This report conce	erns (check one): ⊠Original Grant ⊡Class II Change
Project No. Equipment Test Model Serial Model Applicant Address	<ul> <li>1604061</li> <li>AC1200 Dual-Band Wi-Fi Extender</li> <li>EW-7478AC</li> <li>EW-7478WAP, RE11S, RG21, RE11, RE10</li> <li>EDIMAX TECHNOLOGY CO., LTD.</li> <li>No.3, Wu-Chuan 3rd Road, Wu-Gu, New Taipei City 24891, Taiwan</li> </ul>
Date of Receipt Date of Test Issued Date Tested by	<ul> <li>Apr. 19, 2016</li> <li>Apr. 19, 2016 ~ Jun. 21, 2016</li> <li>Jun. 21, 2016</li> <li>BTL Inc.</li> </ul>
Testing Engineer	: Rush Kao (Rush Kao)
Technical Manag	er :
Authorized Signa	atory :(Andy Chiu)



# Declaration

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

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

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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-1-1604061	Original Issue.	Jun. 21, 2016

# **1. CERTIFICATION**

Equipment :	AC1200 Dual-Band Wi-Fi Extender
Brand Name :	EDIMAX
Test Model :	EW-7478AC
Serial Model:	EW-7478WAP, RE11S, RG21, RE11, RE10
Applicant :	EDIMAX TECHNOLOGY CO., LTD.
Manufacturer :	EDIMAX TECHNOLOGY CO., LTD.
Address :	No.3, Wu-Chuan 3rd Road, Wu-Gu, New Taipei City 24891, Taiwan
Date of Test :	Apr. 19, 2016 ~ Jun. 21, 2016
Test Sample :	Production Sample
Standard(s) :	FCC Part15, Subpart C:(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-1-1604061) 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					
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:

#### **Conducted emission Test:**

C05: (VCCI RN: C-4742; FCC RN:965108; FCC DN:TW1082) No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

#### Radiated emission Test (Below 1 GHz):

**CB11:** (VCCI RN: R-4260; FCC RN:949005; FCC DN:TW1082; IC Assigned Code:20088-2) No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

#### Radiated emission Test (Above 1 GHz):

**CB11:** (VCCI RN: G-868; FCC RN:949005; FCC DN:TW1082; IC Assigned Code:20088-2) No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

# 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 emission test:

Test Site	Method	Measurement Frequency Range	U, (dB)
C05	CISPR	150 kHz~30MHz	2.04

B. Radiated emission test:

1					
	Test Site	Method	Measurement Frequency Range	U,(dB)	
	CB11	CISPR	9kHz ~ 150kHz	4.00	
	(3m)	CIOFK	150kHz ~ 30MHz	4.00	

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
CB11 (3m)	CISPR	30MHz ~ 200MHz	V	3.06
		30MHz ~ 200MHz	Н	2.58
		200MHz ~ 1,000MHz	V	3.50
		200MHz ~ 1,000MHz	Н	3.10

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
CB11	CISPR	1GHz ~ 6GHz	V	4.14
(3m)	CISER	1GHz ~ 6GHz	Н	4.14

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
CB11	CISPR	6GHz ~ 18GHz	V	5.34
(1m)	CISER	6GHz ~ 18GHz	Н	5.34

Test Site	Method	Measurement Frequency Range	U, (dB)
CB08		18 ~ 26.5 GHz	4.66
(1m)	CISPR	26.5 ~ 40 GHz	4.74

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our  $U_{lab}$  values in CISPR 16-4-2 terminology.

Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U<sub>CISPR</sub>, as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz: 3.6 dB

Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz: 5.2 dB

It can be seen that our  $U_{lab}$  values are smaller than  $U_{CISPR}$ .

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	AC1200 Dual-Band Wi-Fi E	AC1200 Dual-Band Wi-Fi Extender	
Brand Name	EDIMAX		
Test Model	EW-7478AC		
Serial Model	EW-7478WAP, RE11S, RG	21, RE11, RE10	
Model Difference	Marketing Purpose		
EUT Power Rating	I/P: AC 100-240V 50-60Hz		
	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: 300 Mbps	
	Output Power (Max.)	802.11b: 18.54 dBm 802.11g: 26.52 dBm 802.11n(20MHz): 26.14 dBm 802.11n(40MHz): 23.55 dBm	

#### 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	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)
1		98272PRSX000	Dipole	SMA	3.19
2		98272PRSX000	Dipole	SMA	3.19

Note:

(1) The EUT incorporates a MIMO function. Physically, the EUT provides two completed two transmitters and two receivers (2T2R).

(2) Directional gain =  $G_{ANT}$  + 10 log(N) dBi = 3.19 + 10 log (2) = 6.2 dBi. Reduced value = 6.20 - 6 = 0.2 dB 4.

Operating Mode TX Mode	2TX
802.11b	V (ANT 1 + ANT 2)
802.11g	V (ANT 1 + ANT 2)
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	Normal Link

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	Normal Link	

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		MT7620 V1.0.6.0	
Frequency (MHz)	2412	2437	2462
802.11b	10	10	0B
802.11g	15	1C	15
802.11n (20MHz)	13	1C	13
Frequency	2422	2437	2452
802.11n (40MHz)	0B	13	0D



# 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.
-	-	-	-	-	-

	Item	Shielded Type	Ferrite Core	Length	Note
ſ	1	NO	NO	10m	RJ45

# 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)		
	Quasi-peak	Average	
0.15 -0.50	66 to 56*	56 to 46*	
0.50 -5.0	56	46	
5.0 -30.0	60	50	

Note:

- (1) The 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

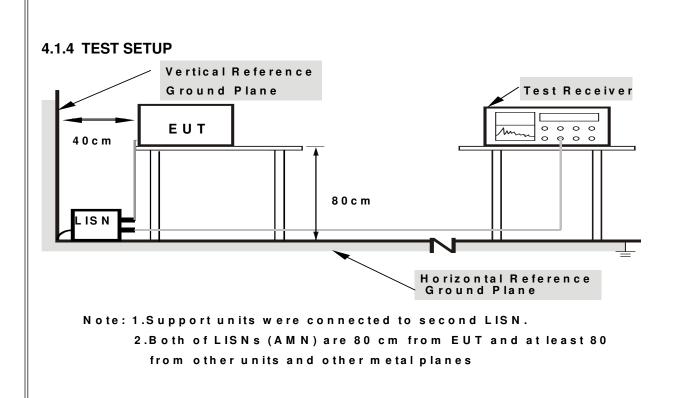
# 4.1.2 TEST PROCEDURE

- 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 placed on the test table and programmed in normal function.

# 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

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

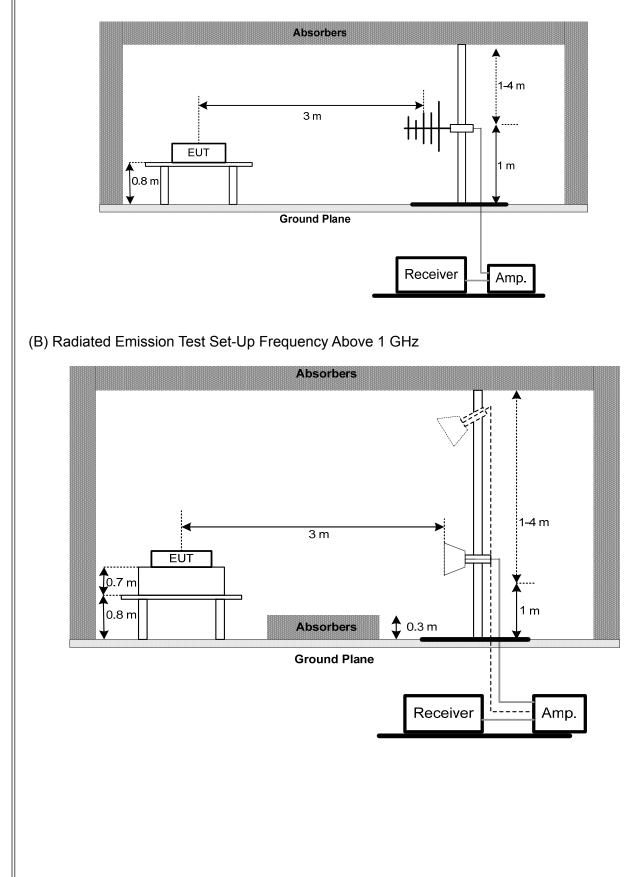
- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- b. The measuring distance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

# 4.2.3 DEVIATION FROM TEST STANDARD

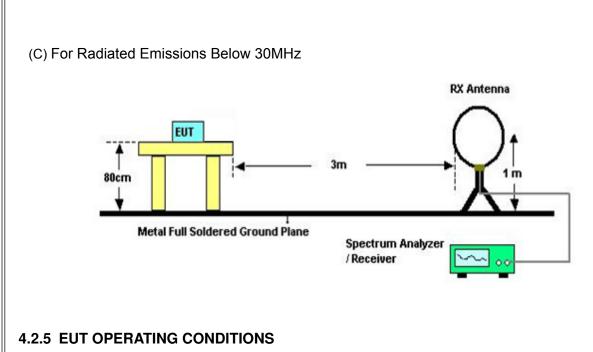
No deviation

# 4.2.4 TEST SETUP

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







The EUT was programmed to be in continuously transmitting mode.

# 4.2.6 EUT TEST CONDITIONS

Temperature: 25°C Relative Humidity: 45% Test Voltage: AC 120V/60Hz

# **B**TL

# 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 v03r04.

#### 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)	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 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

	Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	
1	TWO-LINE V-NETWORK	R&S	ENV216	101050	May 31, 2017	
2	Test Cable	TIMES	CFD300-NL	C03	Mar. 03, 2017	
3	EMI Test Receiver	R&S	ESR3	101854	Dec. 08, 2016	
4	Measurement Software	EZ	EZ_EMC (Version NB-03A)	N/A	N/A	

	Radiated Emission Measurement						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until		
1	Spectrum Analyzer	Agilent	N9038A	MY5121021 5	Jun. 06, 2017		
2	Horn Antenna	Schwarzbeck	BBHA 9120	D 546	Nov. 04, 2016		
3	Microwave Pre_amplifier	HP	8447D	2944A08891	Mar. 07, 2017		
4	Test Cable	EMCI	EMC104-SM-S M-5000	150302	Mar. 07, 2017		
5	Test Cable	EMCI	EMC104-SM-S M-800	150305	Mar. 07, 2017		
6	Test Cable	EMCI	EMC104-SM-S M-2500	150306	Mar. 07, 2017		
7	Test Cable	EMCI	EMC8D-NM-NM -8000	150301	Mar. 07, 2017		
8	Test Cable	EMCI	EMC8D-NM-NM -2500	150303	Mar. 07, 2017		
9	Test Cable	EMCI	EMC8D-NM-NM -1000	150304	Mar. 07, 2017		
10	Pre-Amplifier	Agilent	8449B	3008A02331	Jan. 23, 2017		
11	Trilog-Broadband Antenna	Schwarzbeck	VULB9168	9168-364	Feb. 03, 2017		
12	Loop Antenna	EMCO	6502	00042960	Nov. 15. 2016		



	6dB Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 17, 2017	

Peak Output Power Measurement								
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until			
1	Power Meter	Anritsu	ML2487A	6K00004714	May 18, 2017			
2	Power Meter Sensor	Anritsu	MA2491A	034138	May 17, 2017			

Antenna Conducted Spurious Emission Measurement						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 17, 2017	

Power Spectral Density Measurement						
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 17, 2017	

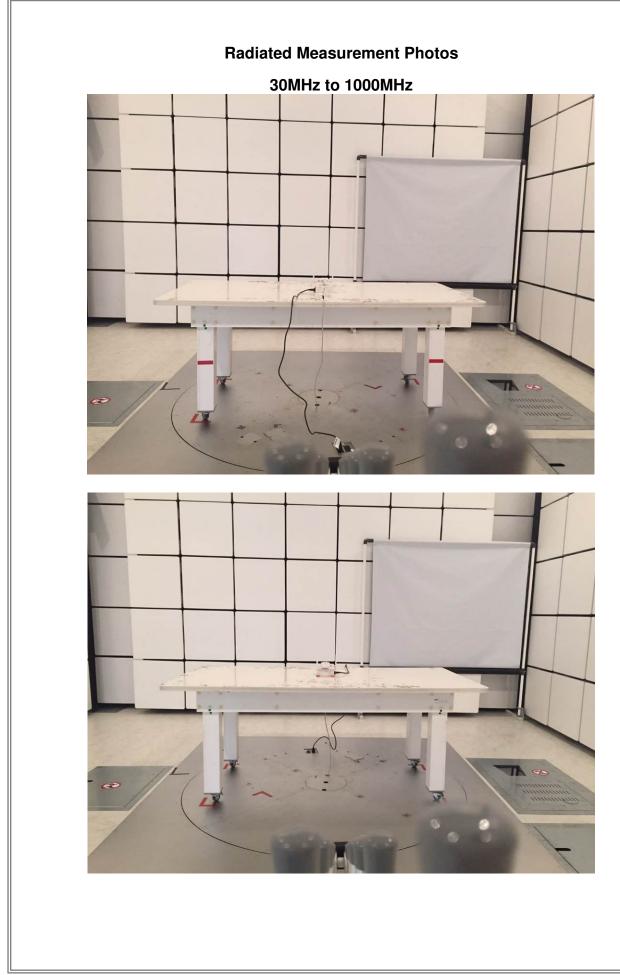
Remark: "N/A" denotes no model name, serial no. or calibration specified. All calibration period of equipment list is one year.

