



FCC Radio Test Report FCC ID: 2ABAMSNSB

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

Project No. : 1608248
Equipment : Sense
Test Model : MB15226
Series Mode : N/A
Applicant : Hello Inc.

Address: 438 Shotwell St, San Francisco, CA 94110, USA

Date of Receipt: Aug. 31, 2016

Date of Test : Aug. 31, 2016 ~ Sep. 14, 2016

Issued Date : Sep. 19, 2016

Tested by : BTL Inc.

Testing Engineer : Kao

(Rush Kao)

Technical Manager :

Authorized Signatory

BTL INC.

B1, No. 37, Lane 365, Yang-Guang St., Nei-Hu District, Taipei City 114, Taiwan.

TEL: +886-2-2657-3299 FAX: +886-2-2657-3331

Report No.: BTL-FCCP-2-1608248 Page 1 of 115





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.

BTL's report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal 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-FCCP-2-1608248 Page 2 of 115





Table of Contents	Page
1 . CERTIFICATION	6
2 . SUMMARY OF TEST RESULTS	7
2.1 TEST FACILITY	7
2.2 MEASUREMENT UNCERTAINTY	8
	_
3. GENERAL INFORMATION	9
3.1 GENERAL DESCRIPTION OF EUT	9
3.2 DESCRIPTION OF TEST MODES	10
3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING	11
3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TE	STED 12
3.5 DESCRIPTION OF SUPPORT UNITS	12
4 . EMC EMISSION TEST	13
4.1 CONDUCTED EMISSION MEASUREMENT	13
4.1.1 POWER LINE CONDUCTED EMISSION LIMITS	13
4.1.2 TEST PROCEDURE	13
4.1.3 DEVIATION FROM TEST STANDARD	13
4.1.4 TEST SETUP 4.1.5 EUT OPERATING CONDITIONS	14 14
4.1.5 EUT OPERATING CONDITIONS 4.1.6 EUT TEST CONDITIONS	14
4.1.7 TEST RESULTS	14
4.2 RADIATED EMISSION MEASUREMENT	15
4.2.1 RADIATED EMISSION LIMITS	15
4.2.2 TEST PROCEDURE	16
4.2.3 DEVIATION FROM TEST STANDARD	16
4.2.4 TEST SETUP	17
4.2.5 EUT OPERATING CONDITIONS 4.2.6 EUT TEST CONDITIONS	18 18
4.2.7 TEST RESULTS (9KHZ TO 30MHZ)	19
4.2.8 TEST RESULTS (30MHZ TO 1000 MHZ)	19
4.2.9 TEST RESULTS (ABOVE 1000 MHZ)	19
5 . BANDWIDTH TEST	20
5.1 APPLIED PROCEDURES	20
5.1.1 TEST PROCEDURE	20
5.1.2 DEVIATION FROM STANDARD	20
5.1.3 TEST SETUP	20
5.1.4 EUT OPERATION CONDITIONS 5.1.5 EUT TEST CONDITIONS	20 20
5.1.6 TEST RESULTS	20 20
6 . MAXIMUM PEAK CONDUCTED OUTPUT POWER TEST	21

Report No.: BTL-FCCP-2-1608248





Table of Contents	Page
0.4.4 P.D. 15D P.D. 0.5 P.L. 150 (1.150 T.	24
6.1 APPLIED PROCEDURES / LIMIT 6.1.1 TEST PROCEDURE	21 21
6.1.2 DEVIATION FROM STANDARD	21
6.1.3 TEST SETUP	21
6.1.4 EUT OPERATION CONDITIONS	21
6.1.5 EUT TEST CONDITIONS	21
6.1.6 TEST RESULTS	21
7 . ANTENNA CONDUCTED SPURIOUS EMISSION	22
7.1 APPLIED PROCEDURES / LIMIT	22
7.1.1 TEST PROCEDURE	22
7.1.2 DEVIATION FROM STANDARD 7.1.3 TEST SETUP	22 22
7.1.4 EUT OPERATION CONDITIONS	22 22
7.1.5 EUT TEST CONDITIONS	22
7.1.6 TEST RESULTS	22
8 . POWER SPECTRAL DENSITY TEST	23
8.1 APPLIED PROCEDURES / LIMIT	23
8.1.1 TEST PROCEDURE	23
8.1.2 DEVIATION FROM STANDARD	23
8.1.3 TEST SETUP 8.1.4 EUT OPERATION CONDITIONS	23 23
8.1.5 EUT TEST CONDITIONS	23 23
8.1.6 TEST RESULTS	23
9 . MEASUREMENT INSTRUMENTS LIST	24
10 . EUT TEST PHOTO	26
ATTACHMENT A - CONDUCTED EMISSION	30
ATTACHMENT B - RADIATED EMISSION (9KHZ TO 30MHZ)	33
ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)	38
ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)	41
ATTACHMENT E - BANDWIDTH	78
ATTACHMENT F – MAXIMUM PEAK CONDUCTED OUTPUT POWER	85
ATTACHMENT G - ANTENNA CONDUCTED SPURIOUS EMISSION	87
ATTACHMENT H - POWER SPECTRAL DENSITY	109

Report No.: BTL-FCCP-2-1608248 Page 4 of 115





REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-2-1608248	Original Issue.	Sep. 19, 2016

Report No.: BTL-FCCP-2-1608248 Page 5 of 115





1. CERTIFICATION

Equipment : Sense
Brand Name : Hello
Test Model : MB15226
Series Model : N/A
Applicant : Hello Inc.
Manufacturer : Jabil Circuit

Address : 10560 Dr. Martin Luther King Jr. St. N., St. Petersburg, FL 33716, United

States

Factory : Jabil Circuit (GuangZhou) LTD.

Address : 128, JunCheng Road, Eastern Zone, Guangzhou Economic and

Technological Development District, 510530 Guangdong Province, PRC

Date of Test : Aug. 31, 2016 ~ Sep. 14, 2016

Test Sample : Engineering 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-2-1608248) 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-FCCP-2-1608248 Page 6 of 115





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:674415; FCC DN:TW0659)

No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

Radiated emission Test (Below 1GHz):

CB15: (FCC RN:674415; FCC DN:TW0659)

No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

Radiated emission Test (Above 1GHz):

CB15: (FCC RN:674415; FCC DN:TW0659)

No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

Report No.: BTL-FCCP-2-1608248 Page 7 of 115





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

A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U,(dB)
C05	CISPR	150 kHz ~ 30MHz	3.06

B. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	U,(dB)
CB15	CISPR	9kHz ~ 150kHz	2.96
(3m)	CISER	150kHz ~ 30MHz	2.74

Test Site	Method	Measurement Frequency Range	Ant.	U,(dB)
		30MHz ~ 200MHz	V	4.76
CB15	CISPR	30MHz ~ 200MHz	Н	4.28
(3m)	CIOPK	200MHz ~ 1,000MHz	V	5.08
		200MHz ~ 1,000MHz	Н	4.50

Test Site	Method	Measurement Frequency Range	Ant.	U,(dB)
		1GHz ~ 6GHz	V	4.48
CB15	CISPR	1GHz ~ 6GHz	Н	4.50
(3m)	CISPR	6GHz ~ 18GHz	V	4.30
		6GHz ~ 18GHz	Н	4.14

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

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_{CISPR} , 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} .

