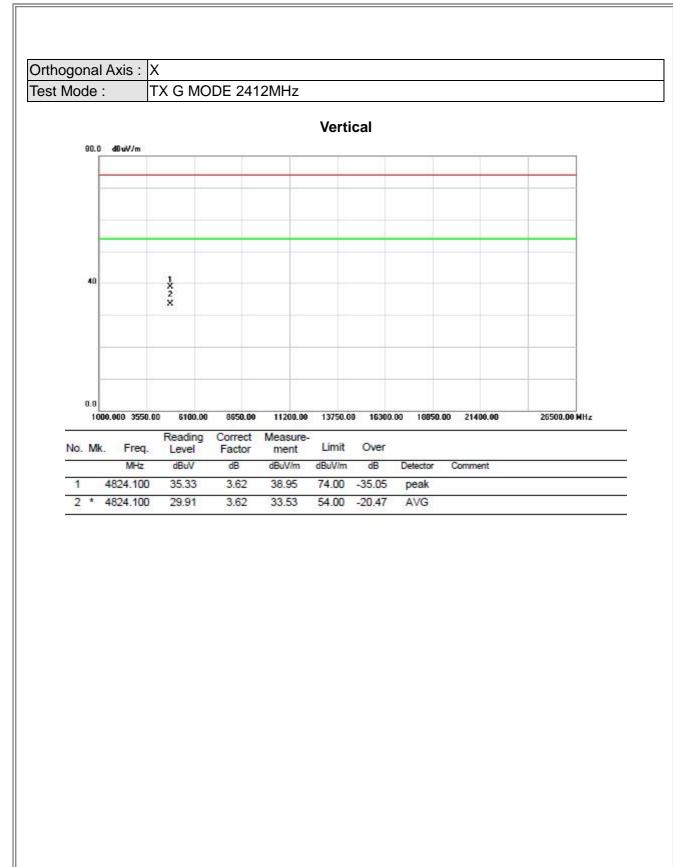




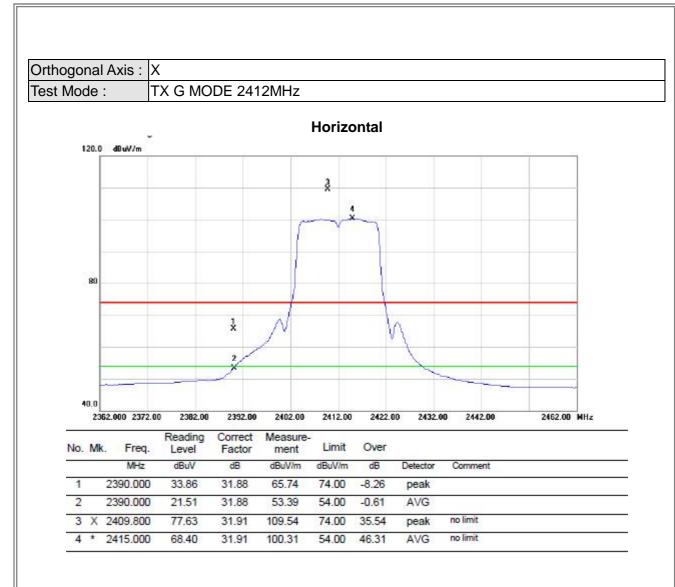




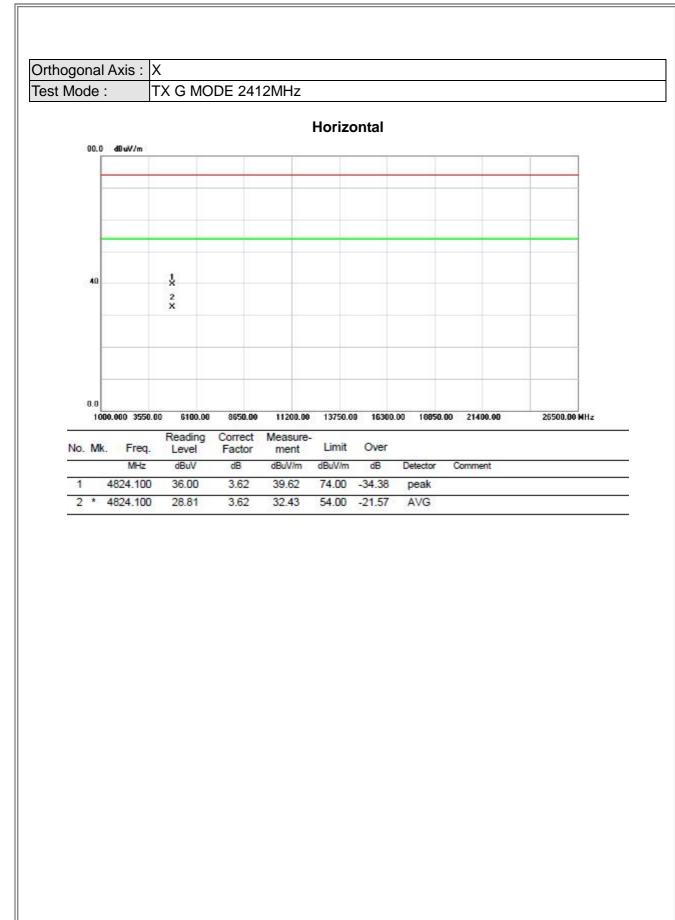




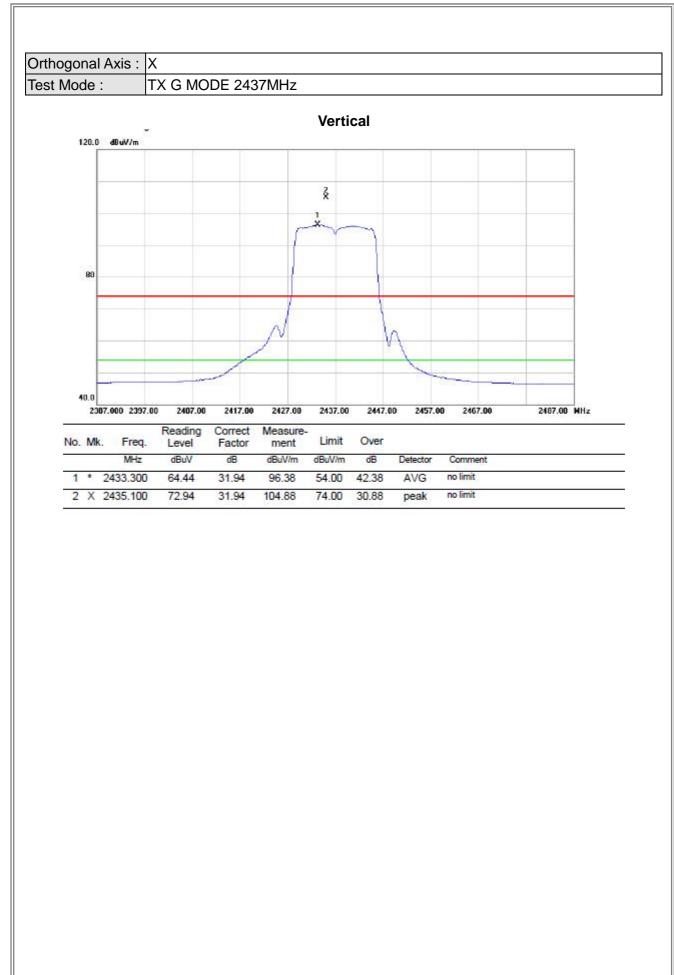




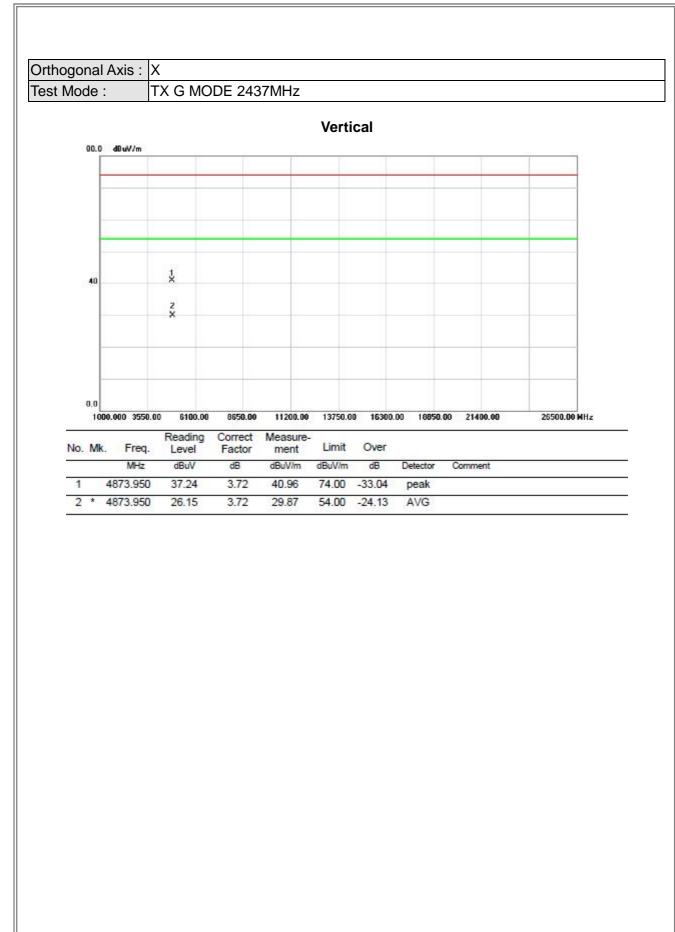




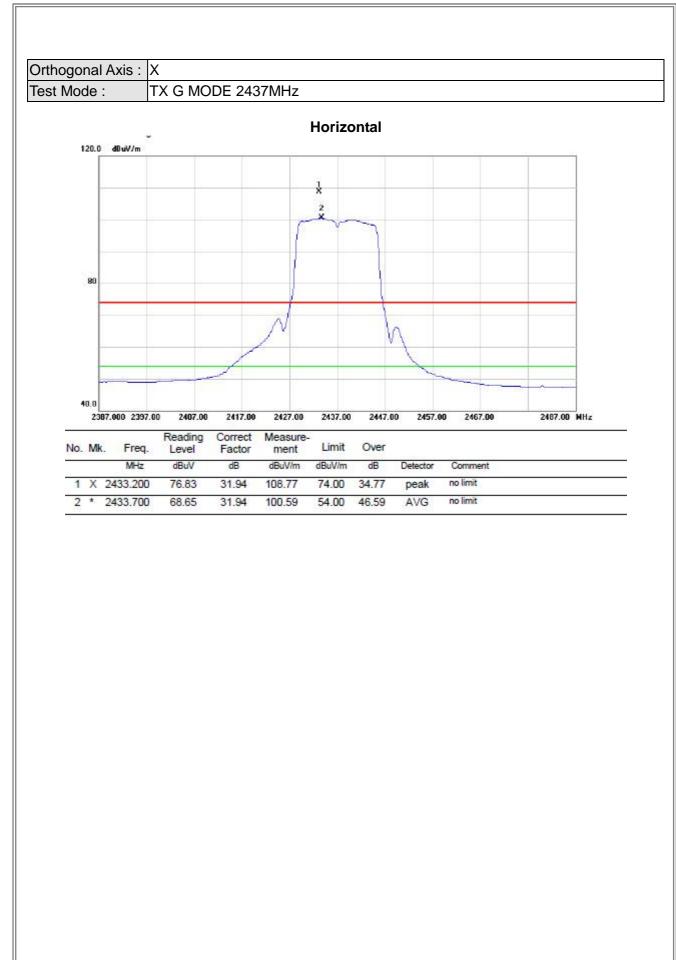




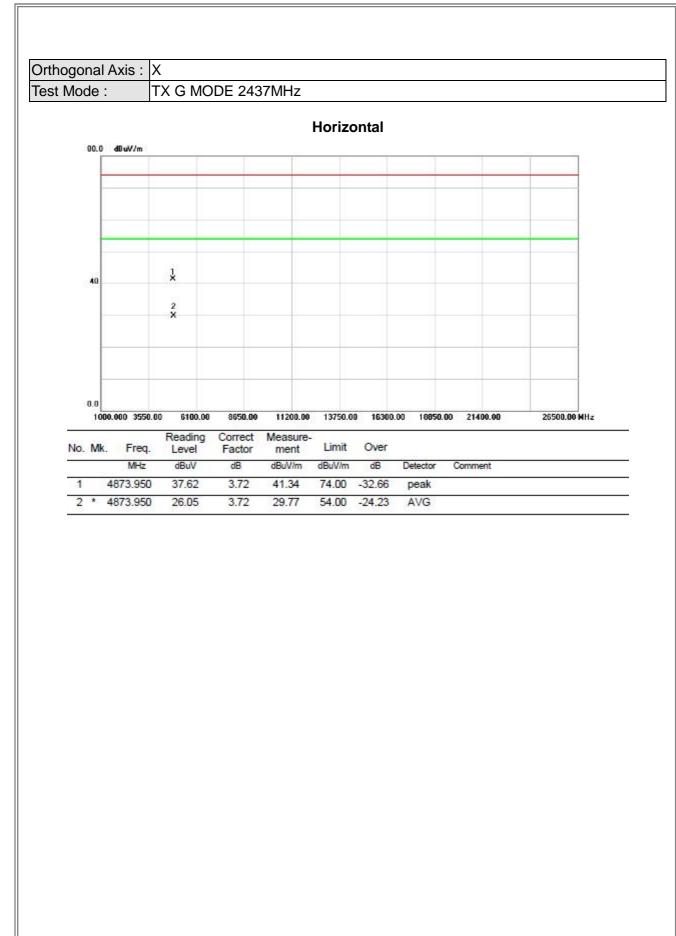




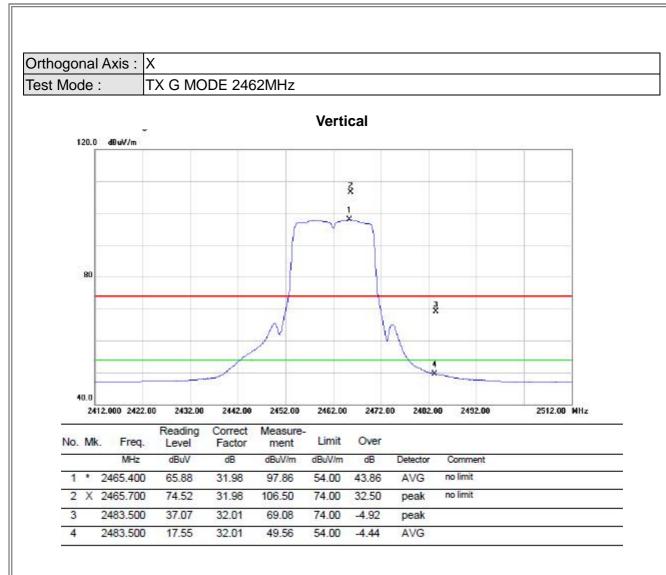




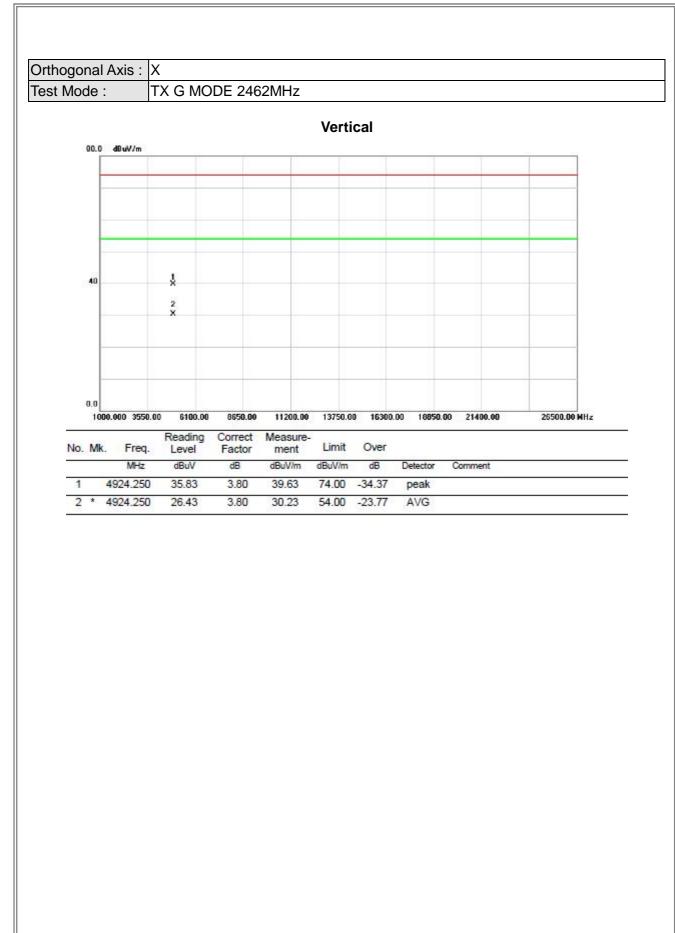




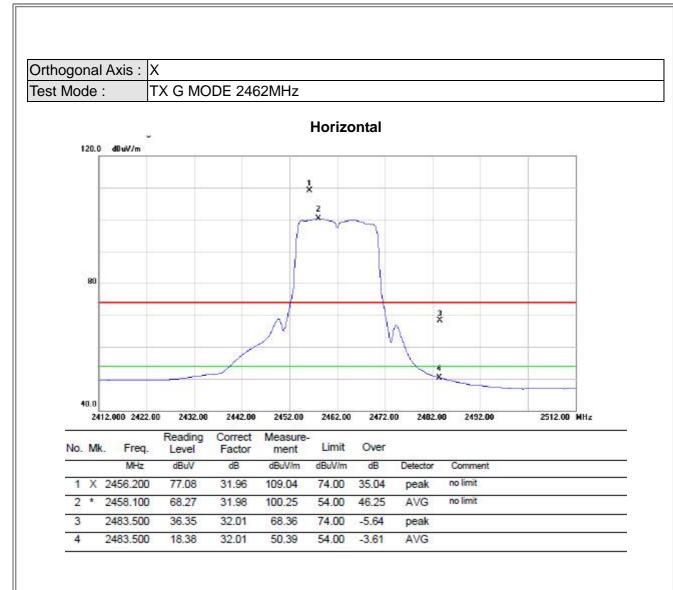