# **10. EUT TEST PHOTO**

**Conducted Measurement Photos** 



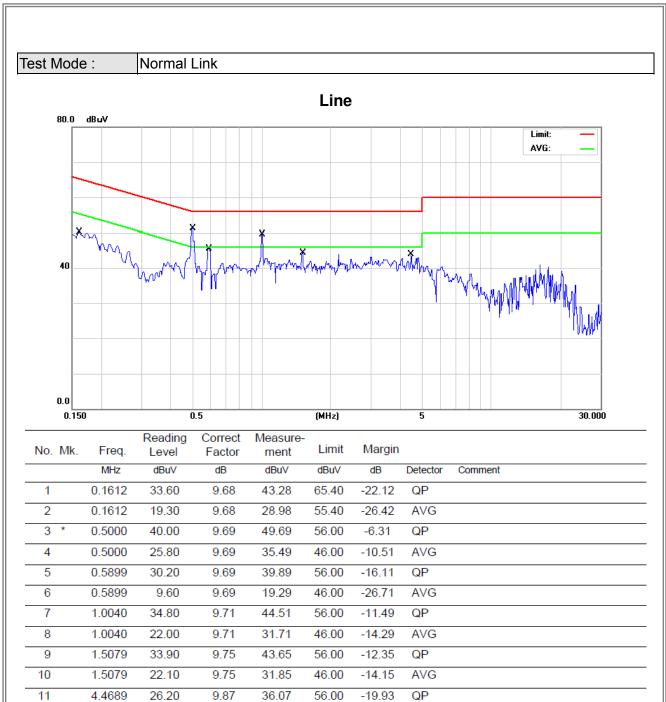






# **ATTACHMENT A - CONDUCTED EMISSION**





4.4689

17.40

9.87

27.27

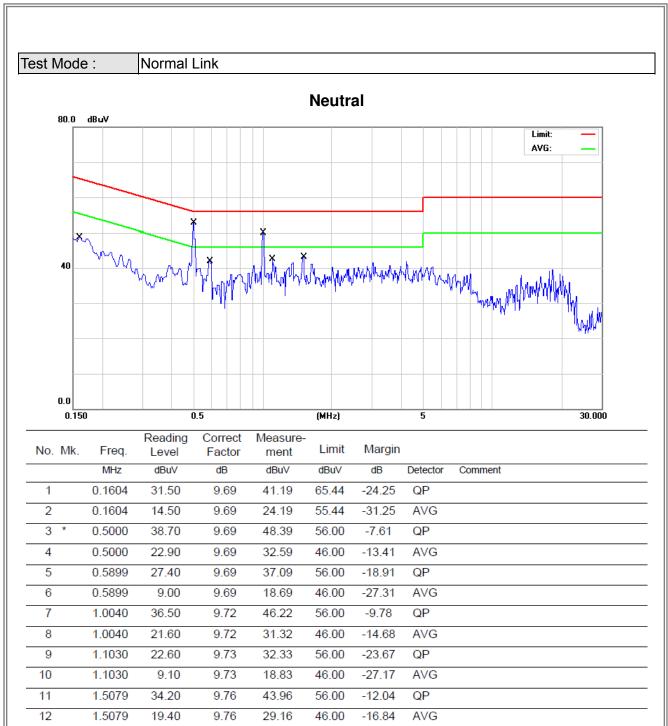
46.00

-18.73

AVG

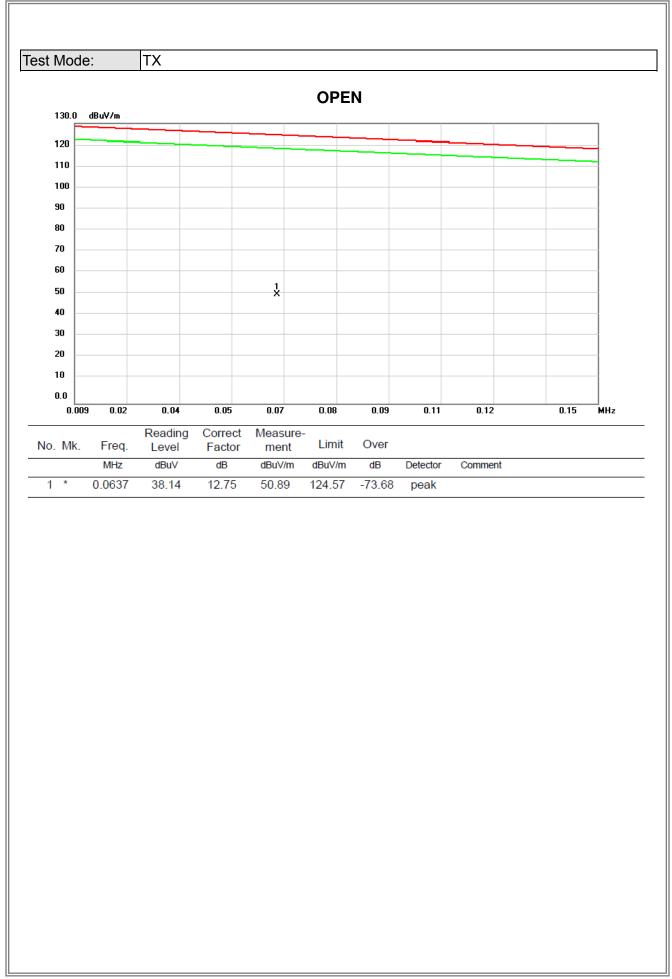
12





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

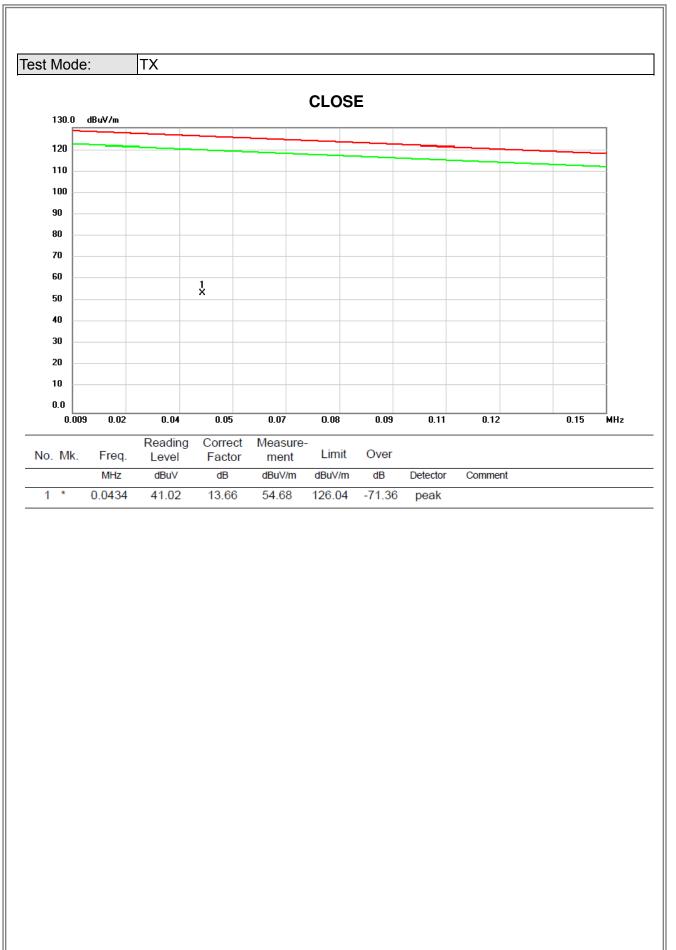










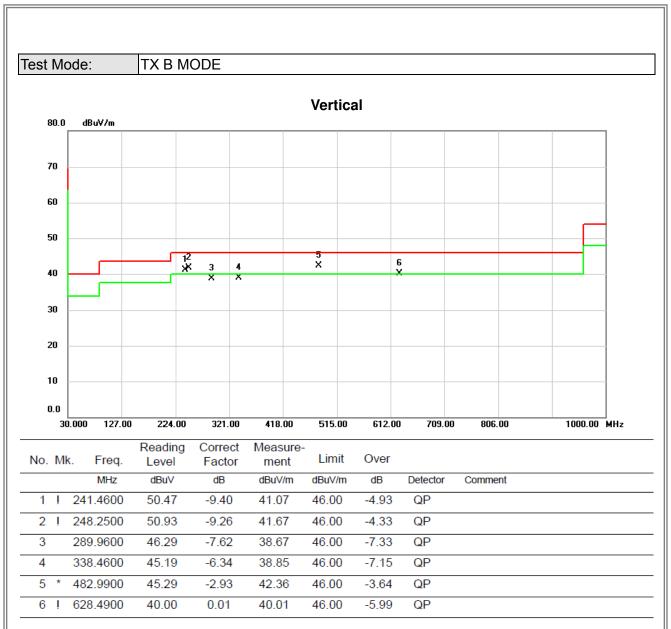




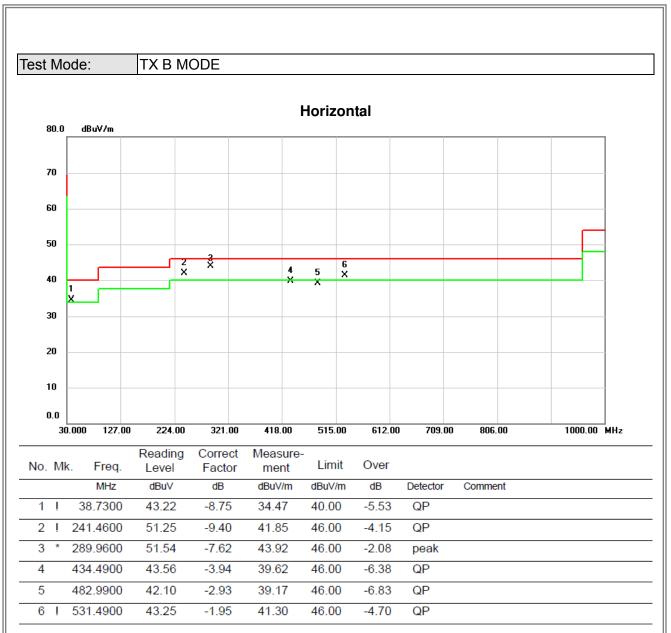


## ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)



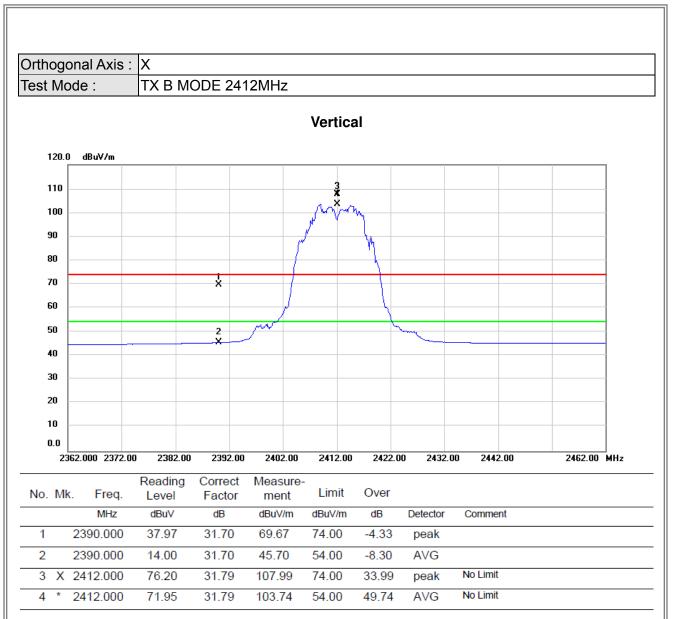




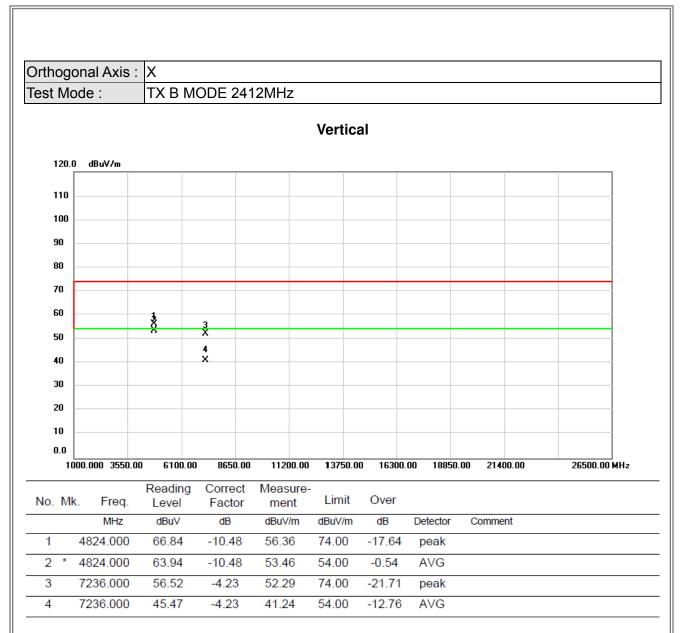


## ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)

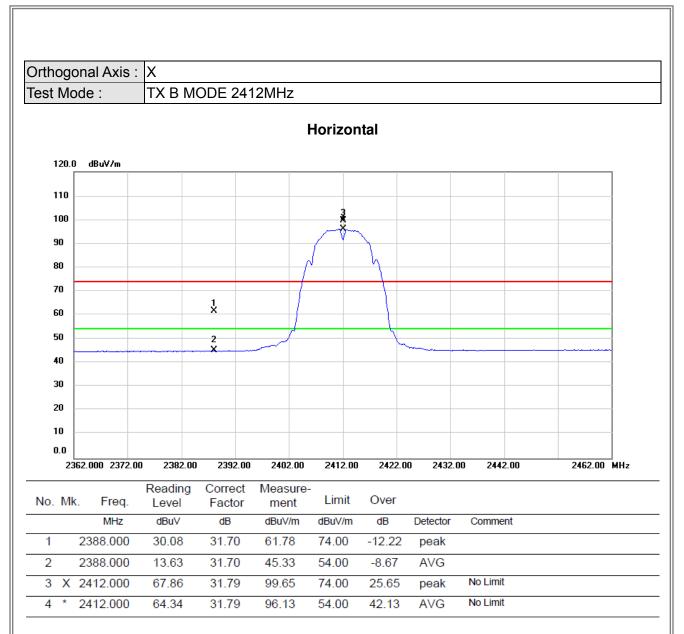




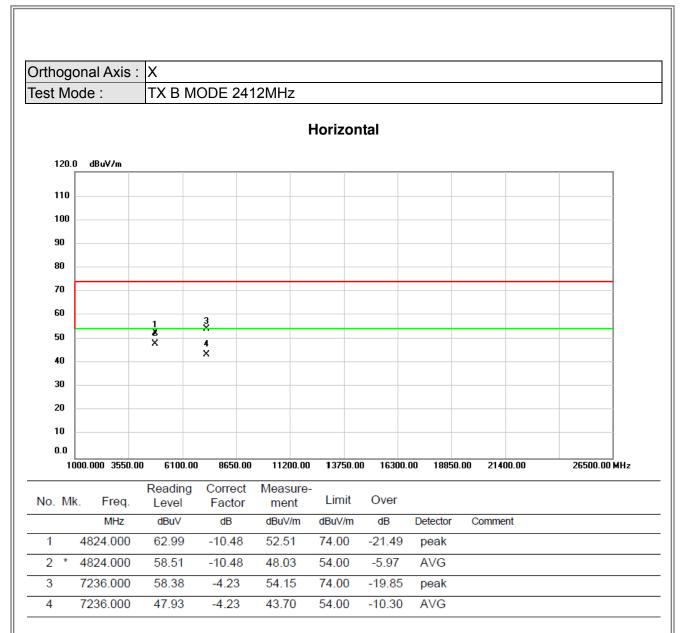




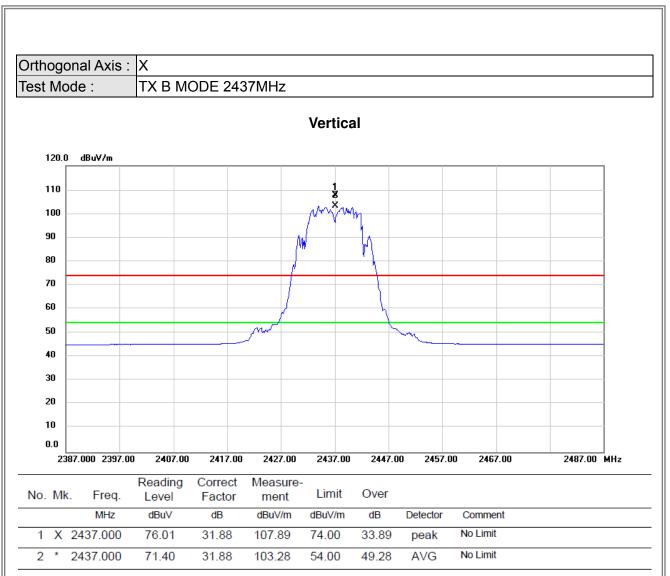




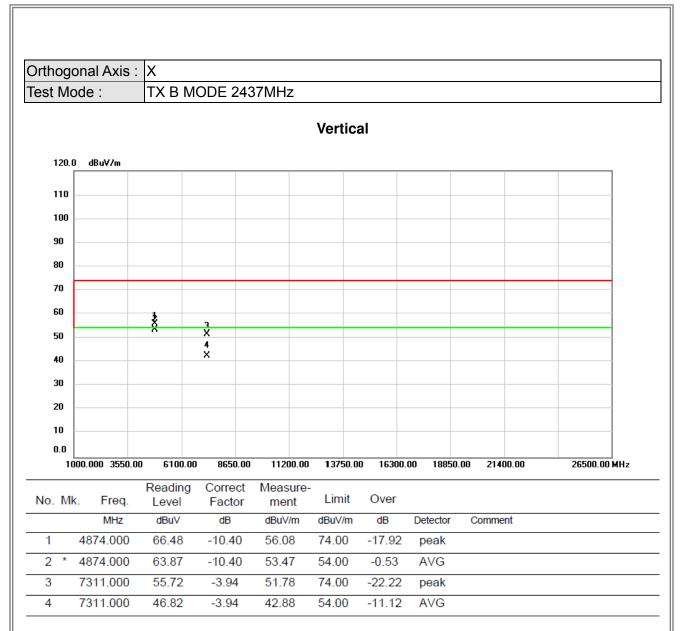




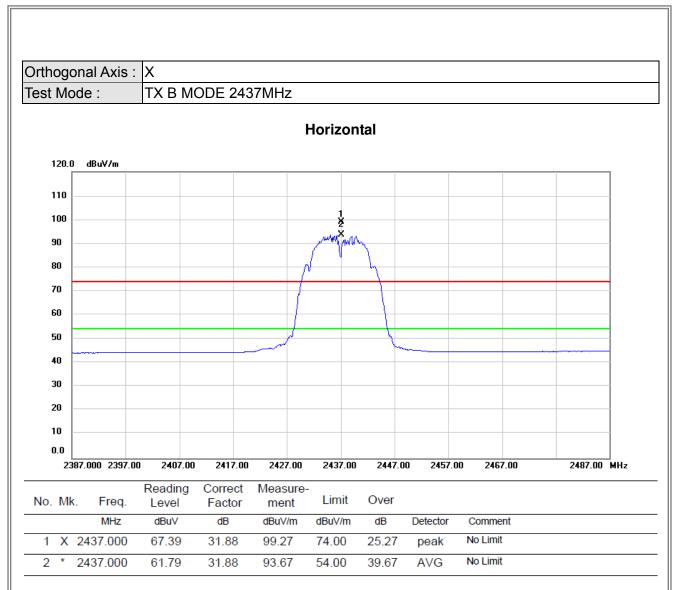




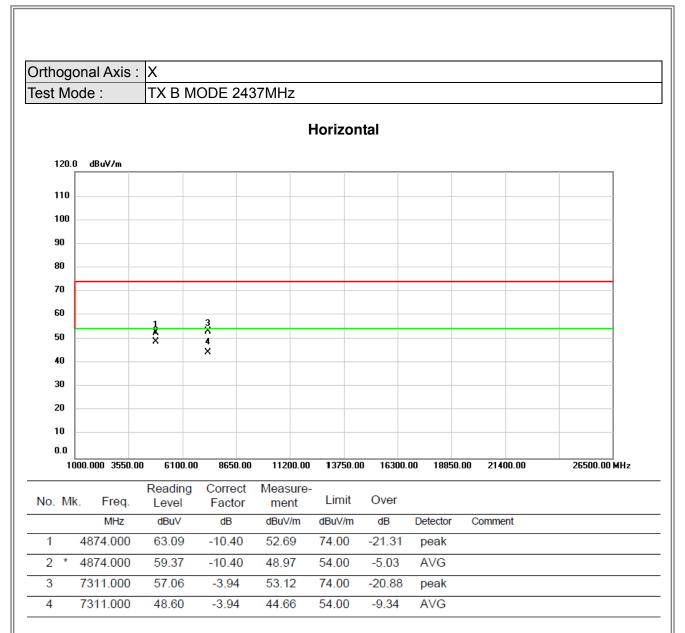




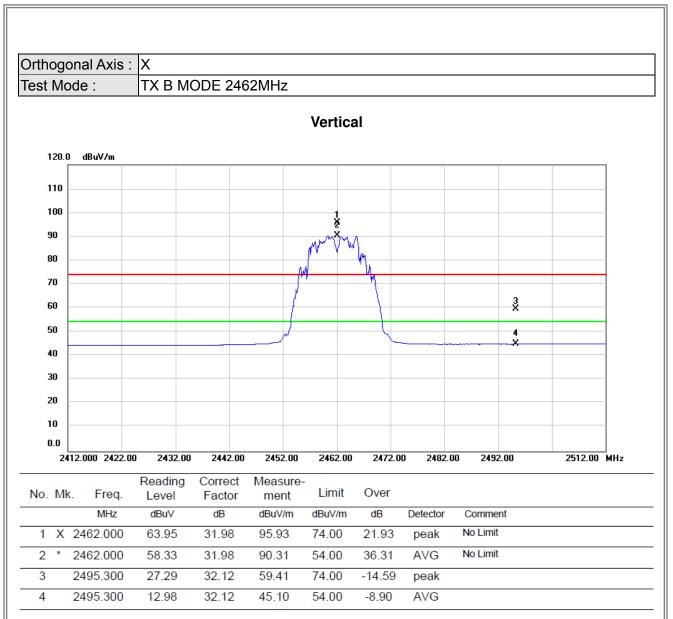




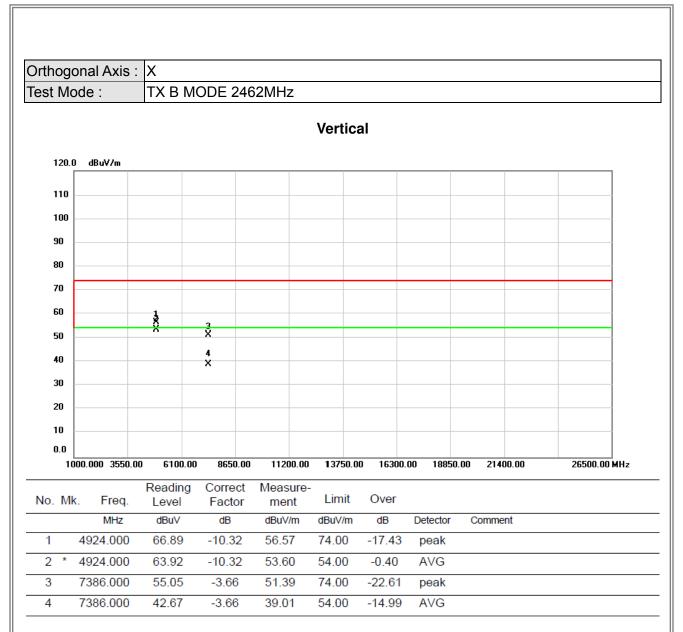




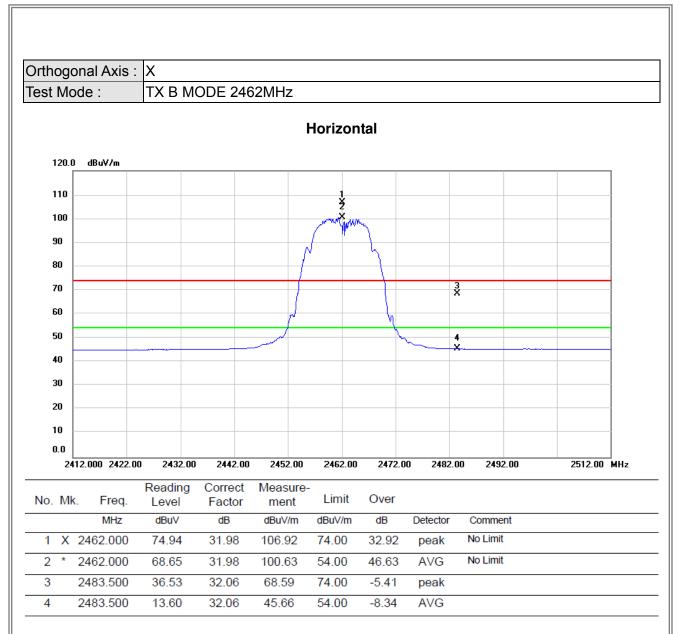




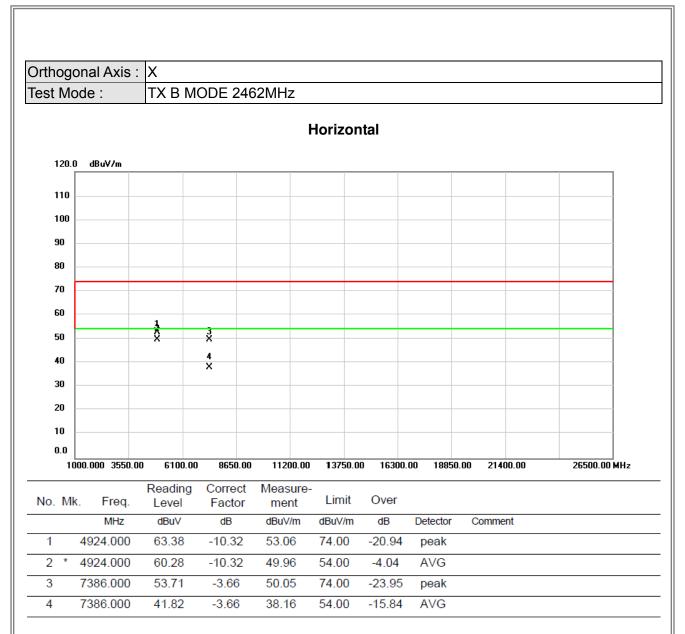