Report No.: BTL-FCCP-2-1608248 Page 8 of 115





3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Sense		
Brand Name	Hello		
Test Model	MB15226		
Model Difference	N/A		
Power Source	AC Adapter: Brand / Model name: Hello/AAA141020 Brand / Model name: Hello/AEA141020 Brand / Model name: Hello/AUA14423 Brand / Model name: Hello/AGA141020 (only differ in model name and plug type)		
Power Rating	I/P: AC 100-240V, 50/60Hz, 0.2A O/P: DC 5.0V, 1A		
	Operation Frequency	2412~2462 MHz	
	Modulation Technology	802.11b:DSSS 802.11g:OFDM 802.11n:OFDM	
Product Description For Bluetooth LE	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 65 Mbps	
	Output Power (Max.)	802.11b: 19.23 dBm 802.11g: 21.16 dBm 802.11n(20MHz): 21.11 dBm	

Note:

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

2. Channel List:

	802.11b, 802.11g, 802.11n(20MHz)						
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.	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)
1	Hello	N/A	PCB_IFA type	N/A	1.3

Report No.: BTL-FCCP-2-1608248 Page 9 of 115





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 Mode

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

For Conducted Test		
Final Test Mode	Description	
Mode 4	TX Mode	

For Radiated Test		
Final Test Mode	Description	
Mode 1	TX B MODE CHANNEL 01/06/11	
Mode 2	TX G MODE CHANNEL 01/06/11	
Mode 3	TX N-20MHZ MODE CHANNEL 01/06/11	

Note:

- (1) The measurements are performed at the high, middle, low available channels.
- (2) 802.11b mode: DBPSK (1Mbps)
 - 802.11g mode: OFDM (6Mbps)
 - 802.11n HT20 mode: BPSK (6.5Mbps)
 - For radiated emission tests, the highest output powers were set for final test.
- (3) For radiated below 1GHz 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%.

Report No.: BTL-FCCP-2-1608248 Page 10 of 115





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

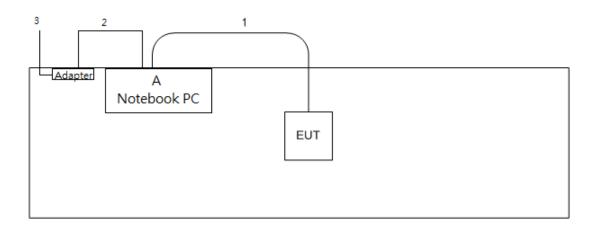
Test software version	cmd		
Frequency (MHz)	2412	2437	2462
802.11b	DEF	DEF	DEF
802.11g	DEF	DEF	DEF
802.11n (20MHz)	DEF	DEF	DEF

Report No.: BTL-FCCP-2-1608248 Page 11 of 115





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.
A Notebook PC	CPC ACER	ACER	N/A	NXMPFTA00143	
		V3-371-67HZ		80598B6600	

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	0.8m	USB Cable
2	NO	NO	1.0m	Power Cable
3	NO	NO	1.0m	Power Cable

Report No.: BTL-FCCP-2-1608248 Page 12 of 115





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 -0.5	66 to 56*	56 to 46*	
0.50 -5.0	56	46	
5.0 -30.0	60	50	

Note

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

The following table is the setting of the receiver

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

4.1.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

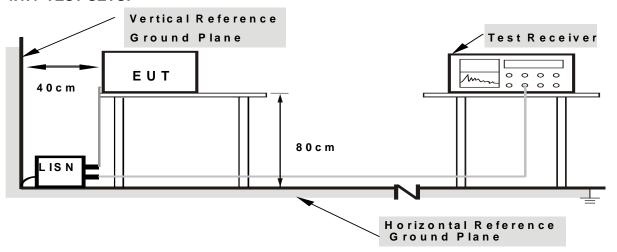
No deviation

Report No.: BTL-FCCP-2-1608248 Page 13 of 115





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-FCCP-2-1608248 Page 14 of 115





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)		
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-FCCP-2-1608248 Page 15 of 115





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

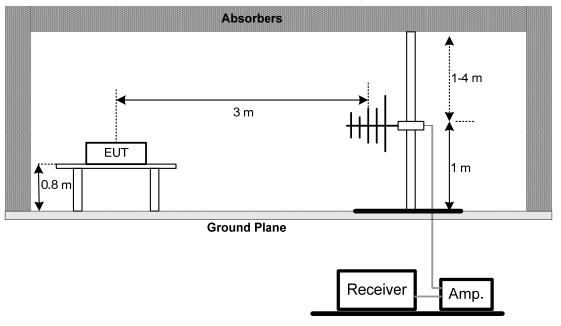
Report No.: BTL-FCCP-2-1608248 Page 16 of 115



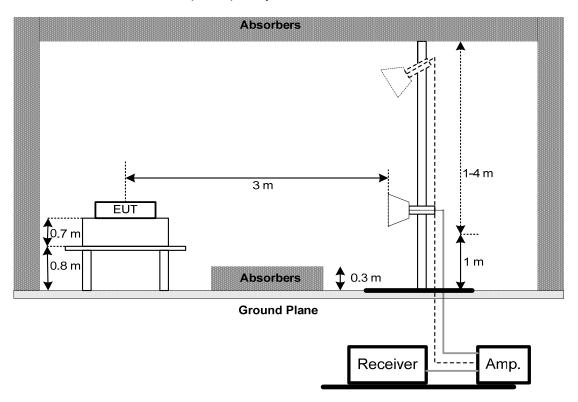


4.2.4 TEST SETUP

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



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

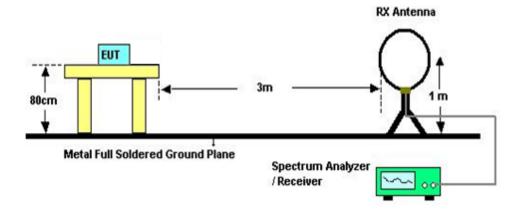


Report No.: BTL-FCCP-2-1608248 Page 17 of 115





(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: 65% Test Voltage: AC 120V/60Hz

Report No.: BTL-FCCP-2-1608248





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.

Report No.: BTL-FCCP-2-1608248 Page 19 of 115





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: 60% Test Voltage: AC 120V/60Hz

5.1.6 TEST RESULTS

Please refer to the Attachment E.

Report No.: BTL-FCCP-2-1608248 Page 20 of 115





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 v03r05.

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP

EUT	Power Meter

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: 60% Test Voltage: AC 120V/60Hz

6.1.6 TEST RESULTS

Please refer to the Attachment F.

Report No.: BTL-FCCP-2-1608248 Page 21 of 115





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

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: 60% Test Voltage: AC 120V/60Hz

7.1.6 TEST RESULTS

Please refer to the Attachment G.

Report No.: BTL-FCCP-2-1608248 Page 22 of 115





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: 60% Test Voltage: AC 120V/60Hz

8.1.6 TEST RESULTS

Please refer to the Attachment H.