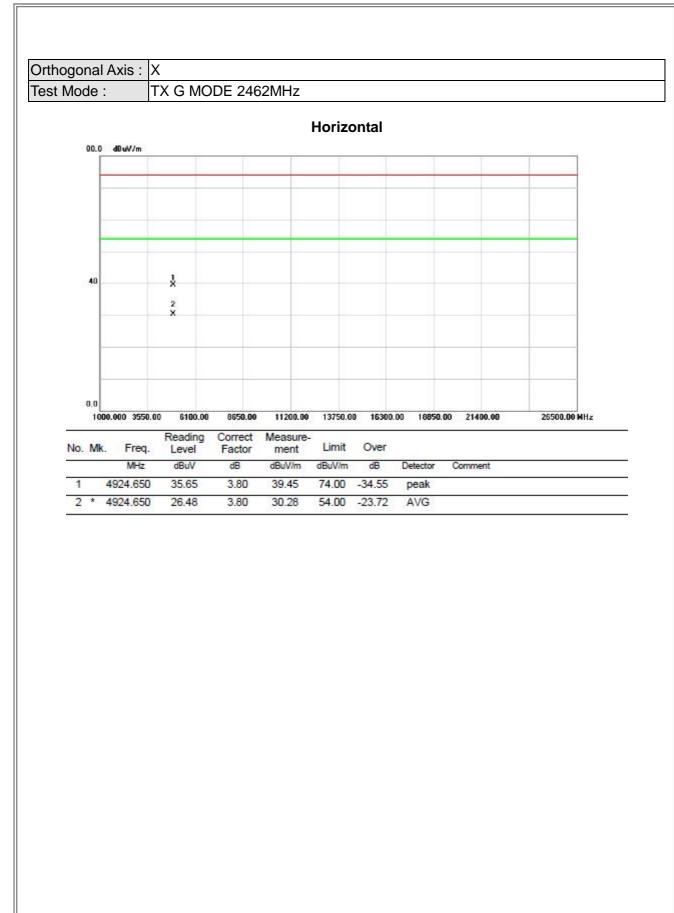




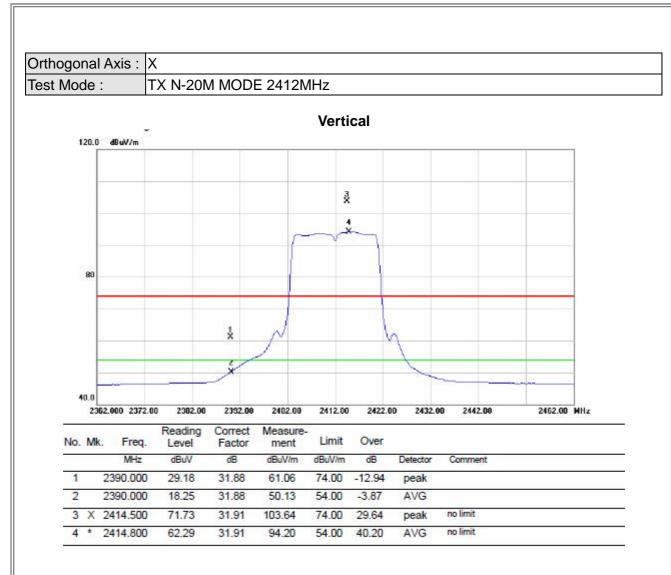




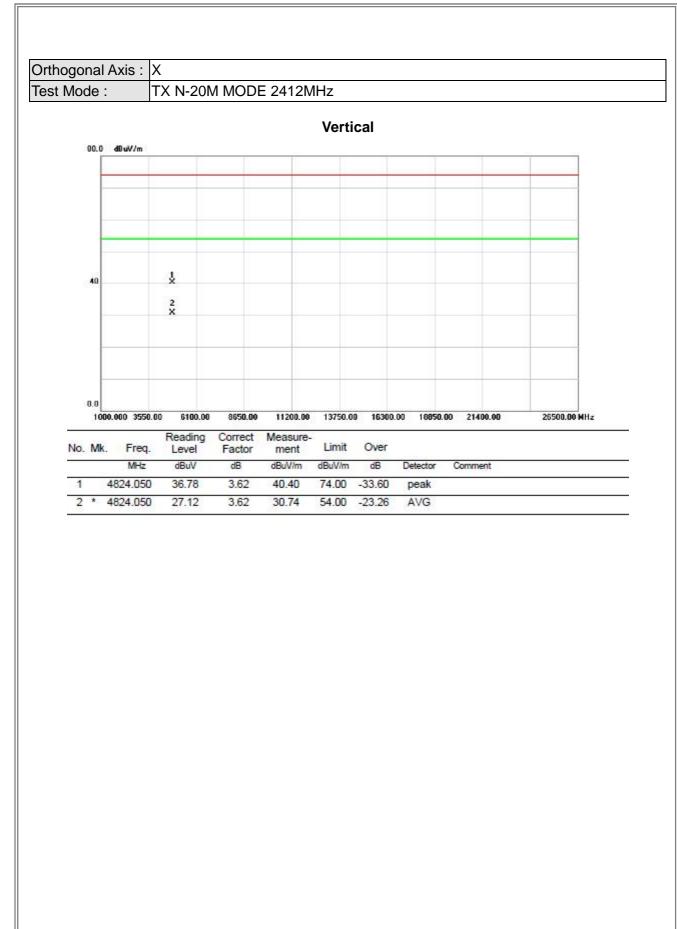




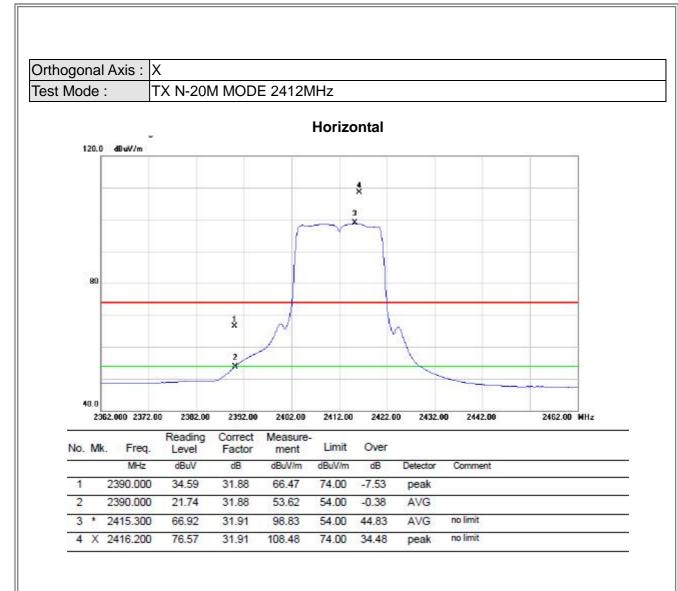




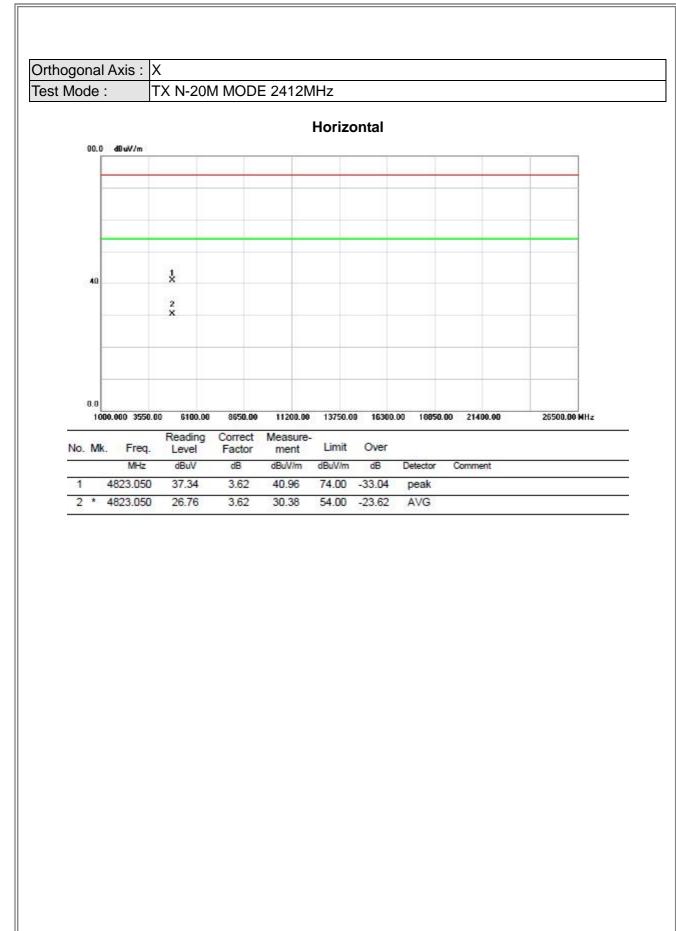




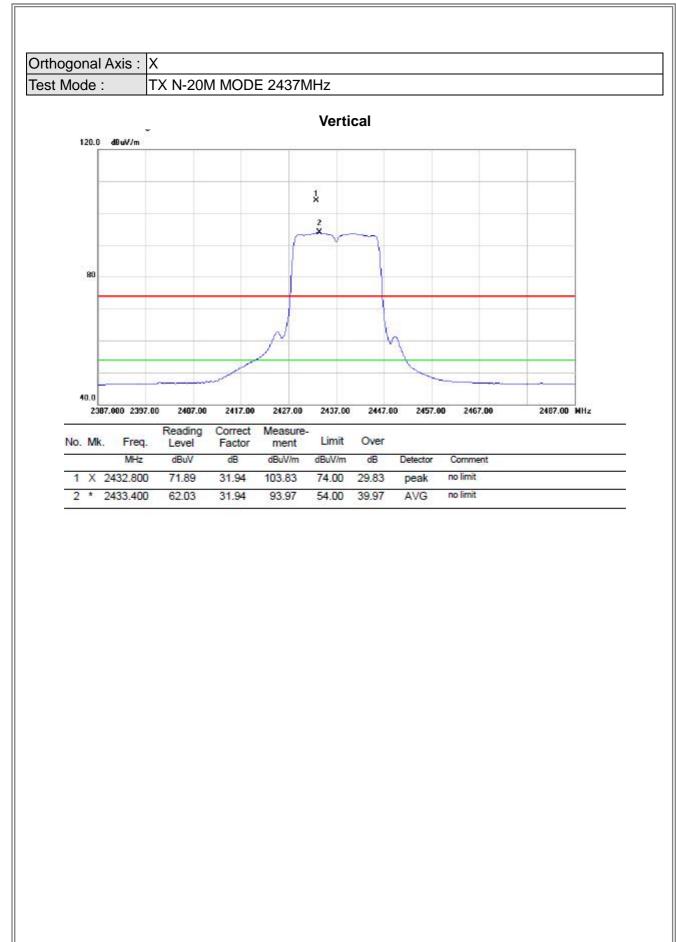




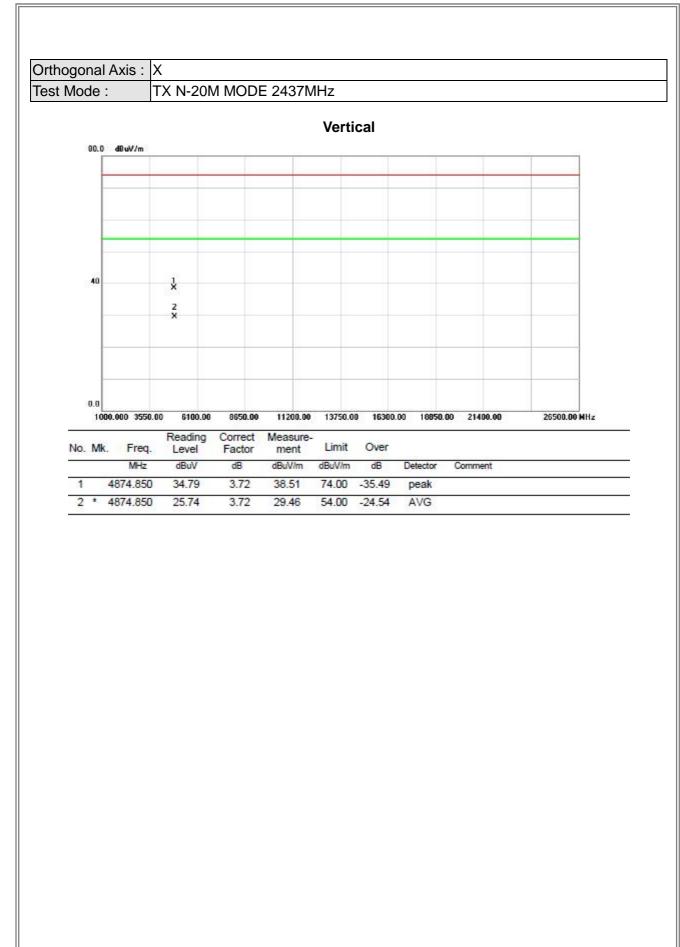




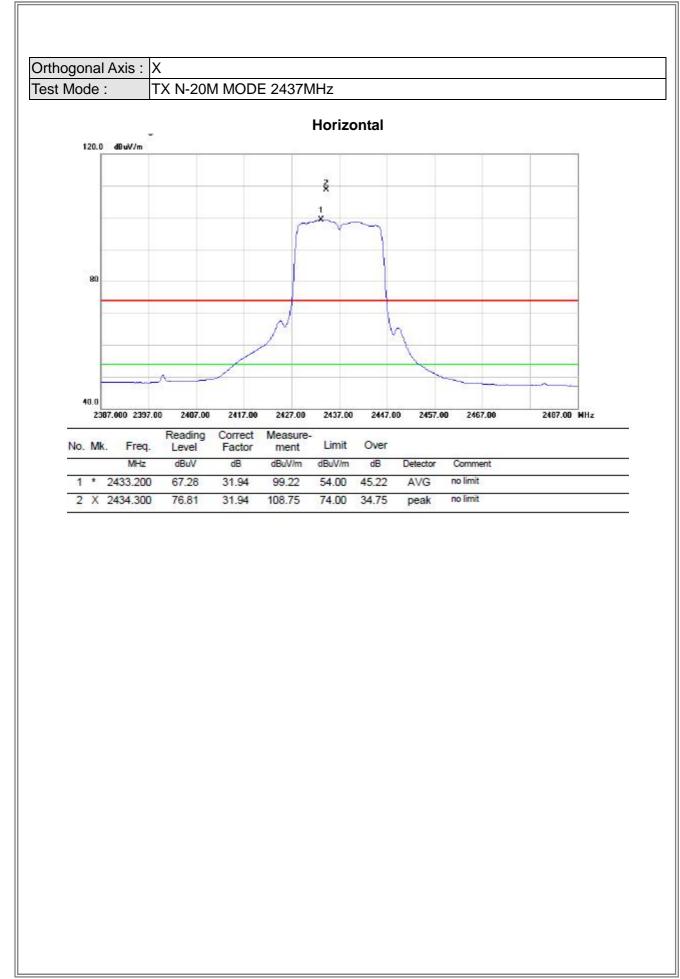




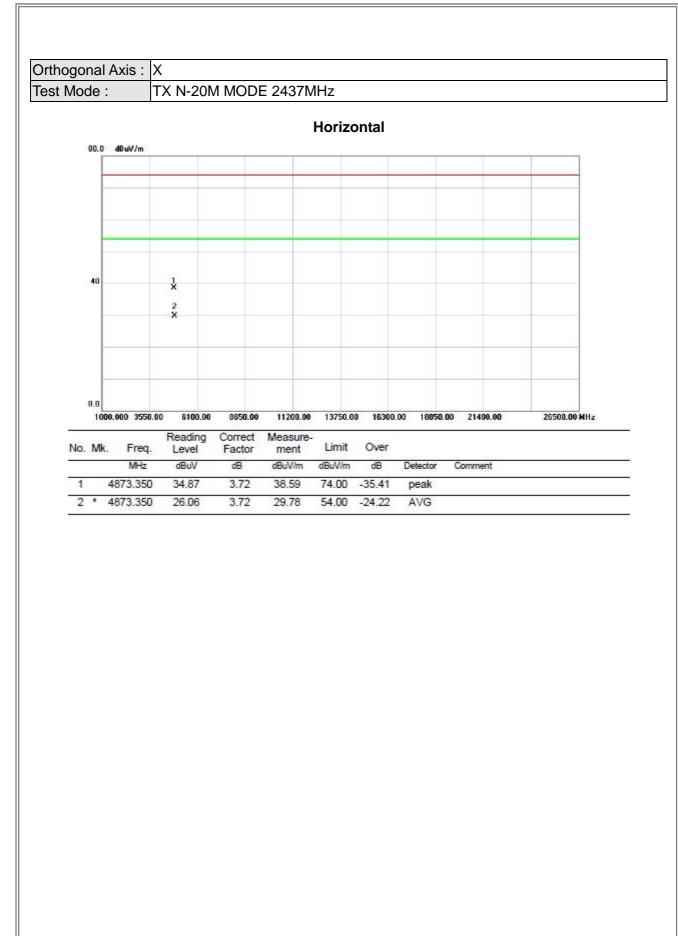




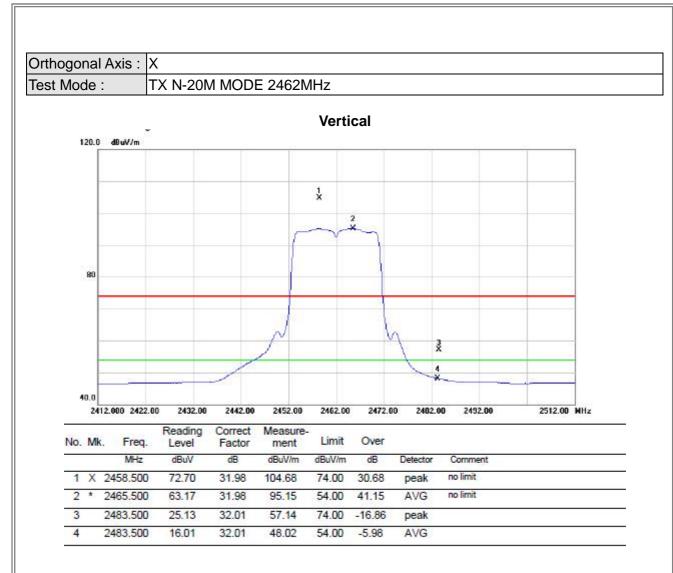




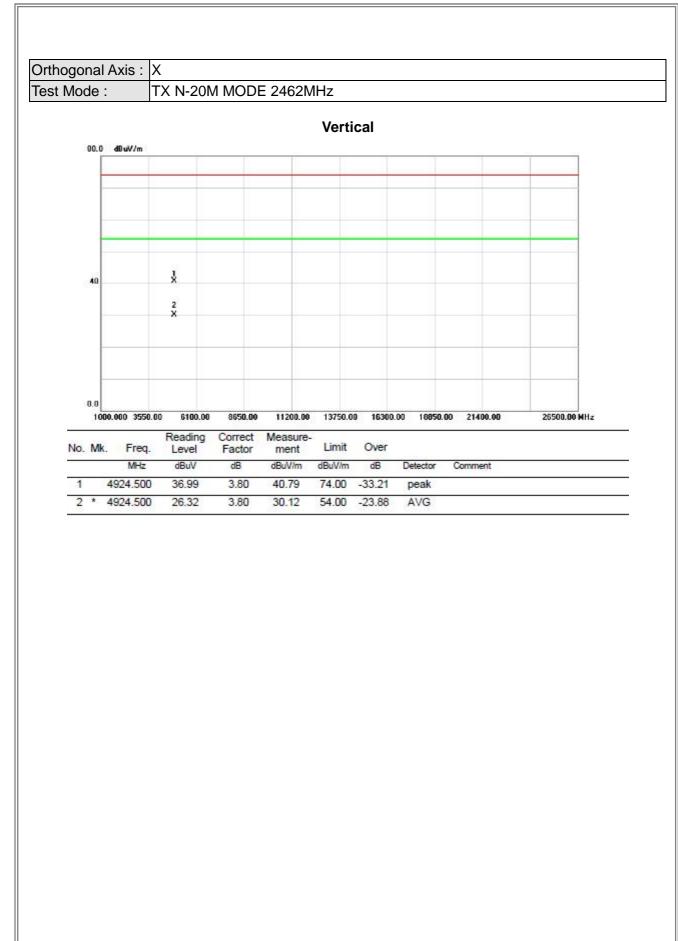