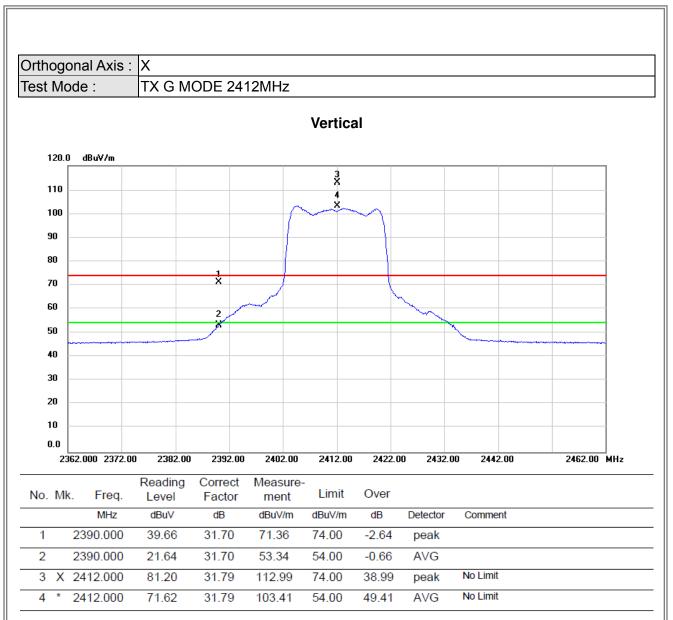




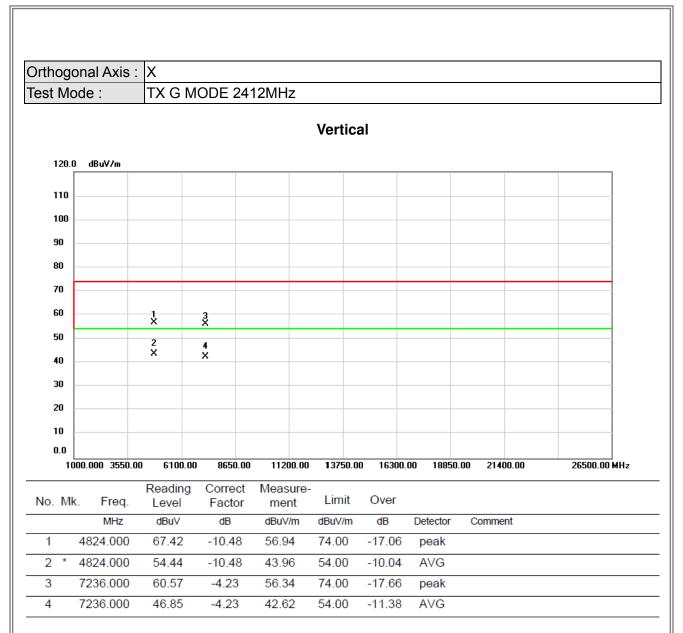




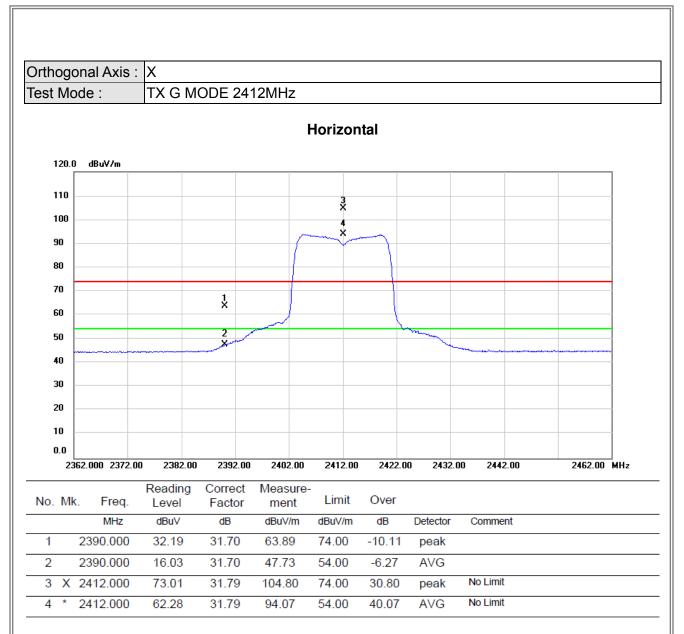




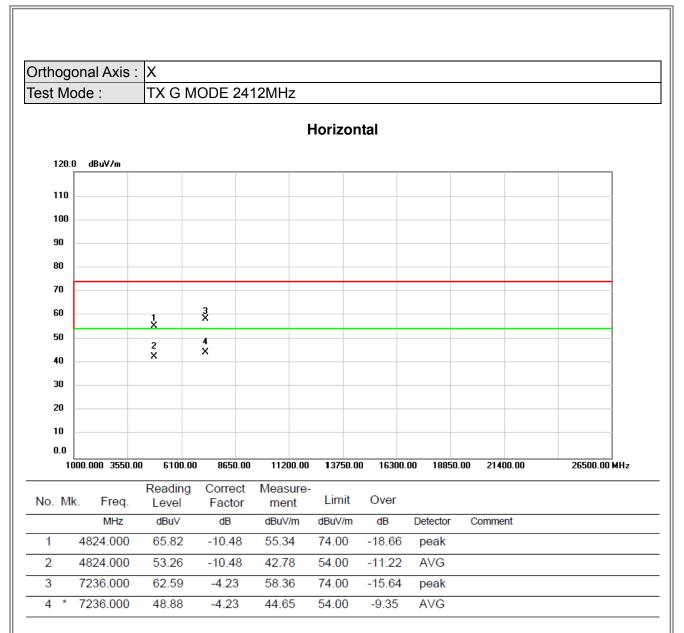




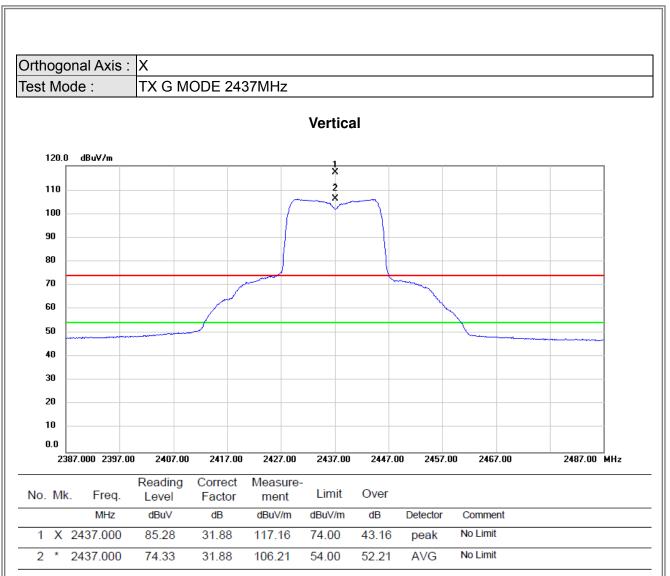




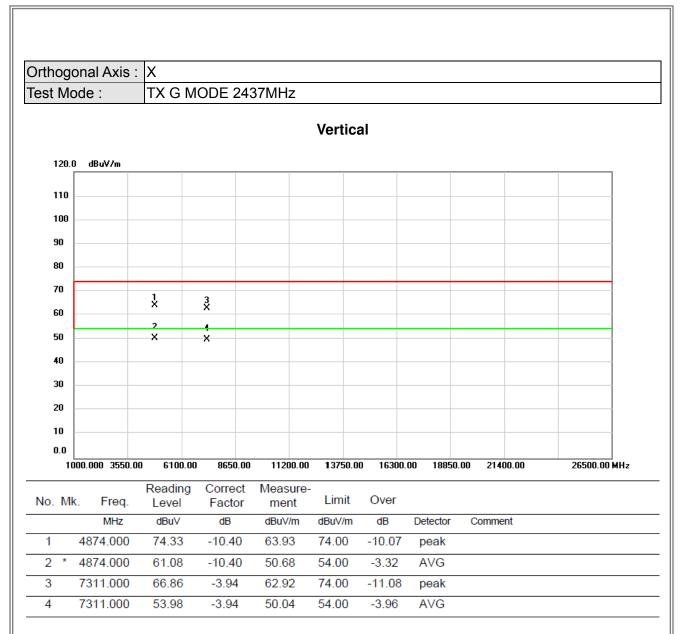




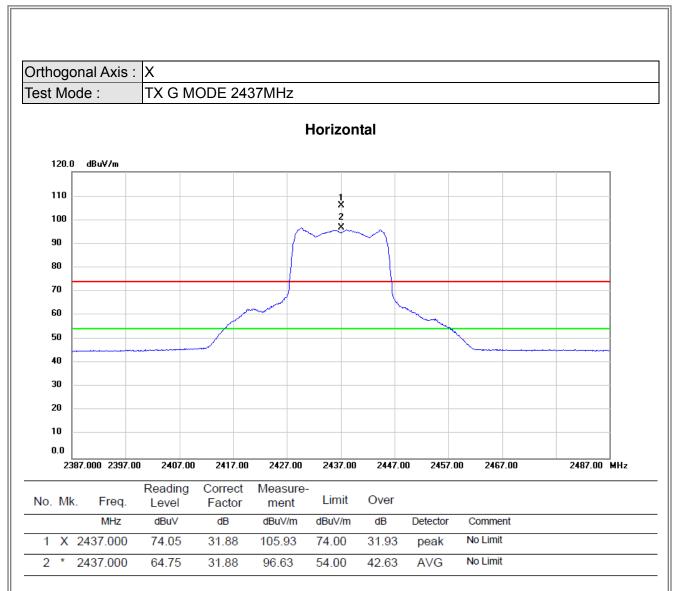




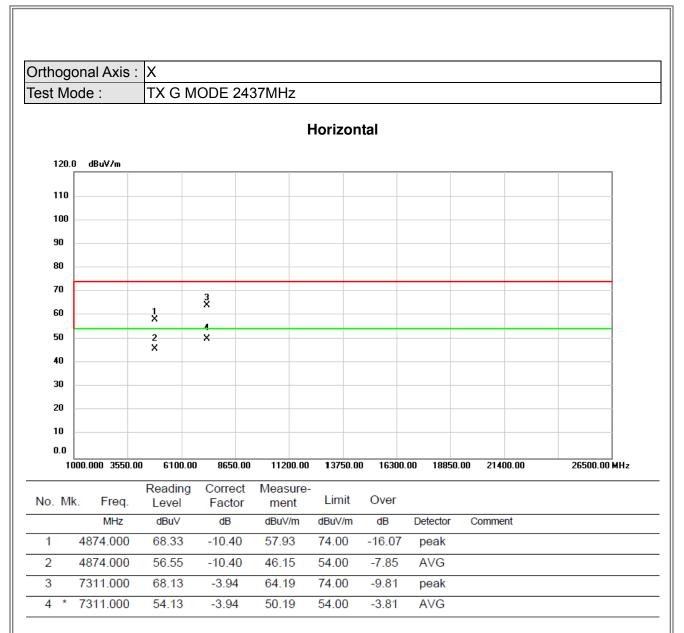




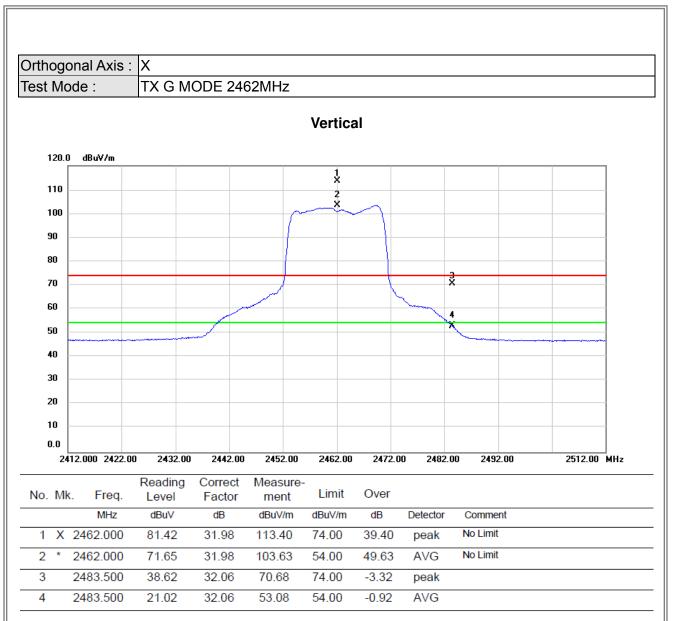




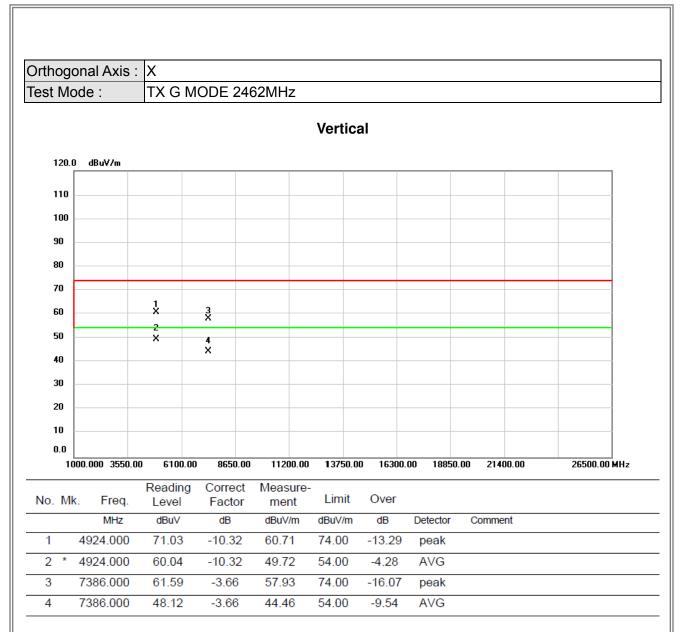




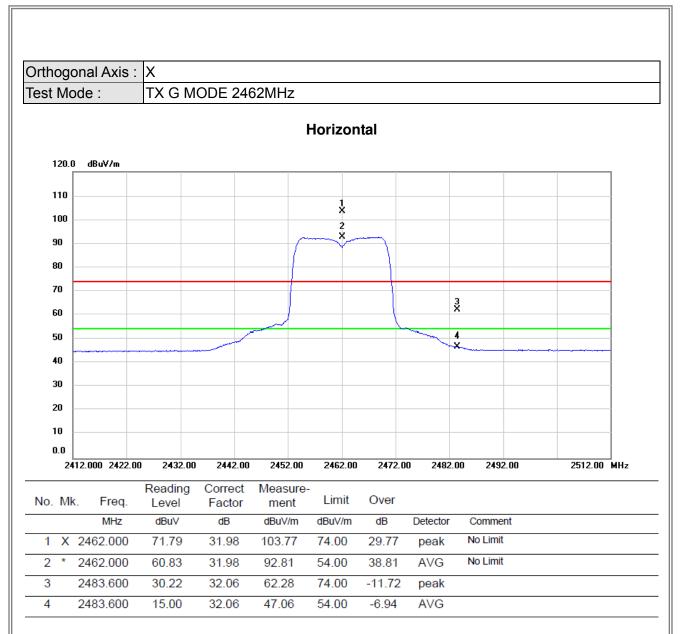




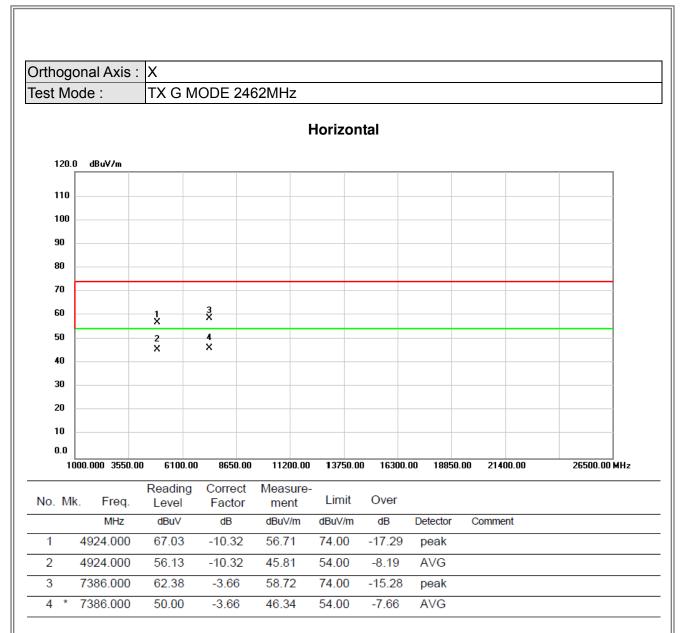




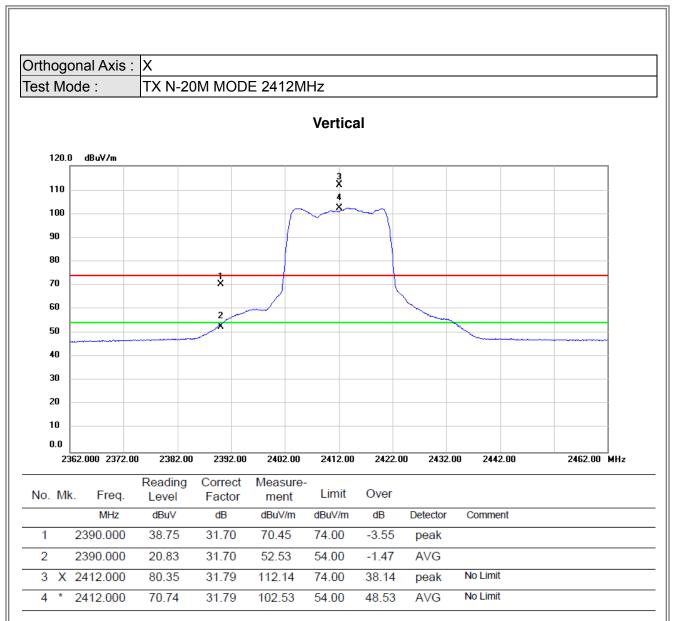




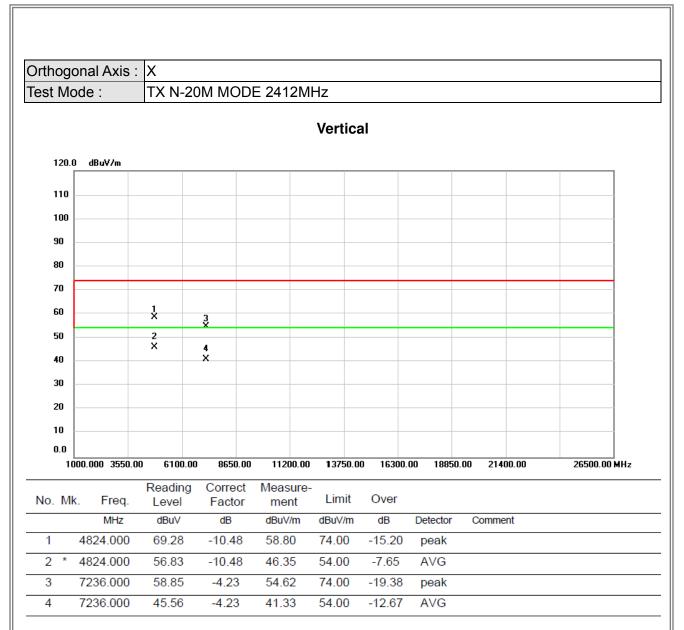




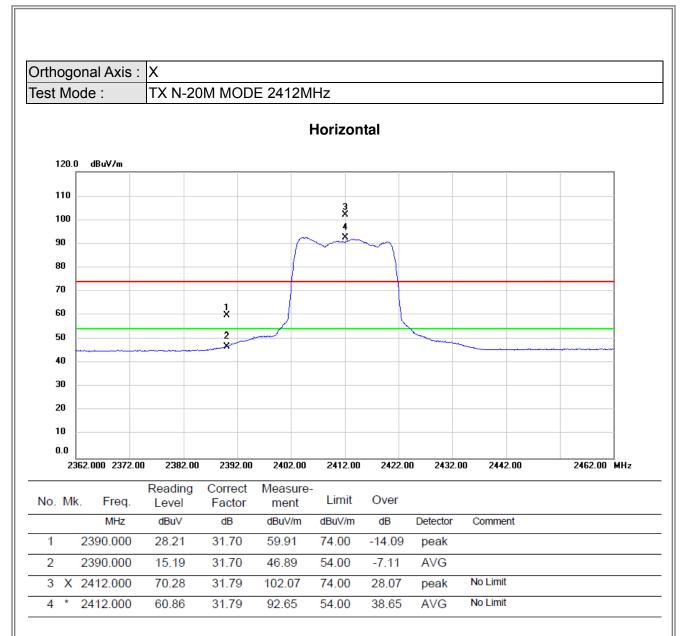




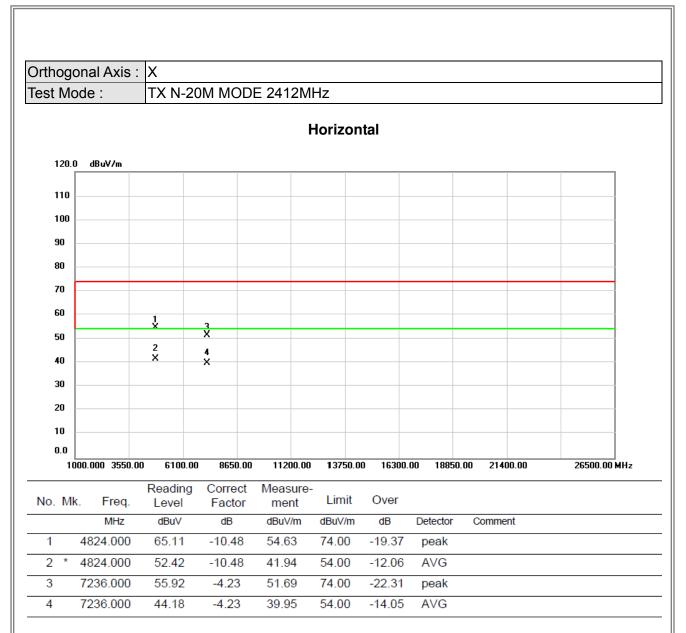




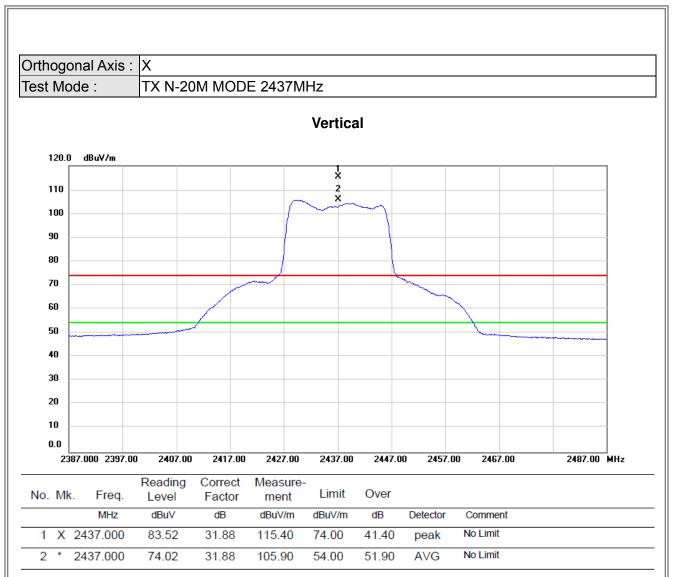




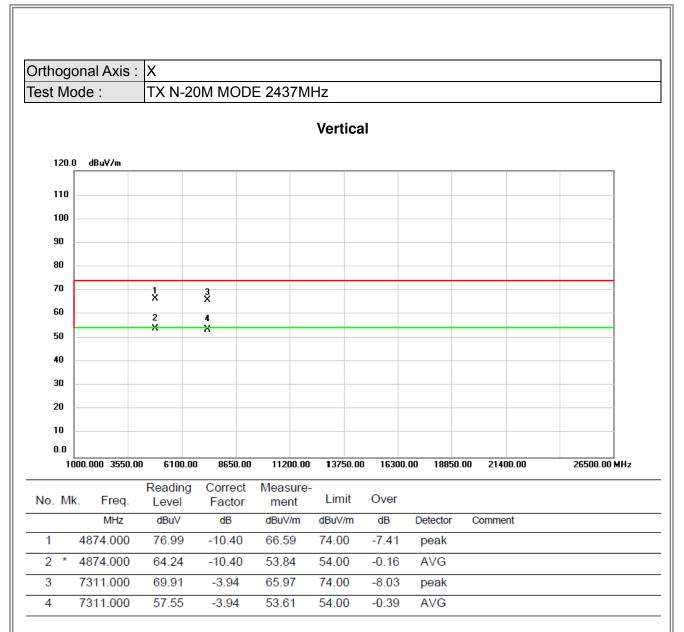




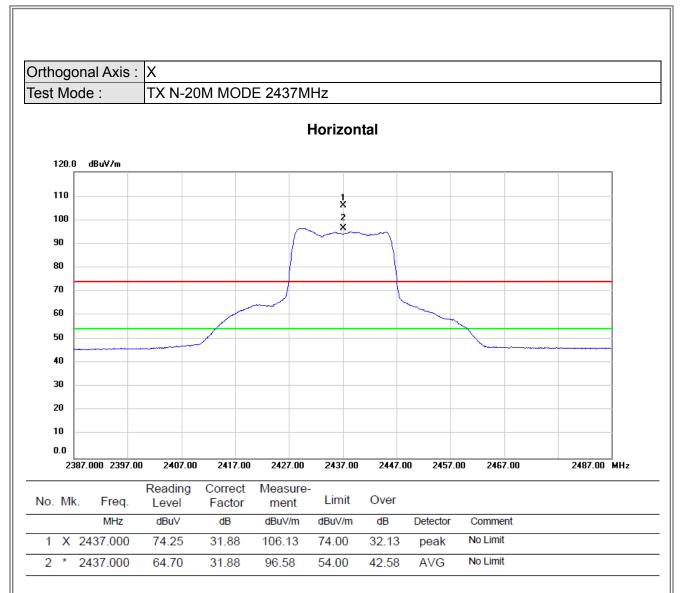




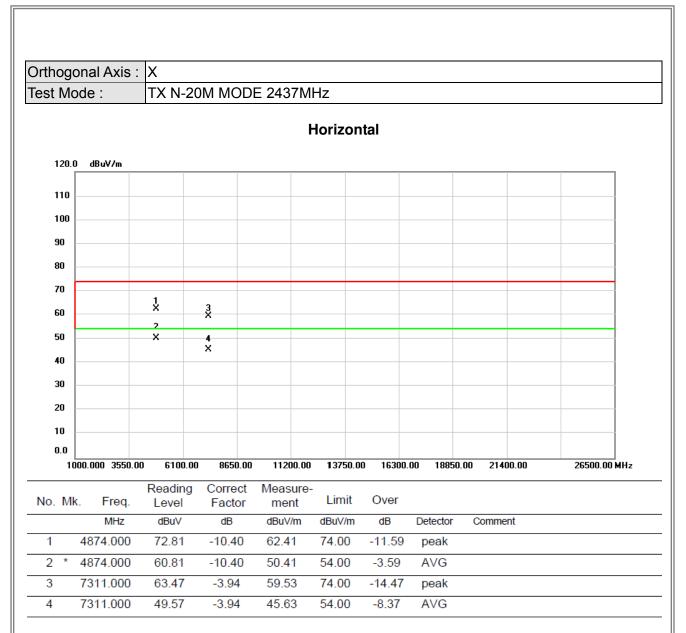




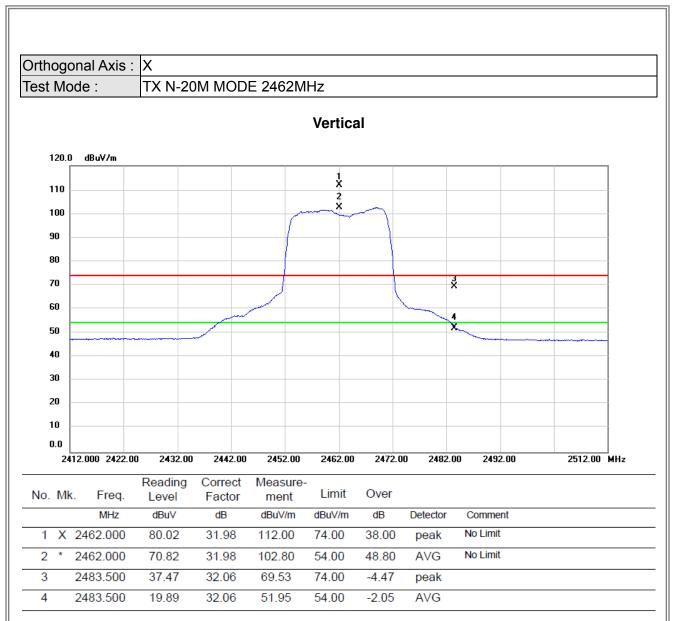




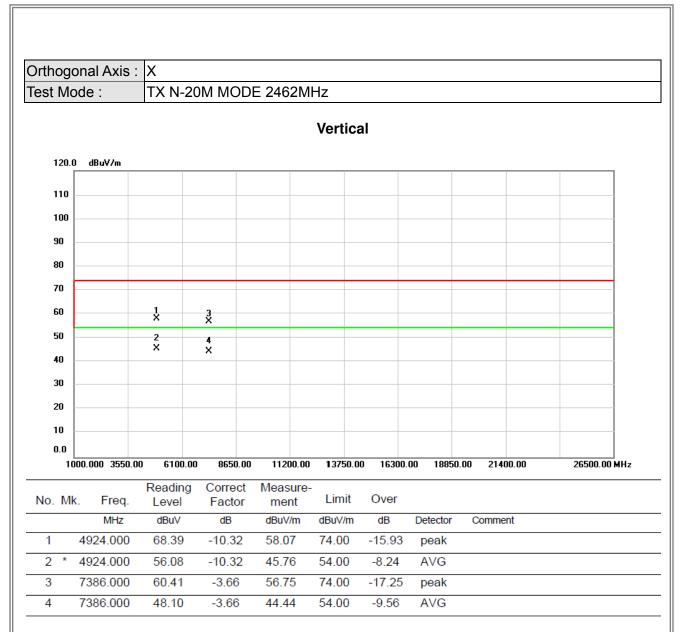




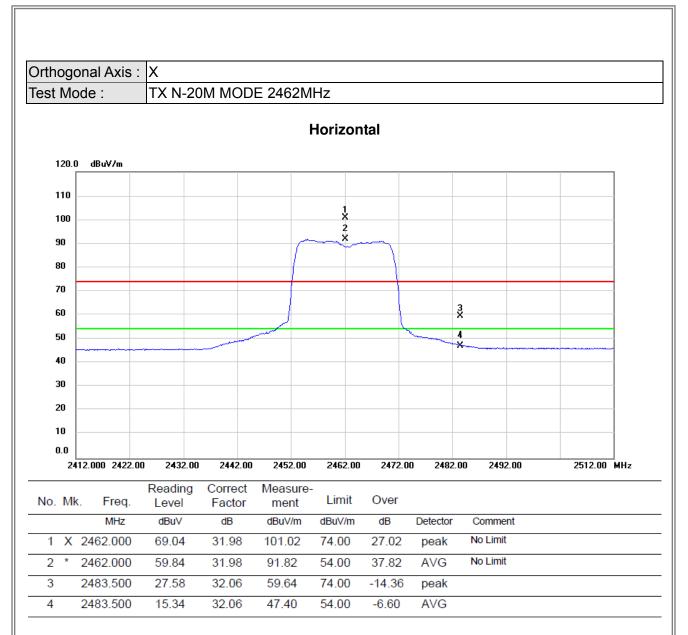




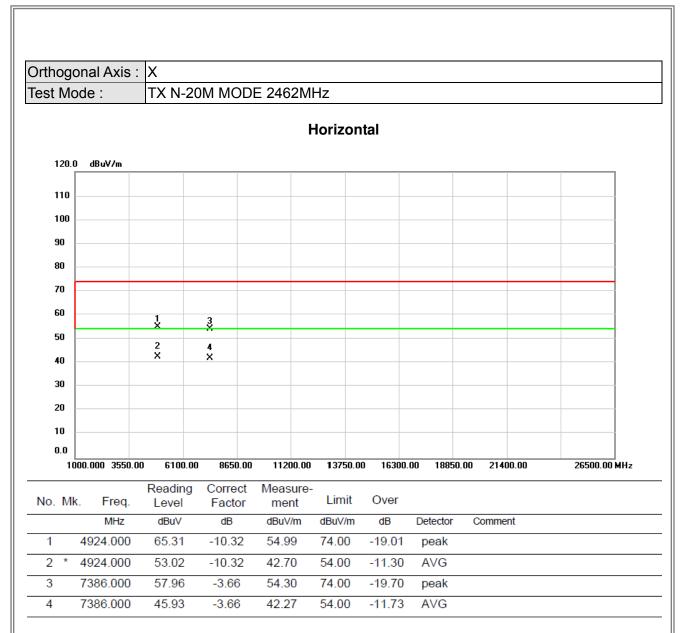




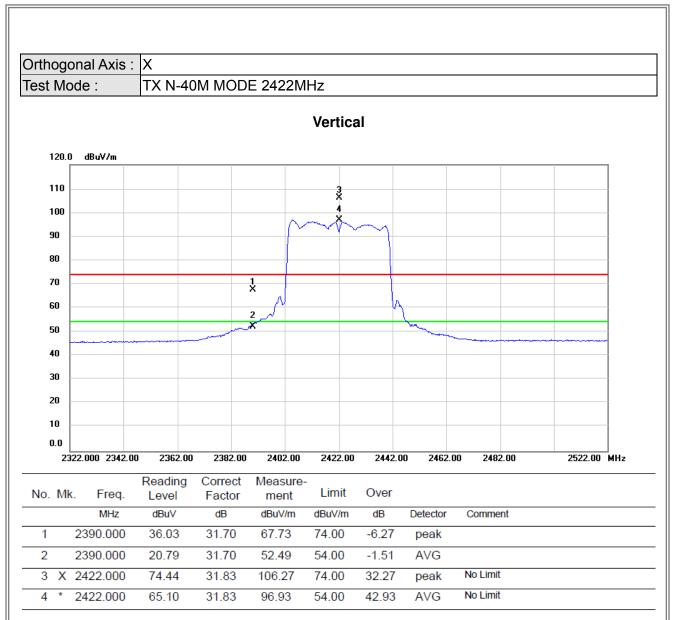




