

# **FCC&IC** Radio Test Report

FCC ID: Q87-RE4100W

IC: 3839A-RE4100W

This report concerns (check one): ⊠Original Grant □Class II Change

Project No. : 1411127
Equipment : Wi-Fi repeater
Model Name : RE4100W
Applicant : Linksys LLC.

Address : 121 Theory Drive, Irvine, California, 92617, United

States of America

Date of Receipt : Nov. 17, 2014

**Date of Test** : Nov. 17, 2014 ~ Dec. 06, 2014

Issued Date : Dec. 08, 2014 Tested by : BTL Inc.

Testing Engineer : Favid Mad

(David Mao)

Technical Manager :

(Leo Hung)

Authorized Signatory : \_\_\_\_\_\_

(Steven Lu)

# BTL INC.

No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

TEL: +86-769-8318-3000 FAX: +86-769-8319-6000

Report No.: BTL-FICP-1-1411127 Page 1 of 149



#### **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.

Report No.: BTL-FICP-1-1411127 Page 2 of 149



Table of Contents	Page
4 CERTIFICATION	7
1. CERTIFICATION	7
2 . SUMMARY OF TEST RESULTS	8
2.1 TEST FACILITY	9
2.2 MEASUREMENT UNCERTAINTY	9
3 . GENERAL INFORMATION	10
3.1 GENERAL DESCRIPTION OF EUT	10
3.2 DESCRIPTION OF TEST MODES	12
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING	15
3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TE	ESTED 16
3.5 DESCRIPTION OF SUPPORT UNITS	16
4 . EMC EMISSION TEST	17
4.1 CONDUCTED EMISSION MEASUREMENT	17
4.1.1 POWER LINE CONDUCTED EMISSION LIMITS 4.1.2 TEST PROCEDURE	17 17
4.1.3 DEVIATION FROM TEST STANDARD	17
4.1.4 TEST SETUP	18
4.1.5 EUT OPERATING CONDITIONS	18
4.1.6 EUT TEST CONDITIONS 4.1.7 TEST RESULTS	18 18
4.2 RADIATED EMISSION MEASUREMENT	19
4.2.1 RADIATED EMISSION LIMITS	19
4.2.2 TEST PROCEDURE	20
4.2.3 DEVIATION FROM TEST STANDARD 4.2.4 TEST SETUP	20 20
4.2.5 EUT OPERATING CONDITIONS	21
4.2.6 EUT TEST CONDITIONS	21
4.2.7 TEST RESULTS (9KHZ TO 30MHZ) 4.2.8 TEST RESULTS (30MHZ TO 1000 MHZ)	22 22
4.2.9 TEST RESULTS (30MH2 TO 1000 MH2) 4.2.9 TEST RESULTS (1GHZ~10 <sup>TH</sup> HARMONIC)	22
4.3 BAND EDGE MEASUREMENT	23
4.3.1 RADIATED EMISSION LIMITS	23
4.3.2 TEST PROCEDURE 4.3.3 TEST SETUP LAYOUT	24 24
4.3.4 DEVIATION FROM TEST STANDARD	24 24
4.3.5 EUT OPERATING CONDITIONS	24
4.3.6 TEST RESULTS (BAND EDGE AND FUNDAMENTAL EMISSIONS	S) 24
5 . BANDWIDTH TEST	25

Report No.: BTL-FICP-1-1411127 Page 3 of 149



Page 4 of 149

Table of Contents	Page
5.1 APPLIED PROCEDURES 5.1.1 TEST PROCEDURE 5.1.2 DEVIATION FROM STANDARD 5.1.3 TEST SETUP 5.1.4 EUT OPERATION CONDITIONS 5.1.5 EUT TEST CONDITIONS 5.1.6 TEST RESULTS	25 25 25 25 25 25 25
6 . MAXIMUM PEAK CONDUCTED OUTPUT POWER TEST	26
6.1 APPLIED PROCEDURES / LIMIT 6.1.1 TEST PROCEDURE 6.1.2 DEVIATION FROM STANDARD 6.1.3 TEST SETUP 6.1.4 EUT OPERATION CONDITIONS 6.1.5 EUT TEST CONDITIONS 6.1.6 TEST RESULTS	26 26 26 26 26 26 26
7. ANTENNA CONDUCTED SPURIOUS EMISSION	27
7.1 APPLIED PROCEDURES / LIMIT 7.1.1 TEST PROCEDURE 7.1.2 DEVIATION FROM STANDARD 7.1.3 TEST SETUP 7.1.4 EUT OPERATION CONDITIONS 7.1.5 EUT TEST CONDITIONS 7.1.6 TEST RESULTS	27 27 27 27 27 27 27
8 . POWER SPECTRAL DENSITY TEST	28
8.1 APPLIED PROCEDURES / LIMIT 8.1.1 TEST PROCEDURE 8.1.2 DEVIATION FROM STANDARD 8.1.3 TEST SETUP 8.1.4 EUT OPERATION CONDITIONS 8.1.5 EUT TEST CONDITIONS 8.1.6 TEST RESULTS	28 28 28 28 28 28 28
9 . MEASUREMENT INSTRUMENTS LIST	29
10 . EUT TEST PHOTO	31
ATTACHMENT A - CONDUCTED EMISSION ATTACHMENT B - RADIATED EMISSION (9KHZ TO 30MHZ)	35 38
ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)	40
ATTACHMENT D - RADIATED EMISSION (1GHZ~10 <sup>TH</sup> HARMONIC)	40 47
ATTACHMENT E - BAND EDGE AND FUNDAMENTAL EMISSIONS	72

Report No.: BTL-FICP-1-1411127



Table of Contents	Page
ATTACHMENT F - BANDWIDTH	97
ATTACHMENT G - MAXIMUM PEAK CONDUCTED OUTPUT POWER	106
ATTACHMENT H - ANTENNA CONDUCTED SPURIOUS EMISSION	110
ATTACHMENT I - POWER SPECTRAL DENSITY	135

Report No.: BTL-FICP-1-1411127 Page 5 of 149



# **REPORT ISSUED HISTORY**

Issued No.	Description	Issued Date
BTL-FICP-1-1411127	Original Issue.	Dec. 08, 2014

Report No.: BTL-FICP-1-1411127 Page 6 of 149



# 1. CERTIFICATION

Equipment : Wi-Fi repeater

Brand Name : Linksys Model Name : RE4100W Applicant : Linksys LLC.

Manufacturer: U-MEDIA Communications, Inc.

Address : 3F, No.1, Jin-Shan 8th St., Hsinchu 300, Taiwan, ROC

Factory: U-MEDIA Communications, Inc.

Address : NO.90, Kuang Fu Nth.Rd., Hsinchu Industrial Park, Hu Kou, Hsinchu 303,

Taiwan, R.O.C.

Date of Test : Nov. 17, 2014 ~ Dec. 06, 2014 Test Sample : ENGINEERING SAMPLE

Standard(s): FCC Part15, Subpart C: 2013 (15.247) / ANSI C63.4-2009

Canada RSS-210: 2010 RSS-GEN Issue 4, Nov 2014

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-FICP-1-1411127) 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).

Report No.: BTL-FICP-1-1411127 Page 7 of 149



# 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

Applied Standard(s): FCC Part15 (15.247) , Subpart C: 2013 Canada RSS-210:2010; RSS-GEN Issue 4, Nov 2014				
Standard FCC		Test Item	Judgment	Under Limit
15.207	RSS-GEN 8.8	Conducted Emission	PASS	Limit Minimum passing margin is -3.98 dB at 0.572 MHz
15.247(d)	RSS-210 Annex 8 (A8.5)	Radiated Emissions	PASS	Limit Minimum passing margin is -5.10 dB at 4874.12 MHz
15.247(d)	RSS-210 Annex 8 (A8.5)	Band Edge Emissions	PASS	Limit Minimum passing margin is -1.01 dB at 2483.50 MHz
15.247(a)(2)	RSS-210 Annex 8 (A8.2(a))	6dB Bandwidth	PASS	-
15.247(b)(3)	RSS-210 Annex 8 (A8.4(4))	Peak Output Power	PASS	Limit Minimum passing margin is -2.45 dB at 2437 MHz
15.247(d)	RSS-210 Annex 8 (A8.5)	Antenna conducted Spurious Emission	PASS	-
15.203	-	Antenna Requirement	PASS	-
15.247(e)	RSS-210 Annex 8 (A8.2(b))	Power Spectral Density	PASS	-

# NOTE:

Report No.: BTL-FICP-1-1411127 Page 8 of 149

<sup>(1)&</sup>quot; N/A" denotes test is not applicable to this device.

<sup>(2)</sup> 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

BTL's test firm number for IC: 4428B-1

#### 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 %.

#### 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	· · · IU(0B) I NOTE		NOTE								
		9KHz~30MHz	V	3.79									
		9KHz~30MHz	Н	3.57									
		30MHz ~ 200MHz	V	3.82									
	CICDD	CICDD	CIEDD	CICDD	CIEDD	CIEDD	CIEDD	CICDD	CICDD	30MHz ~ 200MHz	Н	3.60	
DG-CB03										CISPR	CICDD	CICDD	200MHz ~ 1,000MHz
DG-CB03	CISER	200MHz ~ 1,000MHz	Н	3.94									
		1GHz~18GHz	V	3.12									
		1GHz~18GHz	Н	3.68									
		18GHz~40GHz	V	4.15									
		18GHz~40GHz	Н	4.14									

Report No.: BTL-FICP-1-1411127 Page 9 of 149



# 3. GENERAL INFORMATION

# 3.1 GENERAL DESCRIPTION OF EUT

Equipment	Wi-Fi repeater			
Brand Name	Linksys			
Model Name	RE4100W			
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: 22.45dBm 802.11g: 25.31dBm 802.11n(20MHz): 27.55dBm 802.11n(40MHz): 25.95dBm		
Power Source	AC mains. Power board:  1) Brand / Model: HON-KWANG / HKSC-141145  2) Brand / Model: KUANTECH / KS045858			
Power Rating	I/P: AC 100-240V 50/60Hz O/P: DC 5V 2.0A			

#### Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

Report No.: BTL-FICP-1-1411127 Page 10 of 149



# 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	80	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	N/A	N/A	Internal	N/A	1.00	TX/RX
2	N/A	N/A	Internal	N/A	1.00	TX/RX

Note:

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

4.

Operating Mode		
TX Mode	1TX	2TX
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)

Note: For IEEE 802.11b/g mode (1TX/1RX):

The EUT supports the antenna with TX and RX diversity functions.

Both Ant. 1 and Ant. 2 support transmit and receive functions, but only one of them will be used at one time.

The Ant. 1 generated the worst case, so it was selected to test and record in the report.

For IEEE 802.11n mode (2TX/2RX):

Both Ant. 1 and Ant. 2 can be used as transmitting/receiving antenna.

Ant. 1 and Ant. 2 could both transmit/receive simultaneously.

Report No.: BTL-FICP-1-1411127 Page 11 of 149



# 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	

For Band Edge 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	

Report No.: BTL-FICP-1-1411127 Page 12 of 149



6dB Spectrum Bandwidth		
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	

Maximum Conducted Output Power		
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	

Antenna conducted Spurious Emission		
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	

Power Spectral Density		
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	

Report No.: BTL-FICP-1-1411127 Page 13 of 149



#### 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%.
- (5) The EUT was pre-tested on the positioned of each 3 axis. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

Report No.: BTL-FICP-1-1411127 Page 14 of 149



# 3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

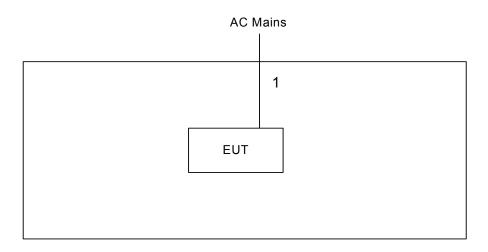
During testing, channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final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

Test software version	QA_Tool 2.4G		
Frequency (MHz)	2412	2437	2462
802.11b	24	1F	25
802.11g	21	23	22
802.11n (20MHz)	1F	24	22
Frequency	2422	2437	2452
802.11n (40MHz)	1F	20	1B

Report No.: BTL-FICP-1-1411127 Page 15 of 149



# 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
1	NO	NO	1.5m	AC Cable

Report No.: BTL-FICP-1-1411127 Page 16 of 149



#### 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 (Min2)	Quasi pea	Average	
0.15 -0.	66 to 56*	56 to 4 *	
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.

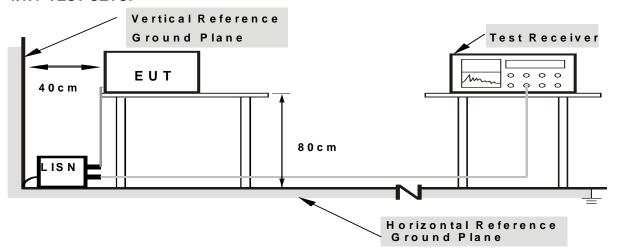
#### 4.1.3 DEVIATION FROM TEST STANDARD

No deviation

Report No.: BTL-FICP-1-1411127 Page 17 of 149



# 4.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

# **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.

Report No.: BTL-FICP-1-1411127 Page 18 of 149



#### 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) & RSS-210 section 2.2& Annex 8 (A8.5), then the 15.209(a)& RSS-Gen 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)	
r requericy (Wiriz)	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

Report No.: BTL-FICP-1-1411127 Page 19 of 149



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

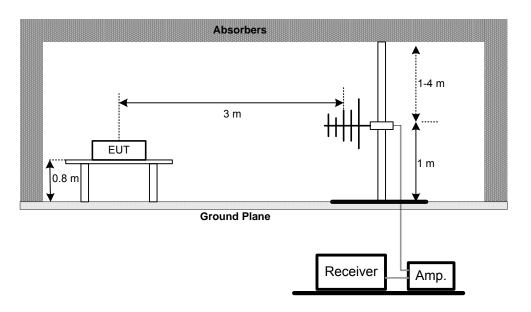
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 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

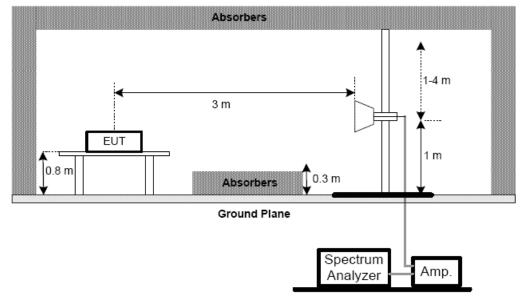
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



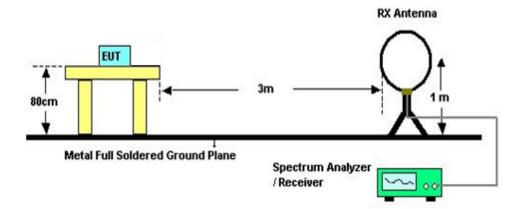
Report No.: BTL-FICP-1-1411127 Page 20 of 149



# (B) Radiated Emission Test Set-Up Frequency Above 1 GHz



# (C) For radiated emissions below 30MHz



# **4.2.5 EUT OPERATING CONDITIONS**

The EUT was programmed to be in continuously transmitting mode.