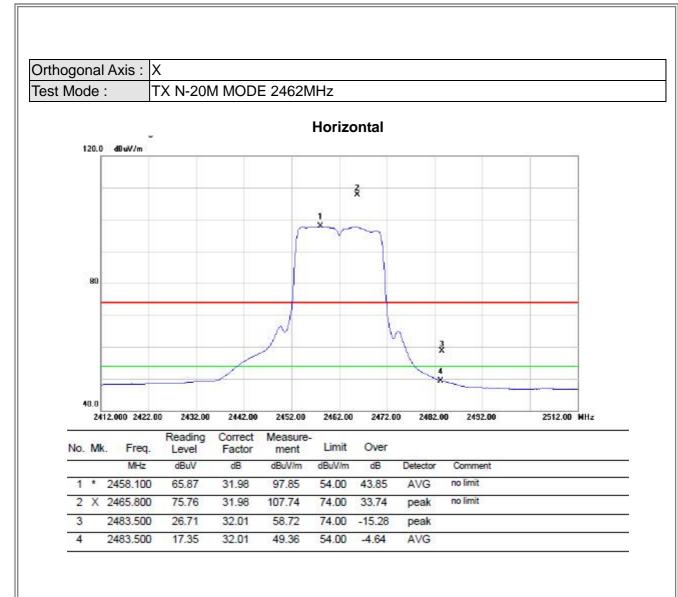




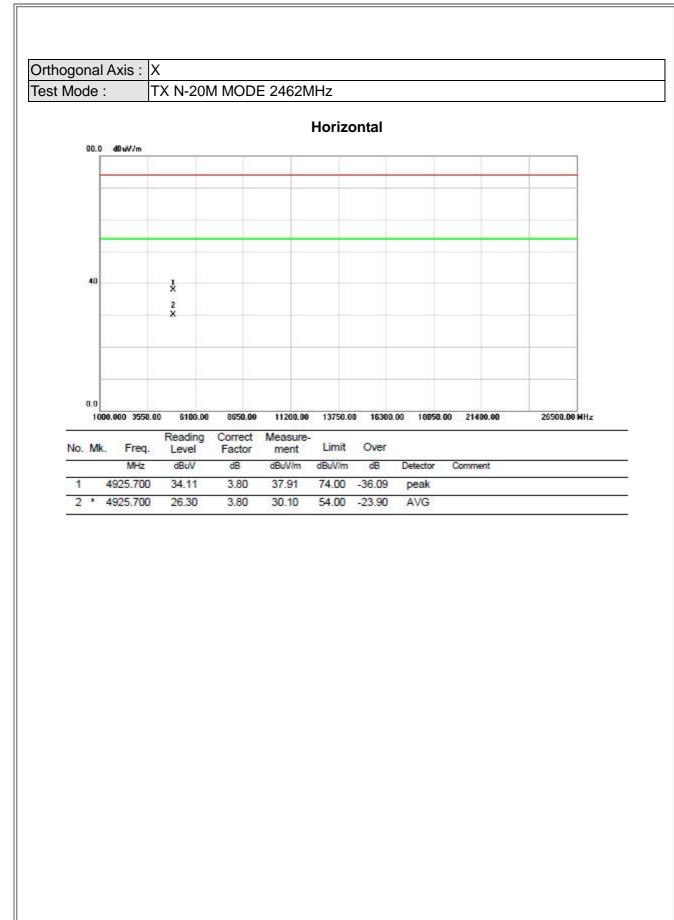




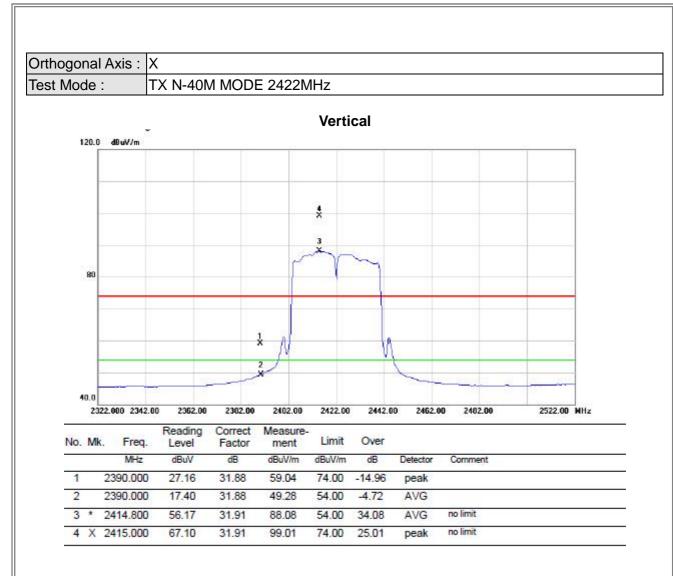




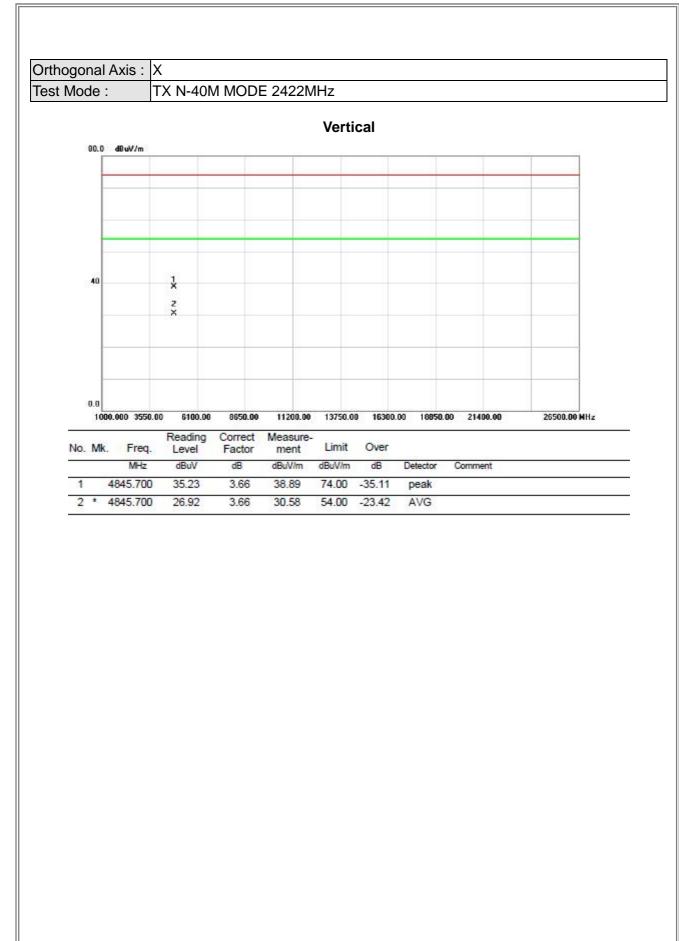




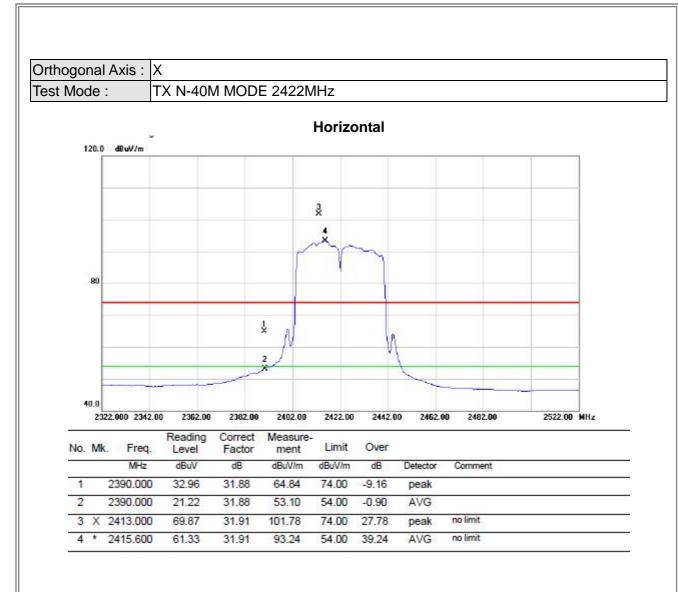




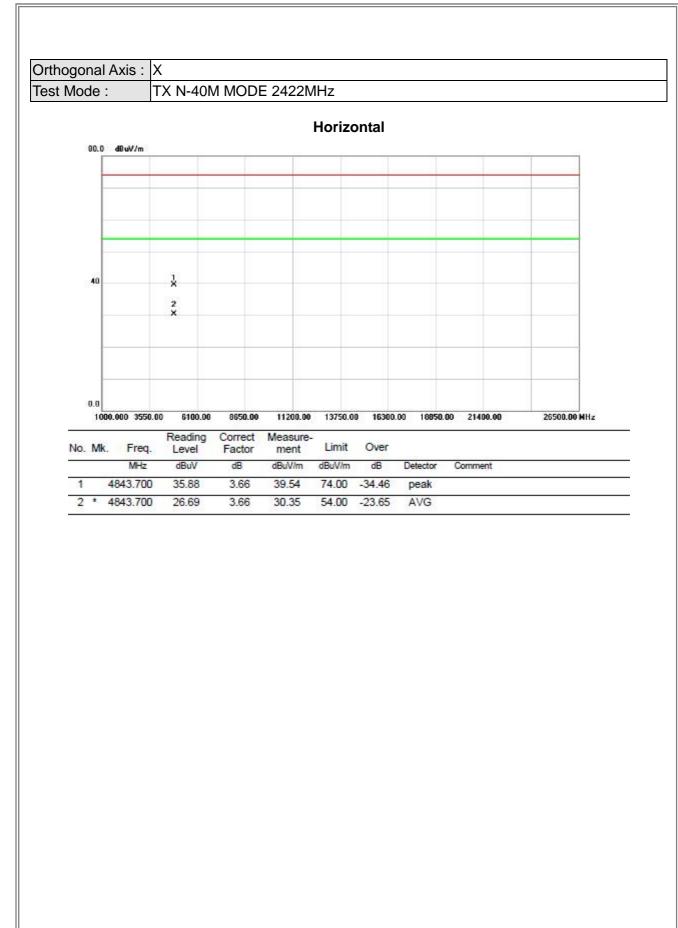




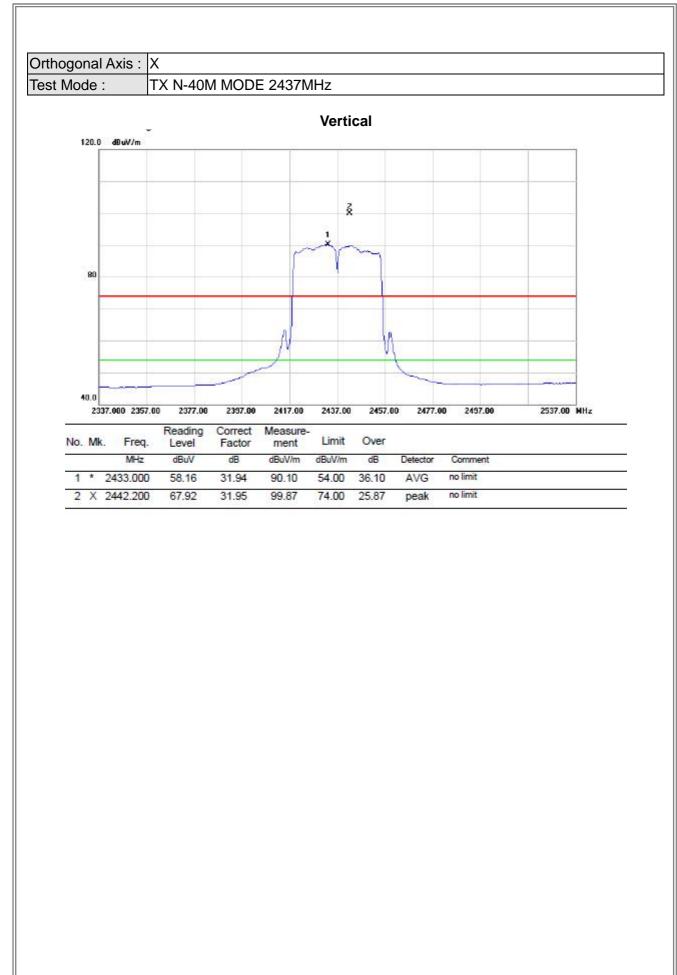




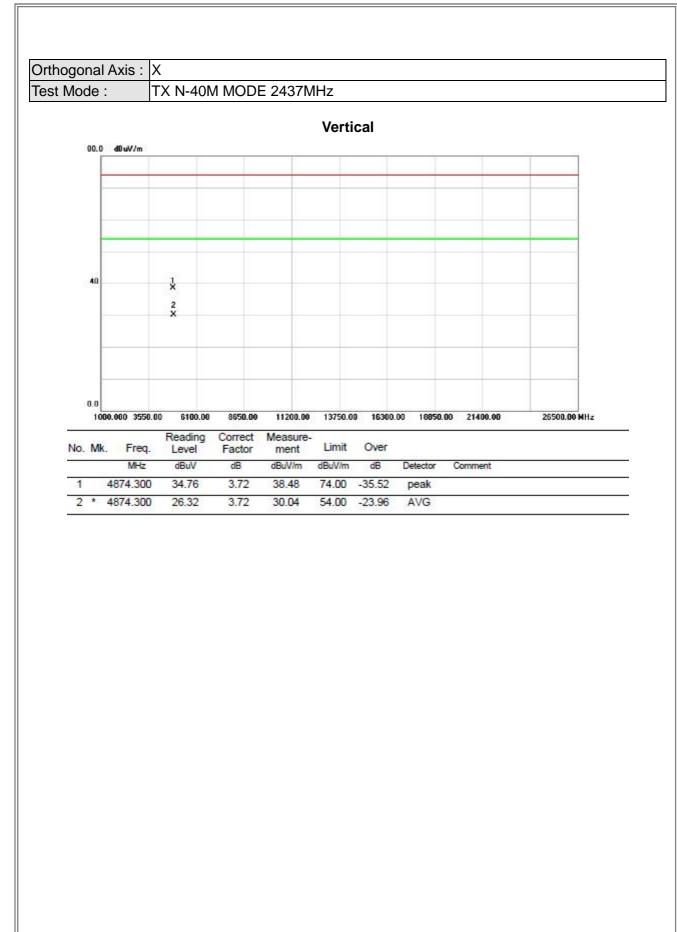




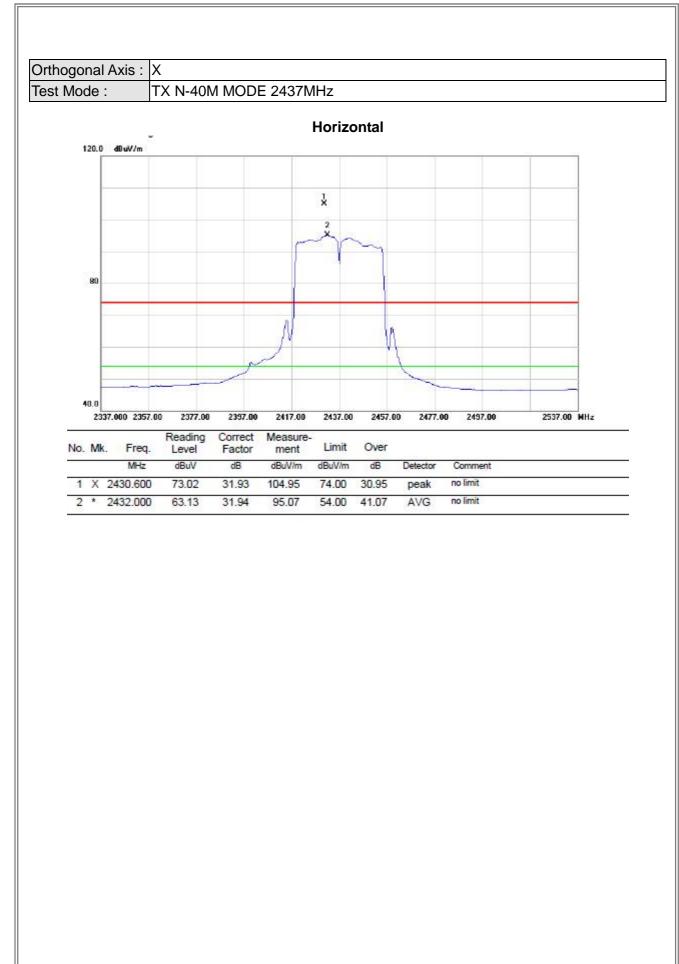




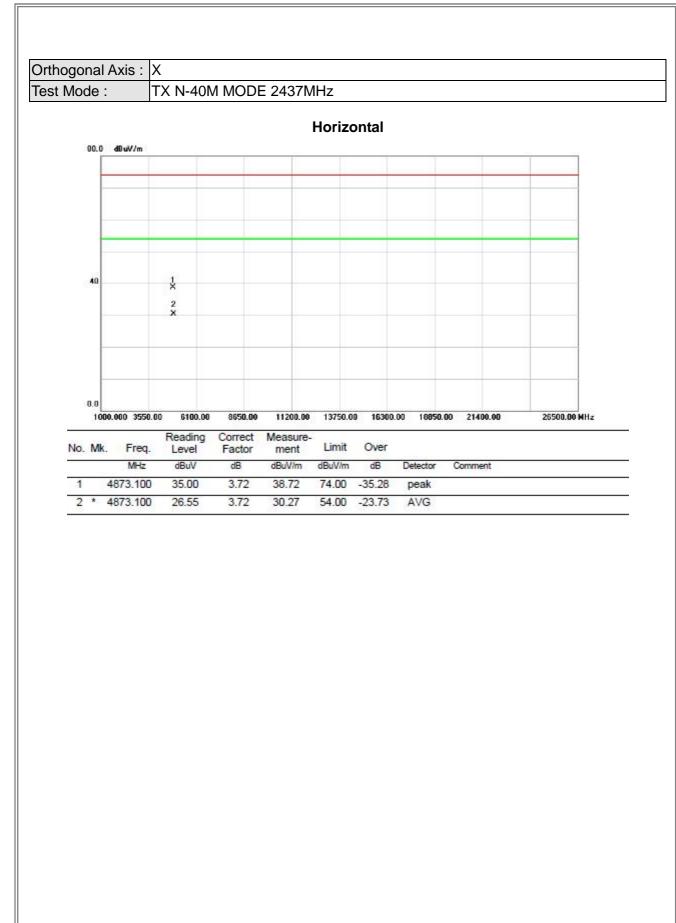