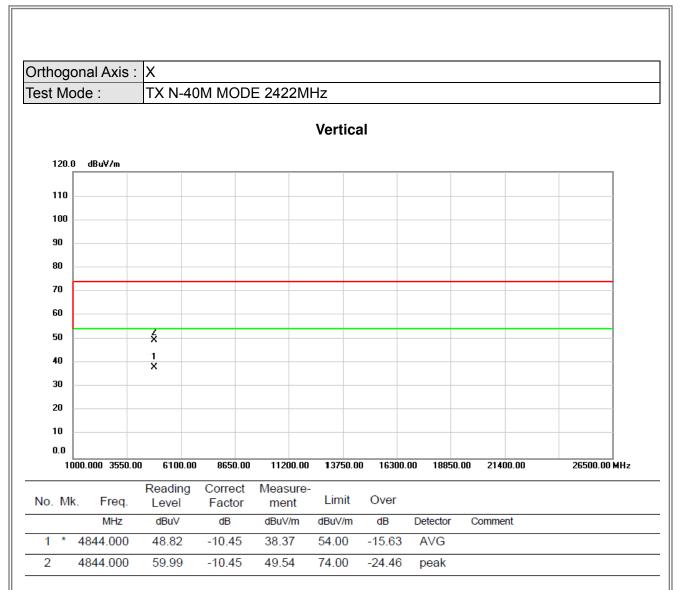




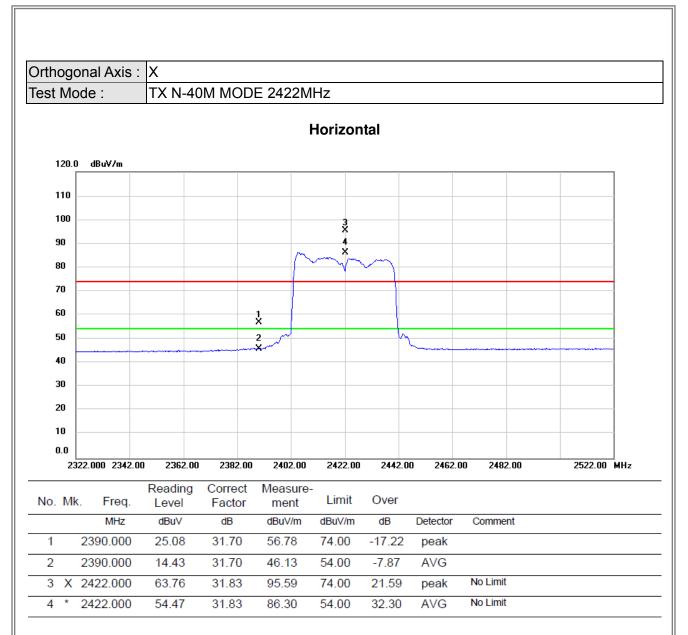




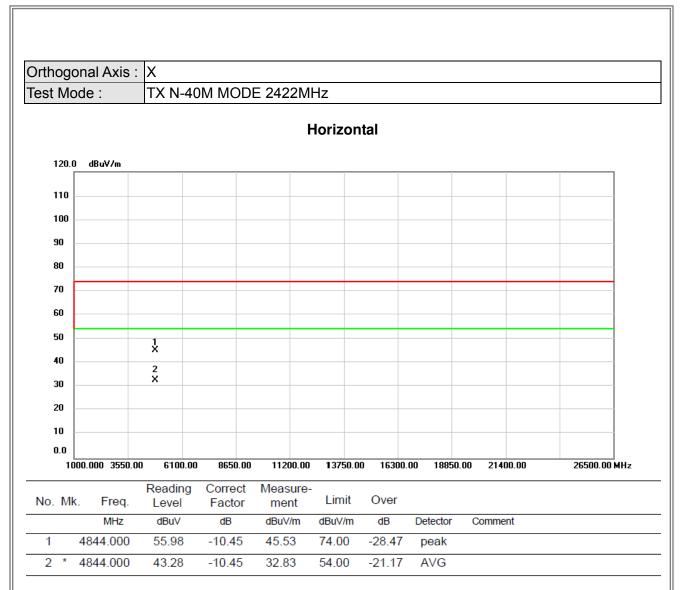




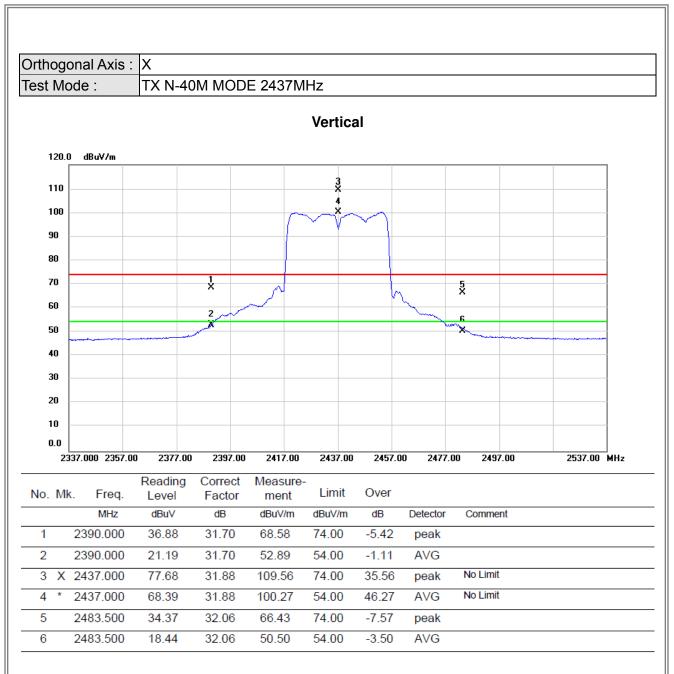




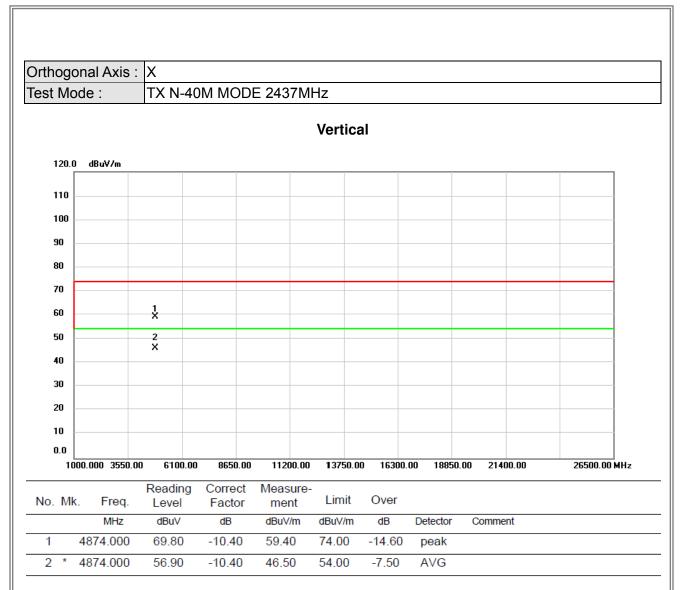




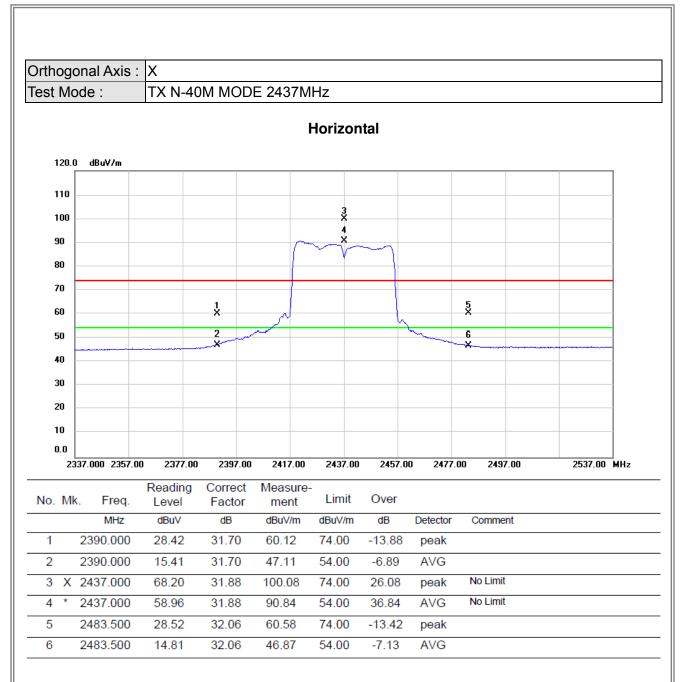




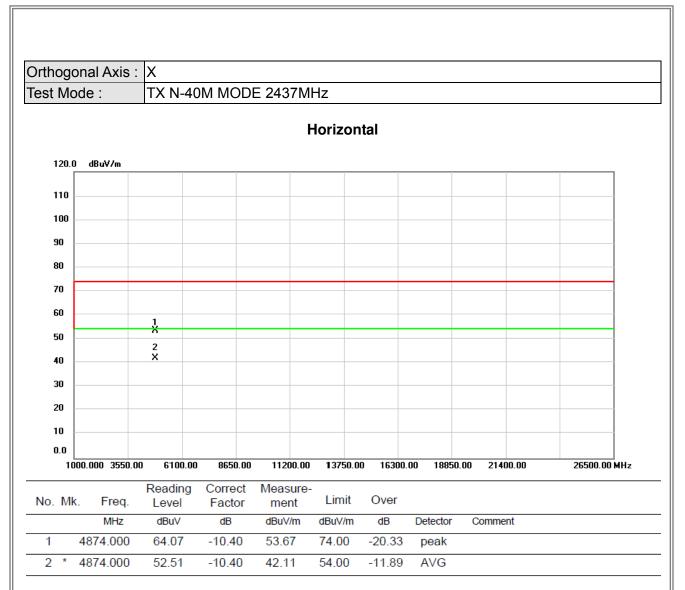




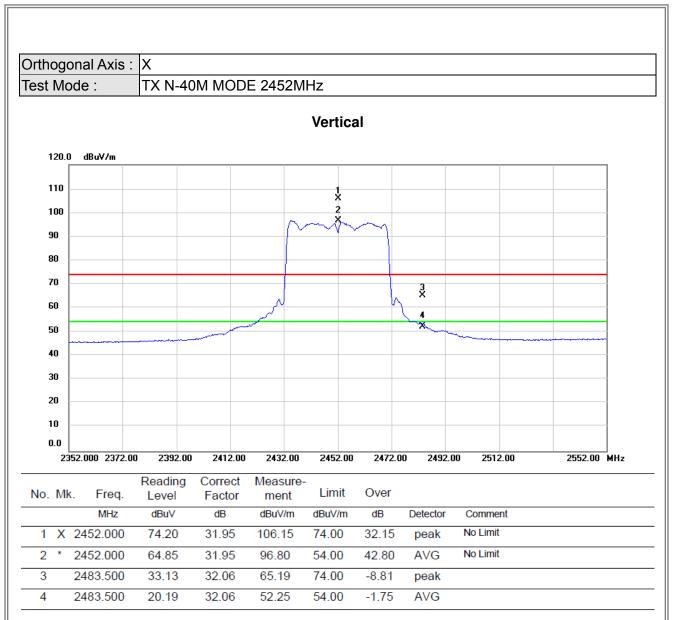




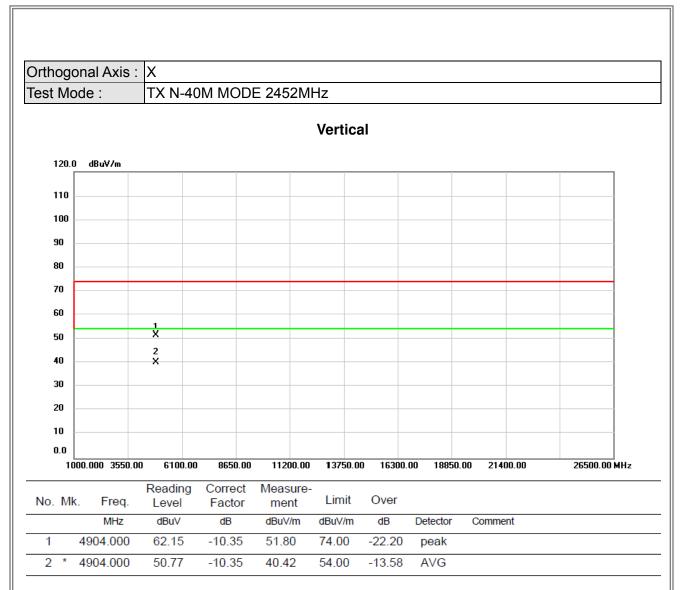




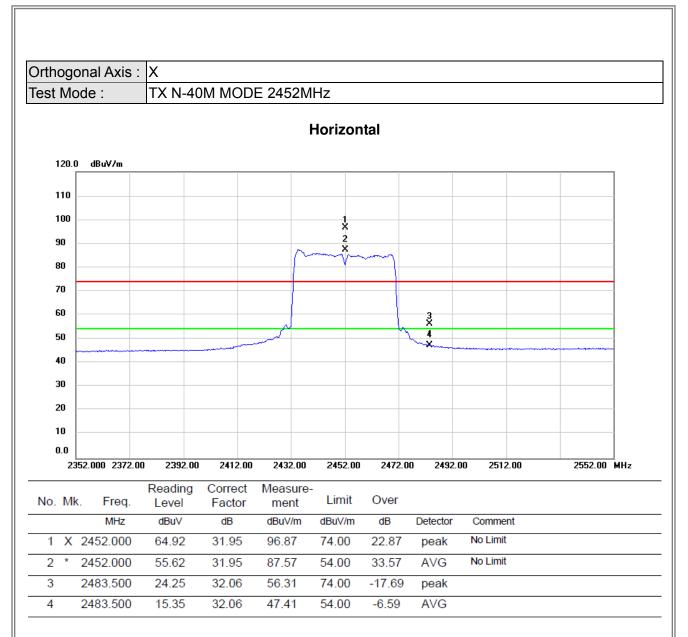




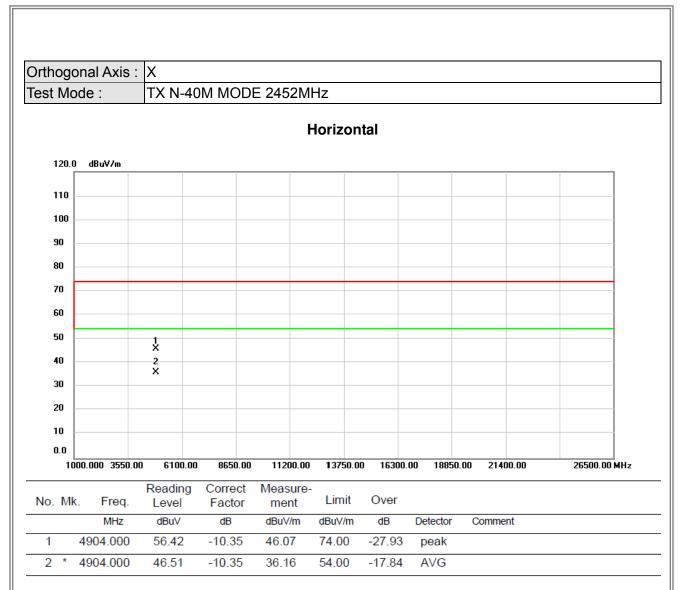








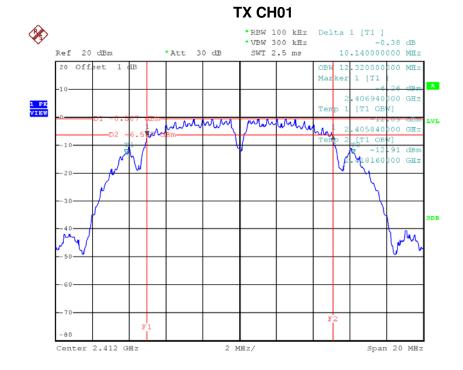




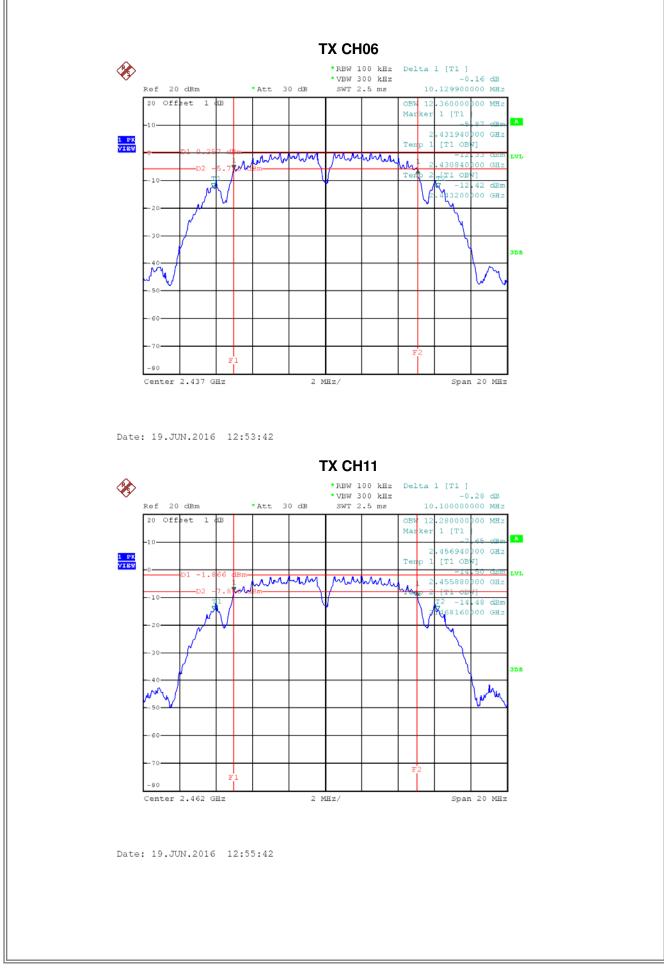
## **ATTACHMENT E - BANDWIDTH**

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

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	10.14	12.32	500	Complies
2437	10.13	12.36	500	Complies
2462	10.10	12.28	500	Complies

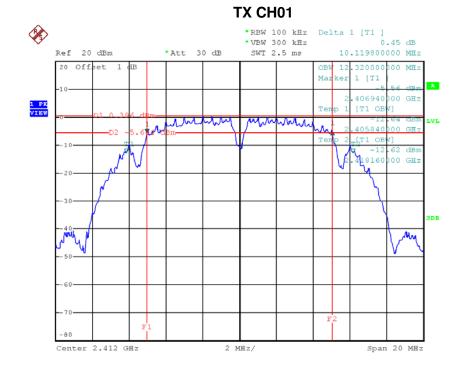


Date: 19.JUN.2016 12:51:18

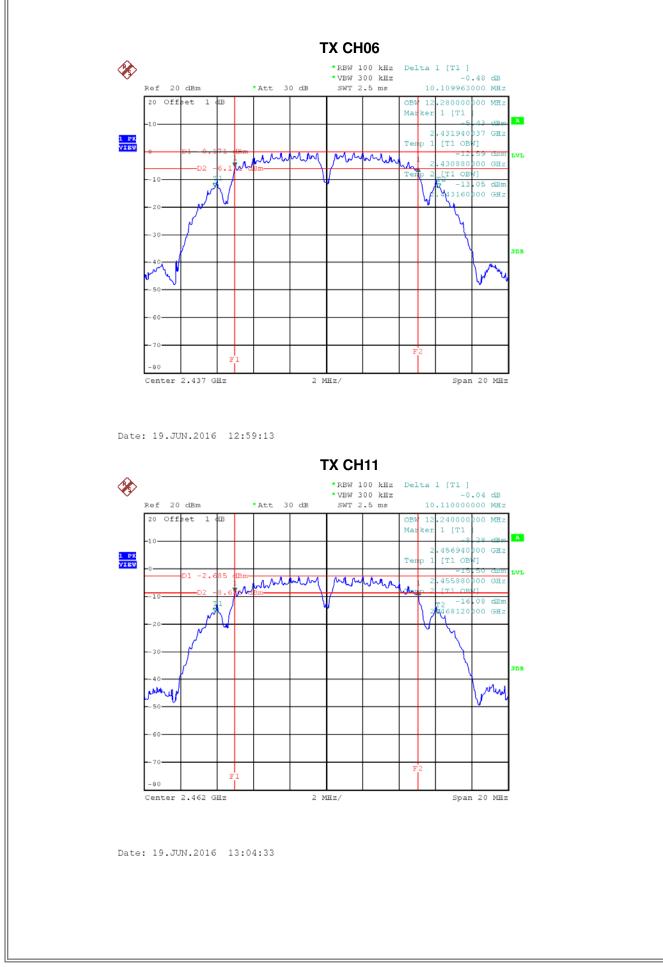


Test Mode : TX B Mode\_CH01/06/11\_ANT 2

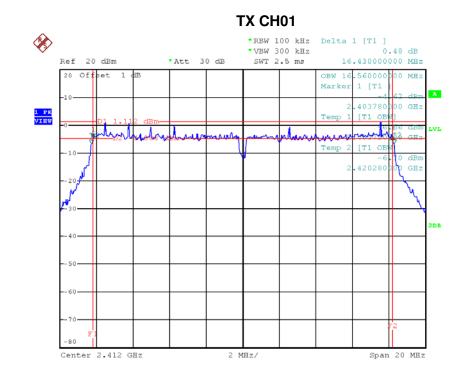
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	10.12	12.32	500	Complies
2437	10.11	12.28	500	Complies
2462	10.11	12.24	500	Complies