Report No.: BTL-FCCP-2-1608248 Page 23 of 115





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	Jan. 26, 2017	
2	Test Cable	TIMES	CFD300-NL	C02	Jun. 15, 2017	
3	EMI Test Receiver	R&S	ESR7	101433	Dec. 10, 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	Trilog-Broadband Antenna	Schwarzbeck	VULB9168-35 2	9168-352	Feb. 04, 2017		
2	Horn Antenna	Schwarzbeck	BBHA 9120	D-546	Nov. 05, 2017		
3	Pre-Amplifier	HP	8447D	2944A08891	Mar. 09 2017		
4	Pre-Amplifier	Agilent	8449B	3008A02331	Jan. 24, 2017		
5	Test Cable	EMCI	EMC8D-NM-N M-8000	150301	Mar. 09, 2017		
6	Test Cable	EMCI	EMC104-SM-S M-2500	150303	Mar. 09, 2017		
7	Test Cable	EMCI	EMC104-NM-S M-1000	150304	Mar. 09, 2017		
8	Test Cable	EMCI	EMC104-SM-S M-5000	150302	Mar. 29, 2017		
9	Test Cable	EMCI	EMC104-SM-S M-800	150305	Mar. 29, 2017		
10	EXA Spectrum Analyzer	Agilent	N9010A	MY52220990	Feb. 24, 2017		
11	EMI Test Receiver	Agilent	N9038A	MY51210215	Jan. 08, 2017		
12	Loop Antenna	EMCO	6502	00042960	Nov. 06. 2016		

Report No.: BTL-FCCP-2-1608248 Page 24 of 115





6dB Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP-40	100129	Jan. 18, 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. 18, 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. 18, 2017

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

Report No.: BTL-FCCP-2-1608248 Page 25 of 115



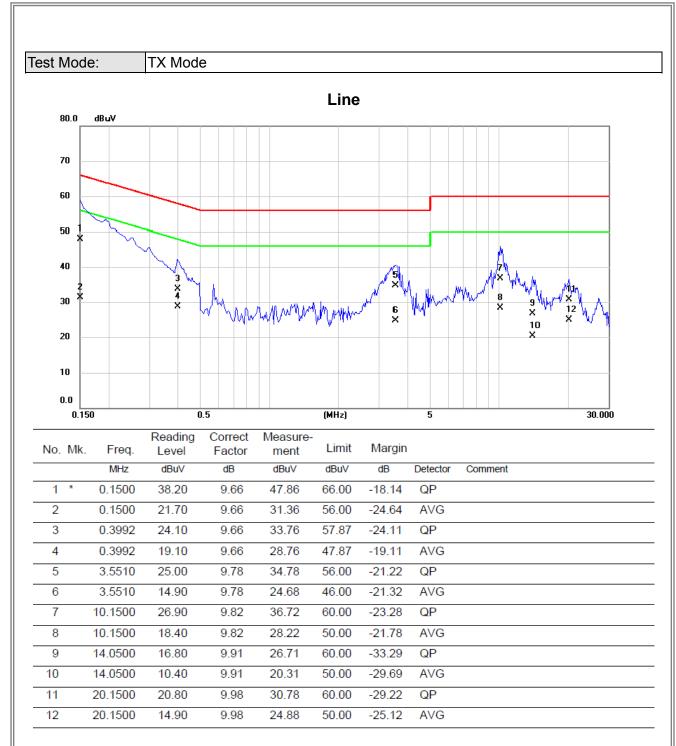


ATTACHMENT A - CONDUCTED EMISSION							

Report No.: BTL-FCCP-2-1608248 Page 30 of 115



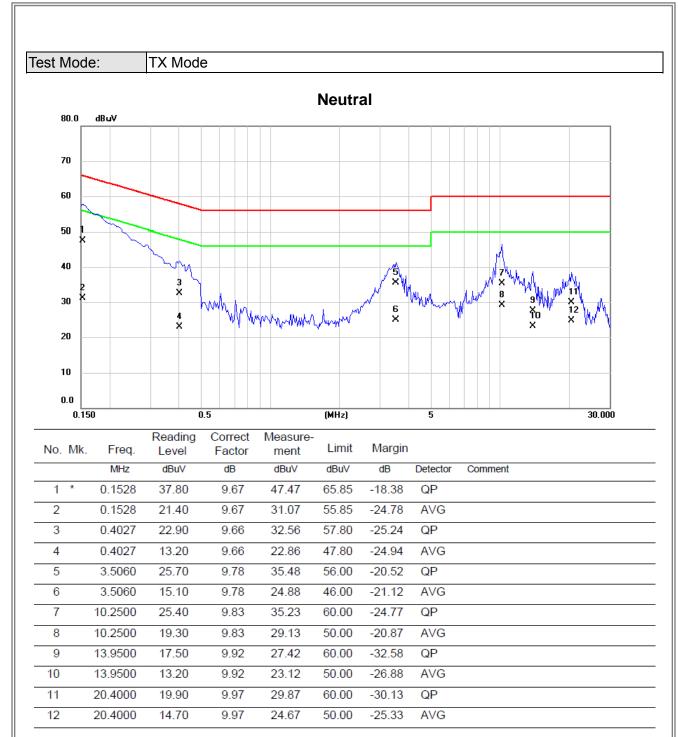




Report No.: BTL-FCCP-2-1608248 Page 31 of 115











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

Report No.: BTL-FCCP-2-1608248 Page 33 of 115







48.78

120.98

-72.20

peak

12.08

36.70

1 *

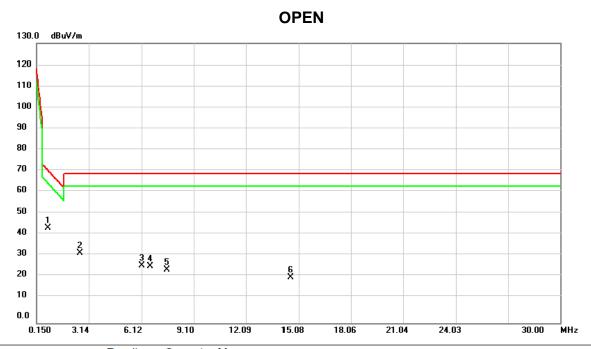
0.1135

Report No.: BTL-FCCP-2-1608248 Page 34 of 115





Test Mode: TX Mode

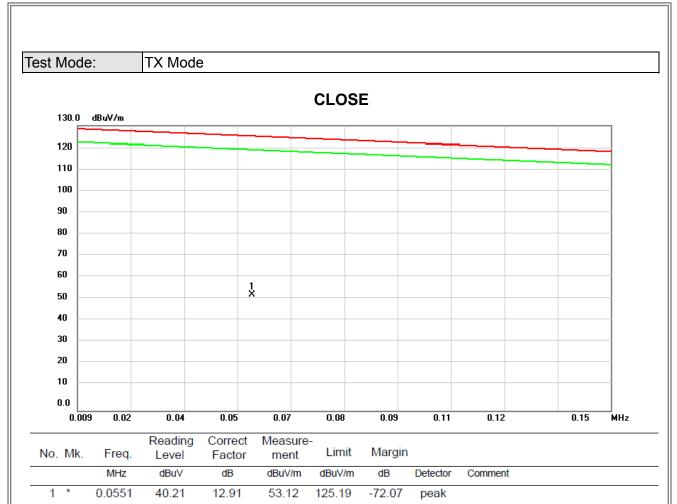


	No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
_			MHz	dBu∨	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1	*	0.8064	32.31	11.92	44.23	70.98	-26.75	peak	
	2		2.6274	21.29	11.27	32.56	69.54	-36.98	peak	
	3		6.1497	15.55	11.38	26.93	69.54	-42.61	peak	
_	4		6.6272	15.26	11.37	26.63	69.54	-42.91	peak	
	5		7.5528	13.60	11.35	24.95	69.54	-44.59	peak	
_	6		14.6272	10.07	11.16	21.23	69.54	-48.31	peak	
_										