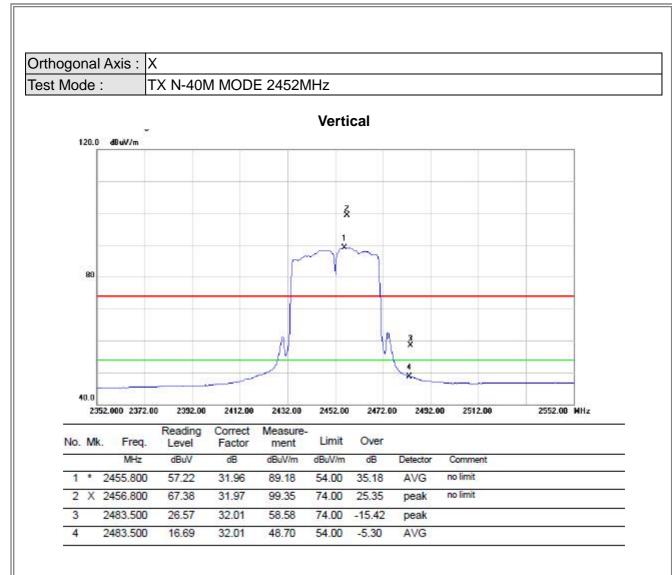




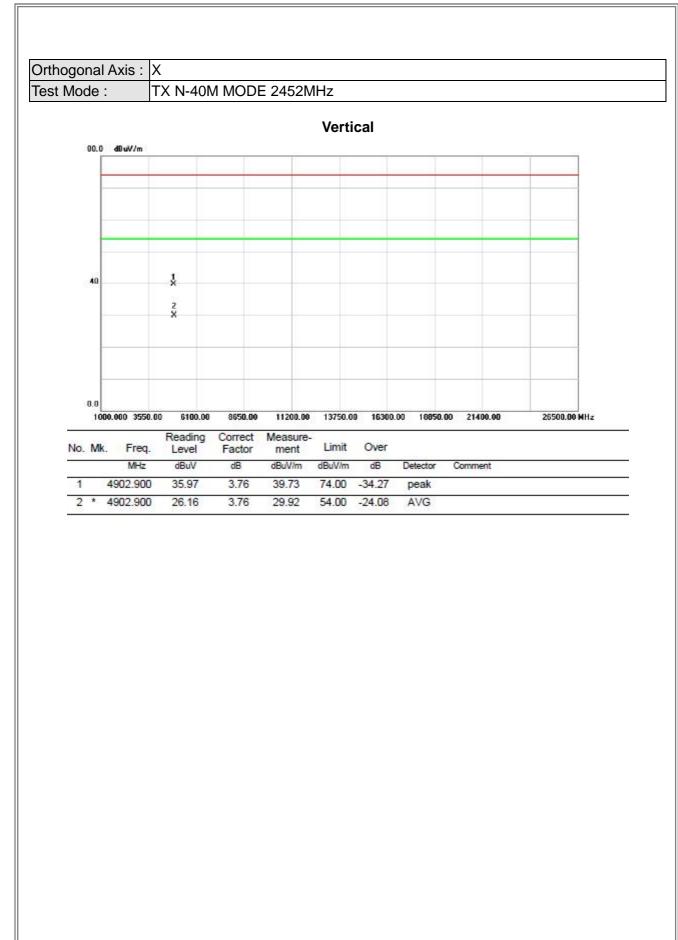




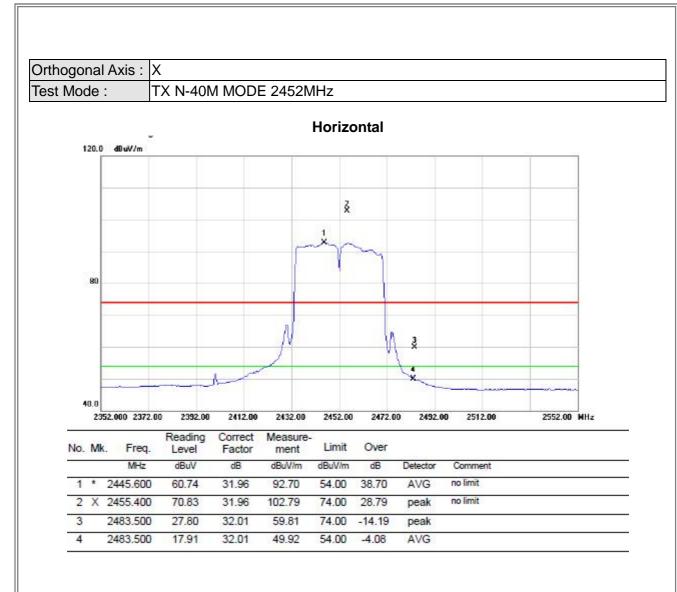




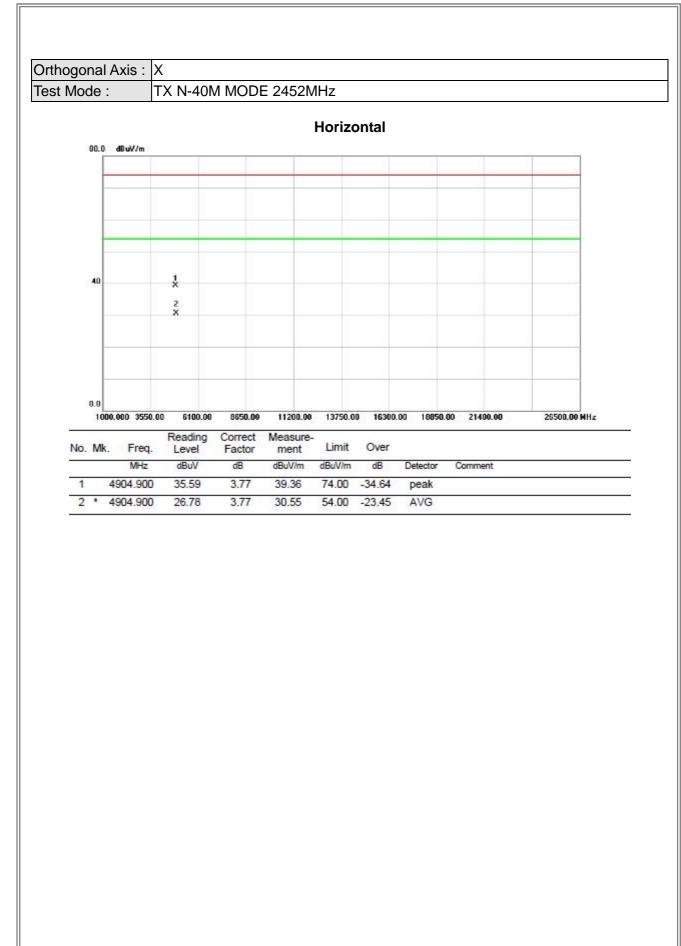








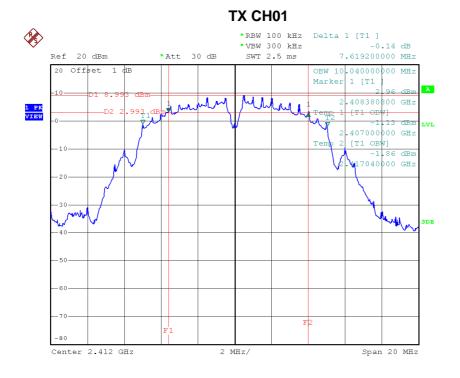




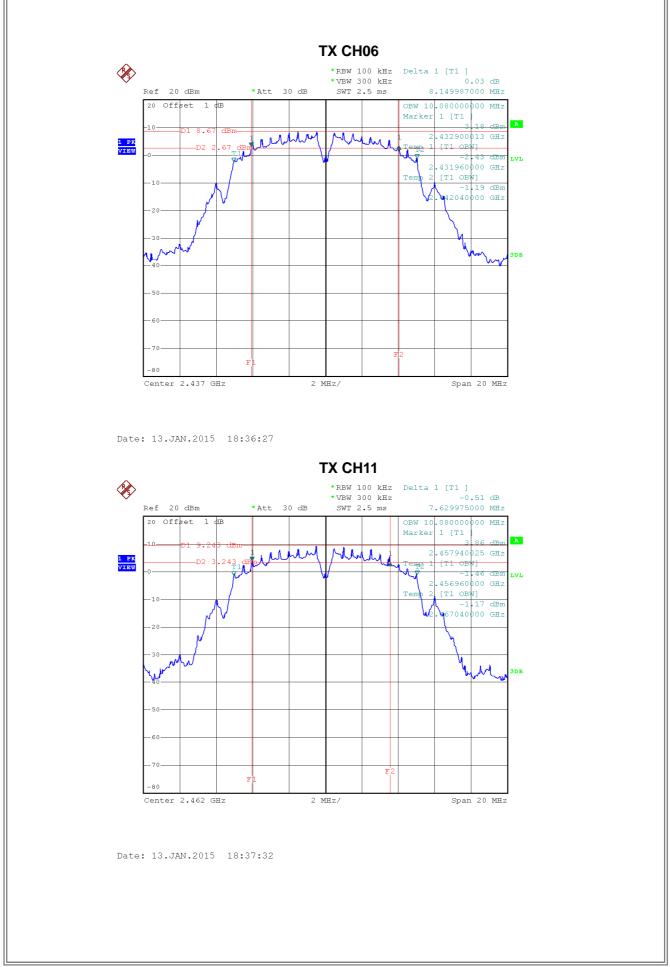
ATTACHMENT E - BANDWIDTH

Test Mode : TX B Mode_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	7.62	10.04	500	Complies
2437	8.15	10.08	500	Complies
2462	7.63	10.08	500	Complies