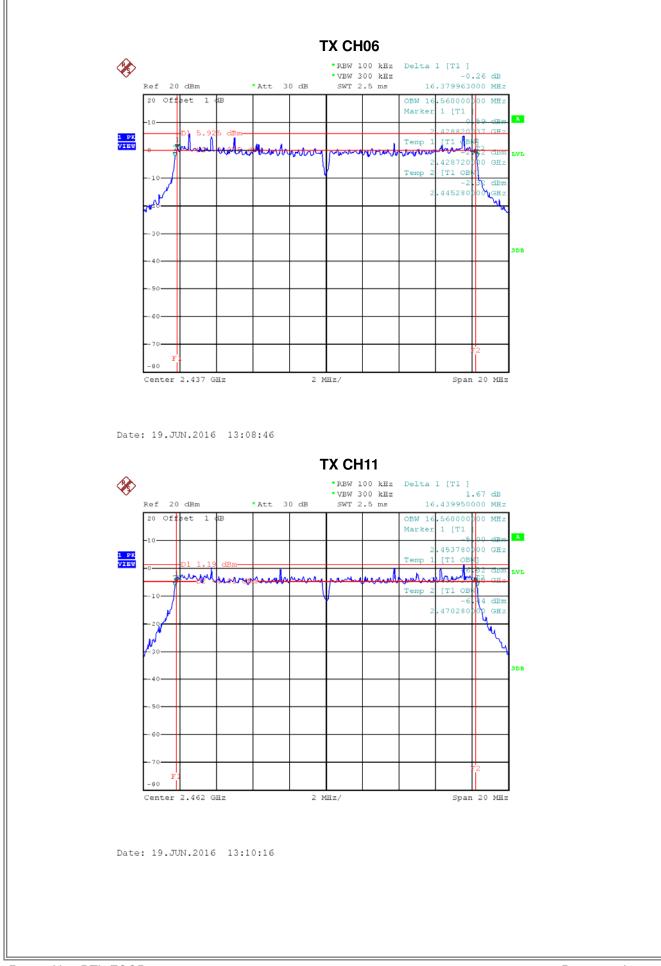
Date: 19.JUN.2016 12:57:46



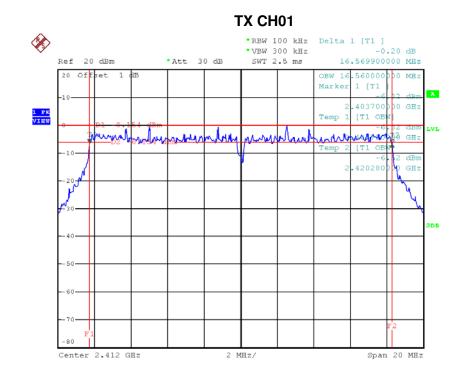
	Test Mode: TX G Mode_CH01/06/11_ANT 1				
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result	
2412	16.43	16.56	500	Complies	
2437	16.38	16.56	500	Complies	
2462	16.44	16.56	500	Complies	



Date: 19.JUN.2016 13:06:15

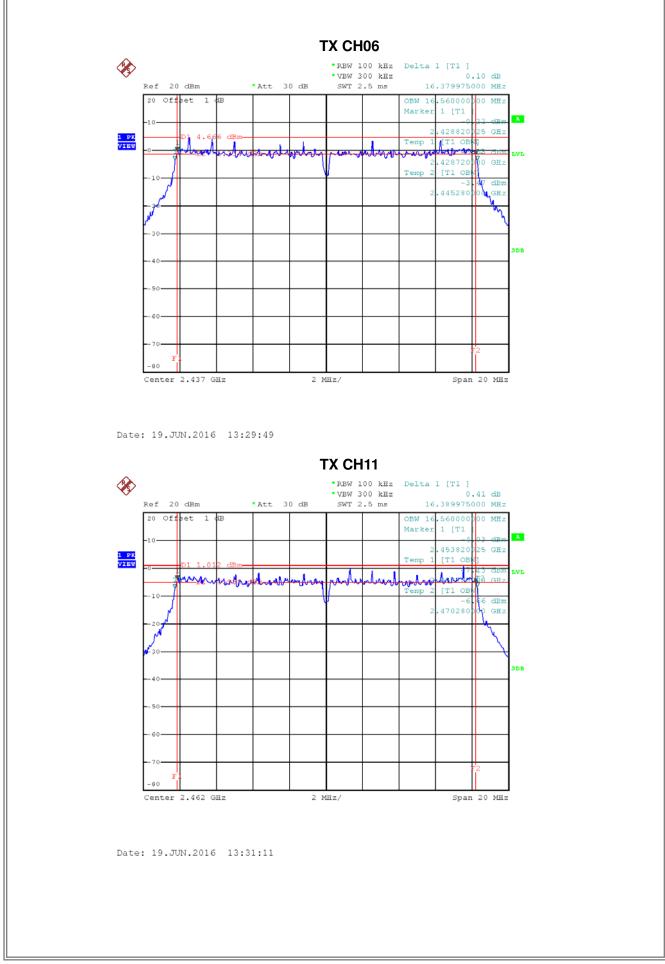


	Test Mode: TX G Mode_CH01/06/11_ANT 2					
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result		
2412	16.57	16.56	500	Complies		
2437	16.38	16.56	500	Complies		
2462	16.39	16.56	500	Complies		



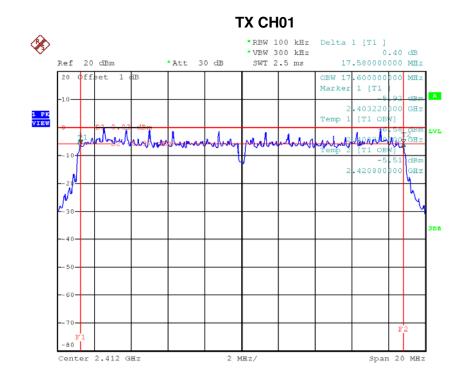
Date: 19.JUN.2016 13:28:16

## Report No.: BTL-FCCP-1-1604061

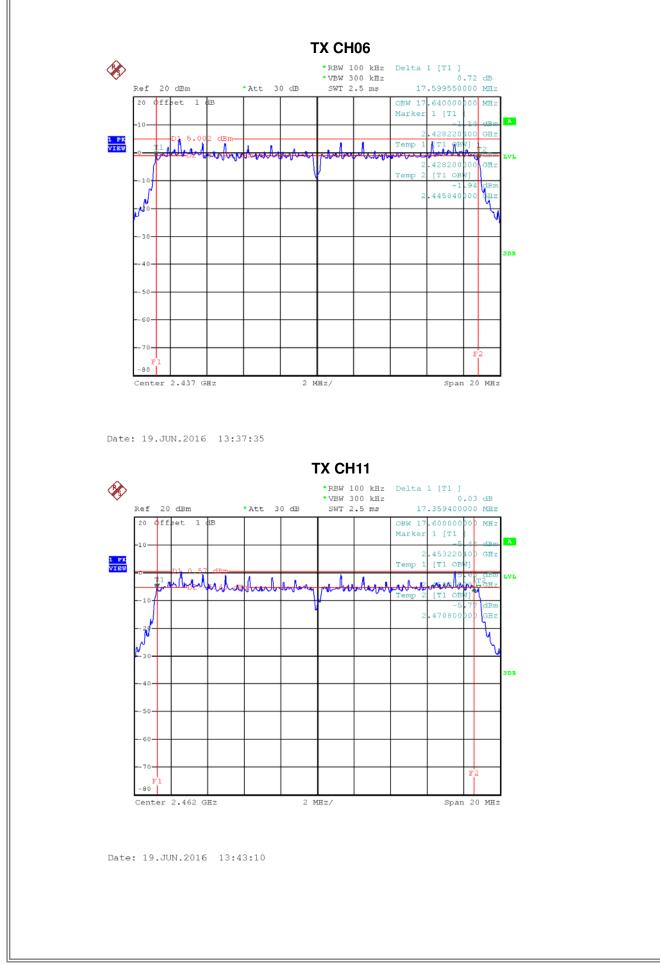




	Test Mode : TX N-20MHz Mode_CH01/06/11_ANT 1				
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result	
2412	17.58	17.60	500	Complies	
2437	17.60	17.64	500	Complies	
2462	17.36	17.60	500	Complies	

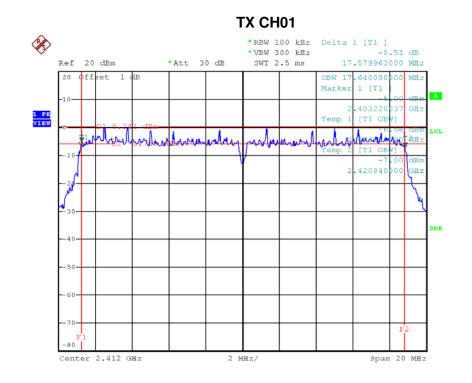


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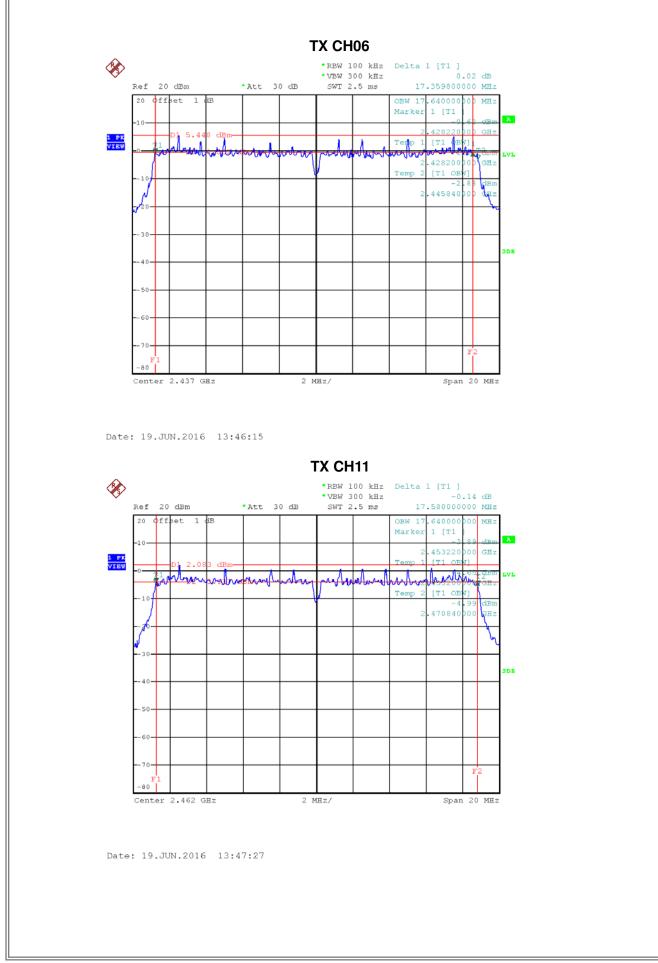




	Test Mode : TX N-20MHz Mode_CH01/06/11_ANT 2				
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result	
2412	17.58	17.64	500	Complies	
2437	17.36	17.64	500	Complies	
2462	17.58	17.64	500	Complies	

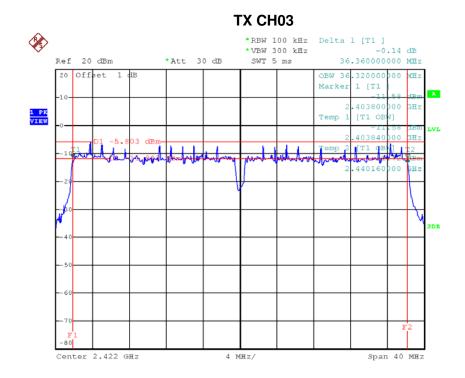


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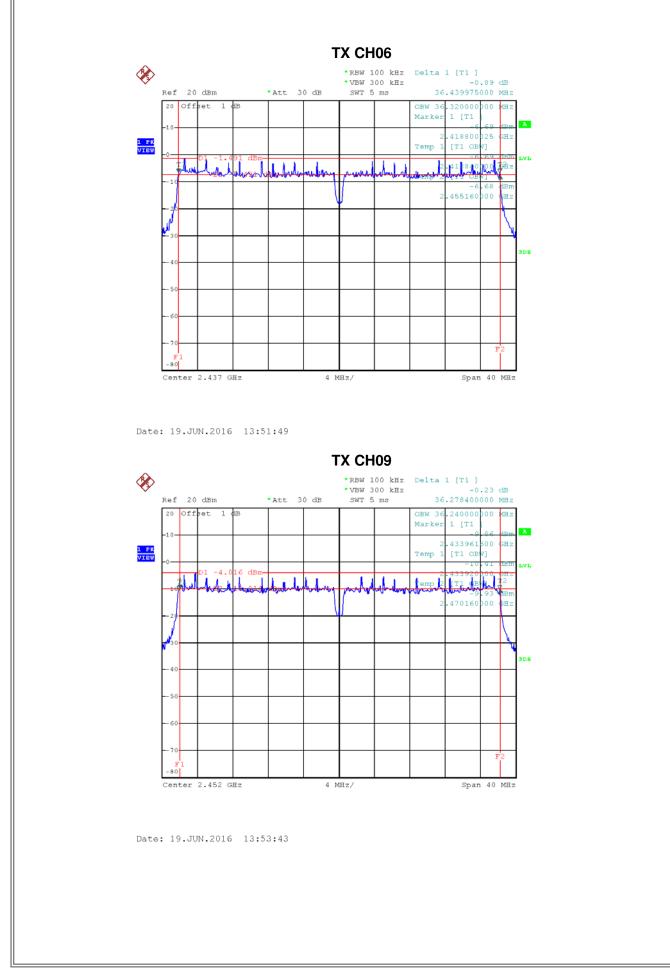




Test Mode : TX N-40MHz Mode_CH03/06/09_ANT 1				
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2422	36.36	36.32	500	Complies
2437	36.44	36.32	500	Complies
2452	36.28	36.24	500	Complies

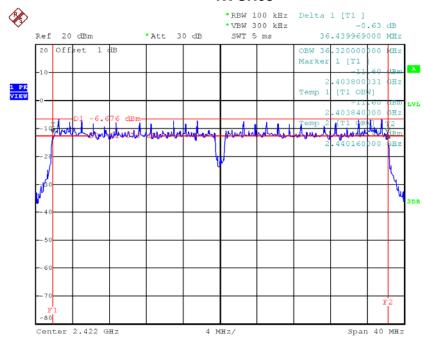


Date: 19.JUN.2016 13:48:56

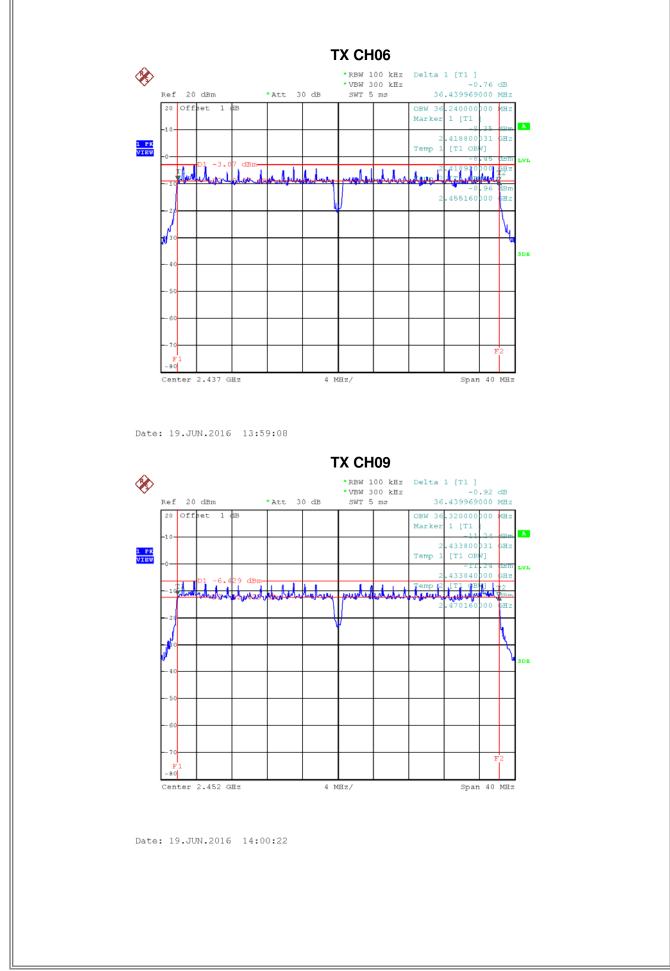


	Test Mode : TX N-40MHz Mode_CH03/06/09_ANT 2					
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result		
2422	36.44	36.32	500	Complies		
2437	36.44	36.24	500	Complies		
2452	36.44	36.32	500	Complies		





Date: 19.JUN.2016 13:56:51



## ATTACHMENT F – MAXIMUM PEAK CONDUCTED OUTPUT POWER

Test Mode :TX B Mode_CH01/06/11_ANT 1							
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result		
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result		
2412	15.69	0.04	29.8	0.95	Complies		
2437	15.88	0.04	29.8	0.95	Complies		
2462	12.96	0.02	29.8	0.95	Complies		

	Test Mode :TX B Mode_CH01/06/11_ANT 2							
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result			
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result			
2412	15.08	0.03	29.8	0.95	Complies			
2437	15.15	0.03	29.8	0.95	Complies			
2462	12.33	0.02	29.8	0.95	Complies			

	Test Mode :TX B Mode_CH01/06/11_Total								
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Popult				
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result				
2412	18.41	0.07	29.8	0.95	Complies				
2437	18.54	0.07	29.8	0.95	Complies				
2462	15.67	0.04	29.8	0.95	Complies				

Test Mode :TX G Mode_CH01/06/11_ANT 1							
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result		
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result		
2412	21.29	0.13	29.8	0.95	Complies		
2437	23.34	0.22	29.8	0.95	Complies		
2462	21.39	0.14	29.8	0.95	Complies		

Test Mode :TX G Mode_CH01/06/11_ANT 2							
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result		
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result		
2412	21.96	0.16	29.8	0.95	Complies		
2437	23.68	0.23	29.8	0.95	Complies		
2462	21.97	0.16	29.8	0.95	Complies		

	Test Mode :TX G Mode_CH01/06/11_Total								
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result				
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result				
2412	24.65	0.29	29.8	0.95	Complies				
2437	26.52	0.45	29.8	0.95	Complies				
2462	24.70	0.30	29.8	0.95	Complies				

Test Mode :TX N20 Mode_CH01/06/11_ANT 1							
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result		
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result		
2412	21.22	0.13	29.8	0.95	Complies		
2437	22.94	0.20	29.8	0.95	Complies		
2462	21.31	0.14	29.8	0.95	Complies		

Test Mode :TX N20 Mode_CH01/06/11_ANT 2								
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result			
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result			
2412	21.48	0.14	29.8	0.95	Complies			
2437	23.32	0.21	29.8	0.95	Complies			
2462	21.61	0.14	29.8	0.95	Complies			

Test Mode :TX N20 Mode_CH01/06/11_Total								
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result			
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result			
2412	24.36	0.27	29.8	0.95	Complies			
2437	26.14	0.41	29.8	0.95	Complies			
2462	24.47	0.28	29.8	0.95	Complies			

Test Mode :TX N40 Mode_CH03/06/09_ANT 1							
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result		
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result		
2422	16.61	0.05	29.8	0.95	Complies		
2437	20.47	0.11	29.8	0.95	Complies		
2452	18.20	0.07	29.8	0.95	Complies		

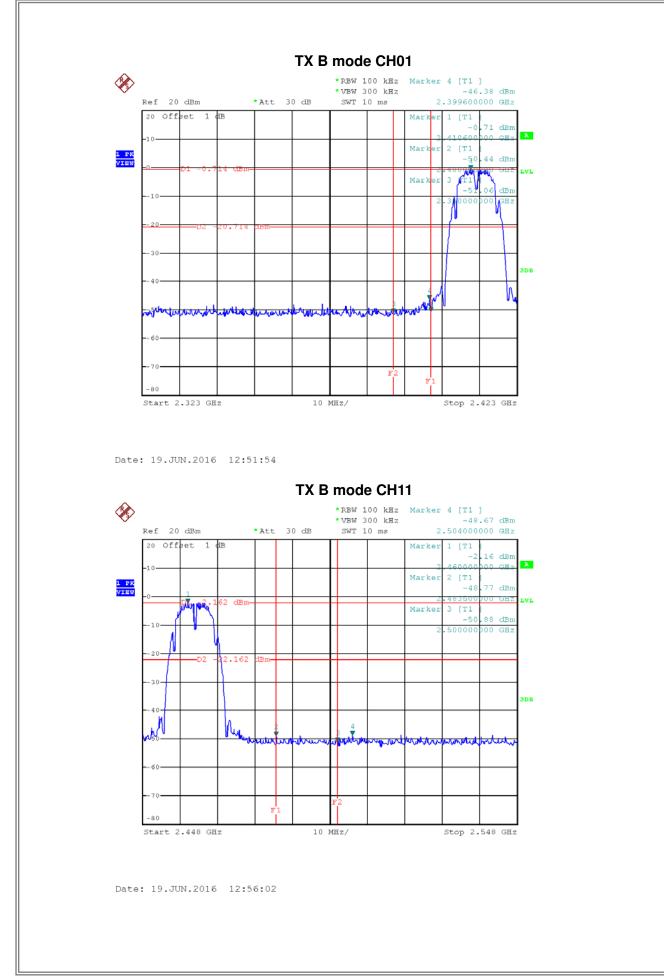
Test Mode :TX N40 Mode_CH03/06/09_ANT 2							
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result		
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result		
2422	15.64	0.04	29.8	0.95	Complies		
2437	20.60	0.11	29.8	0.95	Complies		
2452	17.41	0.06	29.8	0.95	Complies		