# **4.2.6 EUT TEST CONDITIONS**

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

Report No.: BTL-FICP-1-1411127 Page 21 of 149



# 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 (1GHZ~10<sup>TH</sup> HARMONIC)

Please refer to the Attachment D.

Report No.: BTL-FICP-1-1411127 Page 22 of 149



#### 4.3 BAND EDGE MEASUREMENT

#### 4.3.1 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) & RSS-210 section 2.2& Annex 8 (A8.5), then the 15.209(a)& RSS-Gen 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)

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

Report No.: BTL-FICP-1-1411127 Page 23 of 149



#### 4.3.2 TEST PROCEDURE

For Radiated band edges Measurement:

a. The test procedure is the same as section 4.2.2, only the frequency range investigated is limited to 100MHz around band edges.

For Radiated Out of Band Emission Measurement:

a. Test was performed in accordance with KDB 558074 D01 v03r02 for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247 section 10.1 Unwanted Emissions into Non-Restricted Frequency Bands Measurement Procedure.

### 4.3.3 TEST SETUP LAYOUT

For Radiated band edges Measurement:

This test setup layout is the same as that shown in section 4.2.4.

For Radiated Out of Band Emission Measurement:

This test setup layout is the same as that shown in section 4.2.4.

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.3.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

# 4.3.6 TEST RESULTS (BAND EDGE AND FUNDAMENTAL EMISSIONS)

Please refer to the Attachment E.

#### Remark:

(1) No limit: This is fundamental signal, the judgment is not applicable. For fundamental signal judgment was referred to Peak output test.

Report No.: BTL-FICP-1-1411127 Page 24 of 149



# **5. BANDWIDTH TEST**

# **5.1 APPLIED PROCEDURES**

FCC Part15 (15.247) , Subpart C/ RSS-GEN and RSS-210			
Section	Test Item	Frequency Range (MHz)	Result
15.247(a)(2)			
RSS-GEN section 6.6	Bandwidth	2400-2483.5	PASS
RSS-210 Annex 8 (A8.2(a))			

#### **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 F.

Report No.: BTL-FICP-1-1411127 Page 25 of 149



# 6. MAXIMUM PEAK CONDUCTED OUTPUT POWER TEST

#### **6.1 APPLIED PROCEDURES / LIMIT**

FCC Part15 (15.247) , Subpart C/ RSS-210				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3) RSS-210 Annex 8.4(4)	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

EUT	Power Meter
	1 Ower weter

# **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 G.

Report No.: BTL-FICP-1-1411127 Page 26 of 149



#### 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

EUT	SPECTRUM
	ANALYZER

#### 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 H.

Report No.: BTL-FICP-1-1411127 Page 27 of 149



# 8. POWER SPECTRAL DENSITY TEST

# 8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C / RSS-210						
Section	Test Item	Limit	Frequency Range (MHz)	Result		
15.247(e) RSS-210 Annex 8( A8.2(b))	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 I.

Report No.: BTL-FICP-1-1411127 Page 28 of 149



# 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 & Band edge 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	MY5213003 9	Sep. 30, 2015		
4	Test Cable	N/A	C-01_CB03	N/A	Jul. 01, 2015		
5	Controller	CT	SC100	N/A	N/A		
6	Antenna	ETS	3115	00075789	Mar. 29, 2015		
7	Amplifier	Agilent	8449B	3008A02274	Mar. 29, 2015		
8	Receiver	AGILENT	N9038A	MY5213003 9	Sep. 30, 2015		
9	Test Cable	HUBER+SUHNER	C-48	N/A	Apr. 30, 2015		
10	Controller	СТ	SC100	N/A	N/A		
11	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Feb. 22, 2015		
12	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Feb. 22, 2015		
13	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Mar. 29, 2015		
14	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A		

Report No.: BTL-FICP-1-1411127 Page 29 of 149



	6dB Bandwidth Measurement					
Item	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					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	P-series Power meter	Agilent	N1911A	MY45100473	Mar. 29, 2015
2	Wireband Power sensor	Agilent	N1921A	MY51100041	Mar. 29, 2015

	Antenna Conducted Spurious Emission Measurement					
Item	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					
Item	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.

Report No.: BTL-FICP-1-1411127 Page 30 of 149



# **10. EUT TEST PHOTO**

# **Conducted Measurement Photos**





Report No.: BTL-FICP-1-1411127 Page 31 of 149



# **Radiated Measurement Photos**

# 9KHz to 30MHz





Report No.: BTL-FICP-1-1411127 Page 32 of 149



# **Radiated Measurement Photos**

# 30MHz to 1000MHz





Report No.: BTL-FICP-1-1411127 Page 33 of 149



# **Radiated Measurement Photos**

# Above 1000MHz





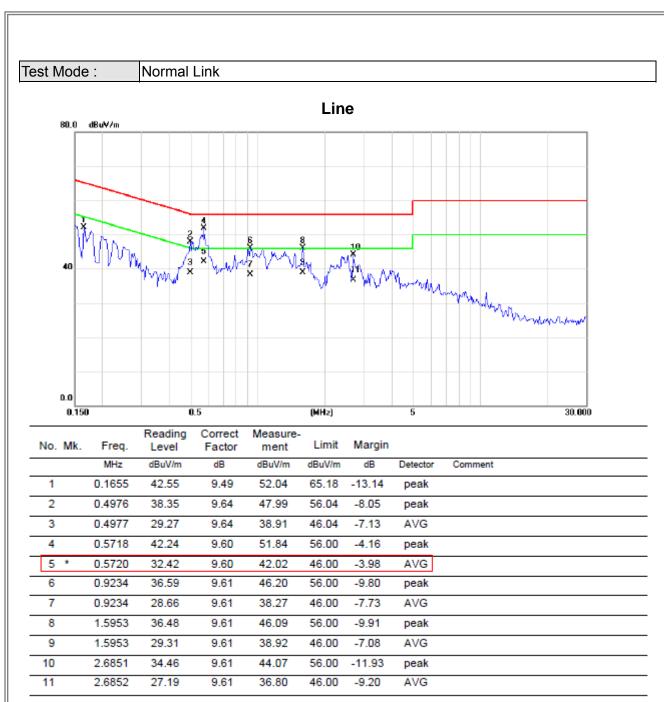
Report No.: BTL-FICP-1-1411127 Page 34 of 149



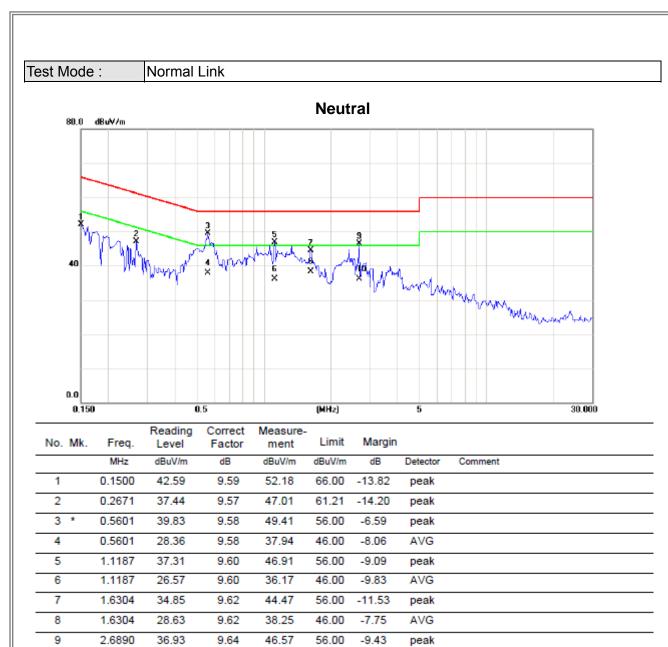
ATTACHMENT A - CONDUCTED EMISSION	

Report No.: BTL-FICP-1-1411127 Page 35 of 149









10

2.6890

26.37

9.64

36.01

46.00

-9.99

AVG



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

Report No.: BTL-FICP-1-1411127 Page 38 of 149



Test Mode: TX B MODE CHANNEL 01

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit(QP) (dBuV/m)	Margin (dB)	Note
0.0086	0°	13.52	25.02	38.54	108.91	-70.37	AVG
0.0086	0°	14.45	25.02	39.47	128.91	-89.44	PEAK
0.0129	0°	6.41	24.75	31.16	105.39	-74.23	AVG
0.0129	0°	7.38	24.75	32.13	125.39	-93.26	PEAK
0.0255	0°	3.49	23.95	27.44	99.47	-72.03	AVG
0.0255	0°	5.32	23.95	29.27	119.47	-90.20	PEAK
0.0321	0°	0.95	23.53	24.48	97.47	-72.99	AVG
0.0331	0°	2.94	23.53	26.47	117.47	-91.00	PEAK
0.5750	0°	30.76	20.04	50.80	72.41	-21.61	QP
1.7562	0°	21.46	19.52	40.98	69.54	-28.56	QP

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit(QP) (dBuV/m)	Margin (dB)	Note
0.0088	90°	13.42	24.30	37.72	128.71	-90.99	AVG
0.0088	90°	14.37	24.30	38.67	148.71	-110.04	PEAK
0.0249	90°	6.35	23.99	30.34	119.68	-89.34	AVG
0.0249	90°	8.58	23.99	32.57	139.68	-107.11	PEAK
0.0323	90°	3.49	23.52	27.01	117.42	-90.41	AVG
0.0323	90°	5.28	23.52	28.80	137.42	-108.62	PEAK
0.0461	90°	0.54	22.65	23.19	114.33	-91.14	AVG
0.0461	90°	2.82	22.65	25.47	134.33	-108.86	PEAK
0.4934	90°	30.77	19.82	50.59	73.74	-23.15	QP
1.7169	90°	21.53	19.53	41.06	69.54	-28.48	QP

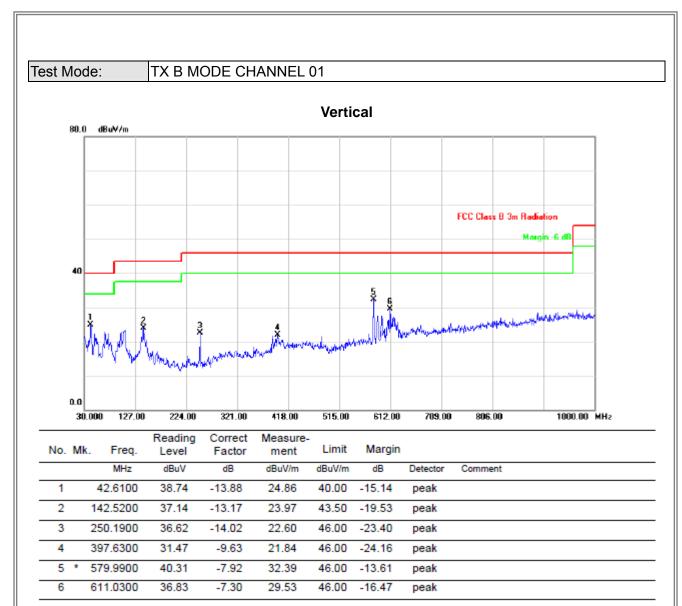
Report No.: BTL-FICP-1-1411127 Page 39 of 149



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

Report No.: BTL-FICP-1-1411127 Page 40 of 149





Report No.: BTL-FICP-1-1411127 Page 41 of 149



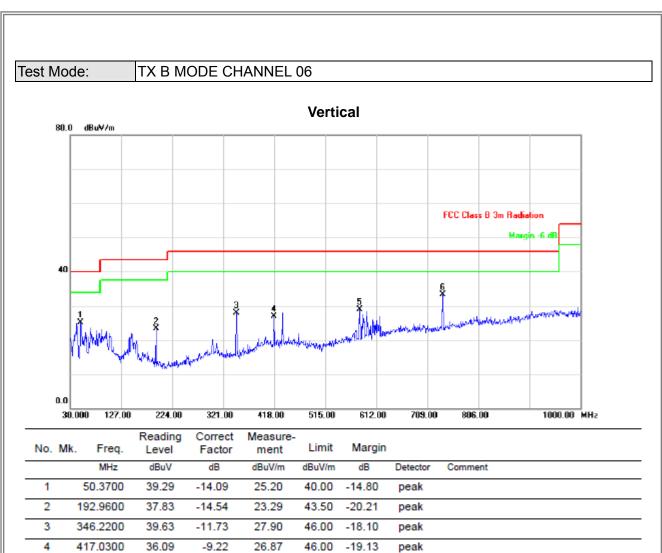


# Horizontal 80.0 dBuV/m FCC Class B 3m Radiation Margin -6 dB 40 0.0 1000.00 MHz 30.000 127.00 224.00 321.00 418.00 515.00 612.00 709.00 806.00

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		148.3400	33.50	-13.18	20.32	43.50	-23.18	peak	
2		250.1900	34.75	-14.02	20.73	46.00	-25.27	peak	
3		398.6000	32.49	-9.60	22.89	46.00	-23.11	peak	
4		484.9300	33.82	-9.95	23.87	46.00	-22.13	peak	
5	*	579.9900	33.78	-7.92	25.86	46.00	-20.14	peak	
6		967.0200	32.86	-0.28	32.58	54.00	-21.42	peak	