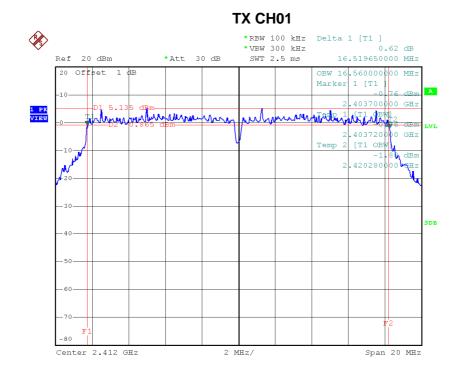


Date: 13.JAN.2015 18:35:27

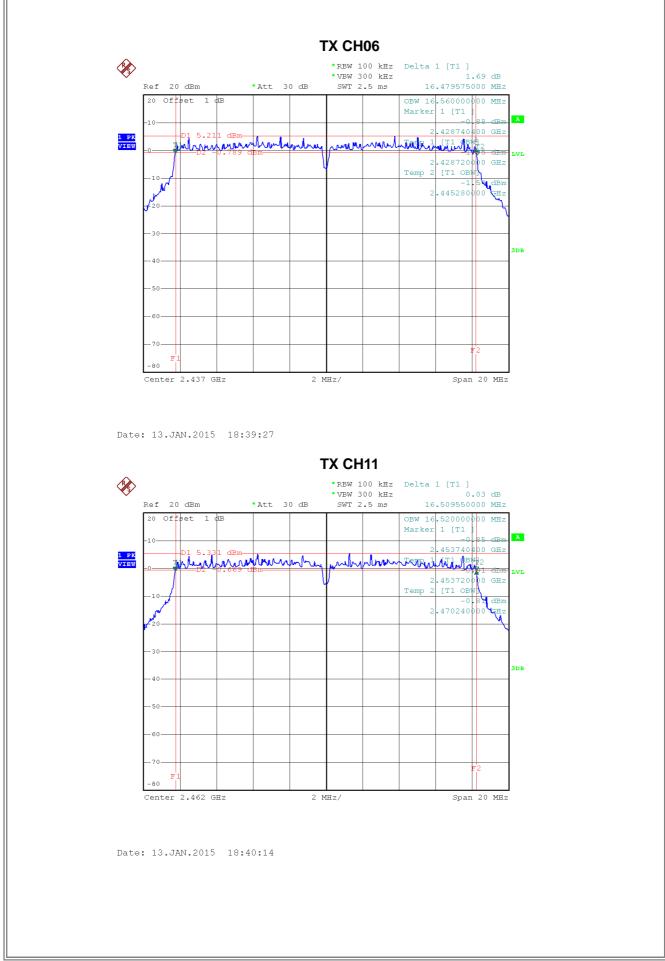


Test Mode: TX G Mode_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	16.52	16.56	500	Complies
2437	16.48	16.56	500	Complies
2462	16.51	16.52	500	Complies

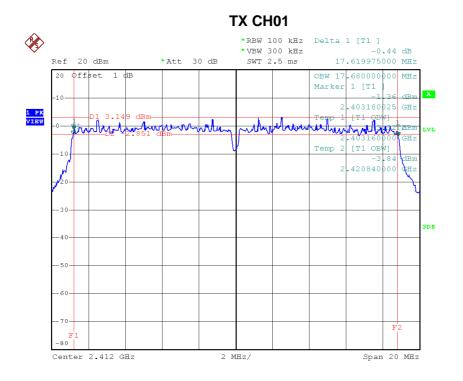


Date: 13.JAN.2015 18:38:25

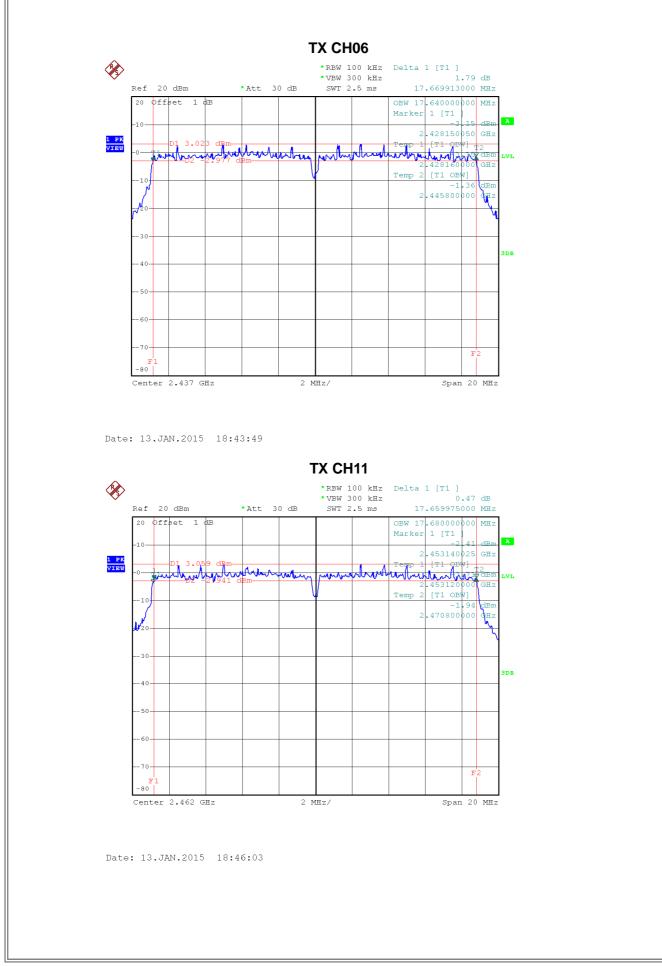


Test Mode : TX N-20MHz Mode_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	17.62	17.68	500	Complies
2437	17.67	17.64	500	Complies
2462	17.66	17.68	500	Complies

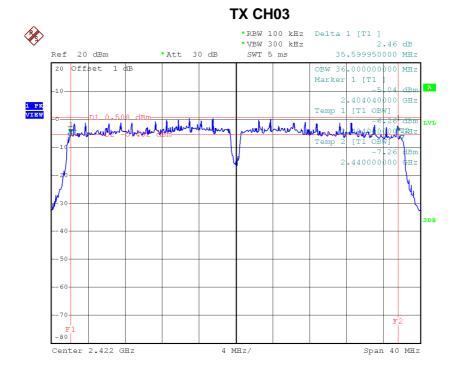


Date: 13.JAN.2015 18:41:48

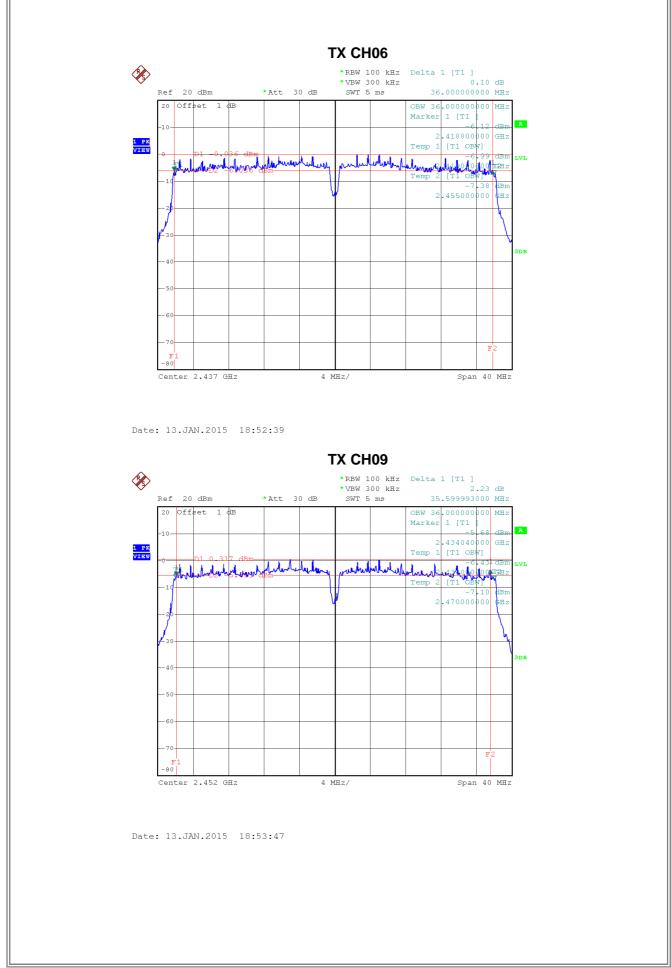


Test Mode : TX N-40MHz Mode_C	CH03/06/09
-------------------------------	------------

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2422	35.60	36.00	500	Complies
2437	36.00	36.00	500	Complies
2452	35.60	36.00	500	Complies



Date: 13.JAN.2015 18:50:39



ATTACHMENT F – MAXIMUM PEAK CONDUCTED OUTPUT POWER

Test Mode :TX B Mode	_CH01/06/11_ANT 1
----------------------	-------------------

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	19.72	0.09	30.00	1.00	Complies
2437	19.26	0.08	30.00	1.00	Complies
2462	19.36	0.09	30.00	1.00	Complies

Test Mode :TX G Mode_CH01/06/11_ANT 1

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	25.12	0.33	30.00	1.00	Complies
2437	25.37	0.34	30.00	1.00	Complies
2462	25.38	0.35	30.00	1.00	Complies

Test Mode :TX N20 Mode_CH01/06/11_ANT 1

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	24.16	0.26	30.00	1.00	Complies
2437	24.20	0.26	30.00	1.00	Complies
2462	24.25	0.27	30.00	1.00	Complies

Test Mode :TX N20 Mode_CH01/06/11_ANT 2

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	23.43	0.22	30.00	1.00	Complies
2437	23.54	0.23	30.00	1.00	Complies
2462	23.63	0.23	30.00	1.00	Complies

Test Mode :TX N20 Mode_CH01/06/11_Total

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	26.82	0.48	30.00	1.00	Complies
2437	26.89	0.49	30.00	1.00	Complies
2462	26.96	0.50	30.00	1.00	Complies

Test Mode :TX N40 Mode_CH03/06/09_ANT 1

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2422	24.02	0.25	30.00	1.00	Complies
2437	24.22	0.26	30.00	1.00	Complies
2452	24.17	0.26	30.00	1.00	Complies

Test Mode :TX N40 Mode_CH03/06/09_ANT 2

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2422	23.37	0.22	30.00	1.00	Complies
2437	23.45	0.22	30.00	1.00	Complies
2452	23.35	0.22	30.00	1.00	Complies

Test Mode :TX N40 Mode_CH03/06/09_Total

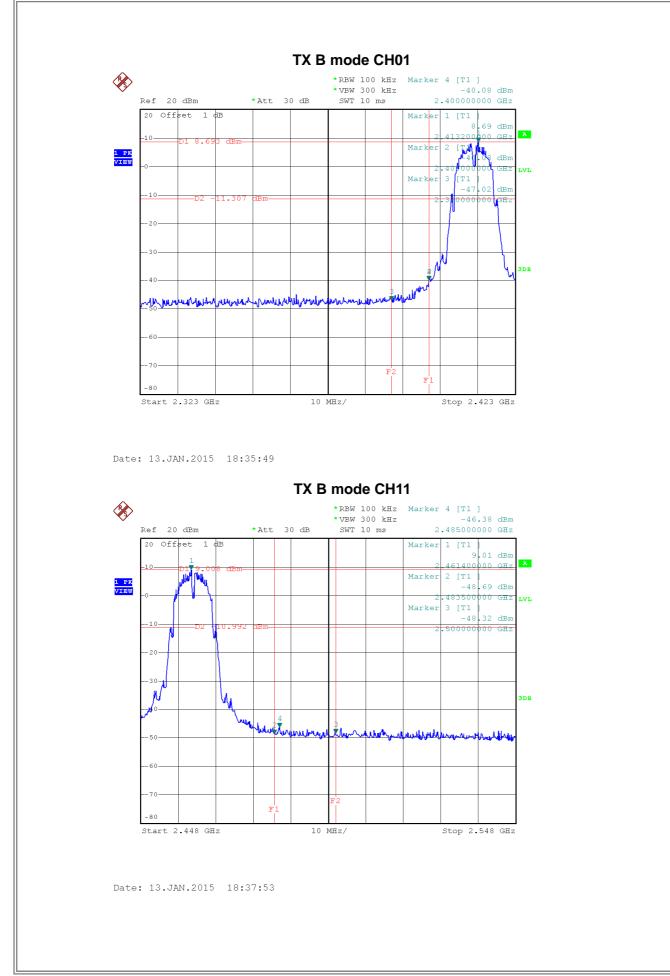
Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2422	26.72	0.47	30.00	1.00	Complies
2437	26.86	0.49	30.00	1.00	Complies
2452	26.79	0.48	30.00	1.00	Complies

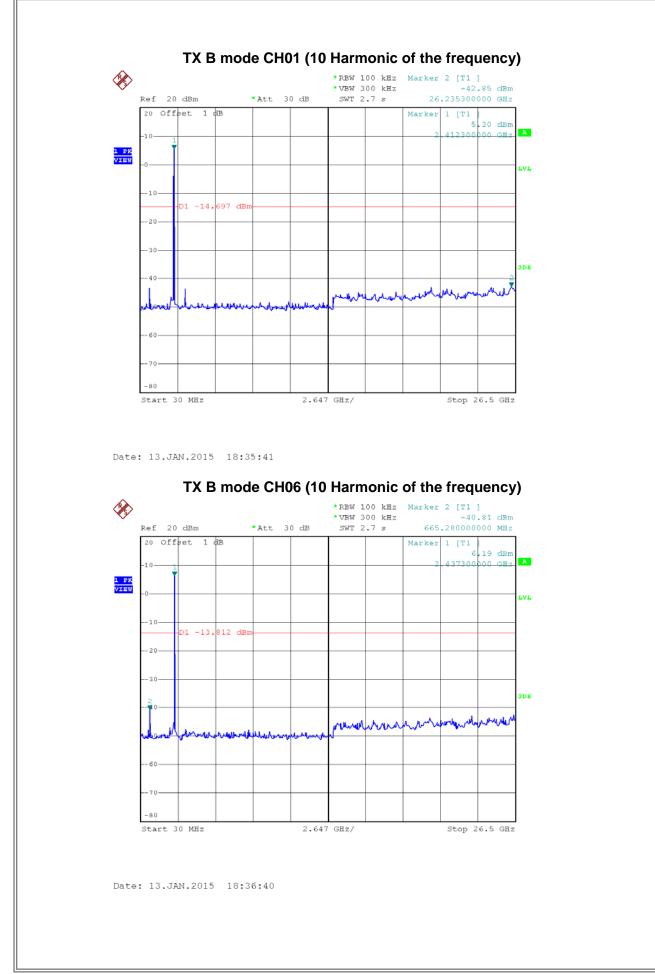
ATTACHMENT G - ANTENNA CONDUCTED SPURIOUS EMISSION