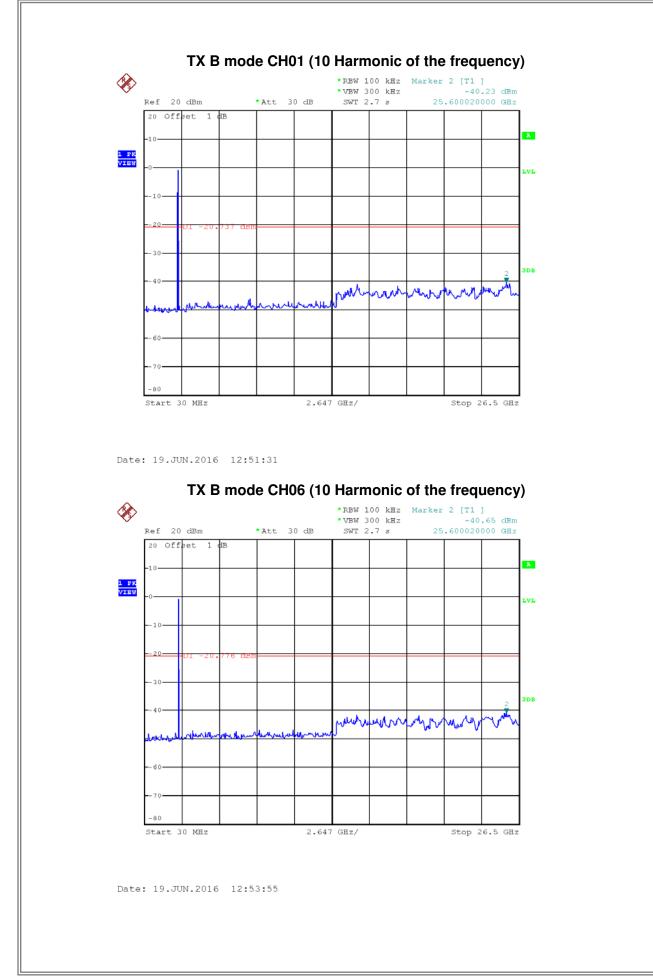
Test Mode :TX N40 Mode_CH03/06/09_Total								
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result			
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result			
2422	19.16	0.08	29.8	0.95	Complies			
2437	23.55	0.23	29.8	0.95	Complies			
2452	20.83	0.12	29.8	0.95	Complies			

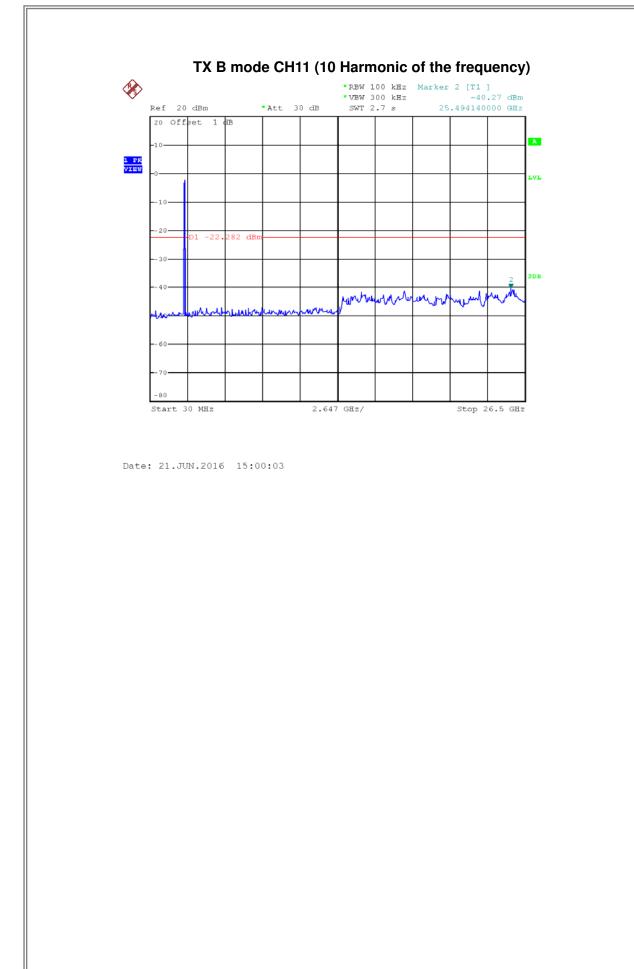
## ATTACHMENT G - ANTENNA CONDUCTED SPURIOUS EMISSION



Test Mode :	TX B Mode_ANT 1	

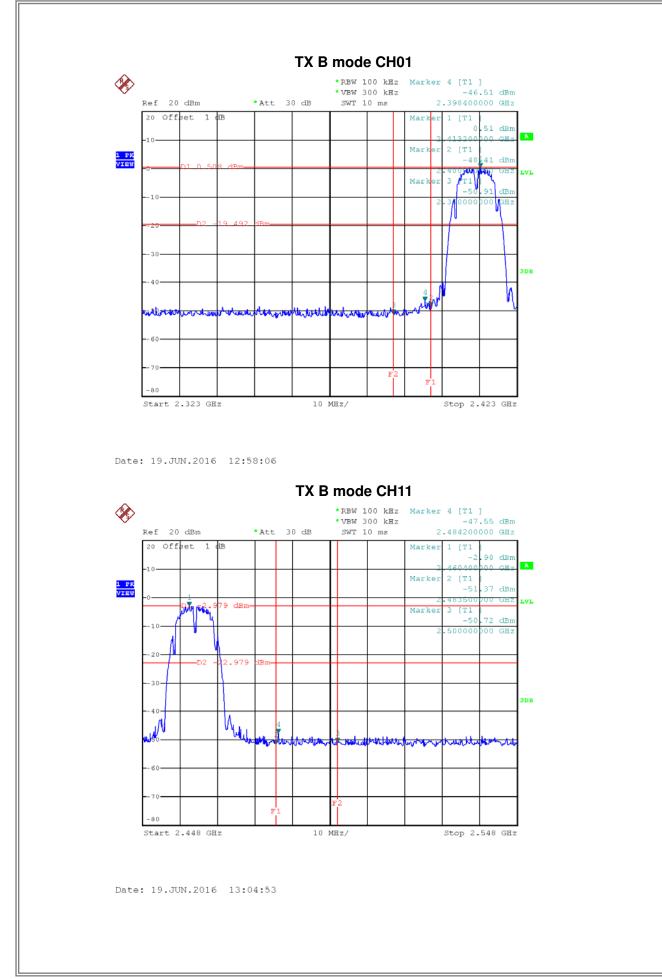


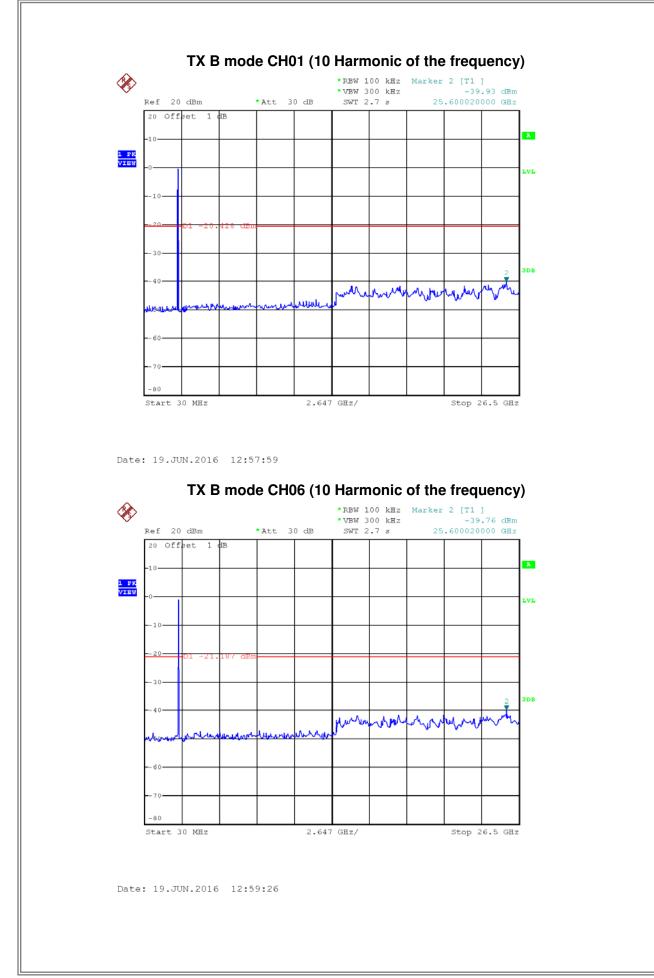


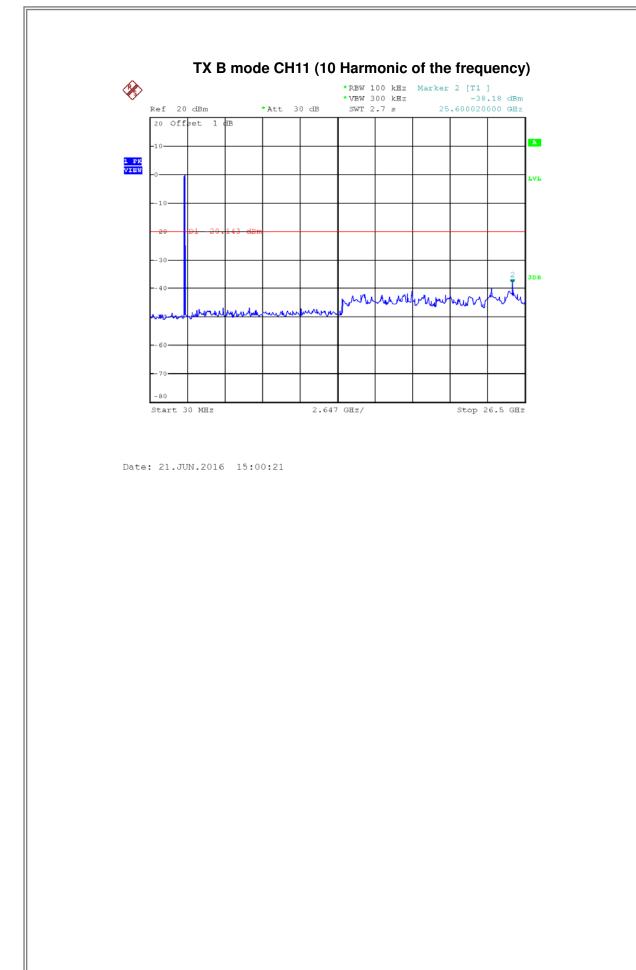




Test Mode :	TX B Mode_ANT 2

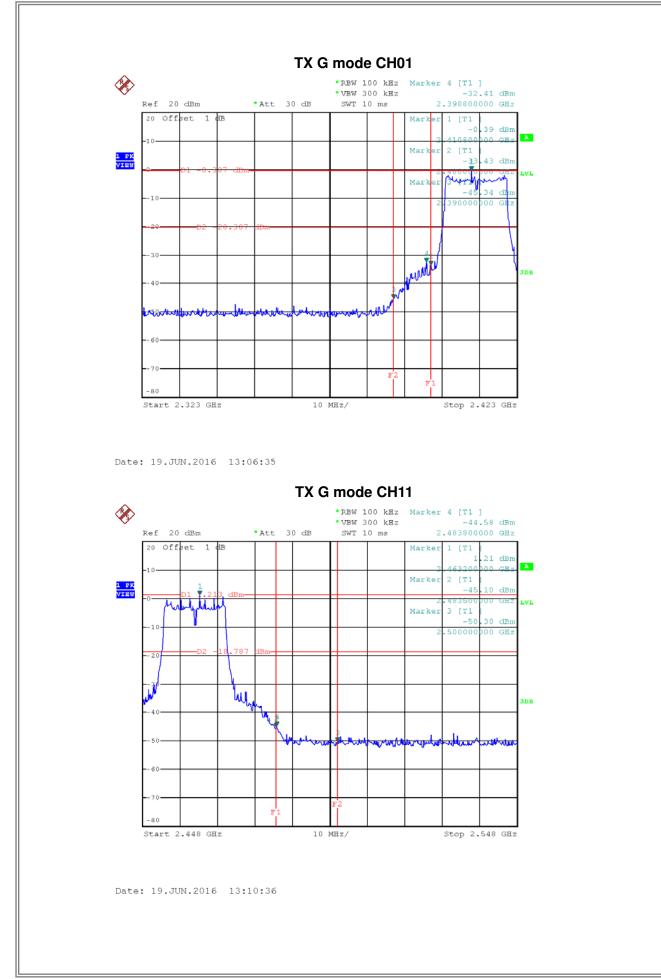


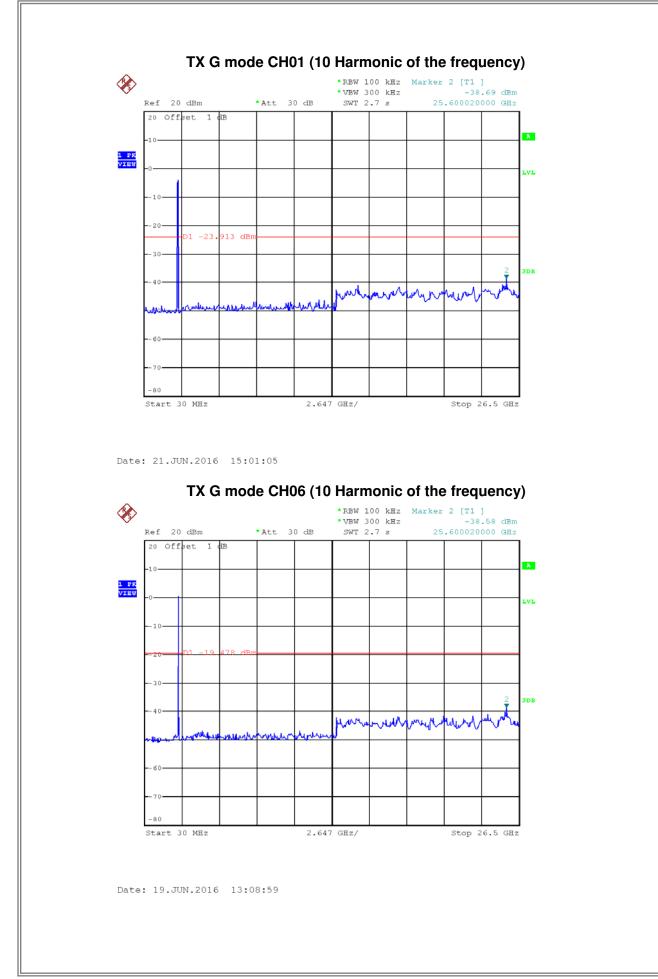


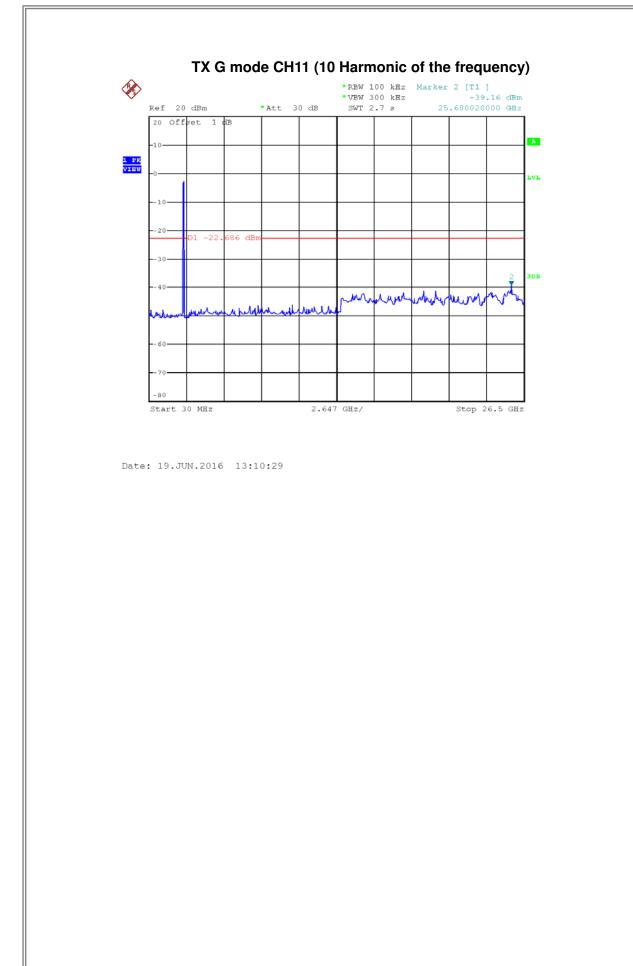




Test Mode :	TX G Mode_ANT 1	
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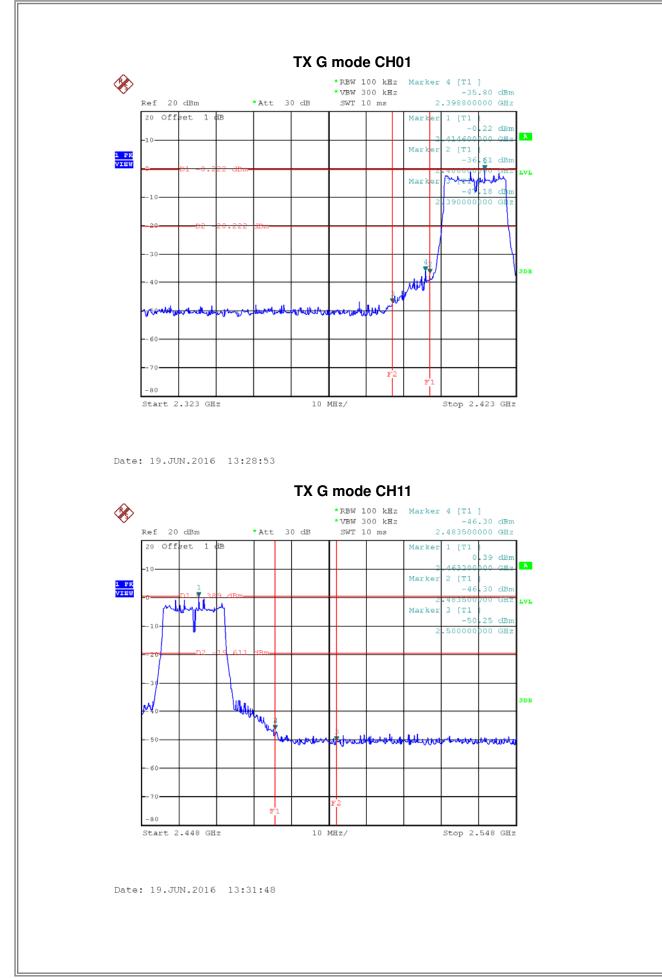