Report No.: BTL-FCCP-2-1608248 Page 35 of 115







Report No.: BTL-FCCP-2-1608248 Page 36 of 115







Report No.: BTL-FCCP-2-1608248 Page 37 of 115



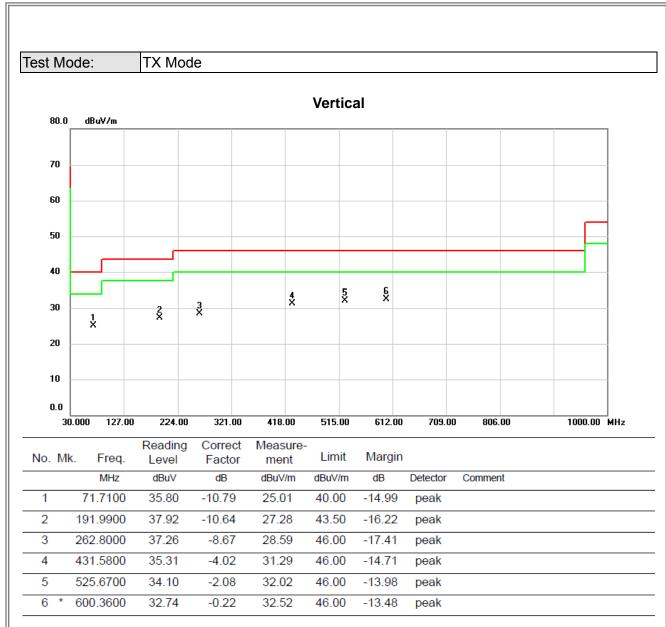


ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)

Report No.: BTL-FCCP-2-1608248 Page 38 of 115



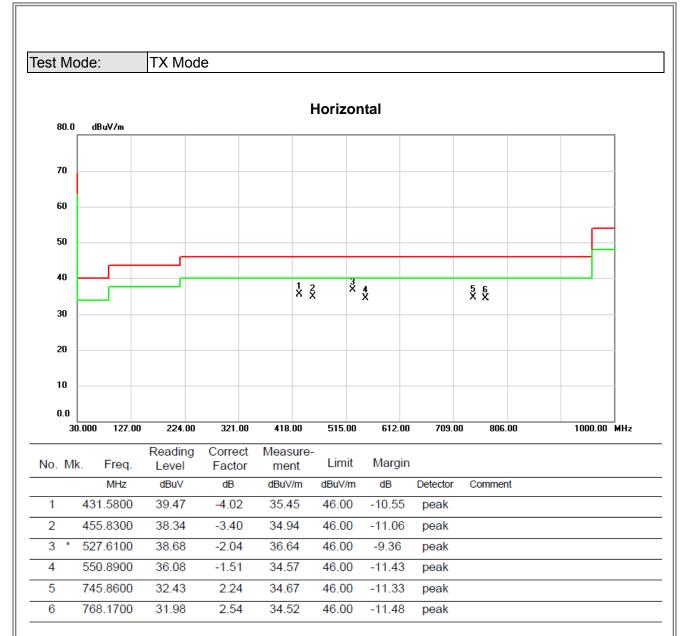




Report No.: BTL-FCCP-2-1608248 Page 39 of 115







Report No.: BTL-FCCP-2-1608248 Page 40 of 115



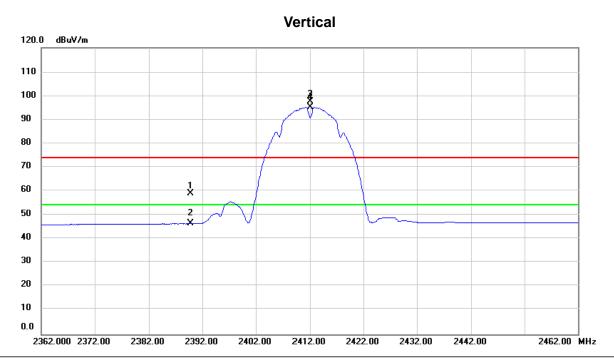


ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)

Report No.: BTL-FCCP-2-1608248 Page 41 of 115







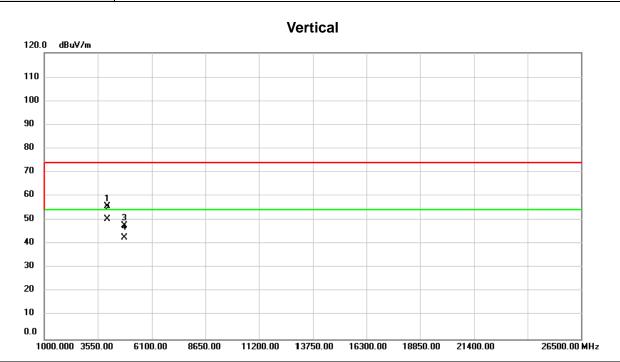
	No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
_			MHz	dBu∨	dB	dBuV/m	dBuV/m	dB	Detector	Comment
_	1		2389.804	27.24	31.70	58.94	74.00	-15.06	peak	
_	2		2389.804	14.90	31.70	46.60	54.00	-7.40	AVG	
_	3	Χ	2412.000	65.78	31.79	97.57	74.00	23.57	peak	No Limit
	4	*	2412.000	63.51	31.79	95.30	54.00	41.30	AVG	No Limit

Report No.: BTL-FCCP-2-1608248 Page 42 of 115









No.	Mk	. Freq.	_		Measure- ment	Limit	Margin		
		MHz	dBu∨	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4020.000	67.36	-11.69	55.67	74.00	-18.33	peak	
2	*	4020.000	62.21	-11.69	50.52	54.00	-3.48	AVG	
3		4824.000	58.43	-10.48	47.95	74.00	-26.05	peak	
4		4824.000	53.33	-10.48	42.85	54.00	-11.15	AVG	

Report No.: BTL-FCCP-2-1608248 Page 43 of 115





Horizontal 120.0 dBuV/m 110 100 90 80 70 X X 60 50 40 30 20 10 0.0 2362.000 2372.00 2382.00 2392.00 2402.00 2412.00 2422.00 2432.00 2442.00 2462.00 MHz

No). M	lk.	Freq.	Reading Level		Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	I	23	90.000	27.53	31.70	59.23	74.00	-14.77	peak	
2	2	23	90.000	14.83	31.70	46.53	54.00	-7.47	AVG	
3	3 X	24	12.000	67.33	31.79	99.12	74.00	25.12	peak	No Limit
4	1 *	24	12.000	65.09	31.79	96.88	54.00	42.88	AVG	No Limit

Report No.: BTL-FCCP-2-1608248 Page 44 of 115



10 0.0

1000.000 3550.00

6100.00

8650.00



Test Mode: TX B MODE 2412MHz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4	1020.000	65.80	-11.69	54.11	74.00	-19.89	peak	
2	* 4	1020.000	60.44	-11.69	48.75	54.00	-5.25	AVG	
3	4	1824.000	58.88	-10.48	48.40	74.00	-25.60	peak	
4	4	1824.000	51.32	-10.48	40.84	54.00	-13.16	AVG	