Report No.: BTL-FICP-1-1411127 Page 42 of 149





579.9900

738.1000

5

6

-7.92

-4.69

36.76

38.09

28.84

33.40

46.00

46.00

-17.16

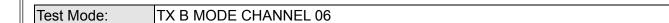
-12.60

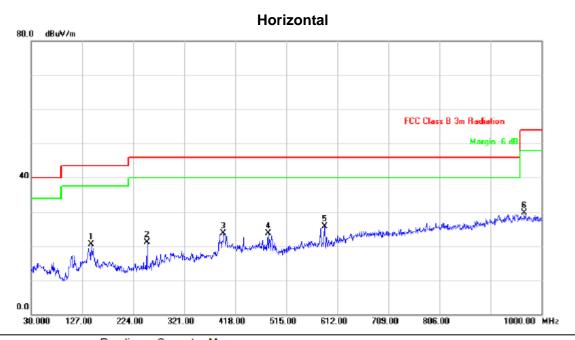
peak

peak

Report No.: BTL-FICP-1-1411127 Page 43 of 149



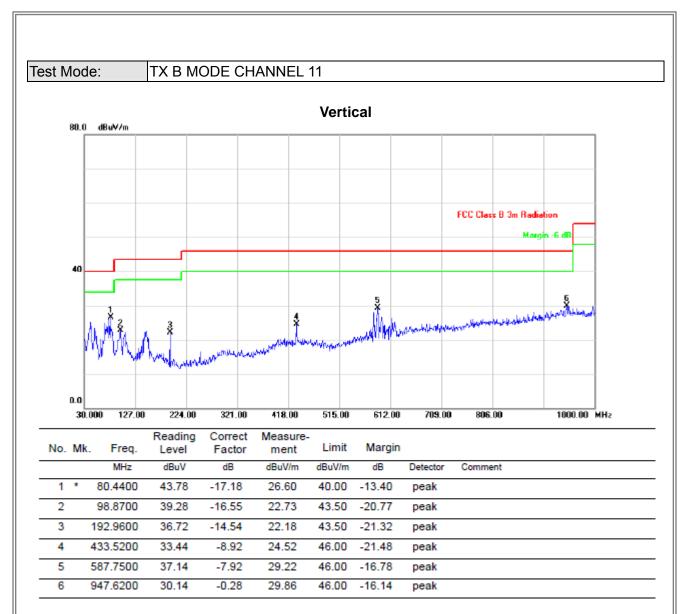




No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		144.4600	33.58	-13.16	20.42	43.50	-23.08	peak	
2		250.1900	35.17	-14.02	21.15	46.00	-24.85	peak	
3		395.6900	33.50	-9.73	23.77	46.00	-22.23	peak	
4		480.0800	33.42	-9.76	23.66	46.00	-22.34	peak	
5	*	587.7500	33.56	-7.92	25.64	46.00	-20.36	peak	
6		967.0200	30.07	-0.28	29.79	54.00	-24.21	peak	

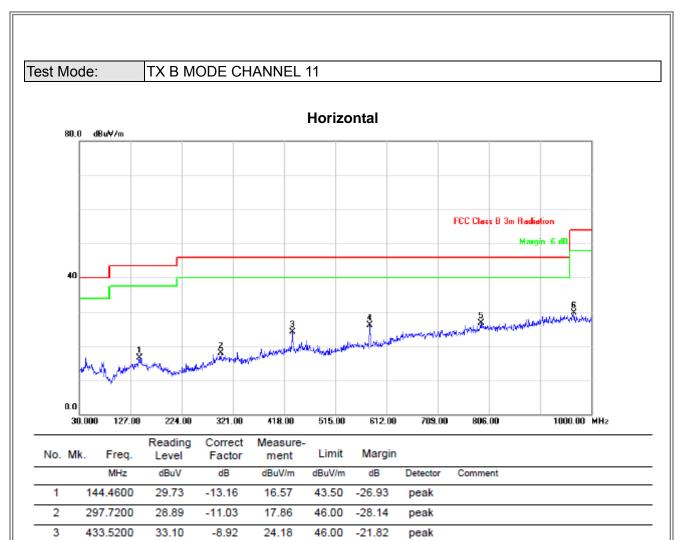
Report No.: BTL-FICP-1-1411127 Page 44 of 149





Report No.: BTL-FICP-1-1411127 Page 45 of 149





46.00

46.00

-19.85

-19.25

54.00 -24.36

peak

peak

peak

4

5

6

579.9900

790.4800

967.0200

34.07

29.97

29.92

-7.92

-3.22

-0.28

26.15

26.75

29.64

Report No.: BTL-FICP-1-1411127 Page 46 of 149



ATTACHMENT D - RADIAT	ΓED EMISSION (1GHZ~10 <sup>TH</sup> HARMONIC)

Report No.: BTL-FICP-1-1411127 Page 47 of 149



Test Mode: TX B MODE 2412MHz

### Vertical



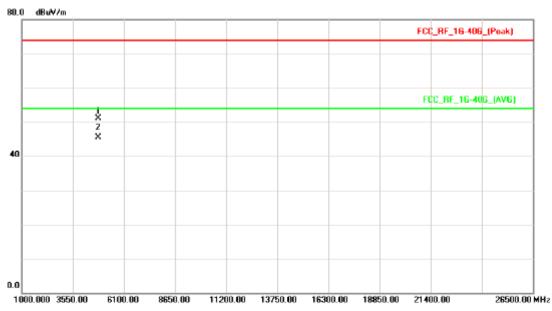
No.	М	lk.	Freq.		Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		48	24.040	48.11	6.44	54.55	74.00	-19.45	peak	
2	*	48	24.040	42.45	6.44	48.89	54.00	-5.11	AVG	

Report No.: BTL-FICP-1-1411127 Page 48 of 149



Test Mode: TX B MODE 2412MHz

#### Horizontal



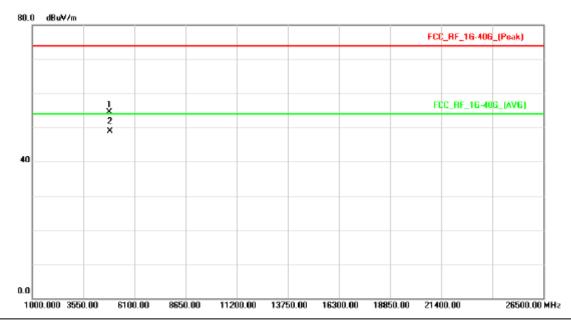
No.	M	k. F				Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4824	1.120	44.69	6.44	51.13	74.00	-22.87	peak	
2	*	4824	1.120	39.06	6.44	45.50	54.00	-8.50	AVG	

Report No.: BTL-FICP-1-1411127 Page 49 of 149



Test Mode: TX B MODE 2437MHz

### Vertical



N	0.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1		4874.120	47.88	6.55	54.43	74.00	-19.57	peak	
	2	*	4874.120	42.35	6.55	48.90	54.00	-5.10	AVG	

Report No.: BTL-FICP-1-1411127 Page 50 of 149



Test Mode: TX B MODE 2437MHz

### Horizontal

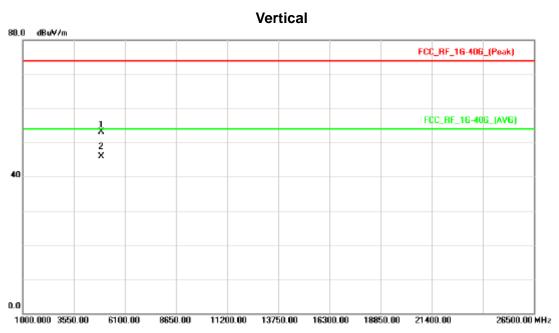


No.	Mk	k. Fred		ng Correct I Factor			Margin		
		MHz	dBu∖	/ dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4874.24	0 43.4	7 6.55	50.02	74.00	-23.98	peak	
2	*	4874.24	0 37.19	9 6.55	43.74	54.00	-10.26	AVG	

Report No.: BTL-FICP-1-1411127 Page 51 of 149



Orthogonal Axis: X
Test Mode: TX B MODE 2462MHz



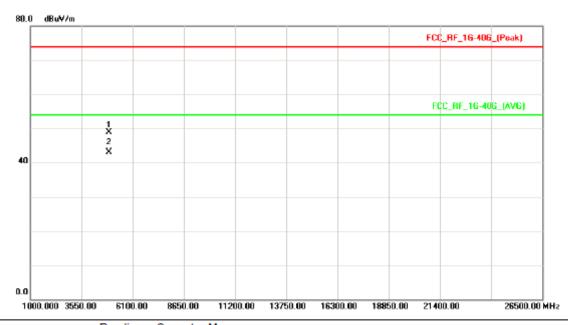
No.	М	k. Fre		Reading Level		Measure- ment	Limit	Margin		
		MH	Z	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4923.8	20	46.41	6.66	53.07	74.00	-20.93	peak	
2	*	4923.8	20	39.23	6.66	45.89	54.00	-8.11	AVG	

Report No.: BTL-FICP-1-1411127 Page 52 of 149



Test Mode: TX B MODE 2462MHz

### Horizontal



No.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4924.180	42.27	6.66	48.93	74.00	-25.07	peak	
2	*	4924.180	36.41	6.66	43.07	54.00	-10.93	AVG	

Report No.: BTL-FICP-1-1411127 Page 53 of 149



Test Mode: TX G MODE 2412MHz

### Vertical



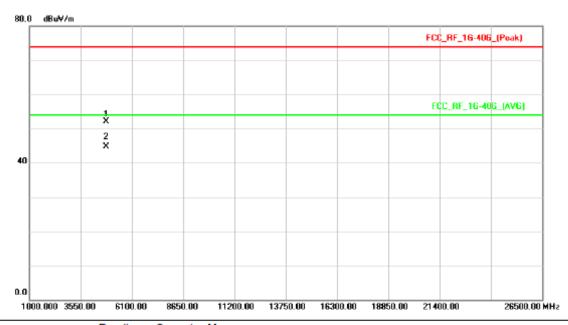
No.	Mk	. Freq.			Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4824.647	47.24	6.44	53.68	74.00	-20.32	peak	
2	*	4824.647	38.53	6.44	44.97	54.00	-9.03	AVG	

Report No.: BTL-FICP-1-1411127 Page 54 of 149



Test Mode: TX G MODE 2412MHz

### Horizontal



No.	Mk.	. Freq.	Reading Level		Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4824.236	45.65	6.44	52.09	74.00	-21.91	peak	
2	*	4824.236	38.21	6.44	44.65	54.00	-9.35	AVG	

Report No.: BTL-FICP-1-1411127 Page 55 of 149



Test Mode: TX G MODE 2437MHz

## Vertical



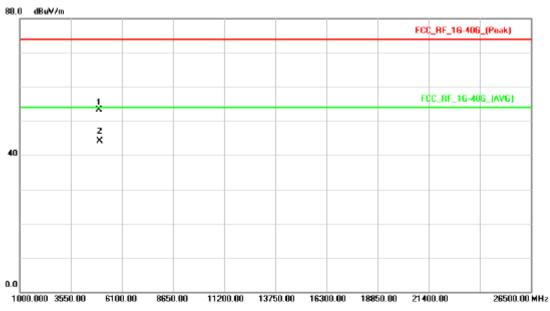
No.	М	c. Freq.			Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4874.554	47.54	6.77	54.31	74.00	-19.69	peak	
2	*	4874.554	38.79	6.77	45.56	54.00	-8.44	AVG	

Report No.: BTL-FICP-1-1411127 Page 56 of 149



Test Mode: TX G MODE 2437MHz

### Horizontal



No.	No. Mk. Freq.				Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4874.546	46.54	6.77	53.31	74.00	-20.69	peak	
2	*	4874.546	37.36	6.77	44.13	54.00	-9.87	AVG	

Report No.: BTL-FICP-1-1411127 Page 57 of 149



Test Mode: TX G MODE 2462MHz

### **Vertical**



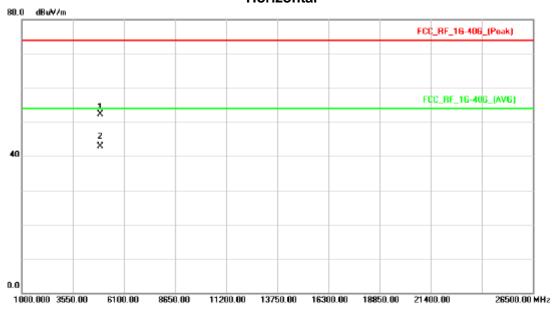
No.	М	k.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		492	4.654	46.87	6.66	53.53	74.00	-20.47	peak	
2	*	492	4.654	37.29	6.66	43.95	54.00	-10.05	AVG	

Report No.: BTL-FICP-1-1411127 Page 58 of 149



Test Mode: TX G MODE 2462MHz

### Horizontal

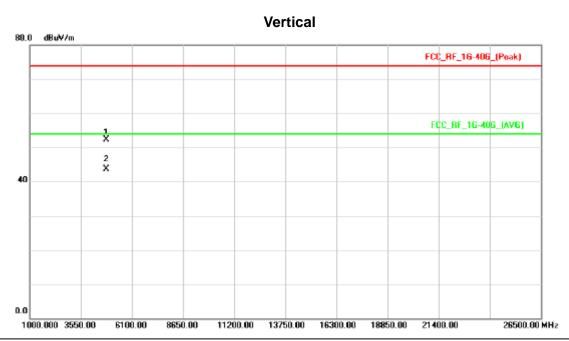


No.	N	Λk.	Freq.	Reading Level		Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		49	923.698	45.58	6.66	52.24	74.00	-21.76	peak	
2	*	49	923.698	36.25	6.66	42.91	54.00	-11.09	AVG	

Report No.: BTL-FICP-1-1411127 Page 59 of 149



Orthogonal Axis: X
Test Mode: TX N-20M MODE 2412MHz



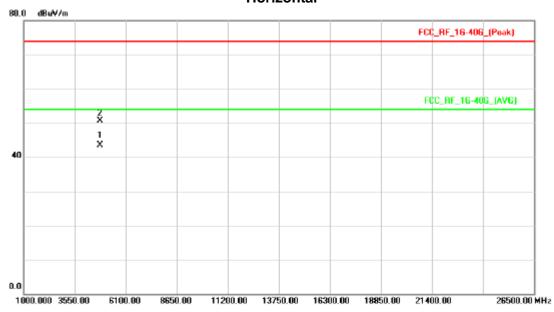
No.	М	lk.	Freq.	Reading Level		Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		48	24.125	45.87	6.44	52.31	74.00	-21.69	peak	
2	*	48	24.125	37.36	6.44	43.80	54.00	-10.20	AVG	

Report No.: BTL-FICP-1-1411127 Page 60 of 149



Test Mode: TX N-20M MODE 2412MHz

### Horizontal



No.	N	Mk.	Freq.	Reading Level		Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	* 4	823.897	37.16	6.44	43.60	54.00	-10.40	AVG	
2		4	824.897	44.34	6.44	50.78	74.00	-23.22	peak	

Report No.: BTL-FICP-1-1411127 Page 61 of 149



Test Mode: TX N-20M MODE 2437MHz

### **Vertical**



No.	M	۸k.	Freq.			Measure- ment		Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		48	374.365	45.76	6.55	52.31	74.00	-21.69	peak	
2	*	48	374.365	38.25	6.55	44.80	54.00	-9.20	AVG	