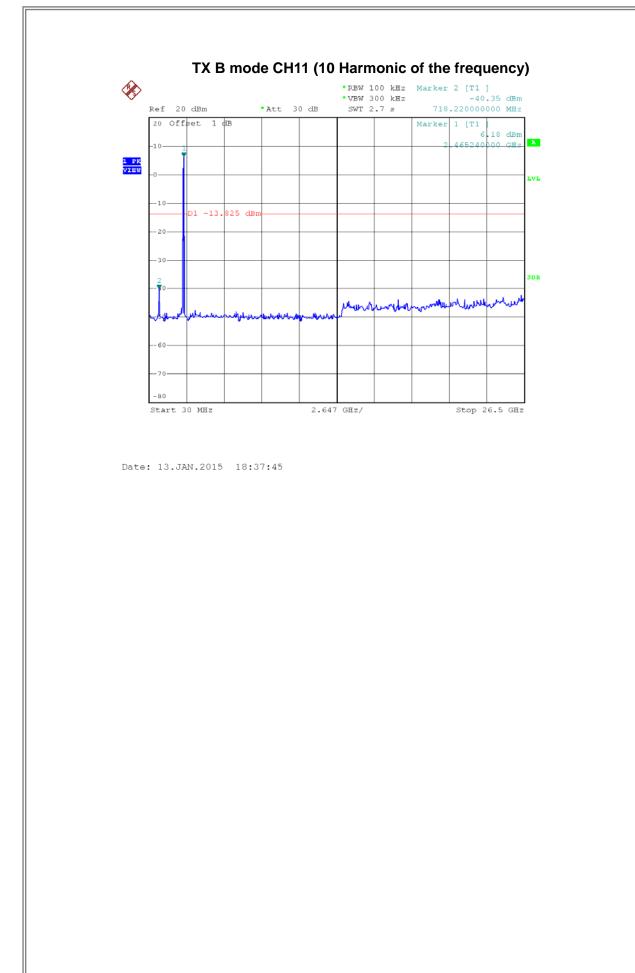


Test Mode :	TX B Mode	

In

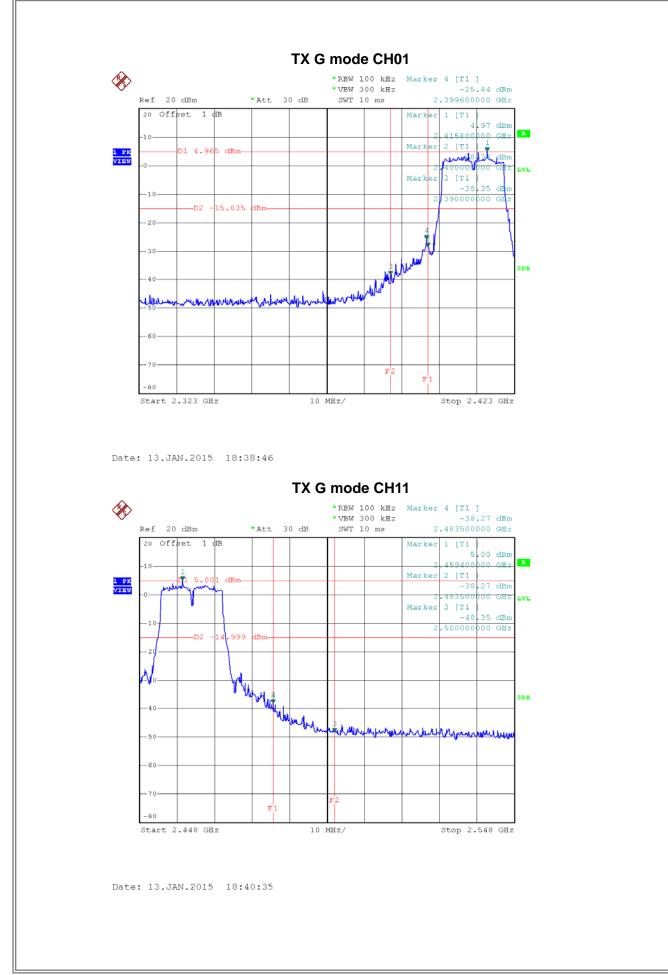


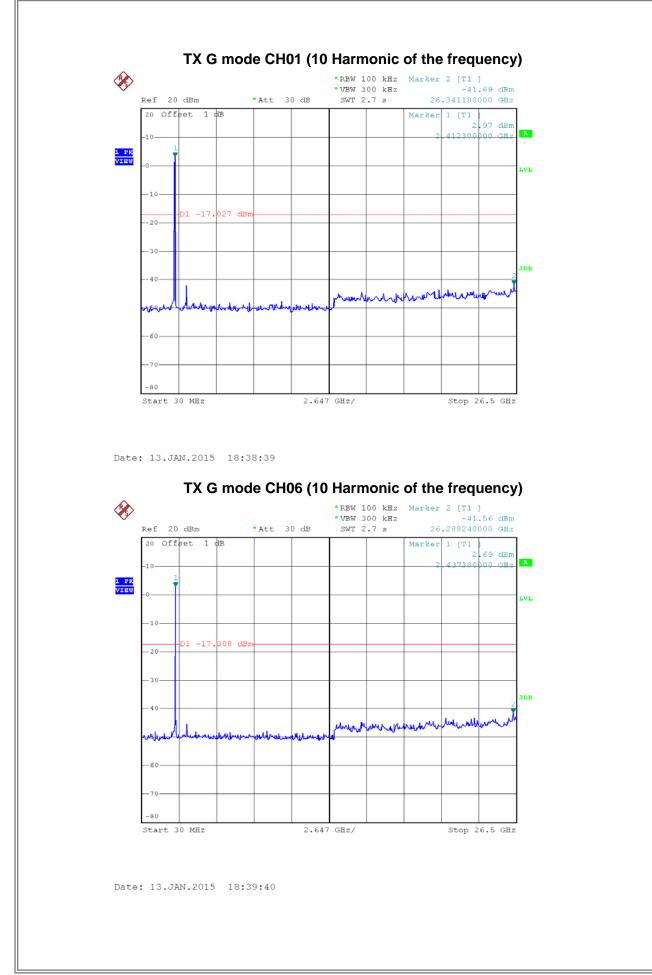


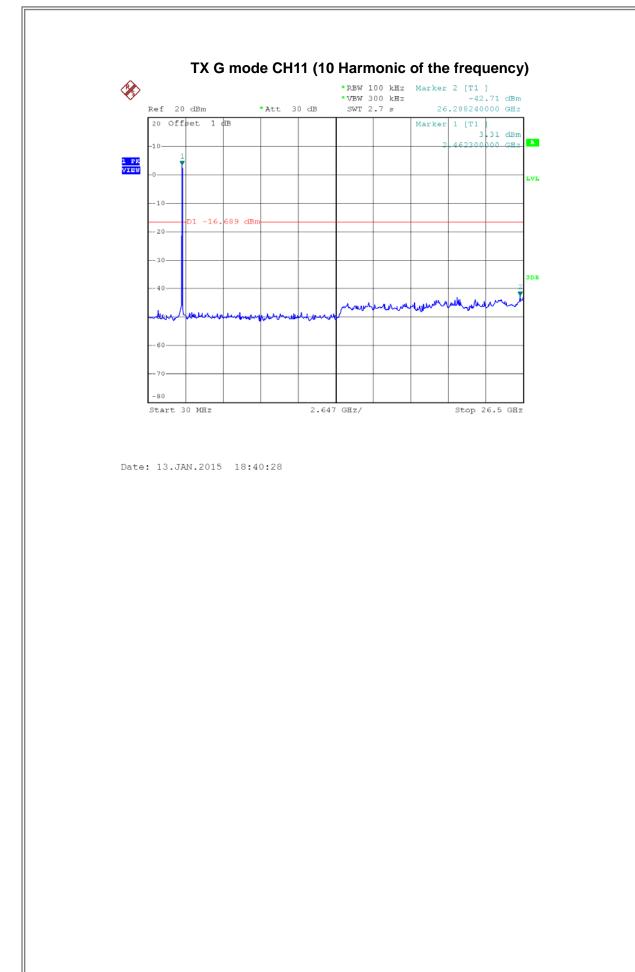




Test Mo	ode :	TX G Mode

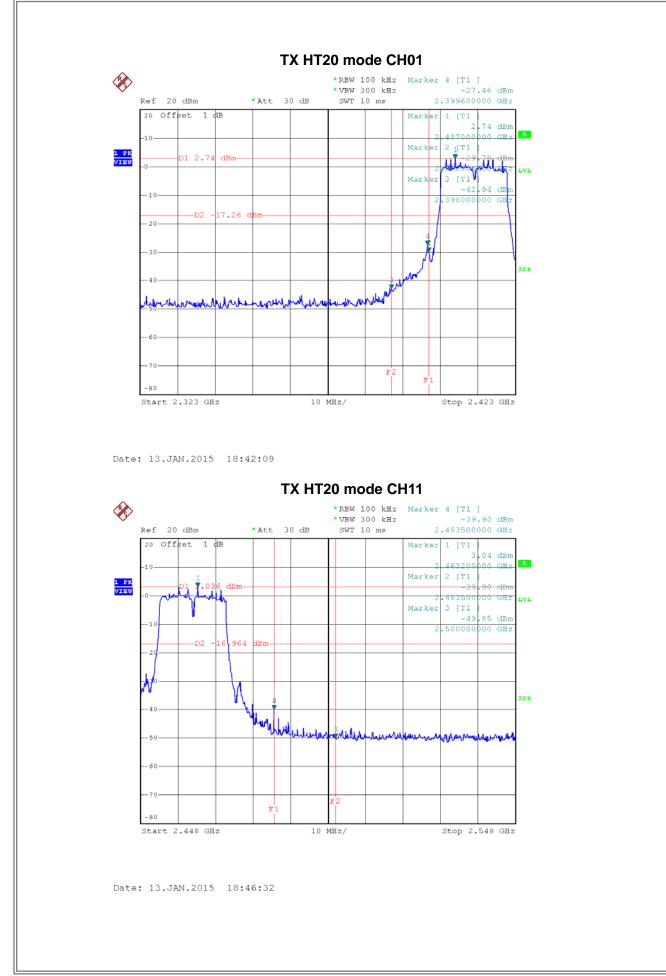


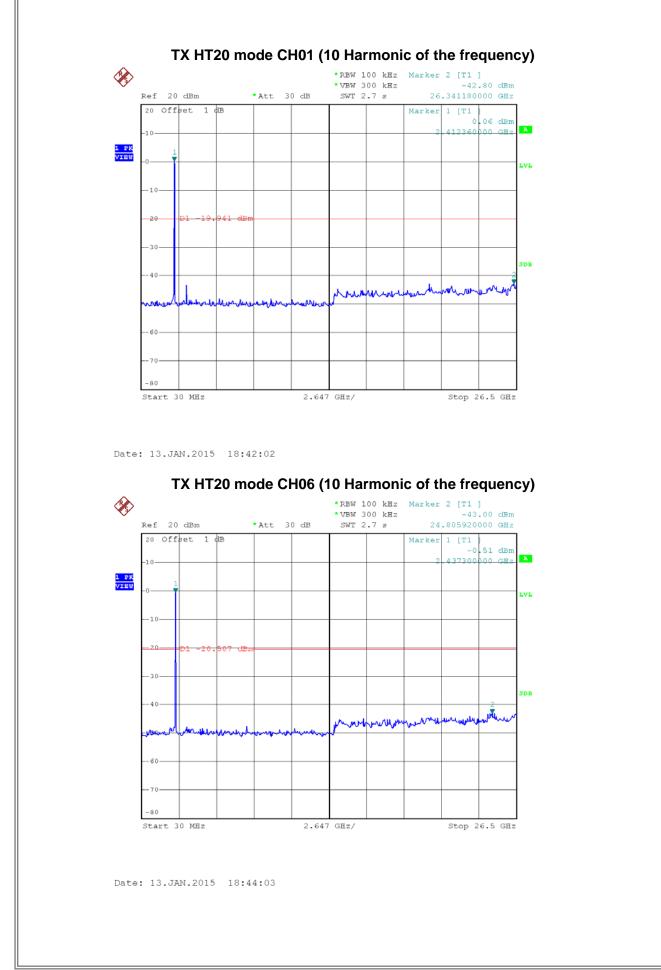


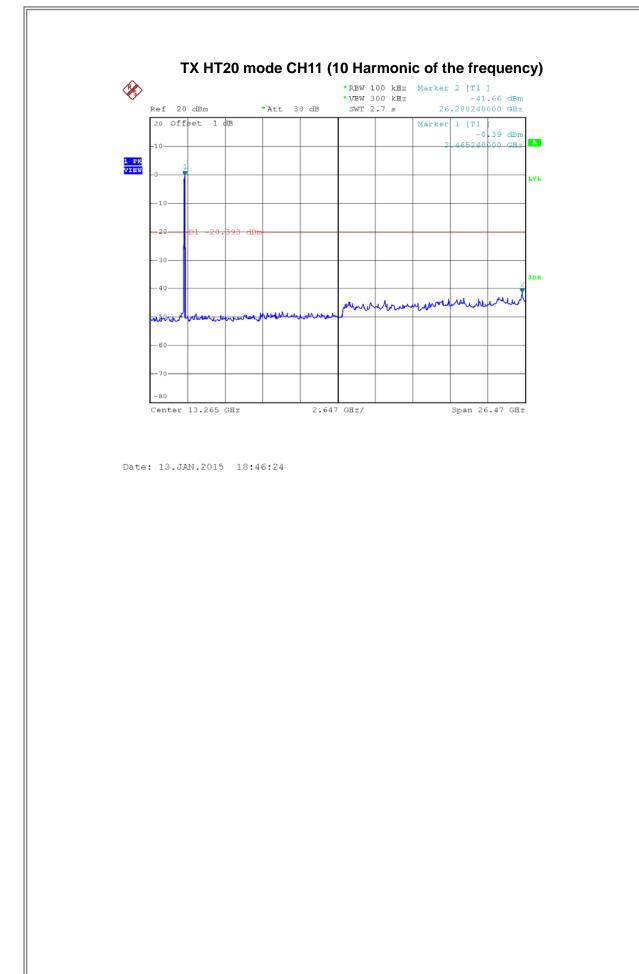




Test Mode :	TX N-20M Mode_ANT 1	
Test Mode .		
Report No [·] BTI -I	FCCP-1-1501C010	Page 113 of 14