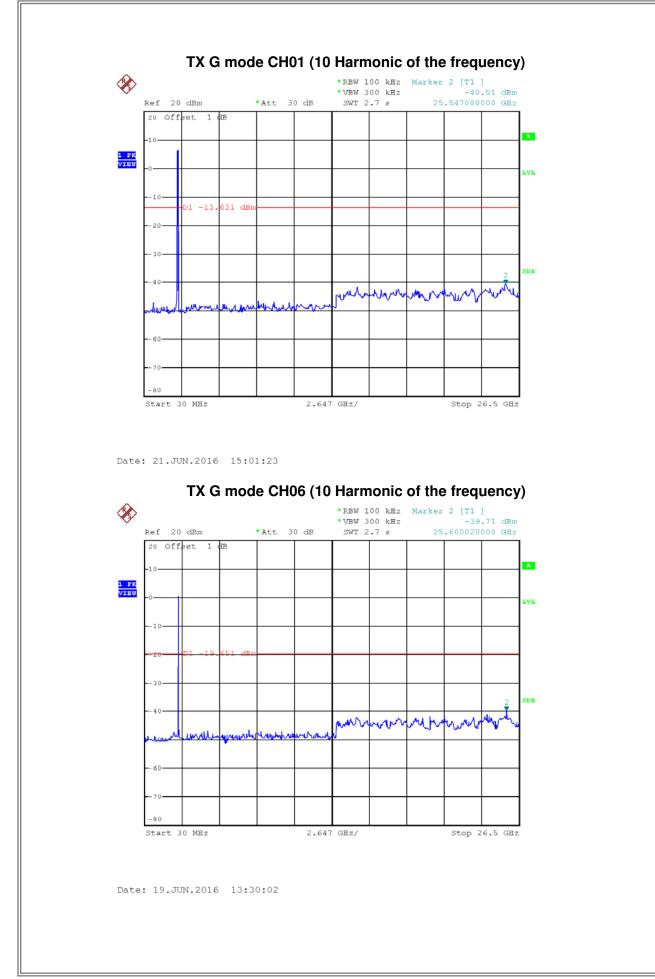


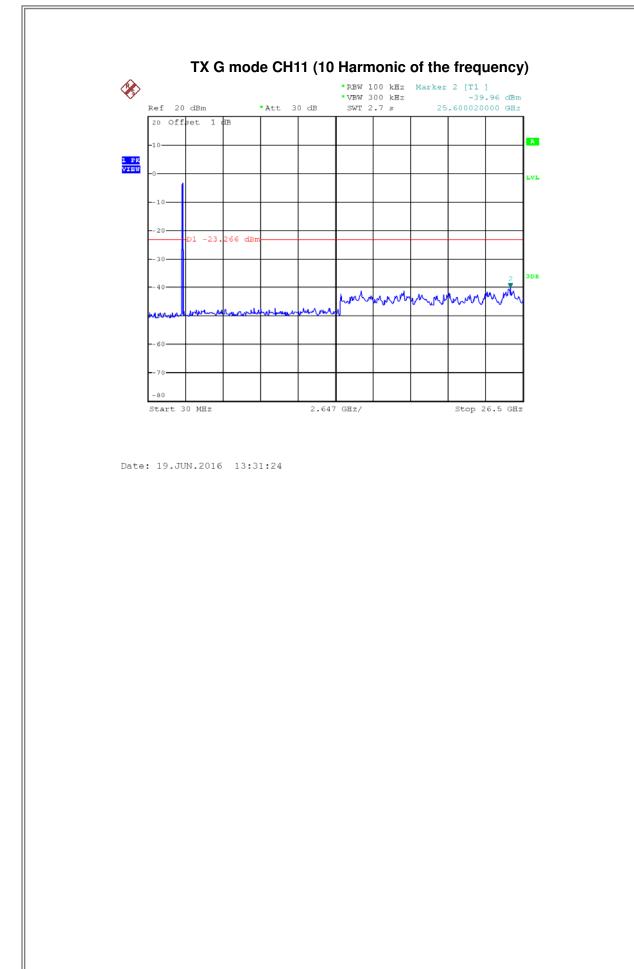




Test Mode :	TX G Mode_ANT 2

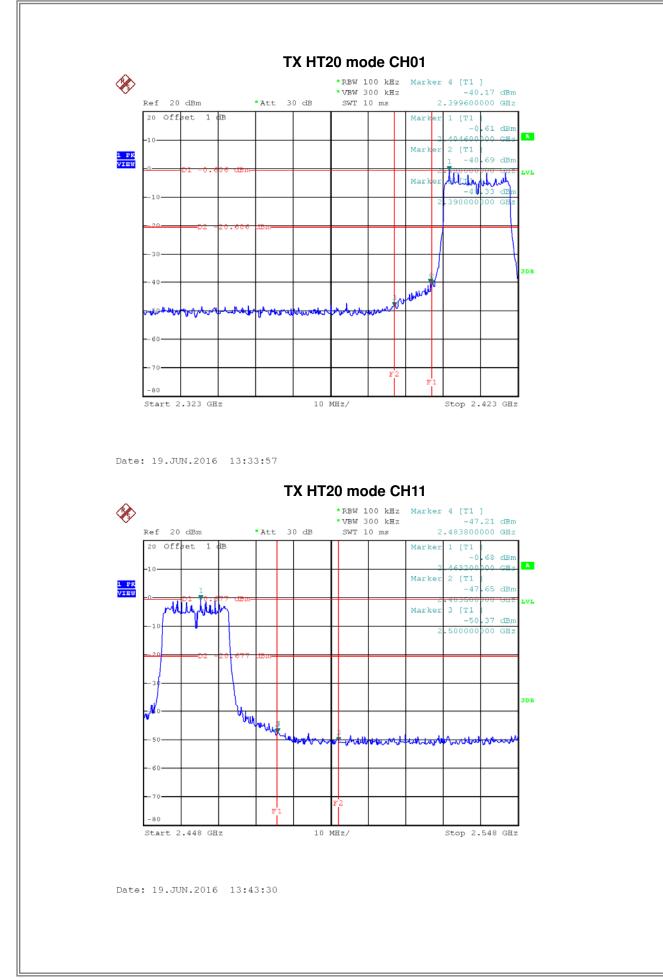


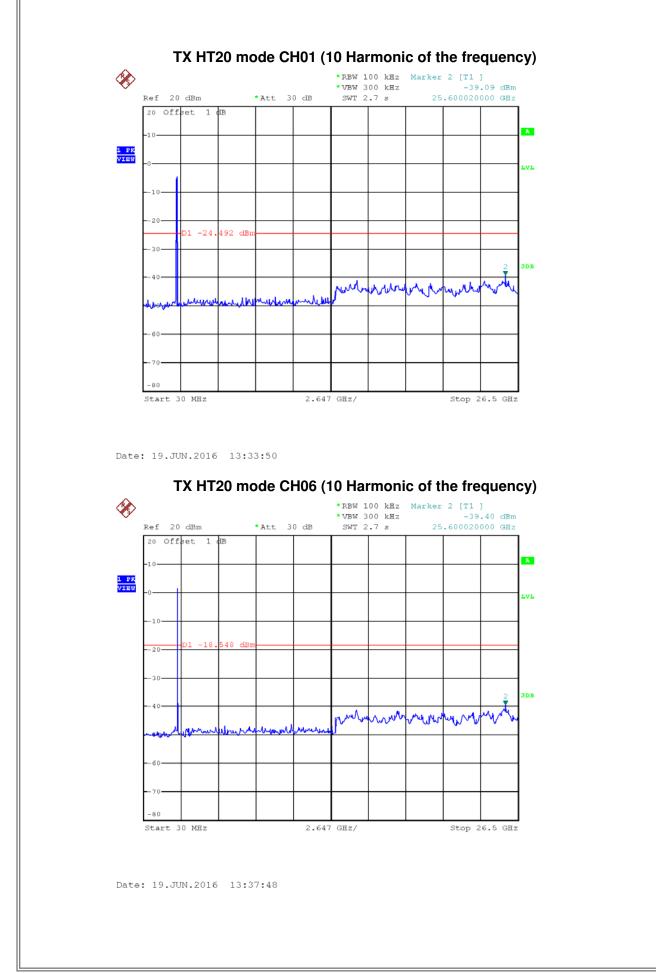




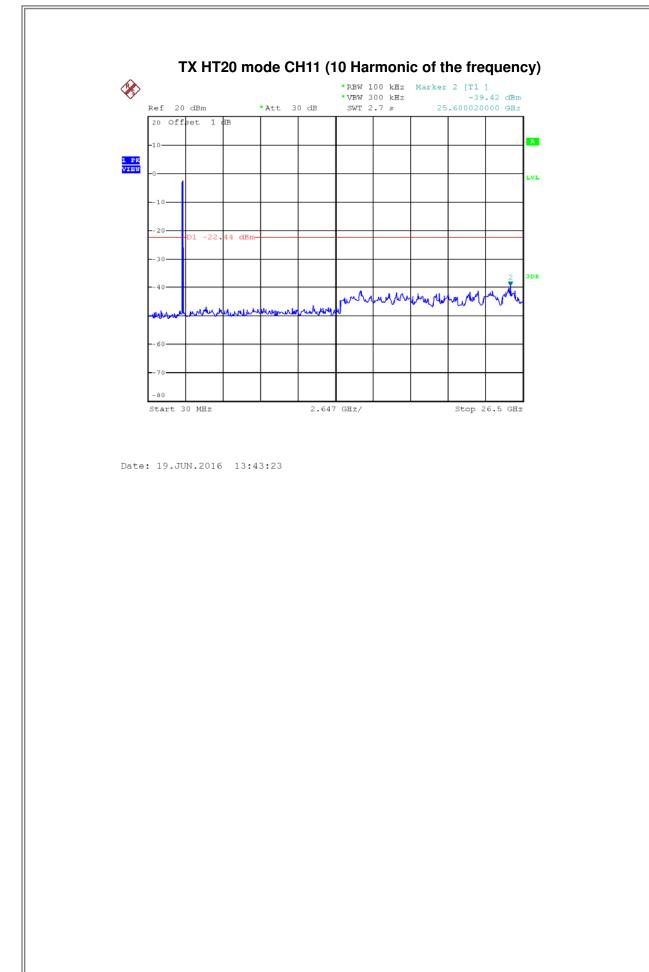


Test Mode :	TX N-20M Mode_ANT 1



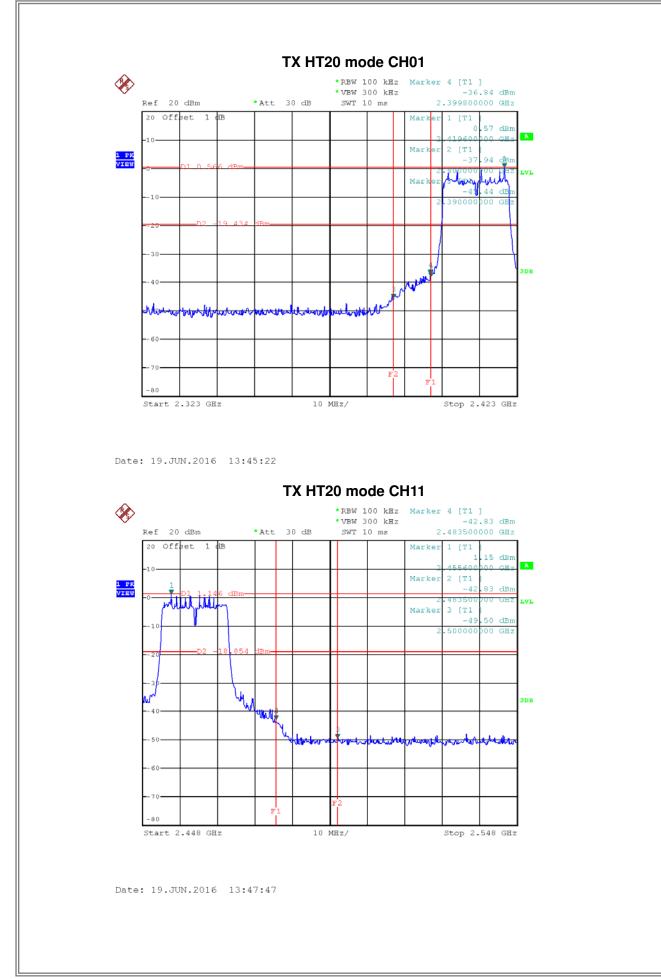


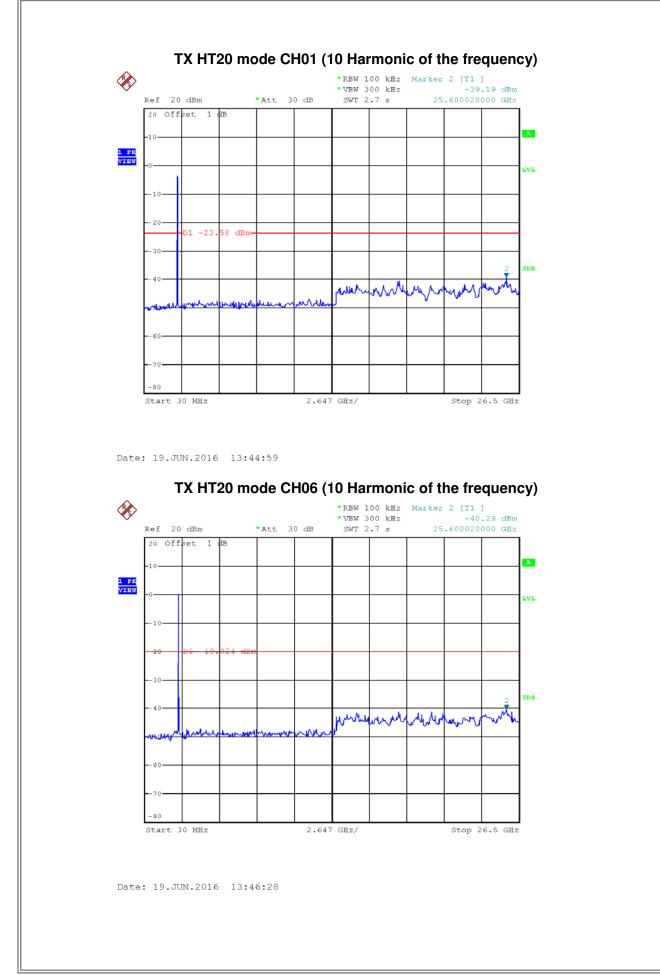
Report No.: BTL-FCCP-1-1604061

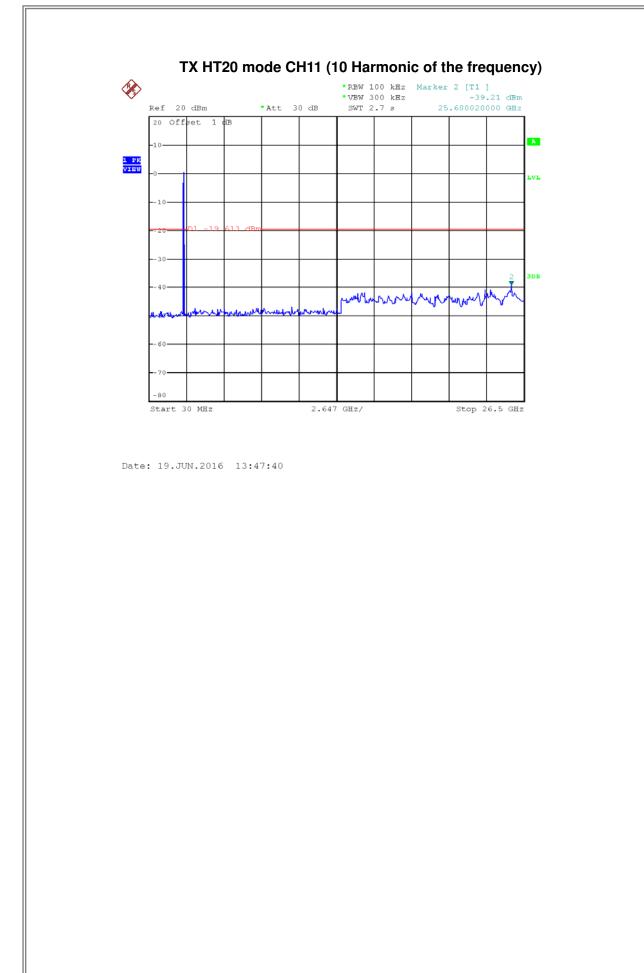




Test Mode :	TX N-20M Mode_ANT 2

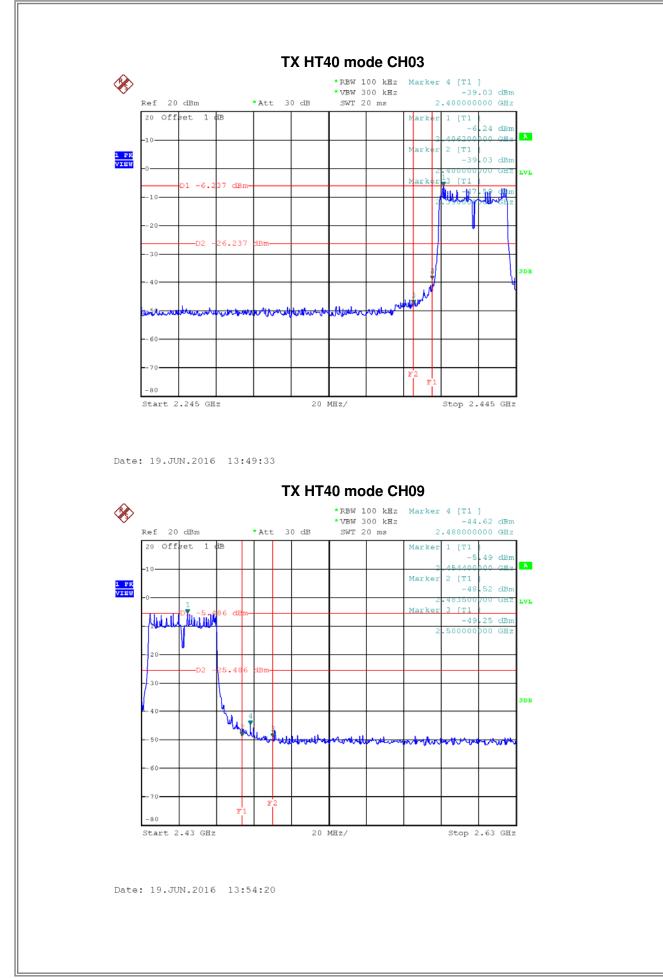


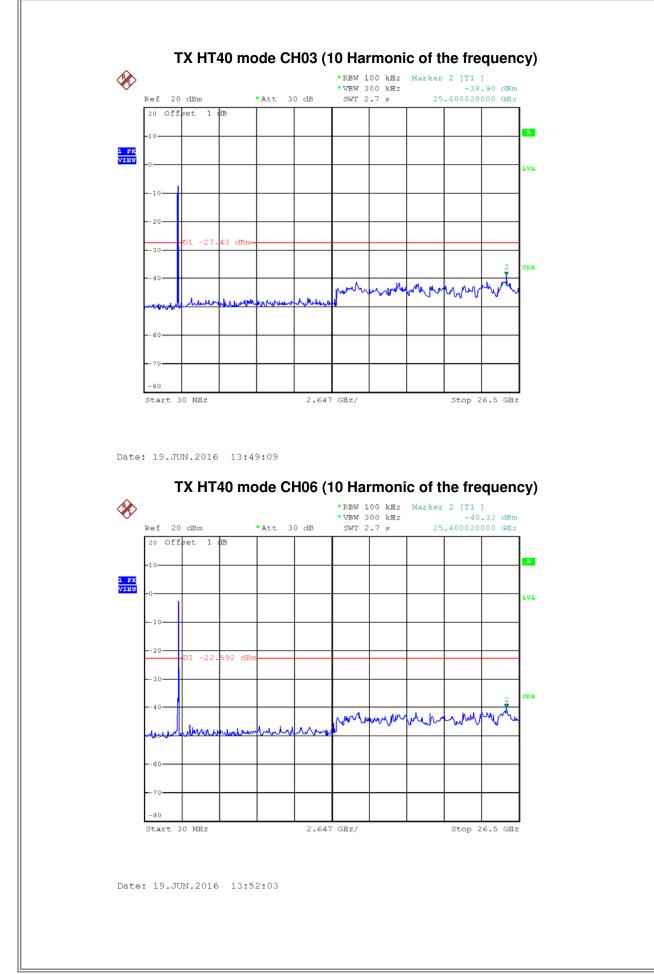




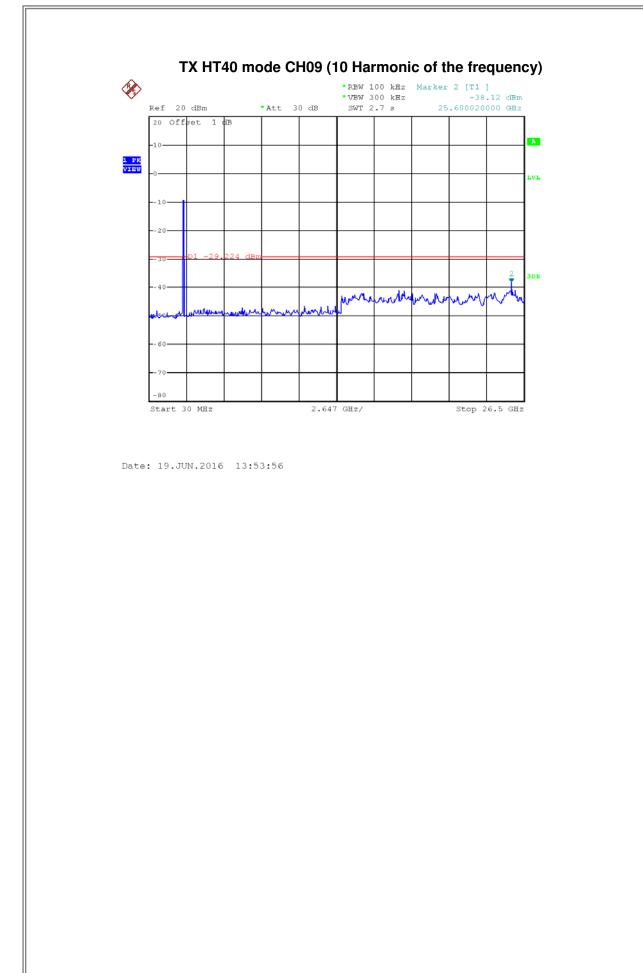


Test Mode :	TX N-40M Mode_ANT 1



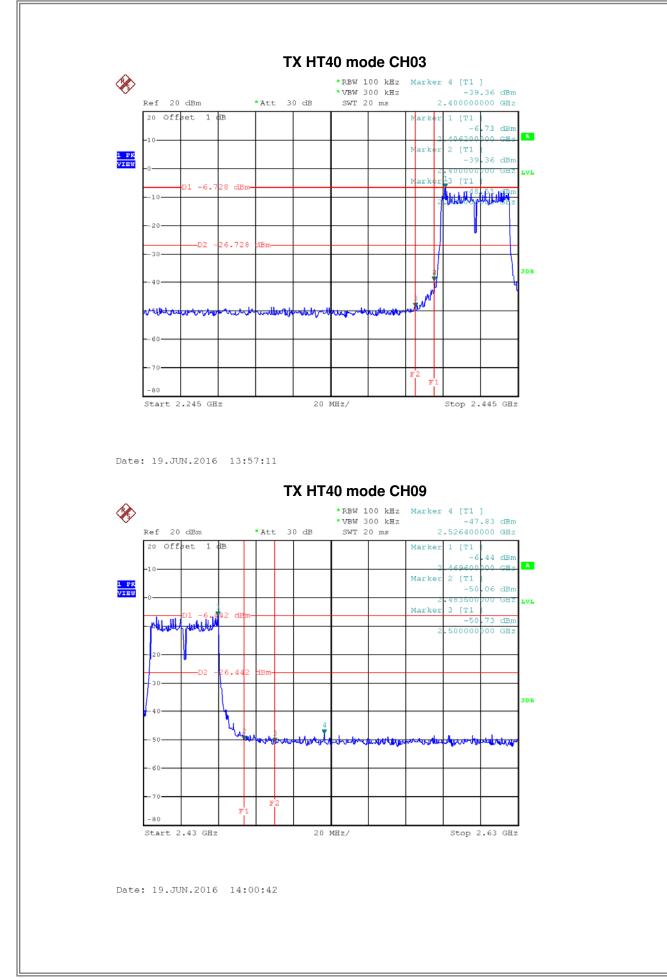


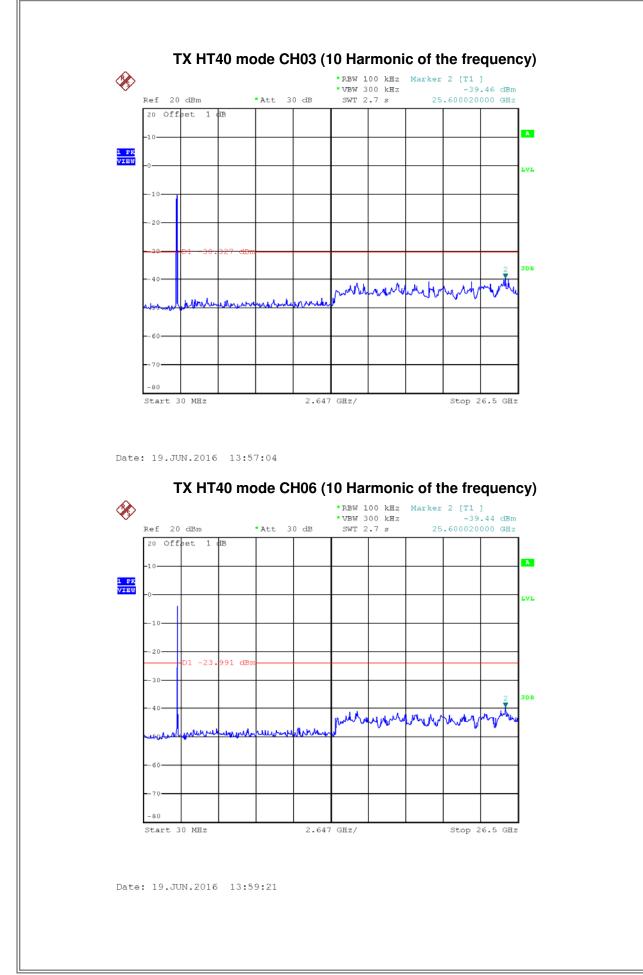
Report No.: BTL-FCCP-1-1604061

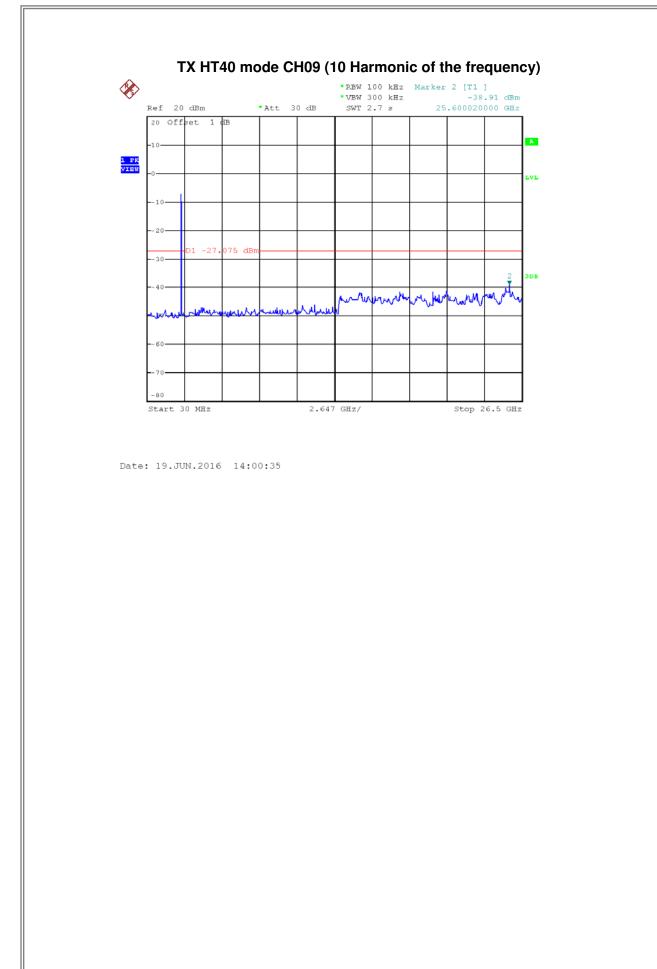




Test Mode :	TX N-40M Mode_ANT 2



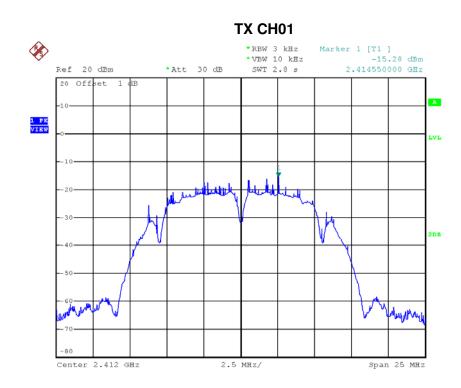




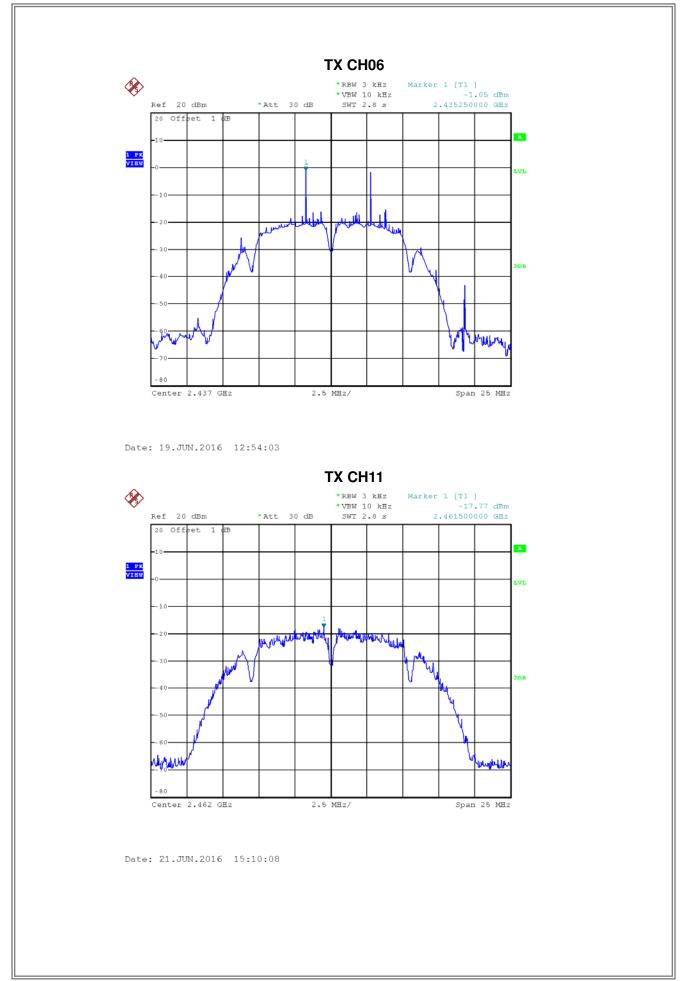
## **ATTACHMENT H - POWER SPECTRAL DENSITY**