Report No.: BTL-FICP-1-1411127 Page 62 of 149



Test Mode: TX N-20M MODE 2437MHz

### Horizontal

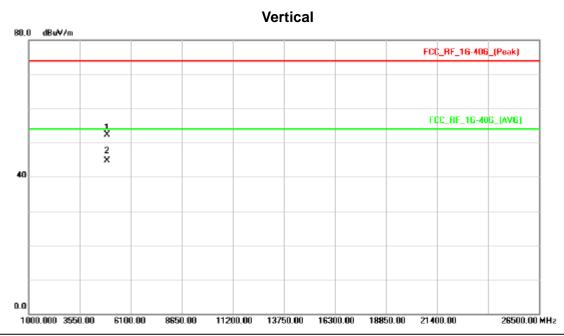


No.	Mk	. Freq.			Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4874.566	44.23	6.55	50.78	74.00	-23.22	peak	
2	*	4874.566	36.05	6.55	42.60	54.00	-11.40	AVG	

Report No.: BTL-FICP-1-1411127 Page 63 of 149



Orthogonal Axis: X
Test Mode: TX N-20M MODE 2462MHz



No.	M	k. Freq.	Reading Level		Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4923.886	45.65	6.66	52.31	74.00	-21.69	peak	
2	*	4923.886	38.14	6.66	44.80	54.00	-9.20	AVG	

Report No.: BTL-FICP-1-1411127 Page 64 of 149



Test Mode: TX N-20M MODE 2462MHz

### Horizontal



No.	N	Λk.	Freq.	Reading Level		Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		49	24.489	45.12	6.66	51.78	74.00	-22.22	peak	
2	*	49	24.489	37.94	6.66	44.60	54.00	-9.40	AVG	

Report No.: BTL-FICP-1-1411127 Page 65 of 149



Test Mode: TX N-40M MODE 2422MHz

### **Vertical**



No.	Mk	. Freq.			Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4844.319	43.83	6.48	50.31	74.00	-23.69	peak	
2	*	4844.319	37.32	6.48	43.80	54.00	-10.20	AVG	

Report No.: BTL-FICP-1-1411127 Page 66 of 149



Test Mode: TX N-40M MODE 2422MHz

### Horizontal



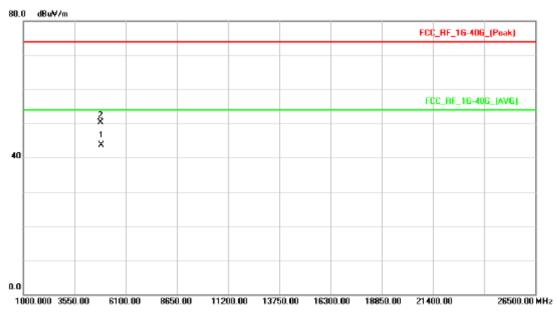
	No.	Mk	. Freq.			Measure- ment		Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
Ī	1		4844.251	42.30	6.48	48.78	74.00	-25.22	peak	
	2	*	4844.251	36.12	6.48	42.60	54.00	-11.40	AVG	

Report No.: BTL-FICP-1-1411127 Page 67 of 149



Test Mode: TX N-40M MODE 2437MHz

### **Vertical**



No.	Mk	. Freq.	Reading Level		Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	4874.235	37.25	6.55	43.80	54.00	-10.20	AVG	
2		4874.235	43.76	6.55	50.31	74.00	-23.69	peak	

Report No.: BTL-FICP-1-1411127 Page 68 of 149



Test Mode: TX N-40M MODE 2437MHz

## Horizontal



No.	M	k. Fr	eq.		Correct Factor	Measure- ment		Margin		
		M	łz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4874.3	95	41.65	6.55	48.20	74.00	-25.80	peak	
2	*	4874.3	95	34.57	6.55	41.12	54.00	-12.88	AVG	

Report No.: BTL-FICP-1-1411127 Page 69 of 149



Test Mode: TX N-40M MODE 2452MHz

### Vertical



No	0.	Mk	. Freq.	Reading Level		Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1		4904.268	42.70	6.61	49.31	74.00	-24.69	peak	
	2	*	4904.268	35.19	6.61	41.80	54.00	-12.20	AVG	

Report No.: BTL-FICP-1-1411127 Page 70 of 149



Test Mode: TX N-40M MODE 2452MHz

## Horizontal



No.	М	lk.	Freq.	Reading Level		Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		49	03.258	42.59	6.61	49.20	74.00	-24.80	peak	
2	*	49	04.258	35.51	6.61	42.12	54.00	-11.88	AVG	

Report No.: BTL-FICP-1-1411127 Page 71 of 149



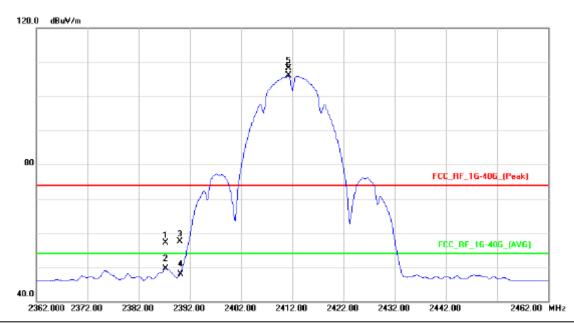
ATTACHMENT E - BAND EDGE AND FUNDAMENTAL EMISSIONS

Report No.: BTL-FICP-1-1411127 Page 72 of 149



Test Mode: TX B MODE 2412MHz

### **Vertical**



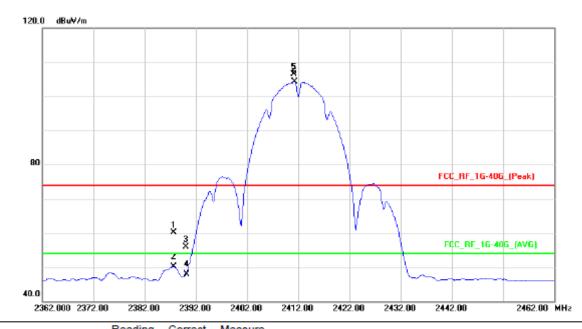
No	. М	k. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2387.300	25.21	31.87	57.08	74.00	-16.92	peak	band edge
2	2	2387.300	17.58	31.87	49.45	54.00	-4.55	AVG	band edge
3	3	2390.000	25.53	31.88	57.41	74.00	-16.59	peak	band edge
4		2390.000	15.95	31.88	47.83	54.00	-6.17	AVG	band edge
5	X	2411.200	76.30	31.91	108.21	74.00	34.21	peak	no limit
6	*	2411.200	74.23	31.91	106.14	54.00	52.14	AVG	no limit

Report No.: BTL-FICP-1-1411127 Page 73 of 149



Test Mode: TX B MODE 2412MHz

### Horizontal



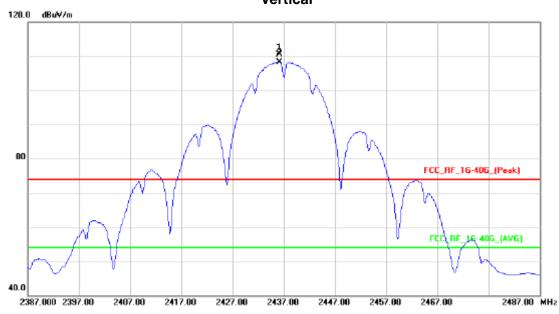
No.	Mk.	. Freq.	Level	Factor	ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2387.600	28.29	31.87	60.16	74.00	-13.84	peak	band edge
2		2387.600	18.27	31.87	50.14	54.00	-3.86	AVG	band edge
3		2390.000	23.94	31.88	55.82	74.00	-18.18	peak	band edge
4		2390.000	15.93	31.88	47.81	54.00	-6.19	AVG	band edge
5	Х	2411.100	74.52	31.91	106.43	74.00	32.43	peak	no limit
6	*	2411.200	72.42	31.91	104.33	54.00	50.33	AVG	no limit

Report No.: BTL-FICP-1-1411127 Page 74 of 149



Test Mode: TX B MODE 2437MHz

### **Vertical**



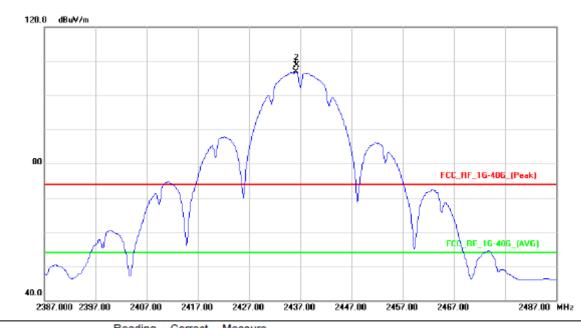
No.	M	k.	Freq.			Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	Х	24	36.100	78.61	31.94	110.55	74.00	36.55	peak	no limit
2	*	24	36.100	76.46	31.94	108.40	54.00	54.40	AVG	no limit

Report No.: BTL-FICP-1-1411127 Page 75 of 149



Test Mode: TX B MODE 2437MHz

### Horizontal



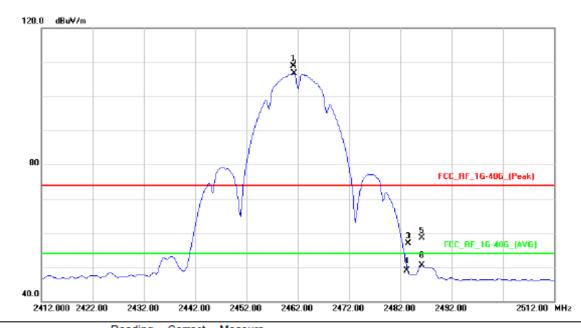
N	0.	Mk	. Freq.	Level		ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1	*	2436.100	74.91	31.94	106.85	54.00	52.85	AVG	no limit
	2	Х	2436.200	77.05	31.94	108.99	74.00	34.99	peak	no limit

Report No.: BTL-FICP-1-1411127 Page 76 of 149



Orthogonal Axis: X
Test Mode: TX B MODE 2462MHz

### **Vertical**



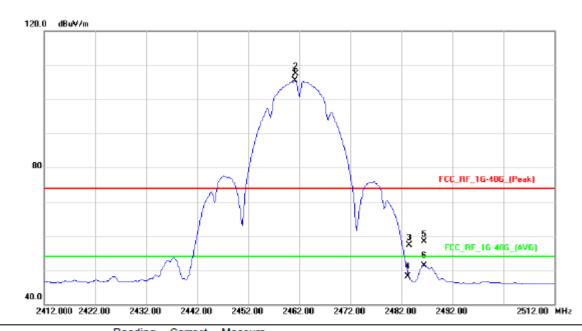
	No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
_	1	Х	2461.100	76.95	31.98	108.93	74.00	34.93	peak	no limit
_	2	*	2461.200	74.75	31.98	106.73	54.00	52.73	AVG	no limit
_	3		2483.500	24.80	32.01	56.81	74.00	-17.19	peak	band edge
_	4		2483.500	16.85	32.01	48.86	54.00	-5.14	AVG	band edge
_	5		2486.200	26.52	32.01	58.53	74.00	-15.47	peak	band edge
	6		2486.200	18.43	32.01	50.44	54.00	-3.56	AVG	band edge

Report No.: BTL-FICP-1-1411127 Page 77 of 149



Test Mode: TX B MODE 2462MHz

### Horizontal



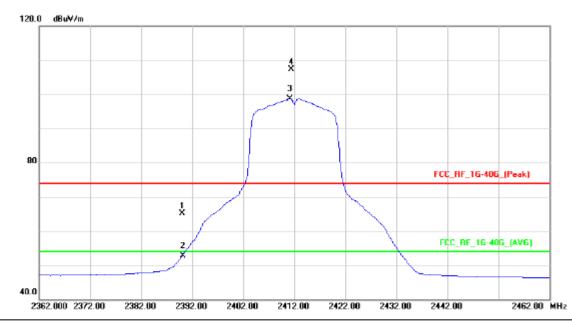
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2461.100	73.44	31.98	105.42	54.00	51.42	AVG	no limit
2	Χ	2461.200	75.55	31.98	107.53	74.00	33.53	peak	no limit
3		2483.500	25.27	32.01	57.28	74.00	-16.72	peak	band edge
4		2483.500	16.16	32.01	48.17	54.00	-5.83	AVG	band edge
5		2486.500	26.30	32.01	58.31	74.00	-15.69	peak	band edge
6		2486.500	19.39	32.01	51.40	54.00	-2.60	AVG	band edge

Report No.: BTL-FICP-1-1411127 Page 78 of 149



Test Mode: TX G MODE 2412MHz

### **Vertical**



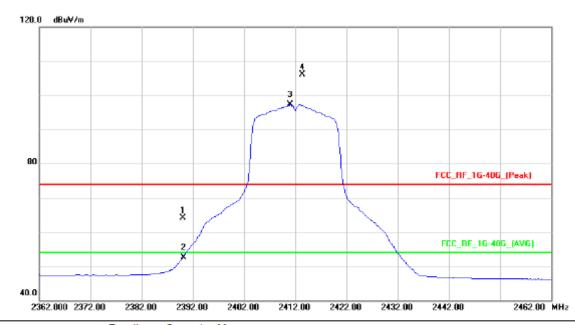
No.	Mk	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	33.13	31.88	65.01	74.00	-8.99	peak	band edge
2		2390.000	20.79	31.88	52.67	54.00	-1.33	AVG	band edge
3	*	2411.100	66.80	31.91	98.71	54.00	44.71	AVG	no limit
4	Х	2411.400	75.45	31.91	107.36	74.00	33.36	peak	no limit

Report No.: BTL-FICP-1-1411127 Page 79 of 149



Test Mode: TX G MODE 2412MHz

### Horizontal



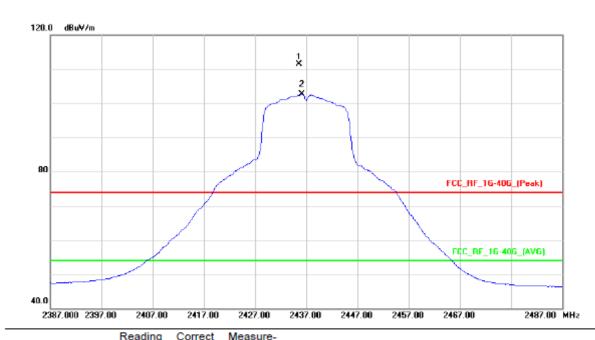
	No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin			
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment	
	1		2390.000	32.22	31.88	64.10	74.00	-9.90	peak	band edge	
	2		2390.000	20.59	31.88	52.47	54.00	-1.53	AVG	band edge	
Ī	3	*	2411.000	65.43	31.91	97.34	54.00	43.34	AVG	no limit	
	4	Х	2413.400	74.18	31.91	106.09	74.00	32.09	peak	no limit	