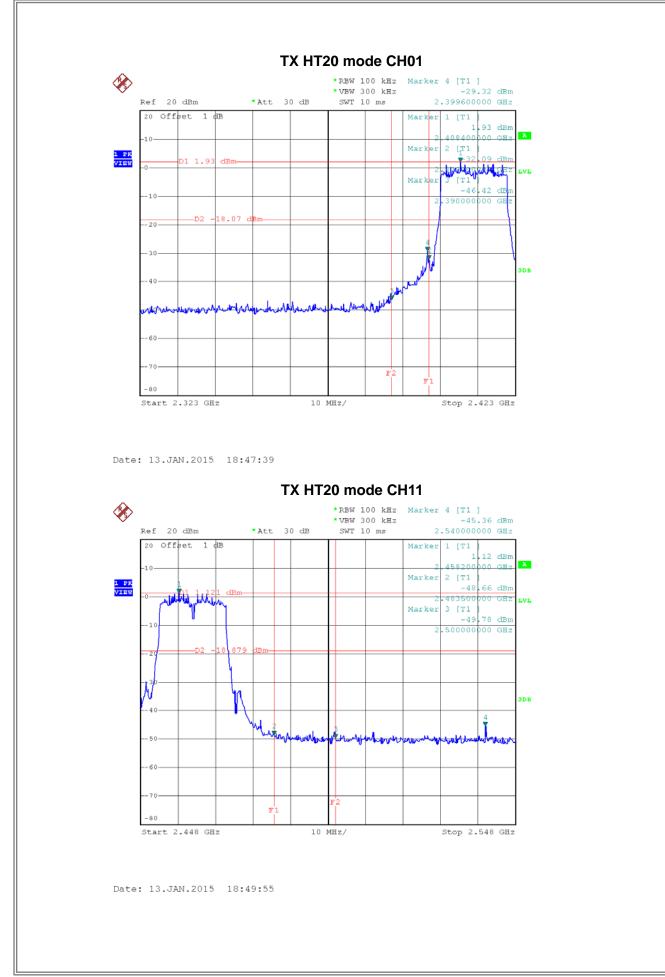


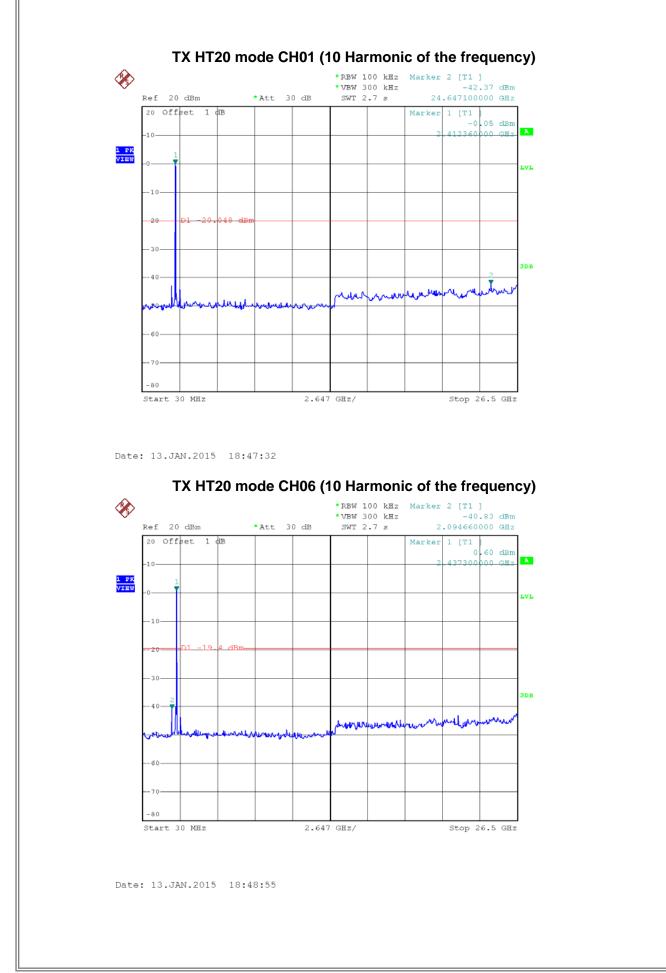


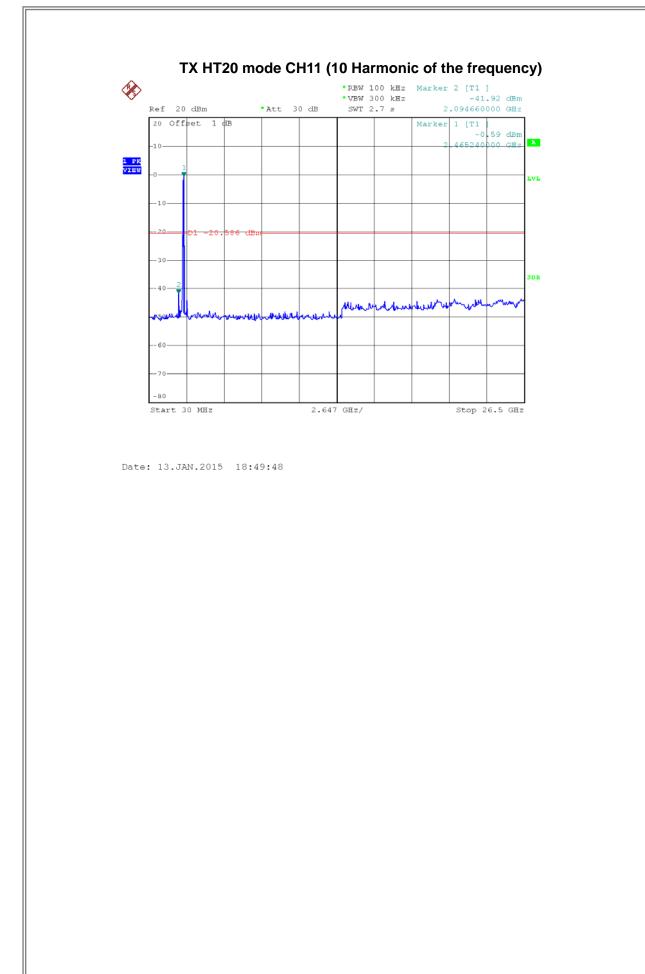




Test Mode :	TX N-20M Mode_ANT 2	

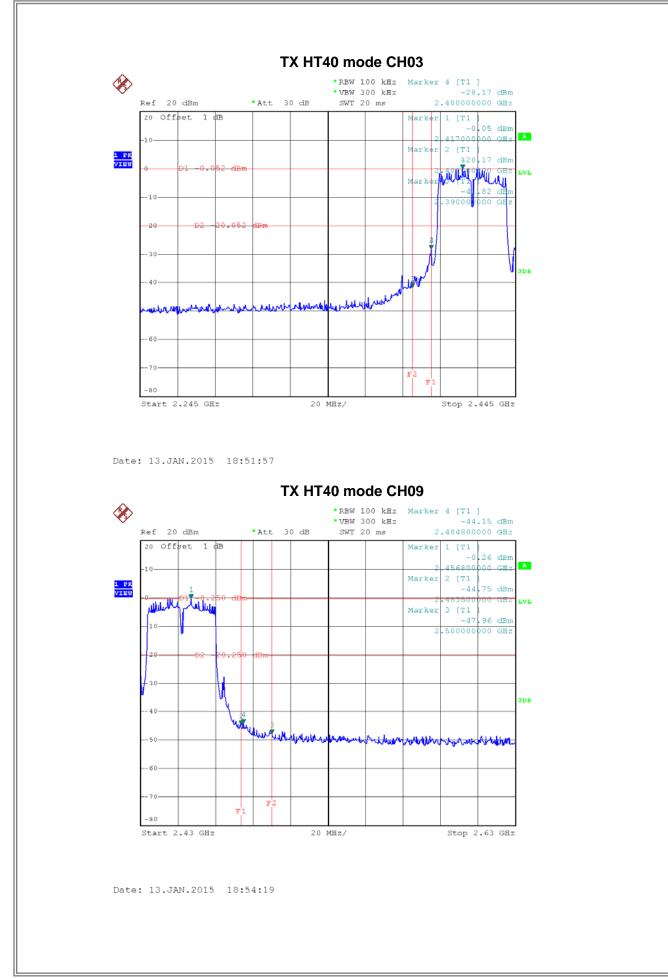


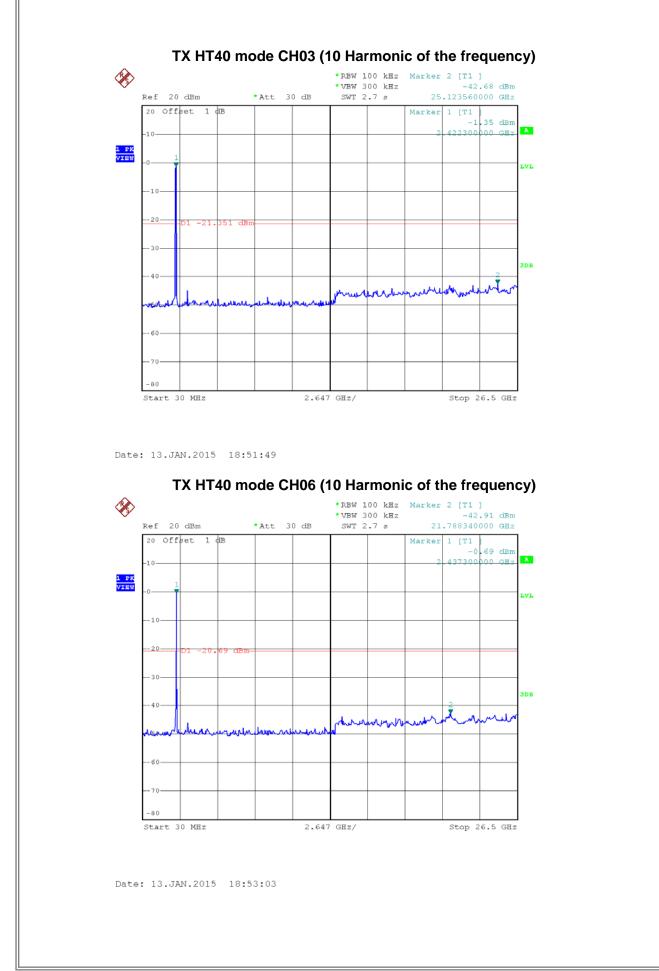


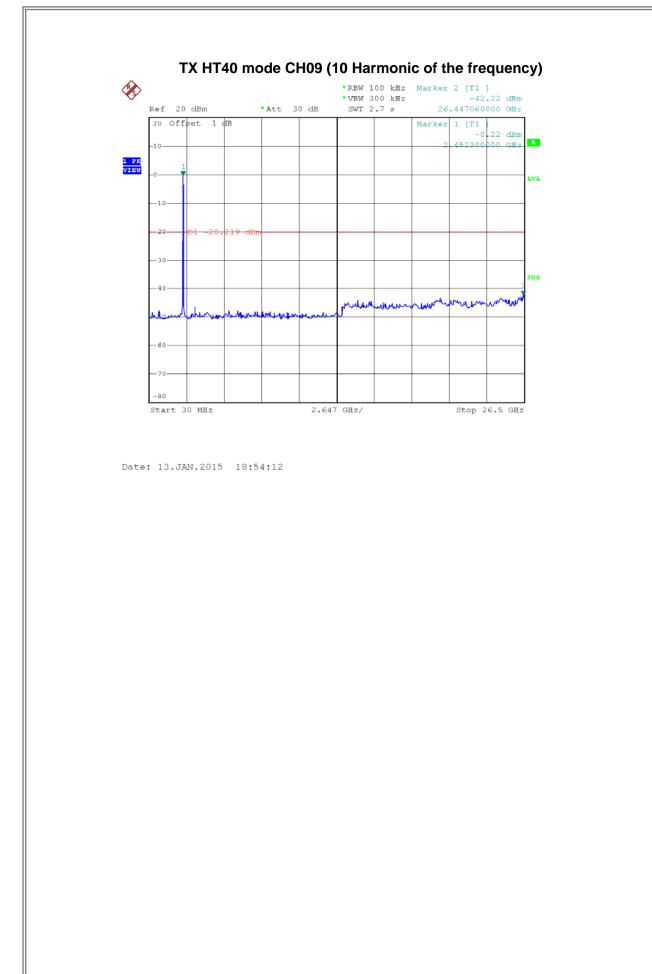




Test Mode :	TX N-40M Mode_ANT 1

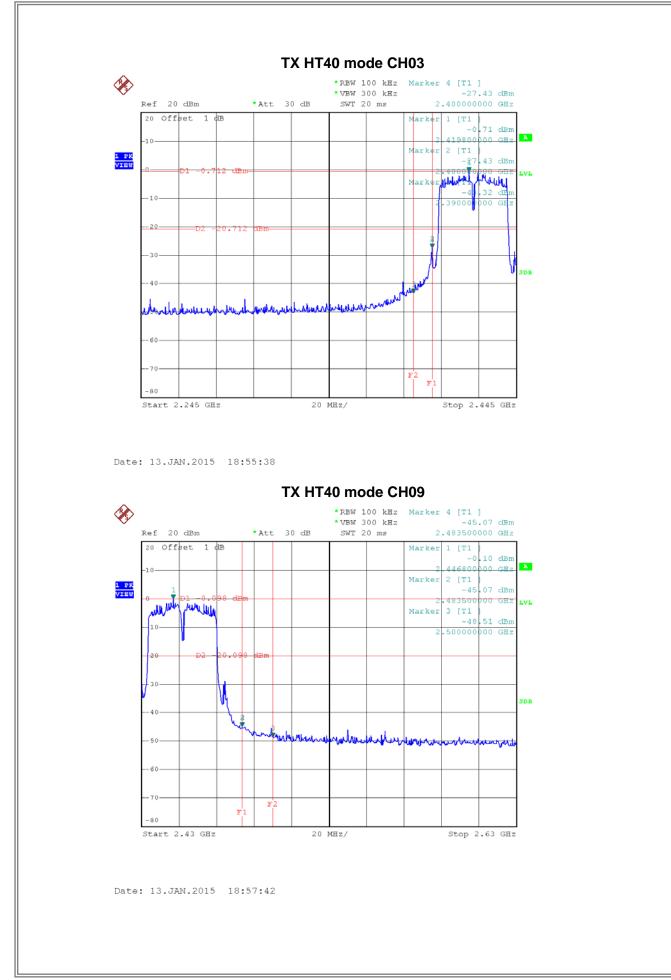


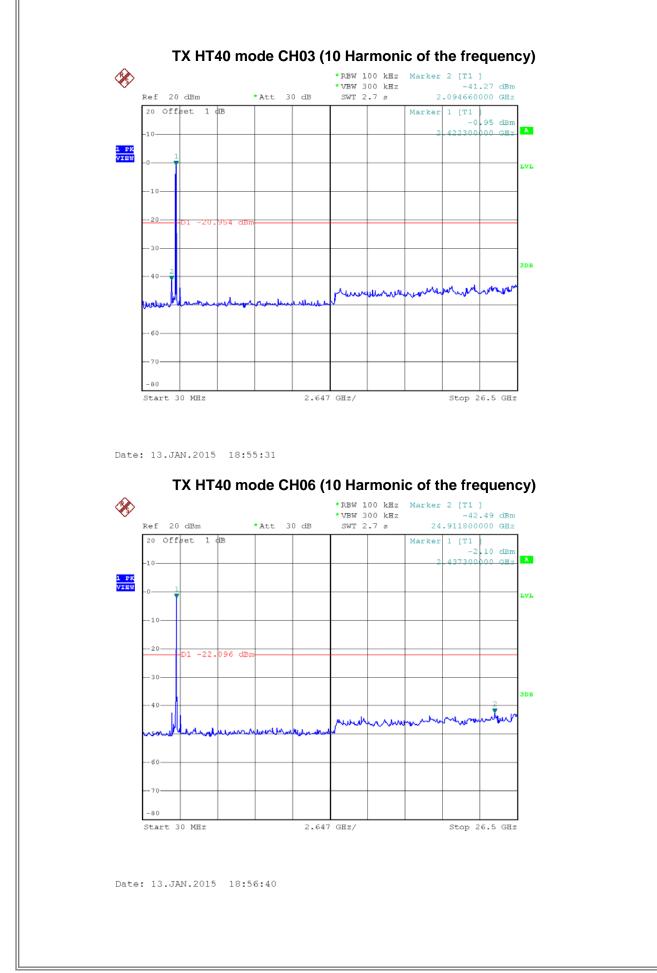


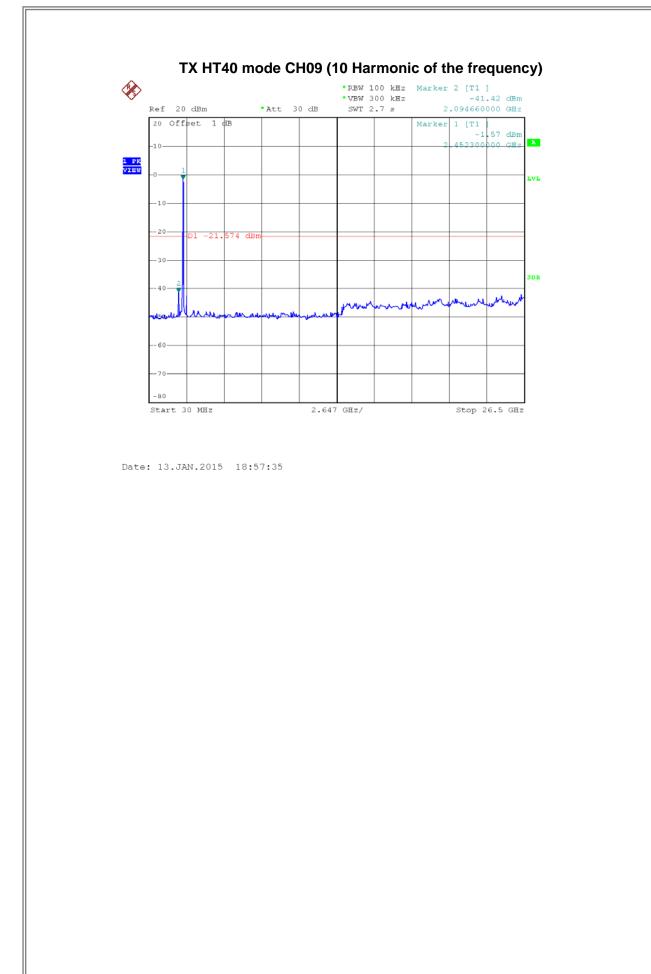




Test Mod	le : TX N-40M M	lode_ANT 2		



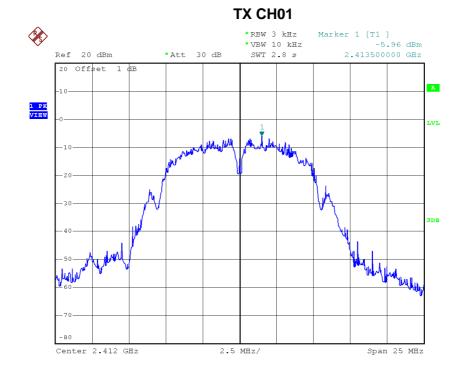




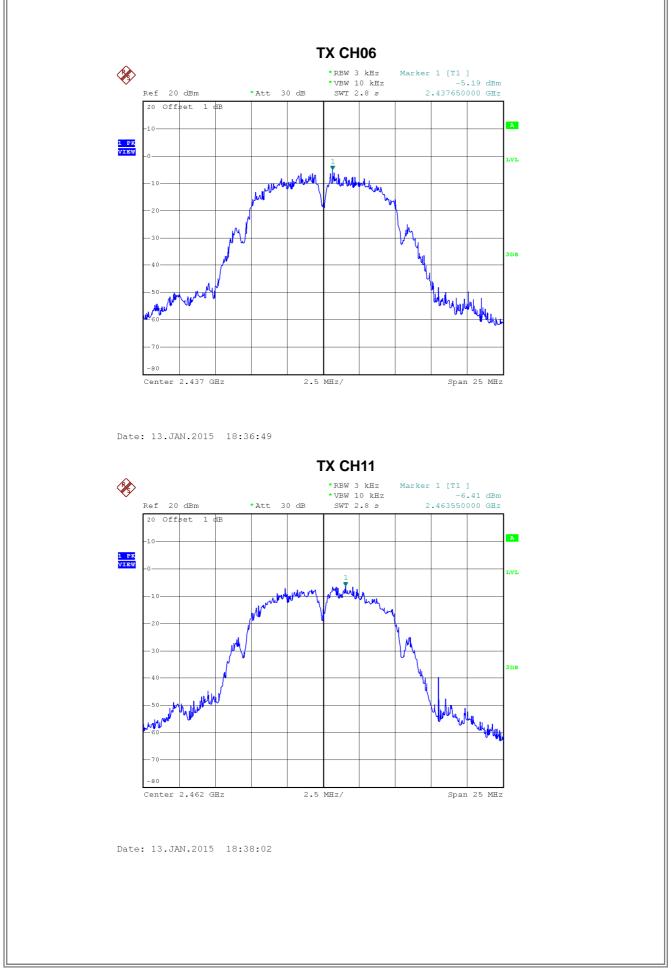
ATTACHMENT H - POWER SPECTRAL DENSITY

Test Mode :TX B Mode_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-5.96	0.25	8.00	Complies
2437	-5.19	0.30	8.00	Complies
2462	-6.41	0.23	8.00	Complies