Test Mode :TX B Mode_CH01/06/11_ANT 1					
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result	
2412	-15.28	0.03	7.8	Complies	
2437	-1.05	0.79	7.8	Complies	
2462	-17.77	0.02	7.8	Complies	

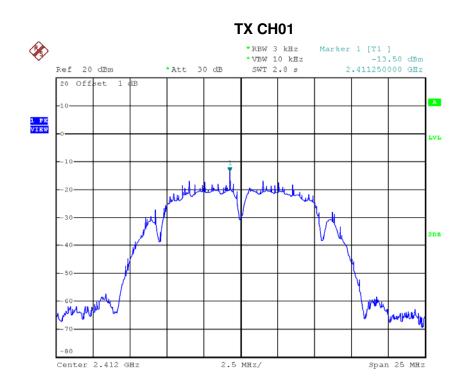


Date: 19.JUN.2016 12:52:03

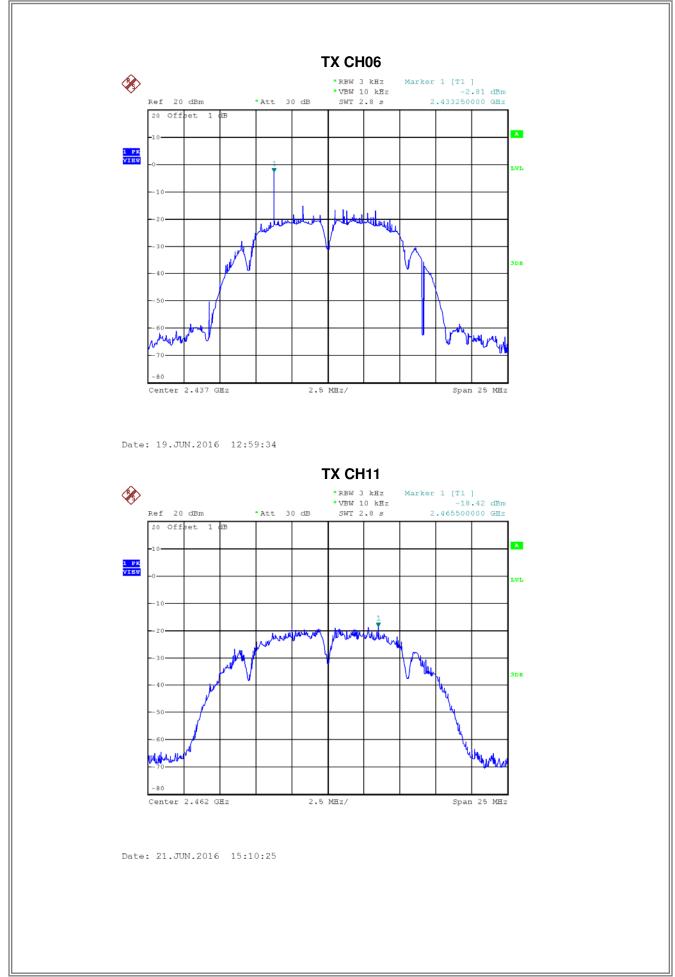




Test Mode :TX B Mode_CH01/06/11_ANT 2					
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result	
2412	-13.50	0.04	7.8	Complies	
2437	-2.81	0.52	7.8	Complies	
2462	-18.42	0.01	7.8	Complies	



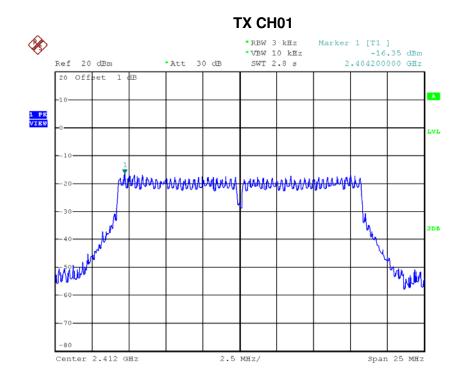
Date: 19.JUN.2016 12:58:15



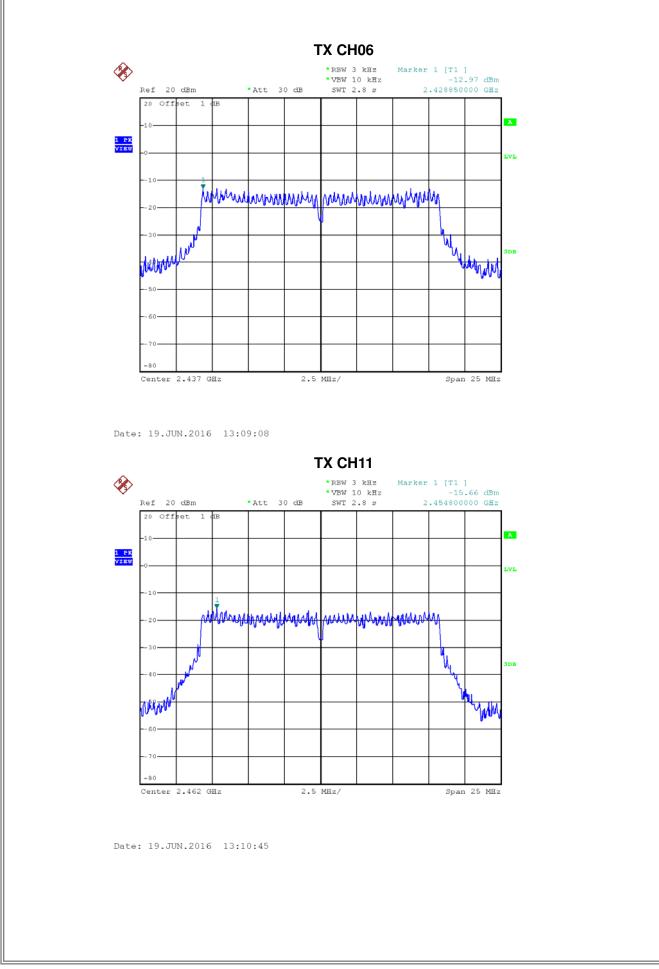
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-11.29	0.07	7.8	Complies
2437	1.17	1.31	7.8	Complies
2462	-15.07	0.03	7.8	Complies



Test Mode :TX G Mode_CH01/06/11_ANT 1					
FrequencyPower DensityPower DensityMax. Limit(MHz)(dBm/3kHz)(mW/3kHz)(dBm/3kHz)					
2412	-16.35	0.02	7.8	Complies	
2437	-12.97	0.05	7.8	Complies	
2462	-15.66	0.03	7.8	Complies	

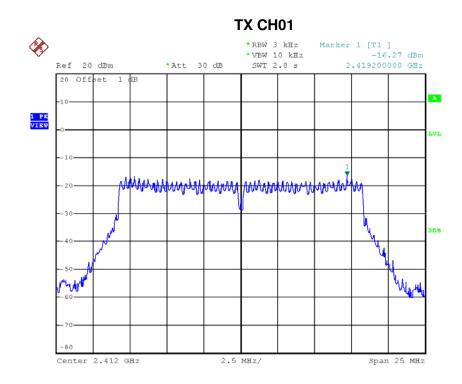


Date: 19.JUN.2016 13:06:43

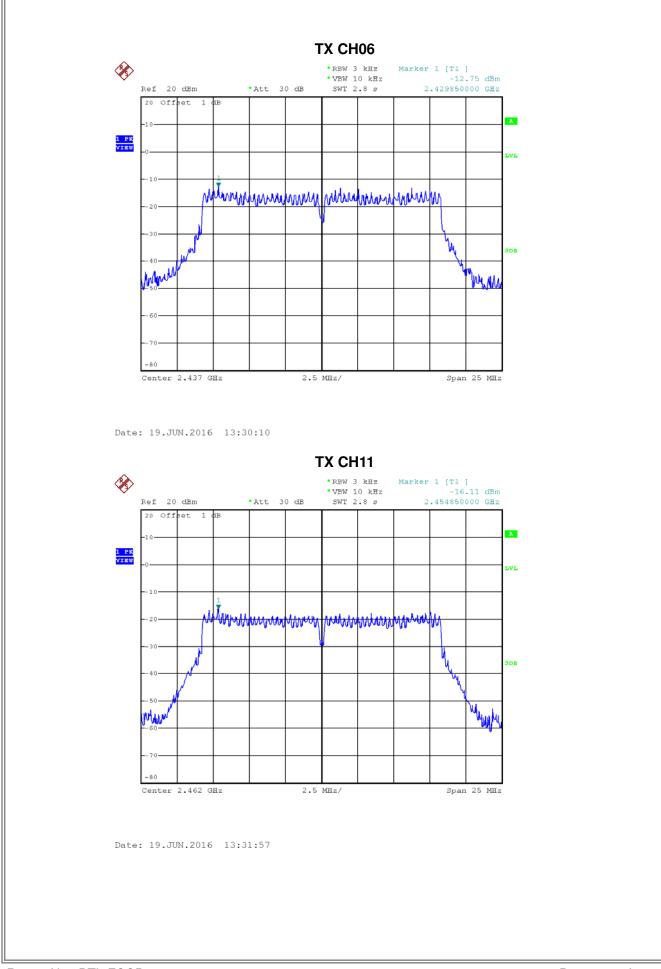




Test Mode :TX G Mode_CH01/06/11_ANT 2					
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result	
2412	-16.27	0.02	7.8	Complies	
2437	-12.75	0.05	7.8	Complies	
2462	-16.11	0.02	7.8	Complies	



Date: 19.JUN.2016 13:29:01



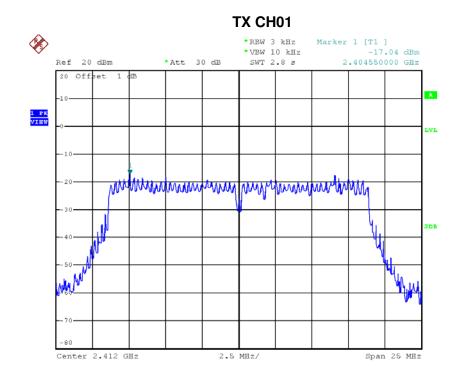


Test Mode :TX G Mode_	CH01/06/11_Total
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Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-13.30	0.05	7.8	Complies
2437	-9.85	0.10	7.8	Complies
2462	-12.87	0.05	7.8	Complies

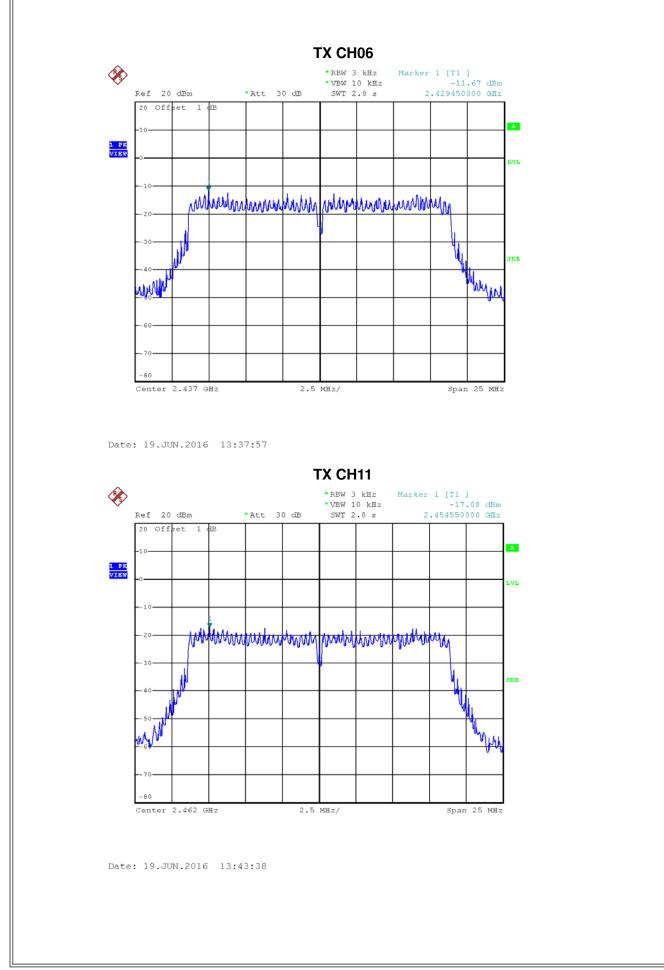


Test Mode : TX N-20M Mode_CH01/06/11_ANT 1					
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result	
2412	-17.04	0.02	7.8	Complies	
2437	-11.67	0.07	7.8	Complies	
2462	-17.08	0.02	7.8	Complies	



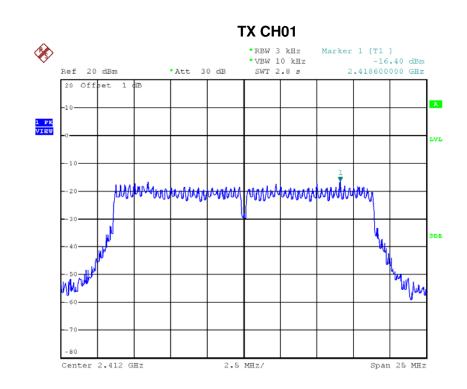
## Date: 19.JUN.2016 13:34:06

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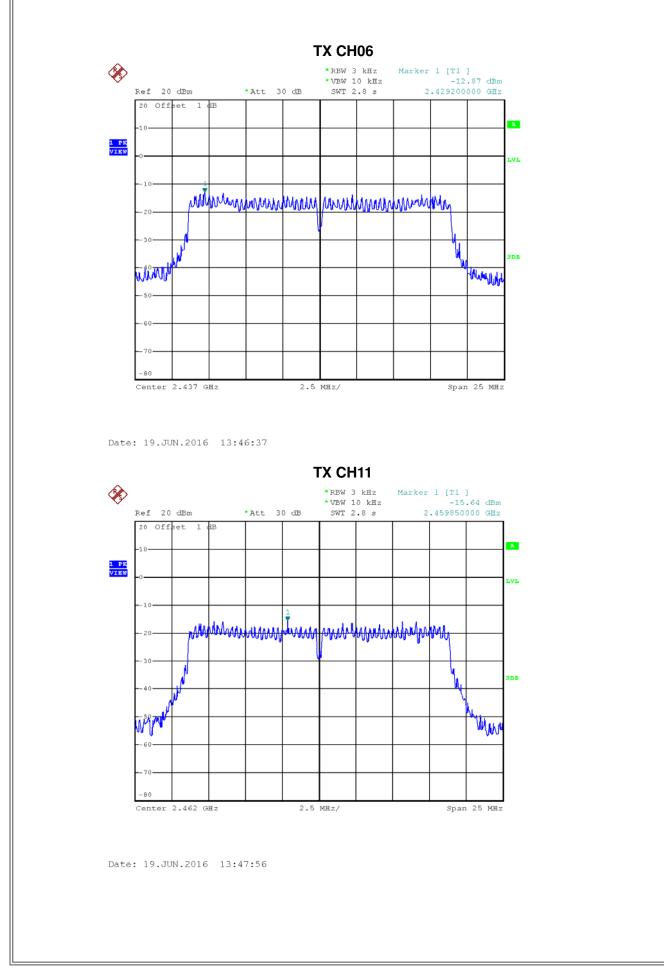




Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-16.40	0.02	7.8	Complies
2437	-12.87	0.05	7.8	Complies
2462	-15.64	0.03	7.8	Complies



Date: 19.JUN.2016 13:45:31

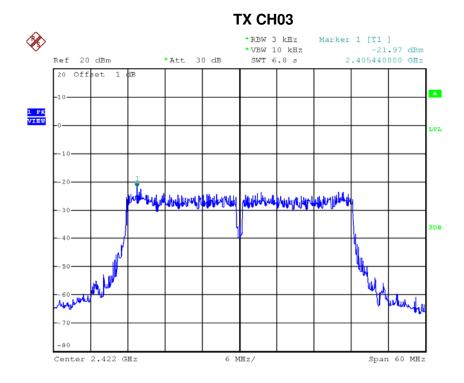


Test Mode : TX N-20M Mode	_CH01/06/11_Total
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Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-13.70	0.04	7.8	Complies
2437	-9.22	0.12	7.8	Complies
2462	-13.29	0.05	7.8	Complies

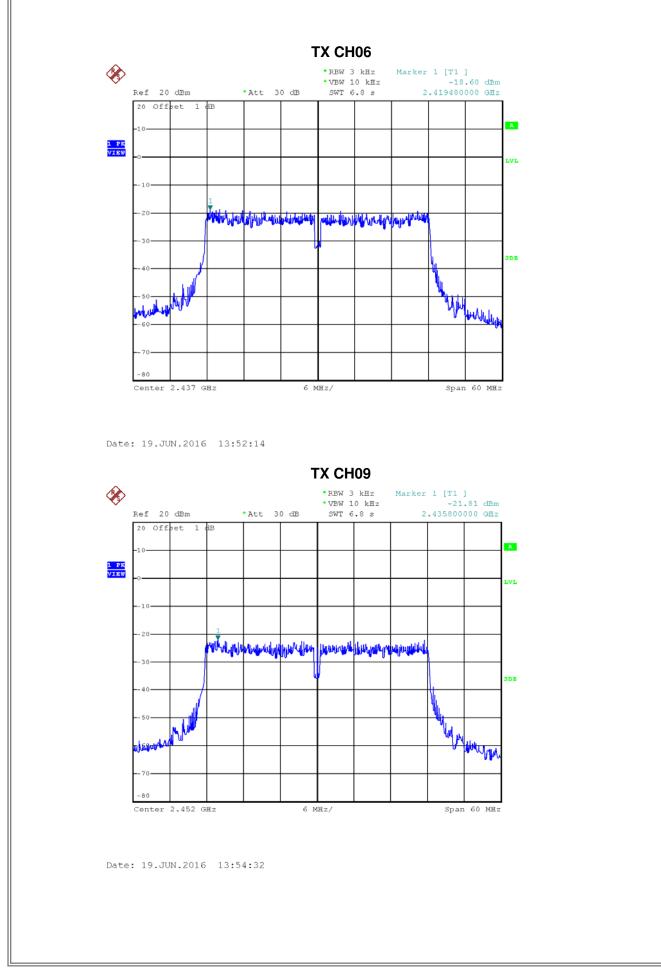


Test Mode : TX N-40M Mode_CH03/06/09_ANT 1						
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result		
2422	-21.97	0.01	7.8	Complies		
2437	-18.60	0.01	7.8	Complies		
2452	-21.81	0.01	7.8	Complies		



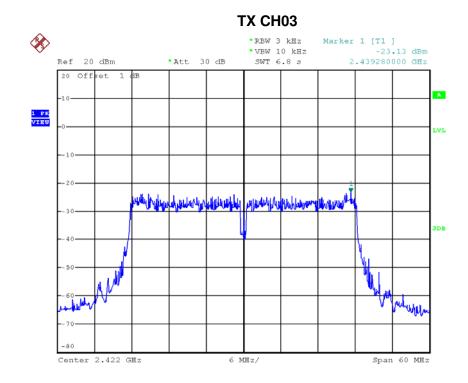
Date: 19.JUN.2016 13:49:44

Report No.: BTL-FCCP-1-1604061

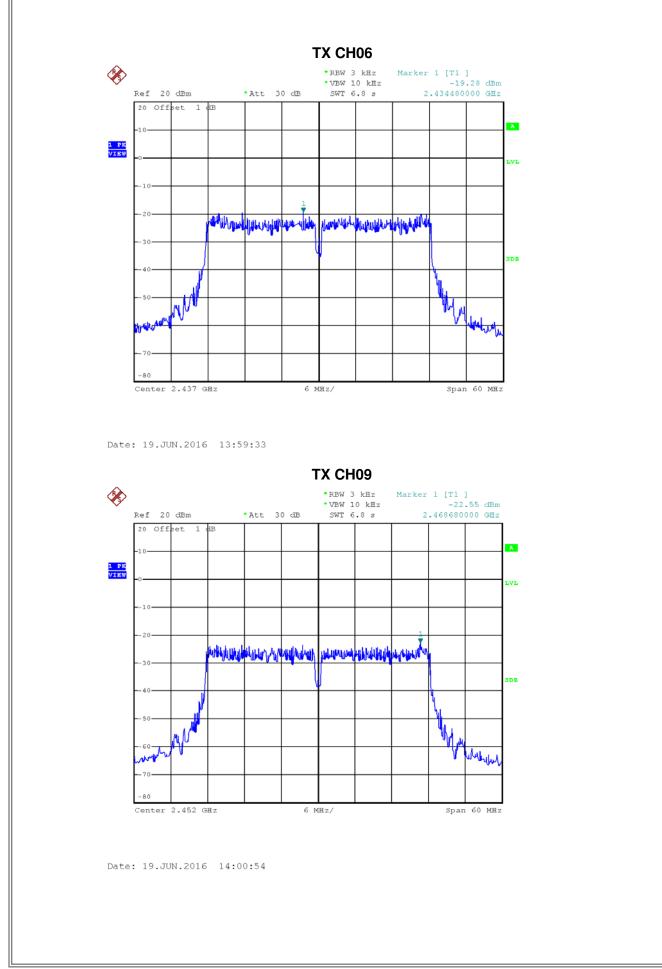




Test Mode : TX N-40M Mode_CH03/06/09_ANT 2						
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result		
2422	-23.13	0.00	7.8	Complies		
2437	-19.28	0.01	7.8	Complies		
2452	-22.55	0.01	7.8	Complies		



Date: 19.JUN.2016 13:57:22





Test Mode : TX N-40M Mode_CH03	3/06/09_Total
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Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2422	-19.50	0.01	7.8	Complies
2437	-15.92	0.03	7.8	Complies
2452	-19.15	0.01	7.8	Complies