Report No.: BTL-FICP-1-1411127 Page 80 of 149



Test Mode: TX G MODE 2437MHz

### **Vertical**



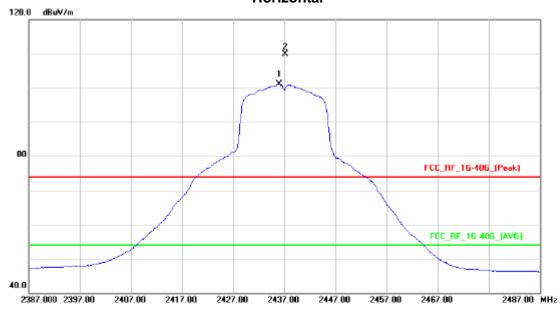
No.	М	k. Freq.	Level		ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	Х	2435.600	79.48	31.94	111.42	74.00	37.42	peak	no limit
2	*	2436.100	70.70	31.94	102.64	54.00	48.64	AVG	no limit

Report No.: BTL-FICP-1-1411127 Page 81 of 149



Test Mode: TX G MODE 2437MHz

### Horizontal



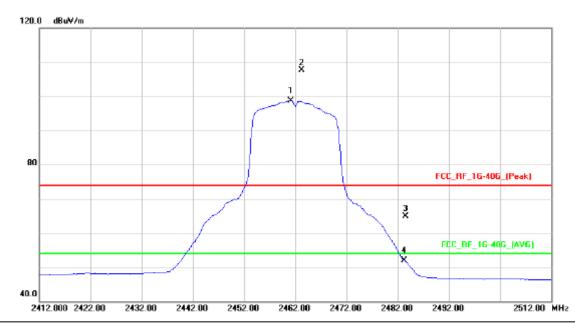
No.	Mk	. Freq.	Reading Level		Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2436.000	69.23	31.94	101.17	54.00	47.17	AVG	no limit
2	Х	2437.200	77.93	31.94	109.87	74.00	35.87	peak	no limit

Report No.: BTL-FICP-1-1411127 Page 82 of 149



Test Mode: TX G MODE 2462MHz

### **Vertical**



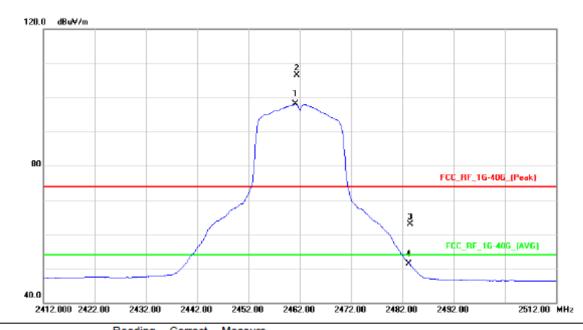
No.	М	k.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin			
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment	
1	*	246	61.100	66.81	31.98	98.79	54.00	44.79	AVG	no limit	
2	Х	240	63.300	75.63	31.98	107.61	74.00	33.61	peak	no limit	
3		248	83.500	32.83	32.01	64.84	74.00	-9.16	peak	band edge	
4		248	83.500	19.93	32.01	51.94	54.00	-2.06	AVG	band edge	

Report No.: BTL-FICP-1-1411127 Page 83 of 149



Test Mode: TX G MODE 2462MHz

### Horizontal

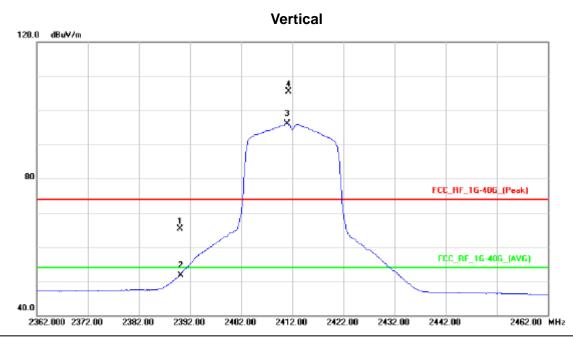


	No.	Mk	. Freq.	Level	Factor	ment	Limit	Margin		
-			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
-	1	*	2461.100	66.03	31.98	98.01	54.00	44.01	AVG	no limit
-	2	Χ	2461.400	74.53	31.98	106.51	74.00	32.51	peak	no limit
-	3		2483.500	30.87	32.01	62.88	74.00	-11.12	peak	band edge
-	4		2483.500	19.20	32.01	51.21	54.00	-2.79	AVG	band edge
_										

Report No.: BTL-FICP-1-1411127 Page 84 of 149



Orthogonal Axis: X
Test Mode: TX N-20M MODE 2412MHz



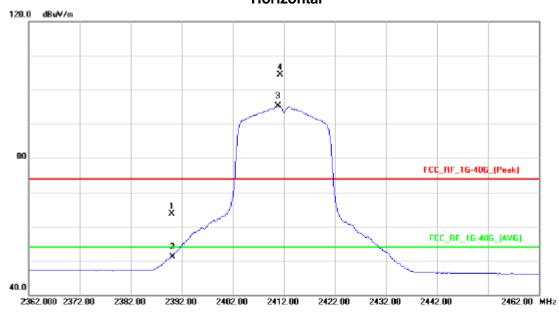
	No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
_			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1		2390.000	33.41	31.88	65.29	74.00	-8.71	peak	band edge
	2		2390.000	19.75	31.88	51.63	54.00	-2.37	AVG	band edge
	3	*	2411.000	64.20	31.91	96.11	54.00	42.11	AVG	no limit
	4	Х	2411.200	73.69	31.91	105.60	74.00	31.60	peak	no limit

Report No.: BTL-FICP-1-1411127 Page 85 of 149



Test Mode: TX N-20M MODE 2412MHz

### Horizontal



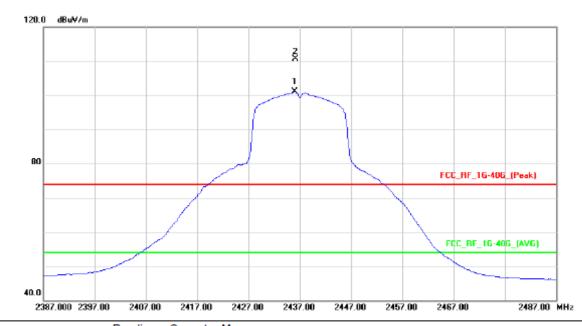
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin				
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment		
1		2390.000	31.81	31.88	63.69	74.00	-10.31	peak	band edge		
2		2390.000	19.22	31.88	51.10	54.00	-2.90	AVG	band edge		
3	*	2410.900	63.33	31.91	95.24	54.00	41.24	AVG	no limit		
4	Χ	2411.200	72.68	31.91	104.59	74.00	30.59	peak	no limit		

Report No.: BTL-FICP-1-1411127 Page 86 of 149



Test Mode: TX N-20M MODE 2437MHz

### **Vertical**



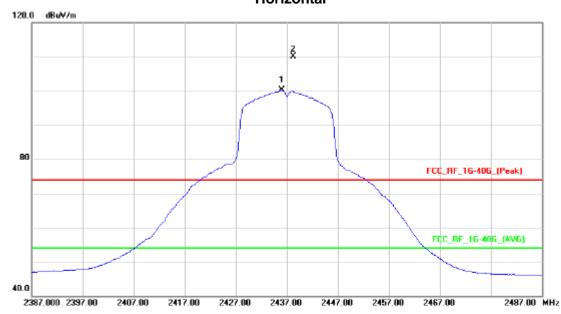
No.	Mk	. Freq.	Reading Level		Measure- ment	Limit	Margin			
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment	
1	*	2436.000	69.13	31.94	101.07	54.00	47.07	AVG	no limit	
2	Х	2436.100	78.77	31.94	110.71	74.00	36.71	peak	no limit	

Report No.: BTL-FICP-1-1411127 Page 87 of 149



Test Mode: TX N-20M MODE 2437MHz

### Horizontal

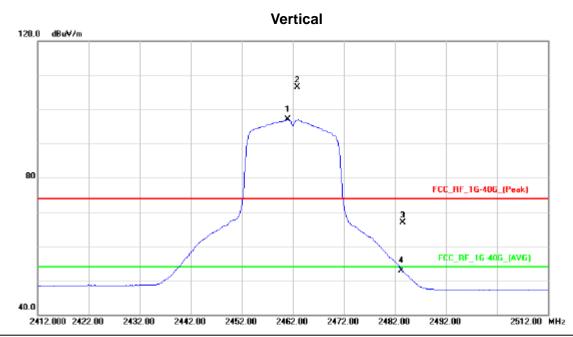


No.	Mk	c. Freq.			Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2436.000	68.29	31.94	100.23	54.00	46.23	AVG	no limit
2	Х	2438.200	78.12	31.94	110.06	74.00	36.06	peak	no limit

Report No.: BTL-FICP-1-1411127 Page 88 of 149



Orthogonal Axis: X
Test Mode: TX N-20M MODE 2462MHz



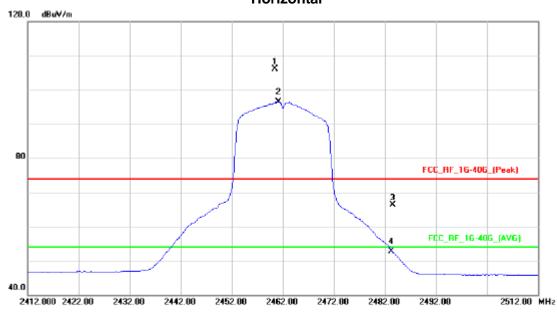
	No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
_			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1	*	2461.000	65.11	31.98	97.09	54.00	43.09	AVG	no limit
	2	Х	2462.900	74.62	31.98	106.60	74.00	32.60	peak	no limit
	3		2483.500	34.92	32.01	66.93	74.00	-7.07	peak	band edge
	4		2483.500	20.98	32.01	52.99	54.00	-1.01	AVG	band edge

Report No.: BTL-FICP-1-1411127 Page 89 of 149



Test Mode: TX N-20M MODE 2462MHz

### Horizontal



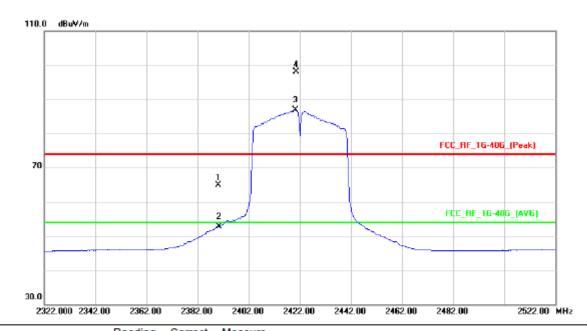
	No.	Mk	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1	X	2460.500	74.07	31.98	106.05	74.00	32.05	peak	no limit
	2	*	2461.100	64.60	31.98	96.58	54.00	42.58	AVG	no limit
	3		2483.500	34.25	32.01	66.26	74.00	-7.74	peak	band edge
_	4		2483.500	20.61	32.01	52.62	54.00	-1.38	AVG	band edge

Report No.: BTL-FICP-1-1411127 Page 90 of 149



Orthogonal Axis: X
Test Mode: TX N-40M MODE 2422MHz

### **Vertical**



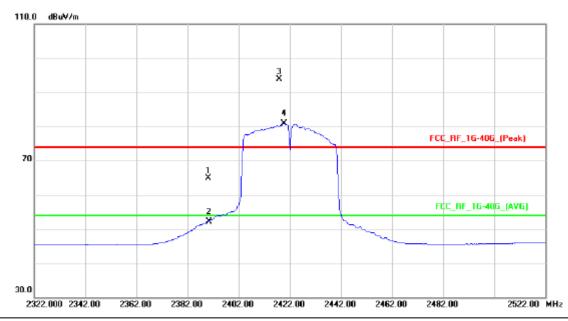
Mk	. Freq.	Level	Factor	ment	Limit	Margin		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	2390.000	33.03	31.88	64.91	74.00	-9.09	peak	band edge
	2390.000	20.73	31.88	52.61	54.00	-1.39	AVG	band edge
*	2420.200	54.99	31.92	86.91	54.00	32.91	AVG	no limit
Х	2420.600	66.12	31.92	98.04	74.00	24.04	peak	no limit
	*	MHz 2390.000 2390.000	Mk. Freq. Level  MHz dBuV  2390.000 33.03  2390.000 20.73  * 2420.200 54.99	Mk.         Freq.         Level         Factor           MHz         dBuV         dB           2390.000         33.03         31.88           2390.000         20.73         31.88           * 2420.200         54.99         31.92	Mk.         Freq.         Level         Factor         ment           MHz         dBuV         dB         dBuV/m           2390.000         33.03         31.88         64.91           2390.000         20.73         31.88         52.61           * 2420.200         54.99         31.92         86.91	Mk.         Freq.         Level         Factor         ment         Limit           MHz         dBuV         dB         dBuV/m         dBuV/m           2390.000         33.03         31.88         64.91         74.00           2390.000         20.73         31.88         52.61         54.00           * 2420.200         54.99         31.92         86.91         54.00	Mk.         Freq.         Level         Factor         ment         Limit         Margin           MHz         dBuV         dB         dBuV/m         dBuV/m         dB           2390.000         33.03         31.88         64.91         74.00         -9.09           2390.000         20.73         31.88         52.61         54.00         -1.39           * 2420.200         54.99         31.92         86.91         54.00         32.91	Mk.         Freq.         Level         Factor         ment         Limit         Margin           MHz         dBuV         dB         dBuV/m         dBuV/m         dB         Detector           2390.000         33.03         31.88         64.91         74.00         -9.09         peak           2390.000         20.73         31.88         52.61         54.00         -1.39         AVG           * 2420.200         54.99         31.92         86.91         54.00         32.91         AVG

Report No.: BTL-FICP-1-1411127 Page 91 of 149



Test Mode: TX N-40M MODE 2422MHz

### Horizontal

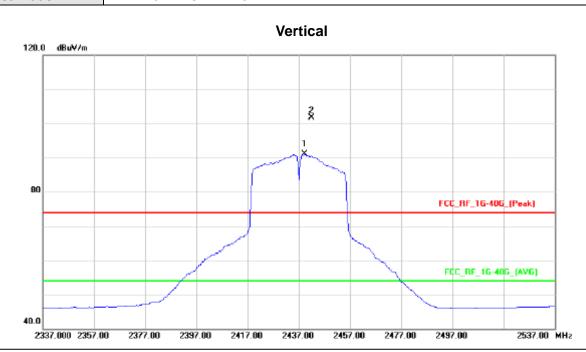


	No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1		2390.000	33.01	31.88	64.89	74.00	-9.11	peak	band edge
	2		2390.000	20.21	31.88	52.09	54.00	-1.91	AVG	band edge
	3	Х	2417.800	62.07	31.91	93.98	74.00	19.98	peak	no limit
Ī	4	*	2419.600	48.97	31.92	80.89	54.00	26.89	AVG	no limit