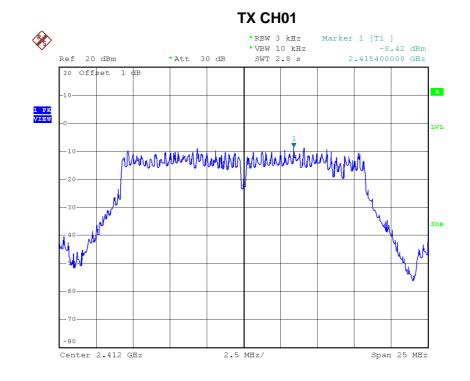


Date: 13.JAN.2015 18:35:57

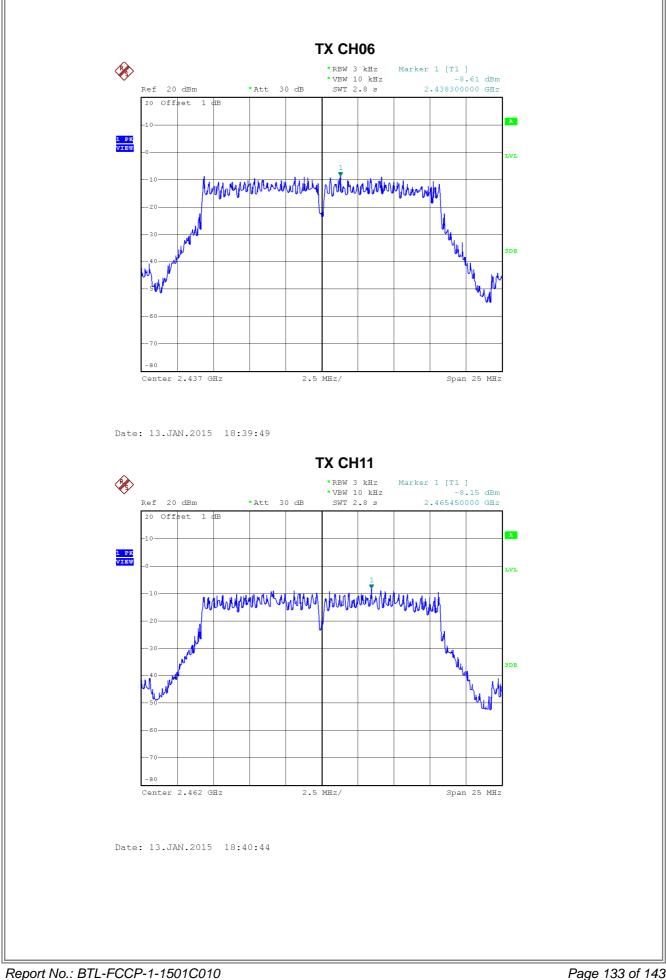


Test Mode :TX G Mode_CH01/06/11

Frequenc (MHz)	y Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-8.42	0.14	8.00	Complies
2437	-8.61	0.14	8.00	Complies
2462	-8.15	0.15	8.00	Complies

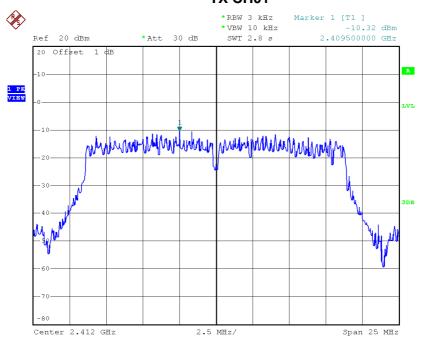


Date: 13.JAN.2015 18:38:55



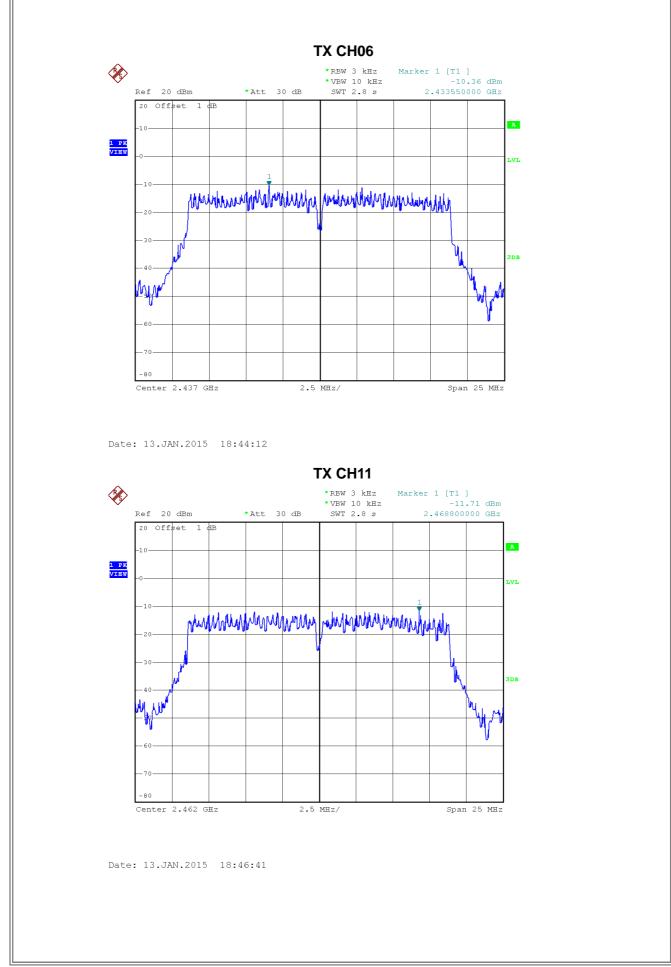
Test Mode : TX N-20M Mode_CH01/06/11_ANT 1

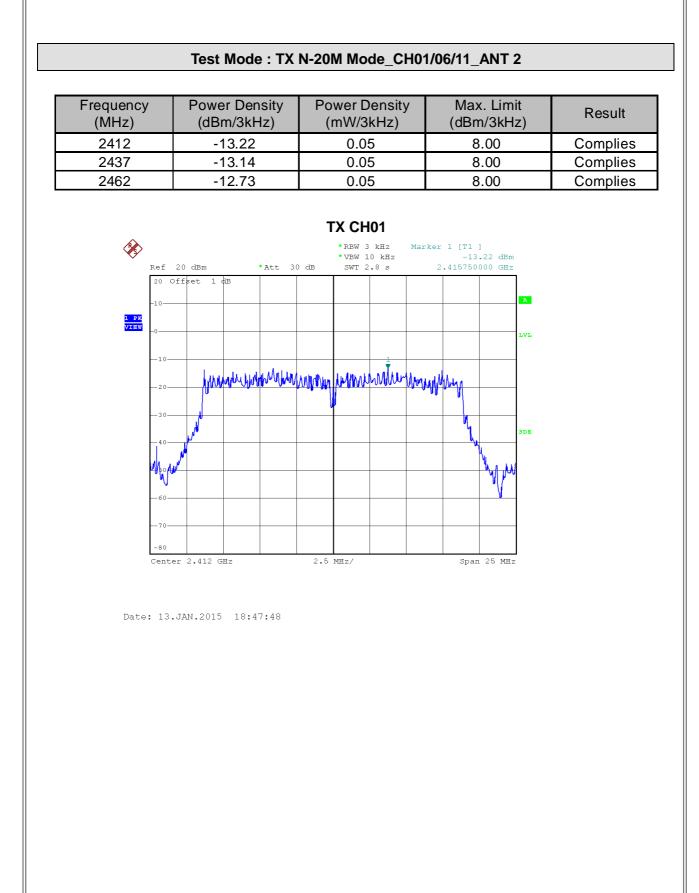
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-10.32	0.09	8.00	Complies
2437	-10.36	0.09	8.00	Complies
2462	-11.71	0.07	8.00	Complies

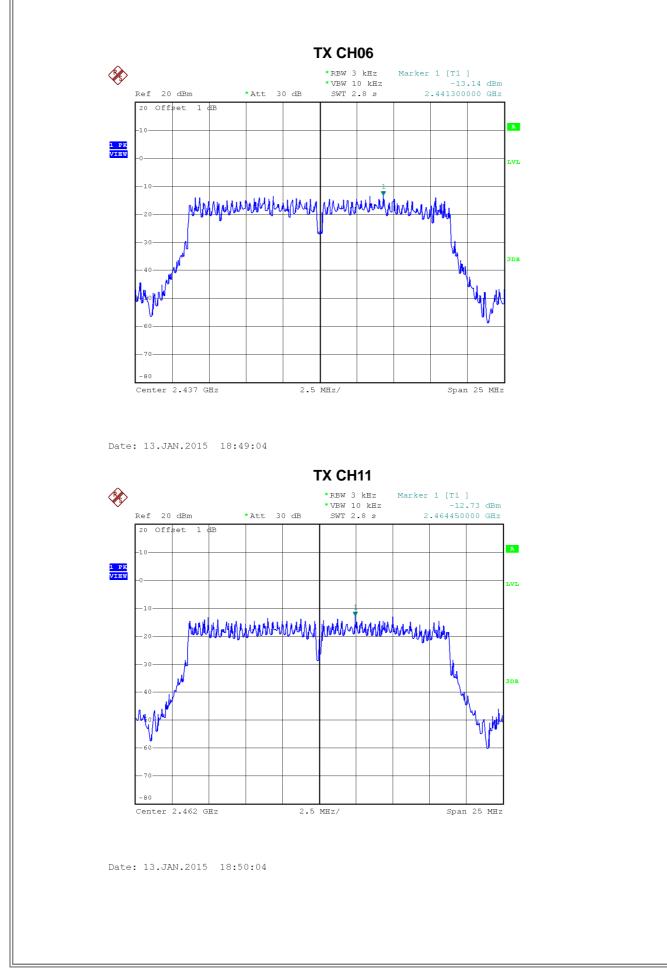


TX CH01

Date: 13.JAN.2015 18:42:18

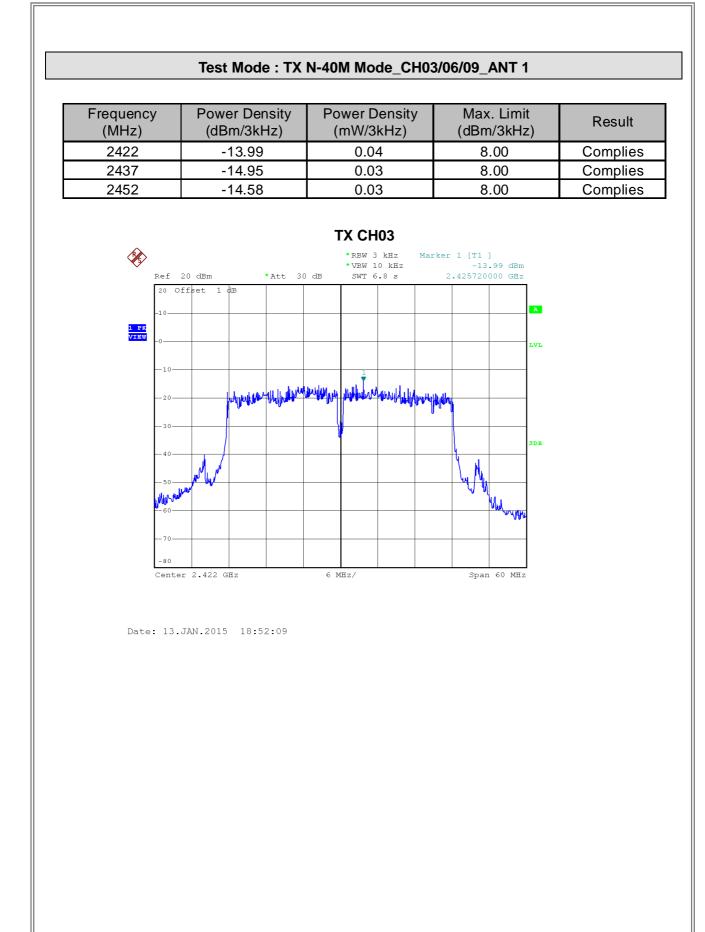




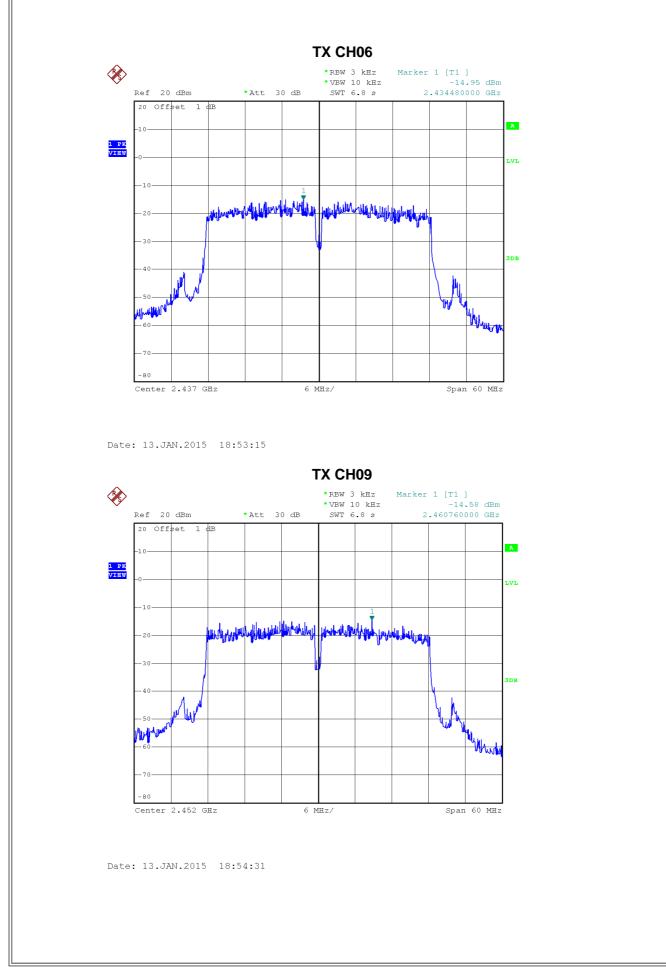


Test Mode : TX N-20M Mode	_CH01/06/11_Total
---------------------------	-------------------

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-8.52	0.14	8.00	Complies
2437	-8.52	0.14	8.00	Complies
2462	-9.18	0.12	8.00	Complies

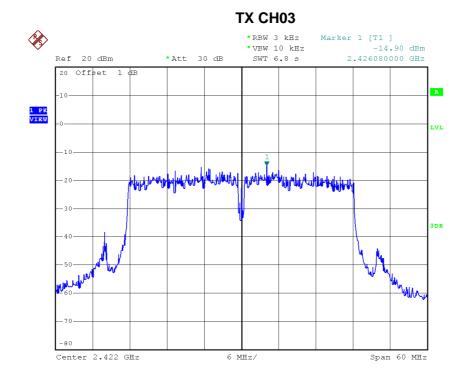


Report No.: BTL-FCCP-1-1501C010

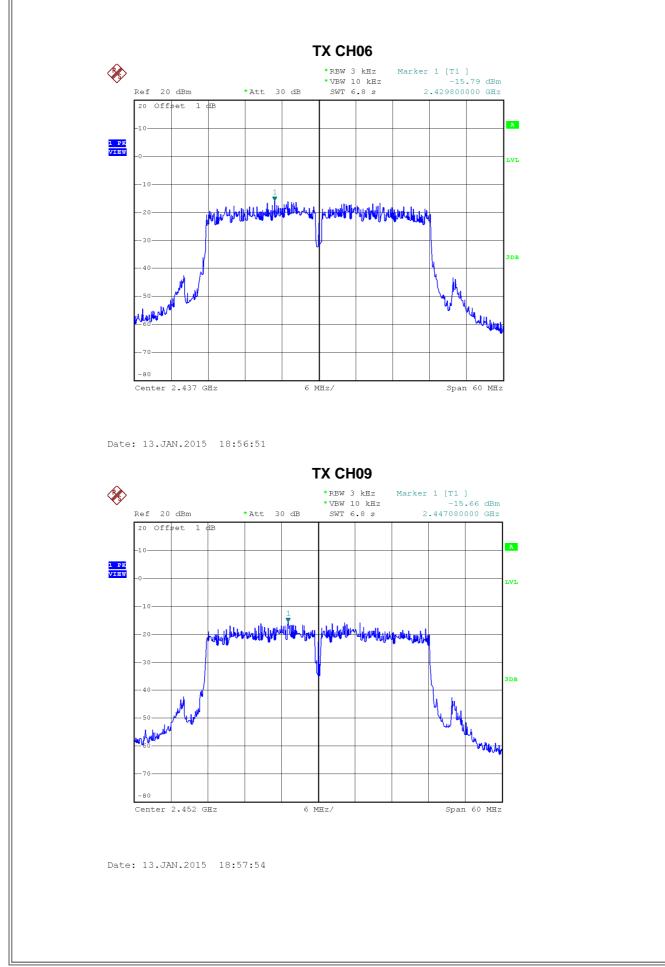


Test Mode : TX N-40M Mode_	CH03/06/09_ANT 2
----------------------------	------------------

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2422	-14.90	0.03	8.00	Complies
2437	-15.79	0.03	8.00	Complies
2452	-15.66	0.03	8.00	Complies



Date: 13.JAN.2015 18:55:50



Test Mode : TX N-40M Mode	_CH03/06/09_	Total
---------------------------	--------------	-------

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2422	-11.41	0.07	8.00	Complies
2437	-12.34	0.06	8.00	Complies
2452	-12.08	0.06	8.00	Complies