11200.00 13750.00 16300.00 18850.00

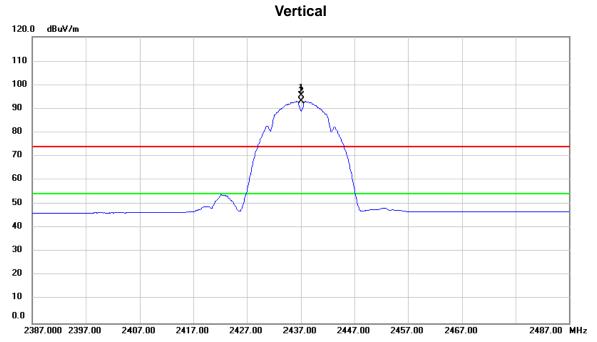
21400.00

26500.00 MHz

Report No.: BTL-FCCP-2-1608248 Page 45 of 115





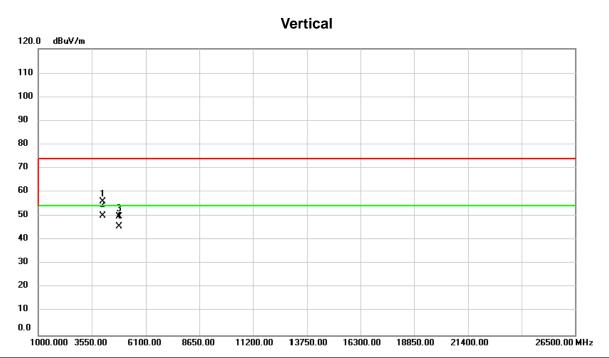


No.	Mk	c. Freq.	Reading Level		Measure- ment		Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.000	63.61	31.88	95.49	74.00	21.49	peak	No Limit
2	*	2437.000	61.26	31.88	93.14	54.00	39.14	AVG	No Limit

Report No.: BTL-FCCP-2-1608248 Page 46 of 115







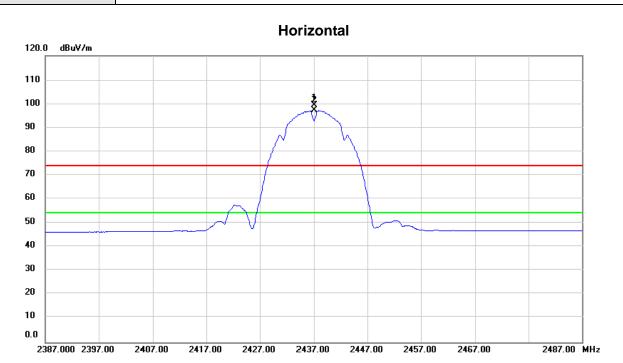
No.	Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4060.000	67.48	-11.64	55.84	74.00	-18.16	peak	
2	*	4060.000	62.01	-11.64	50.37	54.00	-3.63	AVG	
3		4874.000	60.33	-10.40	49.93	74.00	-24.07	peak	
4		4874.000	56.11	-10.40	45.71	54.00	-8.29	AVG	

Report No.: BTL-FCCP-2-1608248 Page 47 of 115









No.	Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.000	67.66	31.88	99.54	74.00	25.54	peak	No Limit
2	*	2437.000	65.35	31.88	97.23	54.00	43.23	AVG	No Limit

Report No.: BTL-FCCP-2-1608248 Page 48 of 115





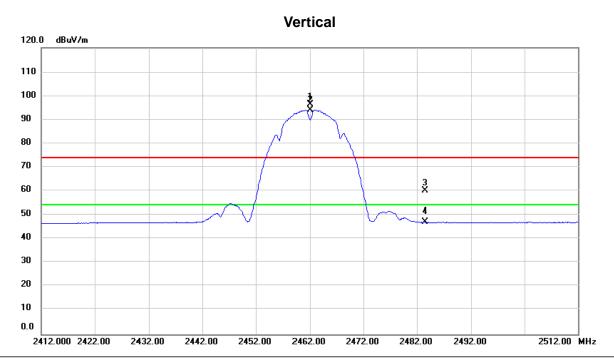
Horizontal 120.0 dBuV/m 110 100 90 80 70 60 50 40 30 20 10 0.0 1000.000 3550.00 6100.00 8650.00 11200.00 13750.00 16300.00 18850.00 21400.00 26500.00 MHz

No	. Mk	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4060.000	66.95	-11.64	55.31	74.00	-18.69	peak	
2	*	4060.000	61.04	-11.64	49.40	54.00	-4.60	AVG	
3		4874.000	58.67	-10.40	48.27	74.00	-25.73	peak	
4		4874.000	54.18	-10.40	43.78	54.00	-10.22	AVG	

Report No.: BTL-FCCP-2-1608248 Page 49 of 115





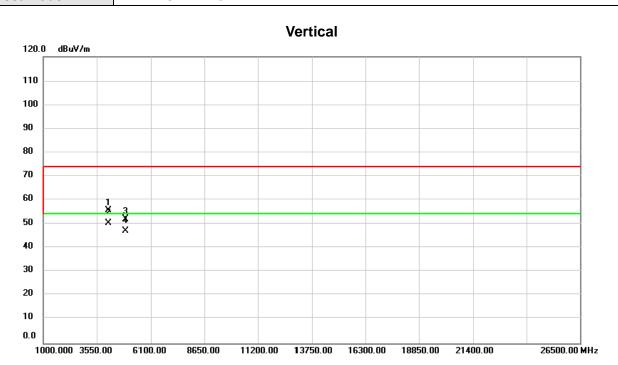


No. Mk. Fre	Reading q. Level	Correct Factor	Measure- ment	Limit	Margin		
MH	z dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 X 2462.0	00 64.58	31.98	96.56	74.00	22.56	peak	No Limit
2 * 2462.00	00 62.17	31.98	94.15	54.00	40.15	AVG	No Limit
3 2483.50	00 27.96	32.06	60.02	74.00	-13.98	peak	
4 2483.50	00 15.09	32.06	47.15	54.00	-6.85	AVG	

Report No.: BTL-FCCP-2-1608248 Page 50 of 115





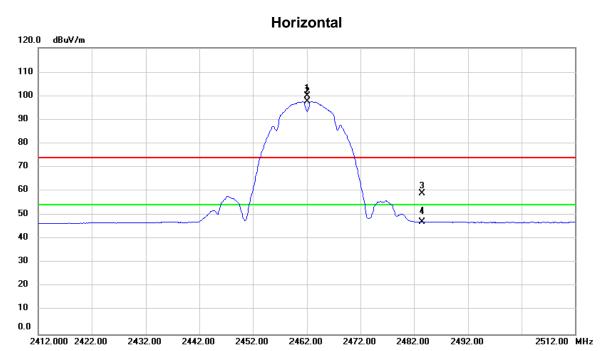


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4100.000	67.31	-11.59	55.72	74.00	-18.28	peak	
2	*	4100.000	62.08	-11.59	50.49	54.00	-3.51	AVG	
3		4924.000	62.42	-10.32	52.10	74.00	-21.90	peak	
4		4924.000	57.72	-10.32	47.40	54.00	-6.60	AVG	

Report No.: BTL-FCCP-2-1608248 Page 51 of 115







No.	Mk	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2462.000	68.08	31.98	100.06	74.00	26.06	peak	No Limit
2	*	2462.000	65.75	31.98	97.73	54.00	43.73	AVG	No Limit
3		2483.500	26.98	32.06	59.04	74.00	-14.96	peak	
4		2483.500	15.22	32.06	47.28	54.00	-6.72	AVG	