Report No.: BTL-FICP-1-1411127 Page 92 of 149



Orthogonal Axis: X
Test Mode: TX N-40M MODE 2437MHz



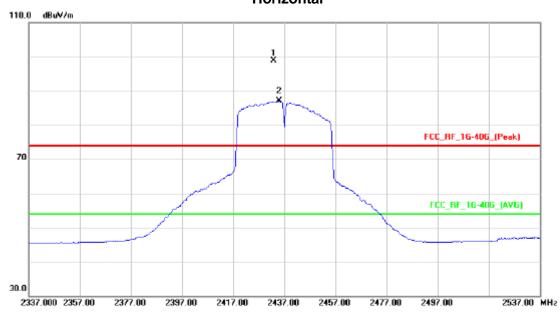
No.	Mk	c. Freq.			Measure- ment		Margin			
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment	
1	*	2439.200	59.10	31.94	91.04	54.00	37.04	AVG	no limit	
2	Х	2441.800	69.81	31.95	101.76	74.00	27.76	peak	no limit	

Report No.: BTL-FICP-1-1411127 Page 93 of 149



Test Mode: TX N-40M MODE 2437MHz

### Horizontal



No.	Mk	. Freq.	Reading Level		Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	Х	2432.800	66.90	31.94	98.84	74.00	24.84	peak	no limit
2	*	2435.000	55.09	31.94	87.03	54.00	33.03	AVG	no limit

Report No.: BTL-FICP-1-1411127 Page 94 of 149



Orthogonal Axis: X
Test Mode: TX N-40M MODE 2452MHz

# Vertical 120.0 dBuV/m 80 FCC\_RF\_16-406\_(Peak) 3 FCC\_RF\_1G-40G\_(AVG) 40.0 2352.000 2372.00 2392.00 2412.00 2432.00 2452.00 2472.00 2492.00 2512.00 2552.00 MHz

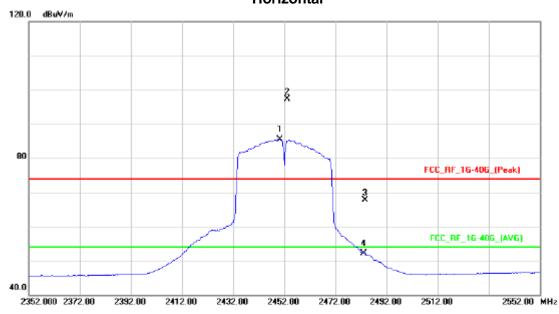
	No.	M	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin			
Ī			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment	
	1	Х	2453.400	68.37	31.96	100.33	74.00	26.33	peak	no limit	
	2	*	2454.200	56.81	31.96	88.77	54.00	34.77	AVG	no limit	
	3		2483.500	36.57	32.01	68.58	74.00	-5.42	peak	band edge	
	4		2483.500	20.87	32.01	52.88	54.00	-1.12	AVG	band edge	
-											_

Report No.: BTL-FICP-1-1411127 Page 95 of 149



Test Mode: TX N-40M MODE 2452MHz

### Horizontal



	No.	M	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
_			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1	*	2450.200	53.54	31.96	85.50	54.00	31.50	AVG	no limit
	2	Х	2453.200	65.43	31.96	97.39	74.00	23.39	peak	no limit
	3		2483.500	35.60	32.01	67.61	74.00	-6.39	peak	band edge
	4		2483.500	20.12	32.01	52.13	54.00	-1.87	AVG	band edge

Report No.: BTL-FICP-1-1411127 Page 96 of 149



ATTACH	IMENT F - BANDW	<b>IDTH</b>

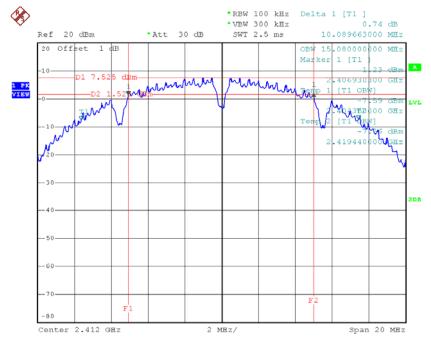
Report No.: BTL-FICP-1-1411127 Page 97 of 149



# Test Mode: TX B Mode\_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	10.09	15.08	500	Complies
2437	10.15	16.20	500	Complies
2462	10.06	15.04	500	Complies

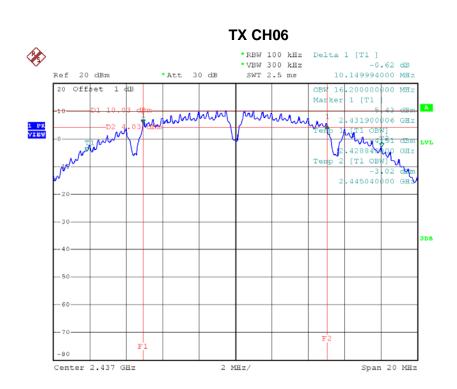
### **TX CH01**



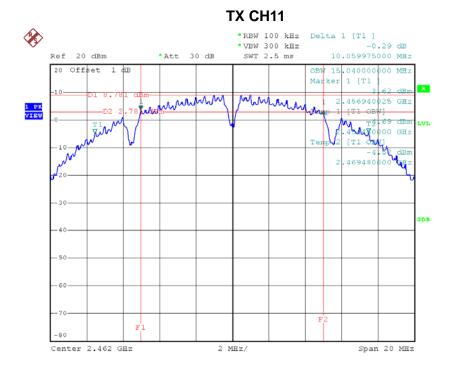
Date: 6.DEC.2014 14:57:45

Report No.: BTL-FICP-1-1411127 Page 98 of 149





#### Date: 6.DEC.2014 14:59:09



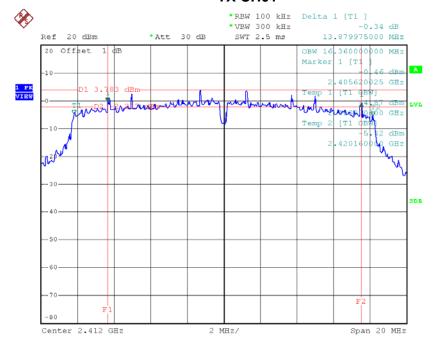
Date: 6.DEC.2014 15:01:17



# Test Mode: TX G Mode\_CH01/06/11

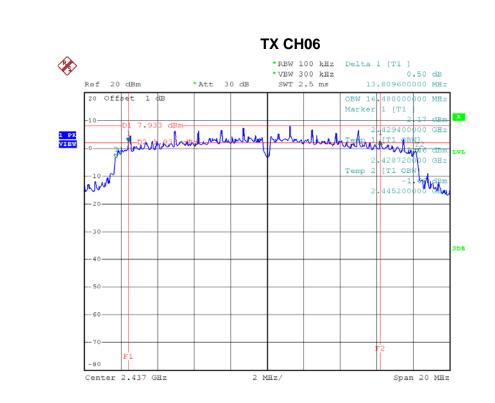
Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	13.88	16.36	500	Complies
2437	13.81	16.48	500	Complies
2462	15.08	16.36	500	Complies

### TX CH01

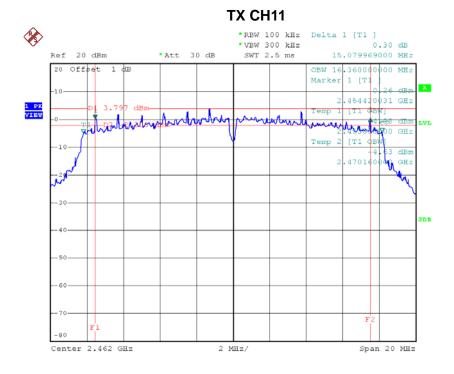


Date: 6.DEC.2014 15:04:29





Date: 6.DEC.2014 15:05:45



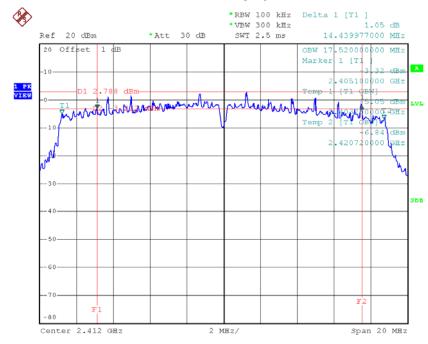
Date: 6.DEC.2014 15:06:54



Test Mode: TX N-20MHz Mode\_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	14.44	17.52	500	Complies
2437	15.07	17.60	500	Complies
2462	15.16	17.56	500	Complies

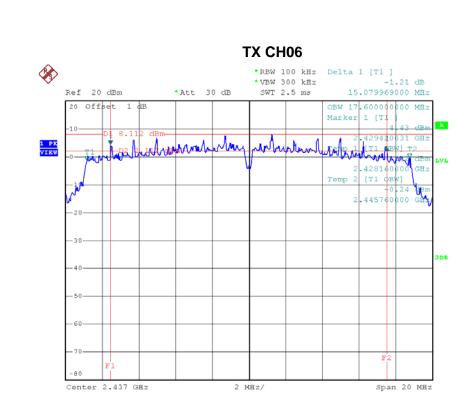
### **TX CH01**



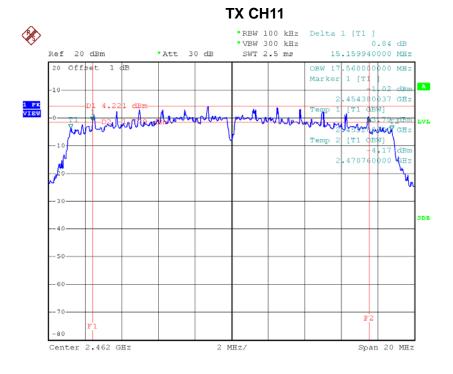
Date: 6.DEC.2014 15:08:40

Report No.: BTL-FICP-1-1411127 Page 102 of 149





Date: 6.DEC.2014 15:09:48



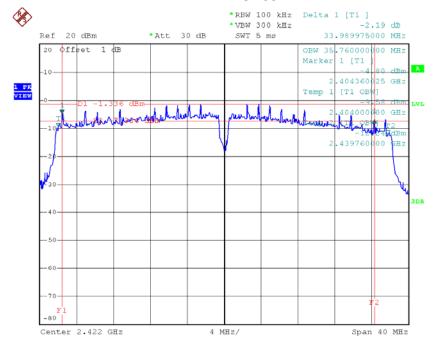
Date: 6.DEC.2014 15:11:06



### Test Mode: TX N-40MHz Mode\_CH03/06/09

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2422	33.99	35.76	500	Complies
2437	32.62	35.84	500	Complies
2452	33.84	35.76	500	Complies

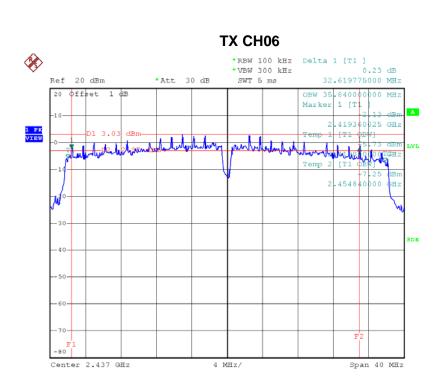
#### **TX CH03**



Date: 6.DEC.2014 15:33:03

Report No.: BTL-FICP-1-1411127 Page 104 of 149





Date: 6.DEC.2014 15:34:20

# 

Date: 6.DEC.2014 15:35:32



ATTACHMENT G - MAXIMUM PEAK CONDUCTED OUTPUT POWER

Report No.: BTL-FICP-1-1411127 Page 106 of 149



# Test Mode :TX B Mode\_CH01/06/11

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	20.86	0.12	30.00	1.00	Complies
2437	22.45	0.18	30.00	1.00	Complies
2462	22.34	0.17	30.00	1.00	Complies

# Test Mode :TX G Mode\_CH01/06/11

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Result
2412	21.49	0.14	30.00	1.00	Complies
2437	25.31	0.34	30.00	1.00	Complies
2462	22.11	0.16	30.00	1.00	Complies

Report No.: BTL-FICP-1-1411127 Page 107 of 149



### 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	20.27	0.11	30.00	1.00	Complies
2437	25.51	0.36	30.00	1.00	Complies
2462	21.84	0.15	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	20.04	0.10	30.00	1.00	Complies
2437	23.28	0.21	30.00	1.00	Complies
2462	21.12	0.13	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	23.17	0.21	30.00	1.00	Complies
2437	27.55	0.57	30.00	1.00	Complies
2462	24.51	0.28	30.00	1.00	Complies

Report No.: BTL-FICP-1-1411127 Page 108 of 149



#### 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	19.12	0.08	30.00	1.00	Complies
2437	23.09	0.20	30.00	1.00	Complies
2452	20.75	0.12	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	18.95	0.08	30.00	1.00	Complies
2437	22.78	0.19	30.00	1.00	Complies
2452	19.65	0.09	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	22.05	0.16	30.00	1.00	Complies
2437	25.95	0.39	30.00	1.00	Complies
2452	23.25	0.21	30.00	1.00	Complies

Report No.: BTL-FICP-1-1411127 Page 109 of 149



ATTACHMENT H - ANTENNA CONDUCTED SPURIOUS EMISSION

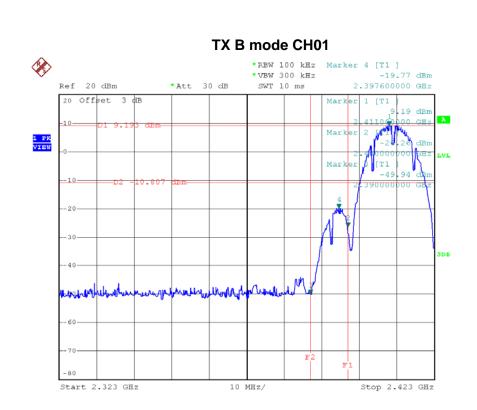
Report No.: BTL-FICP-1-1411127 Page 110 of 149



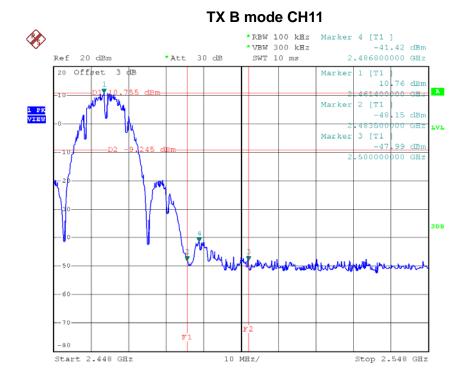
T4-1	TV D M - 1 -
Test Mode :	TX B Mode

Report No.: BTL-FICP-1-1411127





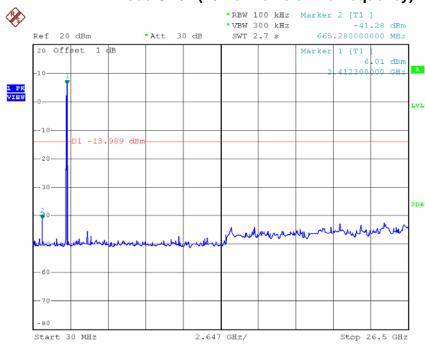




Date: 6.DEC.2014 15:01:39

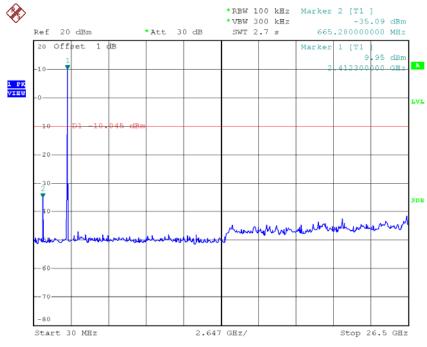






Date: 6.DEC.2014 14:58:00

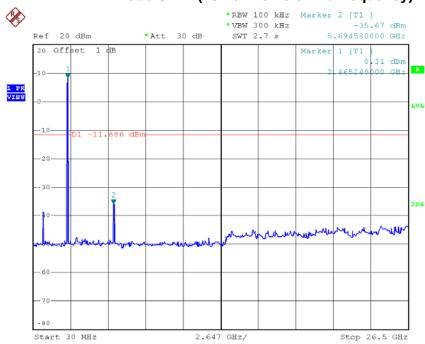
# TX B mode CH06 (10 Harmonic of the frequency)



Date: 6.DEC.2014 14:59:24







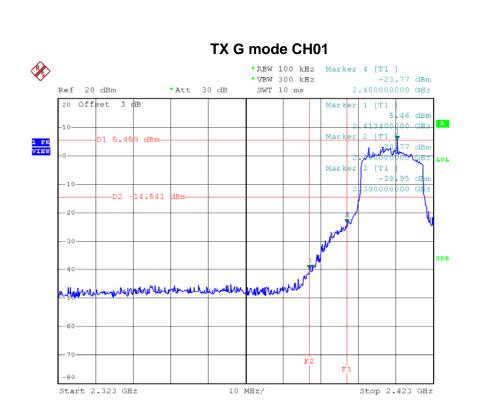
Date: 6.DEC.2014 15:01:31

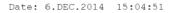


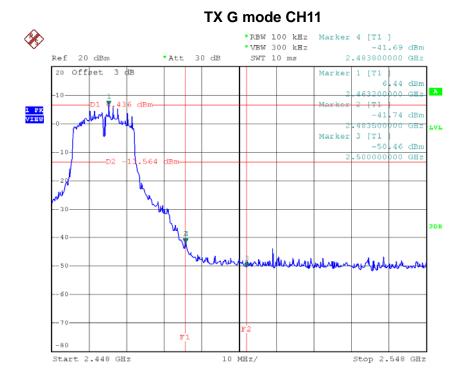
Test Mode :	TX G Mode

Report No.: BTL-FICP-1-1411127





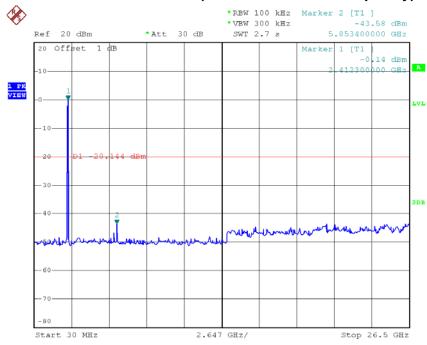




Date: 6.DEC.2014 15:07:16

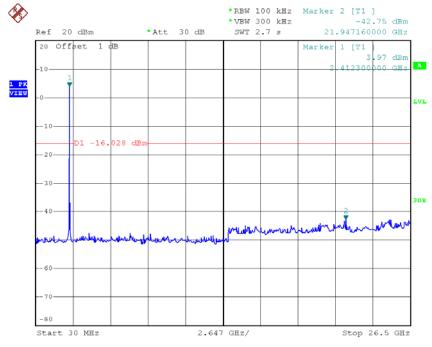






Date: 6.DEC.2014 15:04:43

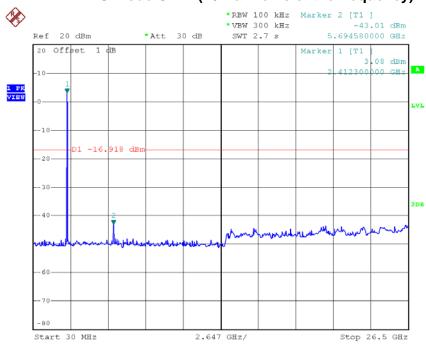
# TX G mode CH06 (10 Harmonic of the frequency)



Date: 6.DEC.2014 15:05:59



## TX G mode CH11 (10 Harmonic of the frequency)



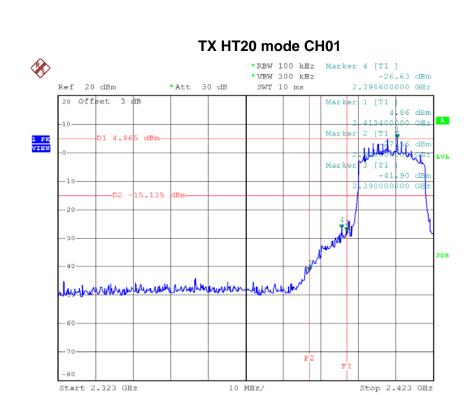
Date: 6.DEC.2014 15:07:08



Test Mode :	TX N-20M Mode_ANT 1

Report No.: BTL-FICP-1-1411127





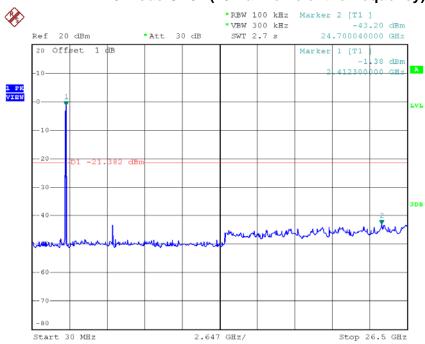
Date: 6.DEC.2014 15:09:02

## TX HT20 mode CH11 \*RBW 100 kHz Marker 4 [T1 ] -40.73 dBm \*VBW 300 kHz \*Att 30 dB 2.483500000 GHz Ref 20 dBm SWT 10 ms 20 Offset 3 dB Marker 1 [T1 4 87 dBm Marker 2 [T1 | -40 73 dBm 483500000 GHZ Marker 3 [T1 -49 85 dBm 500000000 GHz -80 Start 2.448 GHz Stop 2.548 GHz 10 MHz/

Date: 6.DEC.2014 15:11:29

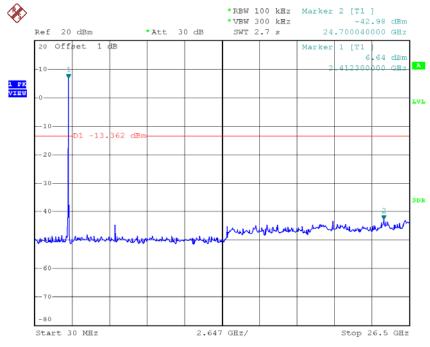






Date: 6.DEC.2014 15:08:54

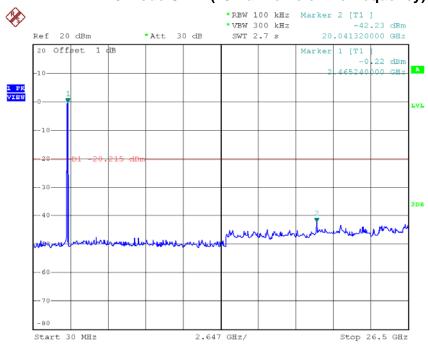
#### TX HT20 mode CH06 (10 Harmonic of the frequency)



Date: 6.DEC.2014 15:10:02



## TX HT20 mode CH11 (10 Harmonic of the frequency)



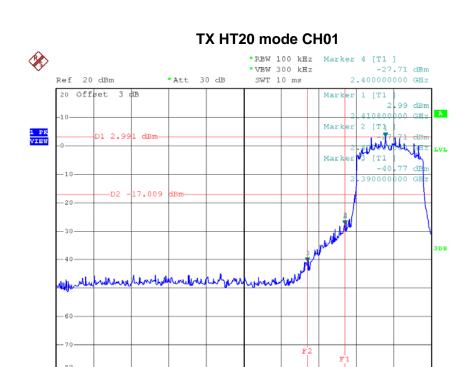
Date: 6.DEC.2014 15:11:21



Test Mode:	TX N-20M Mode_ANT 2

Report No.: BTL-FICP-1-1411127 Page 123 of 149



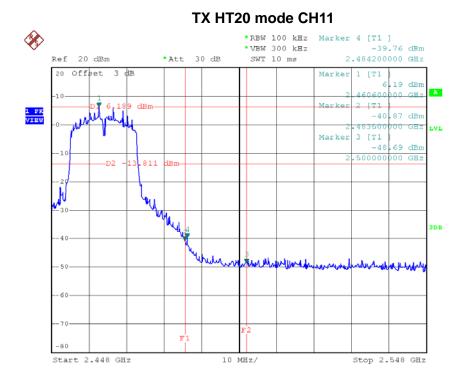


10 MHz/

Stop 2.423 GHz



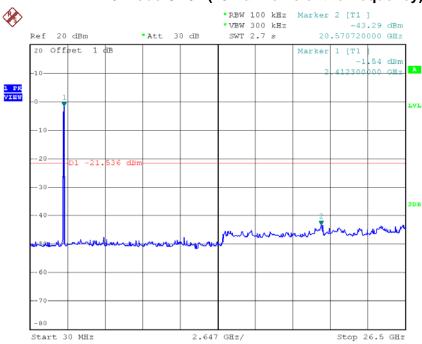
Start 2.323 GHz



Date: 6.DEC.2014 15:31:52

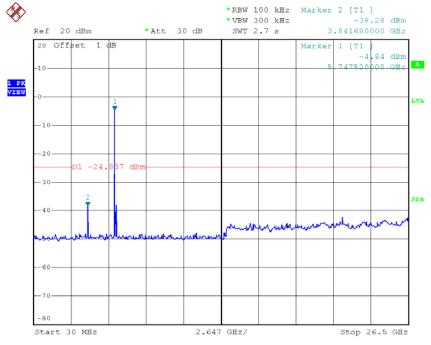






Date: 6.DEC.2014 15:14:10

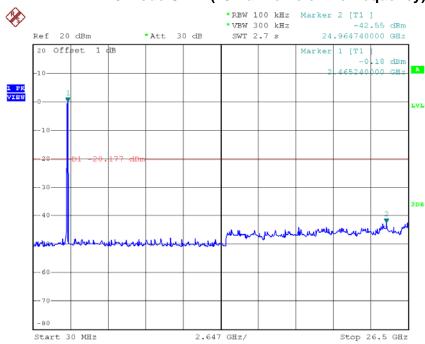
### TX HT20 mode CH06 (10 Harmonic of the frequency)



Date: 6.DEC.2014 15:17:19







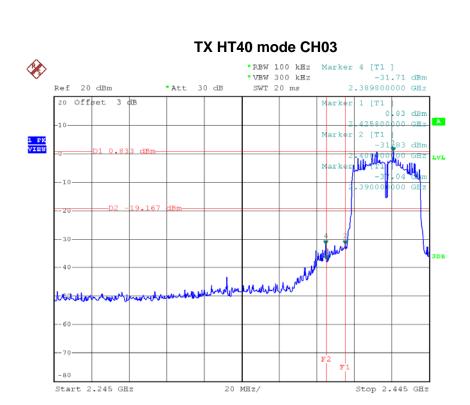
Date: 6.DEC.2014 15:31:43



Total Mode v	TV NI 40M Mada ANT 4
Test Mode :	TX N-40M Mode_ANT 1

Report No.: BTL-FICP-1-1411127





Date: 6.DEC.2014 15:33:26

## 

20 MHz/

Stop 2.63 GHz

TX HT40 mode CH09

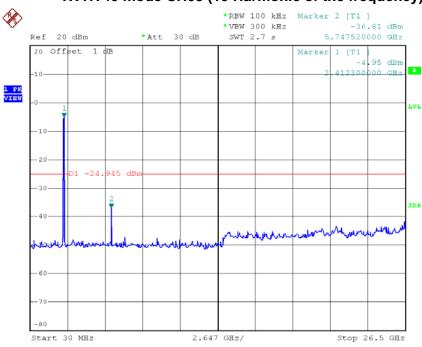
Date: 6.DEC.2014 15:35:55

Start 2.43 GHz

-80

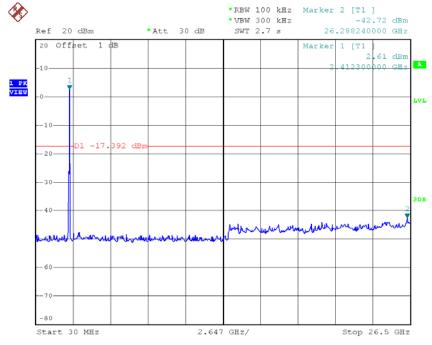






Date: 6.DEC.2014 15:33:18

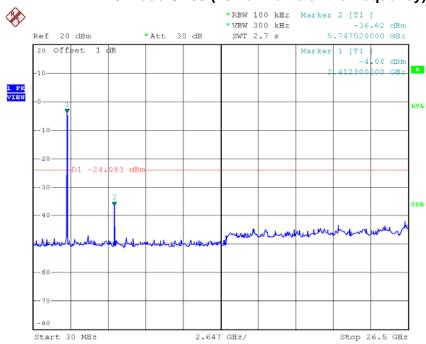
### TX HT40 mode CH06 (10 Harmonic of the frequency)