Report No.: BTL-FCCP-2-1608248 Page 52 of 115





1000.000 3550.00

6100.00

8650.00

11200.00

No	. Mł	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4100.000	66.50	-11.59	54.91	74.00	-19.09	peak	
2	*	4100.000	61.45	-11.59	49.86	54.00	-4.14	AVG	
3		4924.000	59.96	-10.32	49.64	74.00	-24.36	peak	
4		4924.000	54.24	-10.32	43.92	54.00	-10.08	AVG	

13750.00 16300.00 18850.00

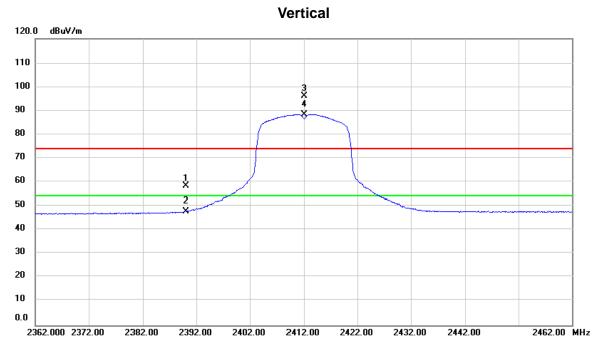
21400.00

26500.00 MHz

Report No.: BTL-FCCP-2-1608248 Page 53 of 115





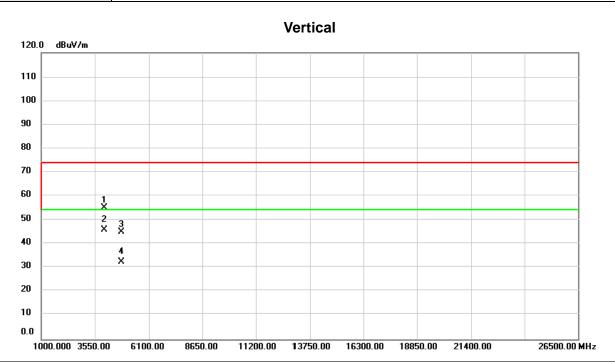


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	26.52	31.70	58.22	74.00	-15.78	peak	
2		2390.000	16.19	31.70	47.89	54.00	-6.11	AVG	
3	X	2412.000	64.27	31.79	96.06	74.00	22.06	peak	No Limit
4	*	2412.000	56.66	31.79	88.45	54.00	34.45	AVG	No Limit

Report No.: BTL-FCCP-2-1608248 Page 54 of 115





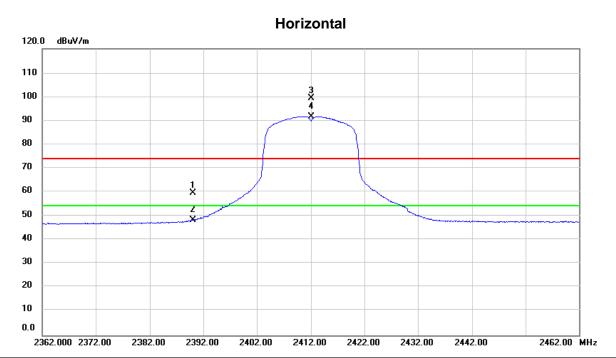


No.	Mk.	Freq.	_	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4020.000	66.88	-11.69	55.19	74.00	-18.81	peak	
2	*	4020.000	57.81	-11.69	46.12	54.00	-7.88	AVG	
3		4824.000	55.50	-10.48	45.02	74.00	-28.98	peak	
4		4824.000	42.97	-10.48	32.49	54.00	-21.51	AVG	

Report No.: BTL-FCCP-2-1608248 Page 55 of 115







No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
-		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	27.82	31.70	59.52	74.00	-14.48	peak	
2		2390.000	16.63	31.70	48.33	54.00	-5.67	AVG	
3	Χ	2412.000	67.54	31.79	99.33	74.00	25.33	peak	No Limit
4	*	2412.000	59.99	31.79	91.78	54.00	37.78	AVG	No Limit

Report No.: BTL-FCCP-2-1608248 Page 56 of 115





1000.000 3550.00

6100.00

8650.00

11200.00

No. M	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4	020.000	65.49	-11.69	53.80	74.00	-20.20	peak	
2 '	* 4	020.000	55.62	-11.69	43.93	54.00	-10.07	AVG	
3	4	824.000	55.29	-10.48	44.81	74.00	-29.19	peak	
4	4	824.000	43.52	-10.48	33.04	54.00	-20.96	AVG	

13750.00 16300.00 18850.00

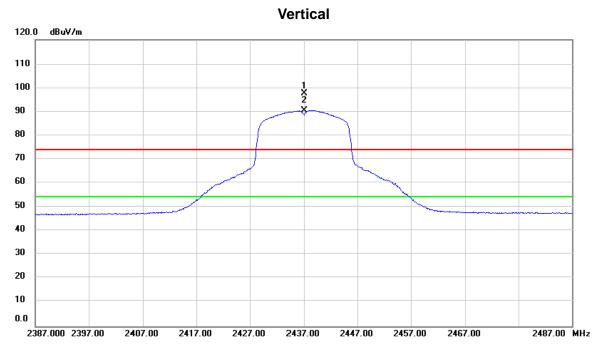
21400.00

26500.00 MHz

Report No.: BTL-FCCP-2-1608248 Page 57 of 115







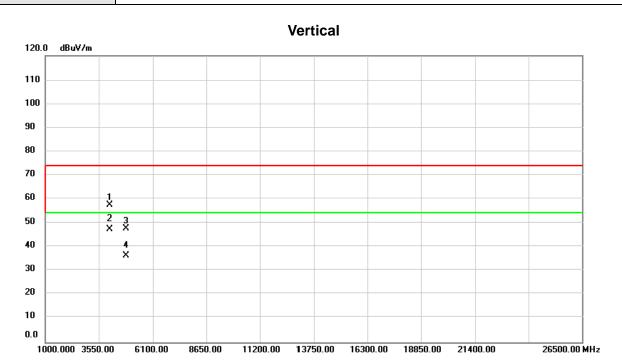
No	٥.	Mk	. Freq.			Measure- ment		Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1	X	2437.000	65.84	31.88	97.72	74.00	23.72	peak	No Limit
	2	*	2437.000	58.68	31.88	90.56	54.00	36.56	AVG	No Limit

Report No.: BTL-FCCP-2-1608248 Page 58 of 115









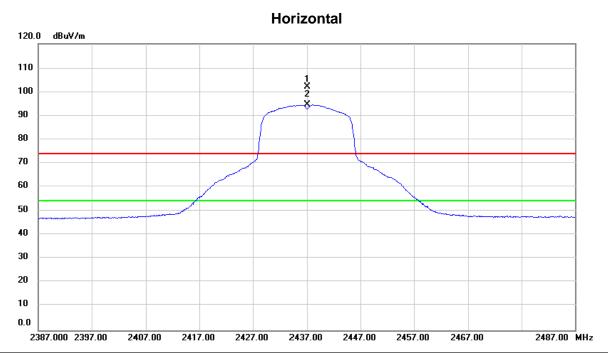
No.	Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4060.000	69.03	-11.64	57.39	74.00	-16.61	peak	
2	*	4060.000	59.14	-11.64	47.50	54.00	-6.50	AVG	
3		4874.000	58.11	-10.40	47.71	74.00	-26.29	peak	
4		4874.000	46.73	-10.40	36.33	54.00	-17.67	AVG	

Report No.: BTL-FCCP-2-1608248 Page 59 of 115









No.	Mk	. Freq.		Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2437.000	70.17	31.88	102.05	74.00	28.05	peak	No Limit
2	*	2437.000	62.68	31.88	94.56	54.00	40.56	AVG	No Limit

Report No.: BTL-FCCP-2-1608248 Page 60 of 115





1000.000 3550.00

6100.00

8650.00

11200.00

MHz dBuV dB dBuV/m dBuV/m dB Detector Comment 1 4060.000 68.61 -11.64 56.97 74.00 -17.03 peak 2 * 4060.000 58.67 -11.64 47.03 54.00 -6.97 AVG 3 4874.000 57.08 -10.40 46.68 74.00 -27.32 peak 4 4874.000 45.64 -10.40 35.24 54.00 -18.76 AVG	No	. Mł	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
2 * 4060.000 58.67 -11.64 47.03 54.00 -6.97 AVG 3 4874.000 57.08 -10.40 46.68 74.00 -27.32 peak			MHz	dBu∨	dB	dBuV/m	dBuV/m	dB	Detector	Comment
3 4874.000 57.08 -10.40 46.68 74.00 -27.32 peak	1		4060.000	68.61	-11.64	56.97	74.00	-17.03	peak	
· · · · · · · · · · · · · · · · · · ·	2	*	4060.000	58.67	-11.64	47.03	54.00	-6.97	AVG	
4 4874.000 45.64 -10.40 35.24 54.00 -18.76 AVG	3		4874.000	57.08	-10.40	46.68	74.00	-27.32	peak	
	4		4874.000	45.64	-10.40	35.24	54.00	-18.76	AVG	

13750.00 16300.00 18850.00

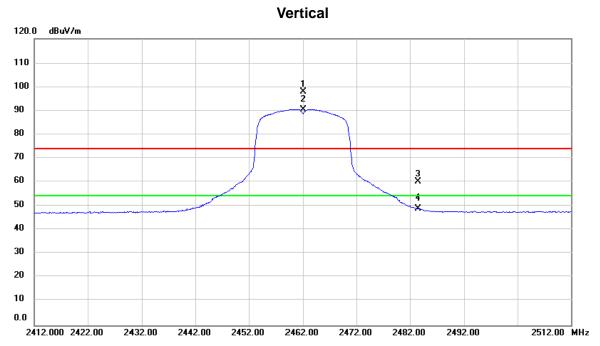
21400.00

26500.00 MHz

Report No.: BTL-FCCP-2-1608248 Page 61 of 115





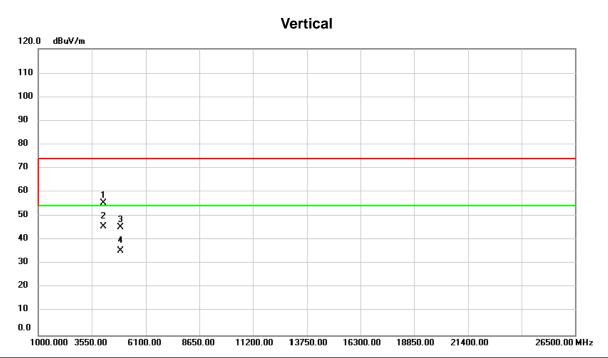


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2462.000	65.89	31.98	97.87	74.00	23.87	peak	No Limit
2	*	2462.000	58.59	31.98	90.57	54.00	36.57	AVG	No Limit
3		2483.500	28.04	32.06	60.10	74.00	-13.90	peak	
4		2483.528	17.06	32.06	49.12	54.00	-4.88	AVG	

Report No.: BTL-FCCP-2-1608248 Page 62 of 115





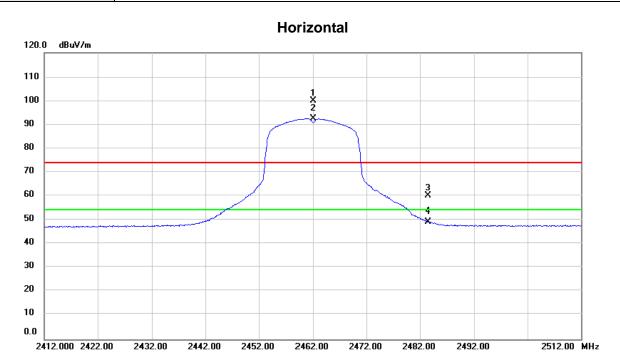


MHz dBuV dB dBuV/m dBuV/m dB Detector Comment 1 4100.000 66.92 -11.59 55.33 74.00 -18.67 peak 2 * 4100.000 57.20 -11.59 45.61 54.00 -8.39 AVG 3 4924.000 55.83 -10.32 45.51 74.00 -28.49 peak 4 4924.000 45.76 -10.32 35.44 54.00 -18.56 AVG	No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
2 * 4100.000 57.20 -11.59 45.61 54.00 -8.39 AVG 3 4924.000 55.83 -10.32 45.51 74.00 -28.49 peak			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
3 4924.000 55.83 -10.32 45.51 74.00 -28.49 peak	1		4100.000	66.92	-11.59	55.33	74.00	-18.67	peak	
· · · · · · · · · · · · · · · · · · ·	2	*	4100.000	57.20	-11.59	45.61	54.00	-8.39	AVG	
4 4924.000 45.76 -10.32 35.44 54.00 -18.56 AVG	3		4924.000	55.83	-10.32	45.51	74.00	-28.49	peak	
	4		4924.000	45.76	-10.32	35.44	54.00	-18.56	AVG	

Report No.: BTL-FCCP-2-1608248 Page 63 of 115







No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2462.000	67.99	31.98	99.97	74.00	25.97	peak	No Limit
2	*	2462.000	60.57	31.98	92.55	54.00	38.55	AVG	No Limit
3		2483.500	28.09	32.06	60.15	74.00	-13.85	peak	
4		2483.500	17.42	32.06	49.48	54.00	-4.52	AVG	

Report No.: BTL-FCCP-2-1608248 Page 64 of 115





1000.000 3550.00

6100.00

8650.00

11200.00

No.	Mk	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4100.000	66.72	-11.59	55.13	74.00	-18.87	peak	
2	*	4100.000	57.25	-11.59	45.66	54.00	-8.34	AVG	
3		4924.000	56.91	-10.32	46.59	74.00	-27.41	peak	
4		4924.000	43.79	-10.32	33.47	54.00	-20.53	AVG	

13750.00 16300.00 18850.00

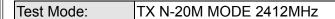
21400.00

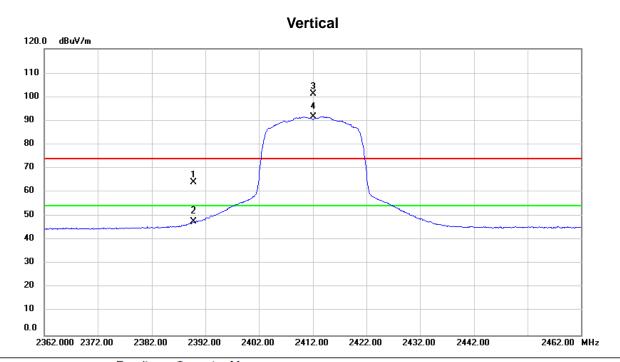
26500.00 MHz

Report No.: BTL-FCCP-2-1608248 Page 65 of 115







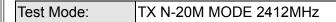


	No.	Mk	c. Freq		Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
_	1		2389.776	32.49	31.70	64.19	74.00	-9.81	peak	
_	2		2389.776	6 16.00	31.70	47.70	54.00	-6.30	AVG	
_	3	X	2412.000	69.37	31.79	101.16	74.00	27.16	peak	No Limit
	4	*	2412.000	59.86	31.79	91.65	54.00	37.65	AVG	No Limit