Date: 6.DEC.2014 15:34:34







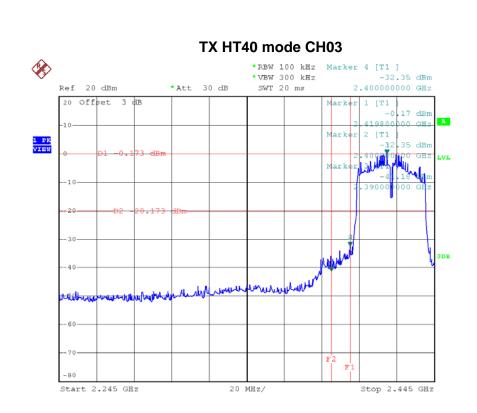
Date: 6.DEC.2014 15:35:47



Test Mode:	TX N-40M Mode_ANT 2

Report No.: BTL-FICP-1-1411127 Page 131 of 149







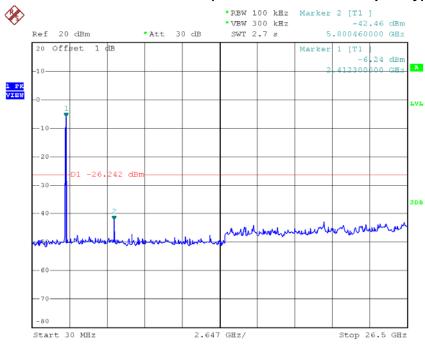
Date: 6.DEC.2014 15:39:46

## TX HT40 mode CH09 \*RBW 100 kHz Marker 4 [T1 ] \*VBW 300 kHz -24.60 dBm Ref 20 dBm SWT 20 ms 2.484400000 GHz \*Att 30 dB 20 Offset 3 dB Marker 1 [T1 5.57 dBm Marker 2 [T1 483500 000 GHz Marker 3 [T1 -42.37 dBm 500000000 GHz -80 Start 2.43 GHz 20 MHz/ Stop 2.63 GHz

Report No.: BTL-FICP-1-1411127

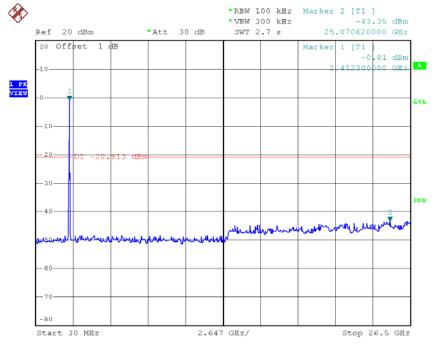






Date: 6.DEC.2014 15:37:09

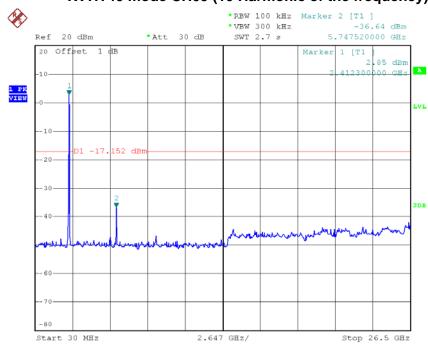
#### TX HT40 mode CH06 (10 Harmonic of the frequency)



Date: 6.DEC.2014 15:38:21







Date: 6.DEC.2014 15:39:38



ATTA	ACHMENT I - POWER SPECTRAL DEI	NSITY

Report No.: BTL-FICP-1-1411127 Page 135 of 149



#### Test Mode:TX B Mode\_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-7.81	0.17	8.00	Complies
2437	-5.86	0.26	8.00	Complies
2462	-5.79	0.26	8.00	Complies

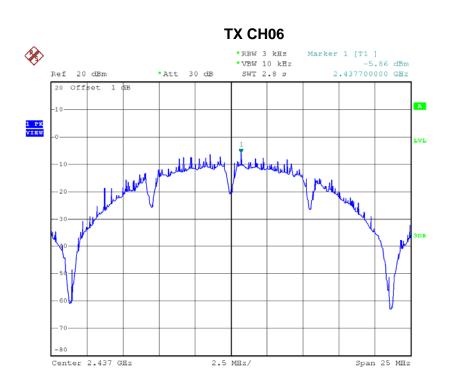
#### TX CH01



Date: 6.DEC.2014 14:58:17

Report No.: BTL-FICP-1-1411127 Page 136 of 149





Date: 6.DEC.2014 15:00:21

# 

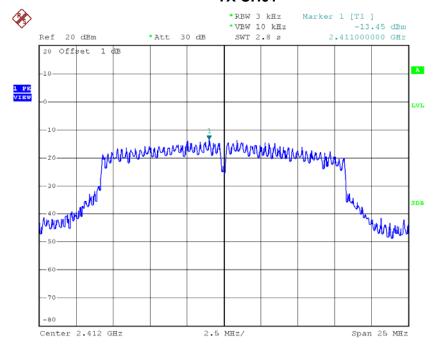
Date: 6.DEC.2014 15:03:32



#### Test Mode :TX G Mode\_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-13.45	0.05	8.00	Complies
2437	-8.81	0.13	8.00	Complies
2462	-12.80	0.05	8.00	Complies

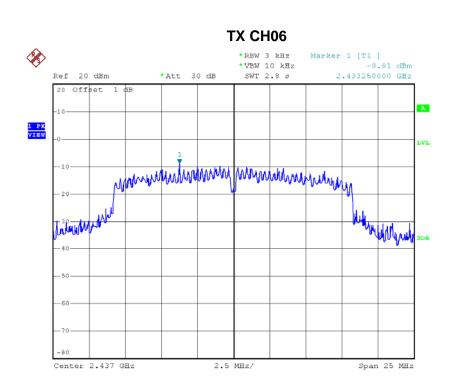
#### **TX CH01**



Date: 6.DEC.2014 15:05:01

Report No.: BTL-FICP-1-1411127 Page 138 of 149





Date: 6.DEC.2014 15:06:09

# 

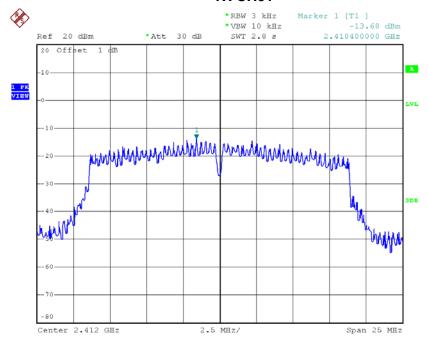
Date: 6.DEC.2014 15:07:26



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	-13.68	0.04	8.00	Complies
2437	-9.55	0.11	8.00	Complies
2462	-12.36	0.06	8.00	Complies

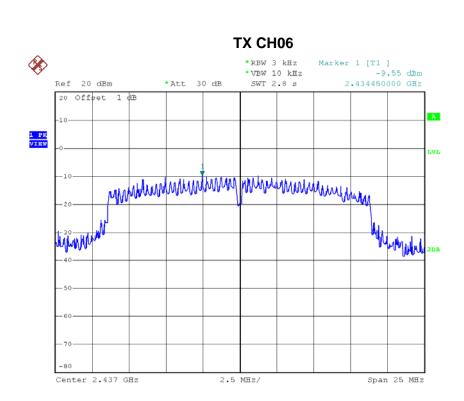
#### TX CH01



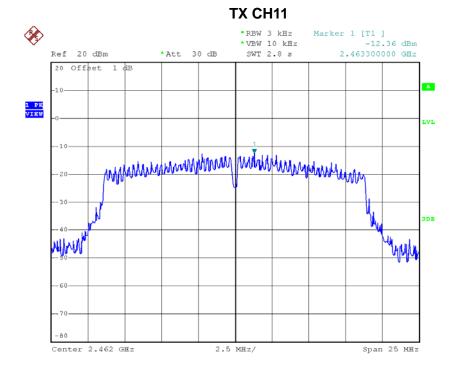
Date: 6.DEC.2014 15:09:12

Report No.: BTL-FICP-1-1411127 Page 140 of 149





Date: 6.DEC.2014 15:10:11



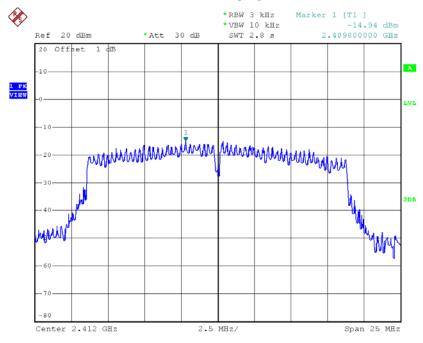
Date: 6.DEC.2014 15:11:39



#### Test Mode: TX N-20M Mode\_CH01/06/11\_ANT 2

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-14.94	0.03	8.00	Complies
2437	-9.95	0.10	8.00	Complies
2462	-12.79	0.05	8.00	Complies

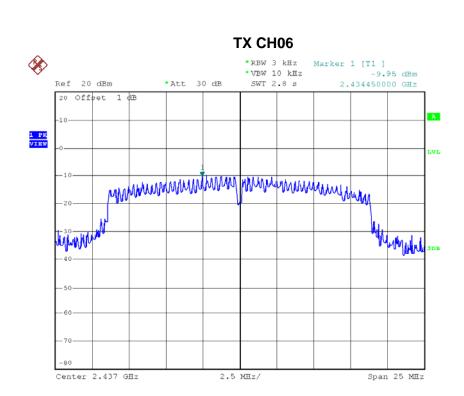
#### TX CH01



Date: 6.DEC.2014 15:14:28

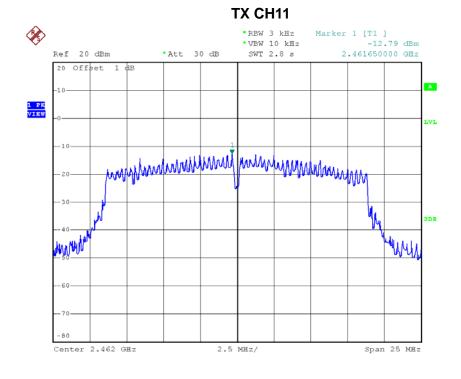
Report No.: BTL-FICP-1-1411127 Page 142 of 149





Date: 6.DEC.2014 15:17:28

Date: 6.DEC.2014 15:32:01



Report No.: BTL-FICP-1-1411127



## 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	-11.25	0.07	8.00	Complies
2437	-6.74	0.21	8.00	Complies
2462	-9.56	0.11	8.00	Complies

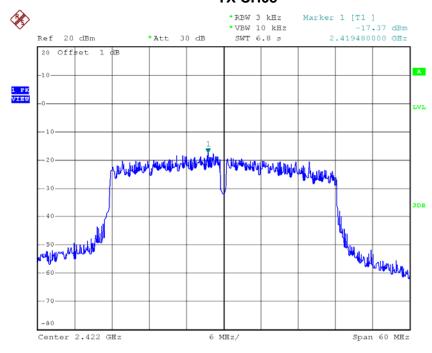
Report No.: BTL-FICP-1-1411127 Page 144 of 149



Test Mode: TX N-40M Mode\_CH03/06/09\_ANT 1

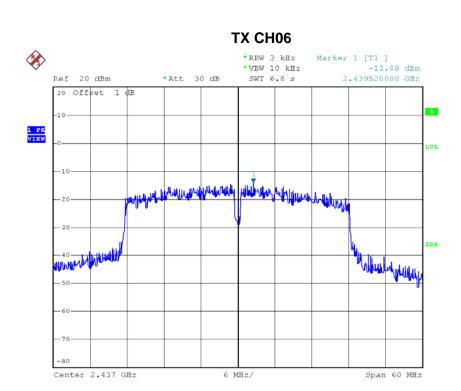
Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2422	-17.37	0.02	8.00	Complies
2437	-13.89	0.04	8.00	Complies
2452	-16.44	0.02	8.00	Complies

#### TX CH03



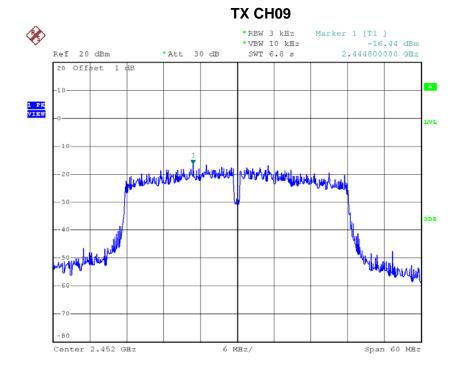
Date: 6.DEC.2014 15:33:39







Date: 6.DEC.2014 15:36:07



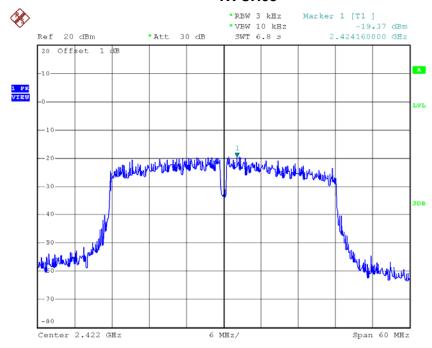
Report No.: BTL-FICP-1-1411127



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	-19.37	0.01	8.00	Complies
2437	-13.65	0.04	8.00	Complies
2452	-13.00	0.05	8.00	Complies

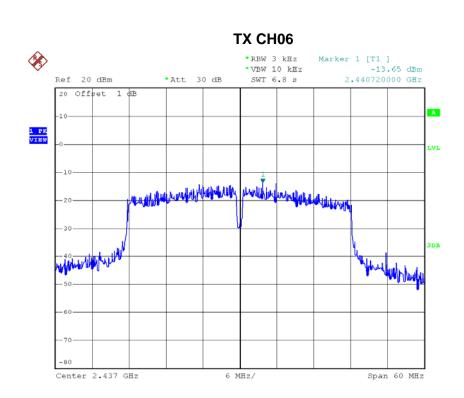
#### TX CH03



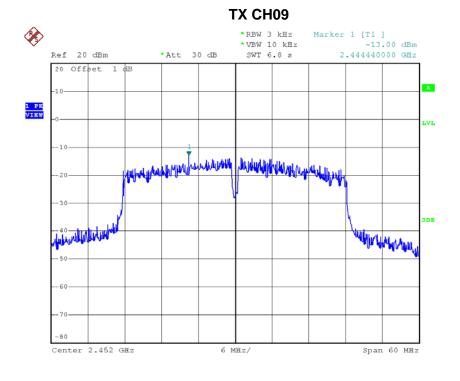
Date: 6.DEC.2014 15:37:30

Report No.: BTL-FICP-1-1411127 Page 147 of 149





Date: 6.DEC.2014 15:38:33



Date: 6.DEC.2014 15:39:59



## 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	-15.25	0.03	8.00	Complies
2437	-10.76	0.08	8.00	Complies
2452	-11.38	0.07	8.00	Complies

Report No.: BTL-FICP-1-1411127 Page 149 of 149