Report No.: BTL-FCCP-2-1608248 Page 66 of 115







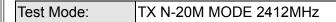
Vertical 120.0 dBuV/m 110 100 90 80 70 60 50 2 3 X X 40 4 × 30 20 10 0.0 1000.000 3550.00 6100.00 8650.00 11200.00 13750.00 16300.00 18850.00 21400.00 26500.00 MHz

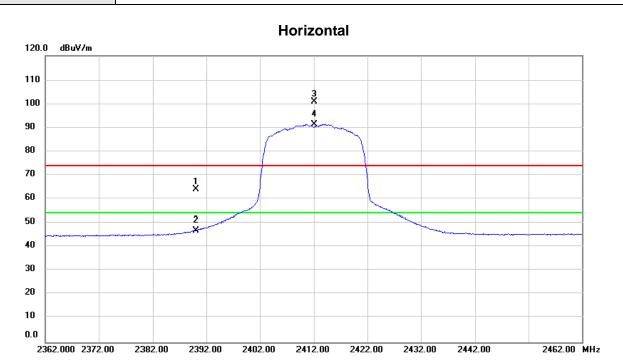
MHz dBuV dB dBuV/m dBuV/m dB Detector Co	omment
1 4020.000 67.01 -11.69 55.32 74.00 -18.68 peak	
2 * 4020.000 57.41 -11.69 45.72 54.00 -8.28 AVG	
3 4824.000 56.80 -10.48 46.32 74.00 -27.68 peak	
4 4824.000 44.24 -10.48 33.76 54.00 -20.24 AVG	

Report No.: BTL-FCCP-2-1608248 Page 67 of 115







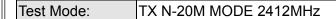


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	32.27	31.70	63.97	74.00	-10.03	peak	
2		2390.000	15.30	31.70	47.00	54.00	-7.00	AVG	
3	X	2412.000	69.14	31.79	100.93	74.00	26.93	peak	No Limit
4	*	2412.000	59.60	31.79	91.39	54.00	37.39	AVG	No Limit

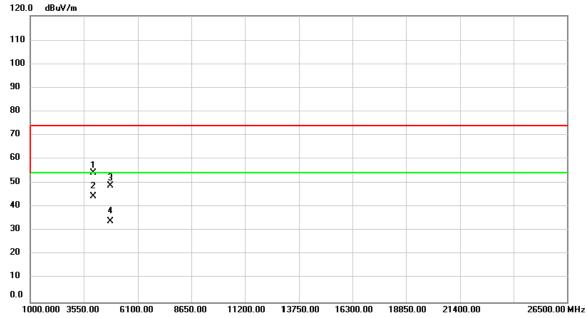
Report No.: BTL-FCCP-2-1608248 Page 68 of 115







Horizontal

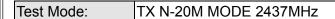


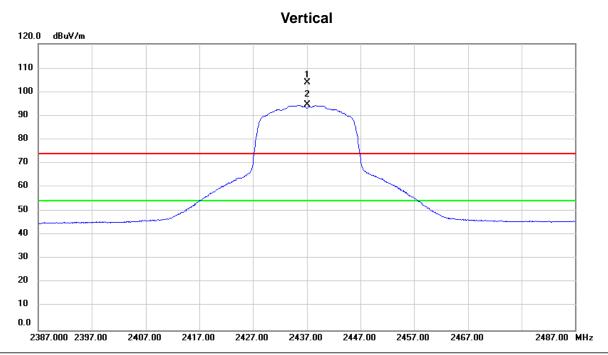
No. I	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4	020.000	65.77	-11.69	54.08	74.00	-19.92	peak	
2	* 4	020.000	56.19	-11.69	44.50	54.00	-9.50	AVG	
3	4	824.000	59.48	-10.48	49.00	74.00	-25.00	peak	
4	4	824.000	44.58	-10.48	34.10	54.00	-19.90	AVG	

Report No.: BTL-FCCP-2-1608248 Page 69 of 115







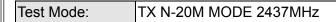


	No.	Mk	c. Freq.		Correct Factor	Measure- ment		Margin		
_			MHz	dBu∨	dB	dBuV/m	dBuV/m	dB	Detector	Comment
_	1	X	2437.000	72.19	31.88	104.07	74.00	30.07	peak	No Limit
_	2	*	2437.000	62.65	31.88	94.53	54.00	40.53	AVG	No Limit

Report No.: BTL-FCCP-2-1608248 Page 70 of 115







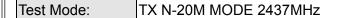
Vertical 120.0 dBuV/m 110 100 90 80 70 60 50 40 30 20 10 0.0 1000.000 3550.00 6100.00 8650.00 11200.00 13750.00 16300.00 18850.00 21400.00 26500.00 MHz

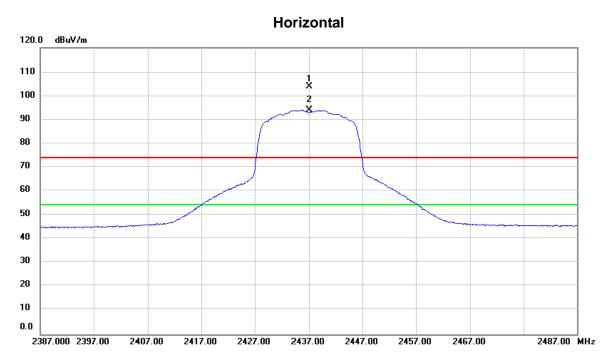
No	. Mł	k. Freq.	Reading Level		Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4060.000	68.31	-11.64	56.67	74.00	-17.33	peak	
2	*	4060.000	58.85	-11.64	47.21	54.00	-6.79	AVG	
3		4874.000	62.44	-10.40	52.04	74.00	-21.96	peak	
4		4874.000	47.80	-10.40	37.40	54.00	-16.60	AVG	

Report No.: BTL-FCCP-2-1608248 Page 71 of 115









No.	Mk	. Freq.	Reading Level		Measure- ment	Limit	Margin			
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment	
1	X	2437.000	71.99	31.88	103.87	74.00	29.87	peak	No Limit	
2	*	2437.000	62.09	31.88	93.97	54.00	39.97	AVG	No Limit	

Report No.: BTL-FCCP-2-1608248 Page 72 of 115

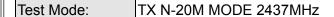


120.0 dBuV/m

50 40

1000.000 3550.00





х _х

4 ×

6100.00

8650.00

Horizontal

21400.00

26500.00 MHz

No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4060.000	71.01	-11.64	59.37	74.00	-14.63	peak	
2	*	4060.000	61.34	-11.64	49.70	54.00	-4.30	AVG	
3		4874.000	59.24	-10.40	48.84	74.00	-25.16	peak	
4		4874.000	46.21	-10.40	35.81	54.00	-18.19	AVG	

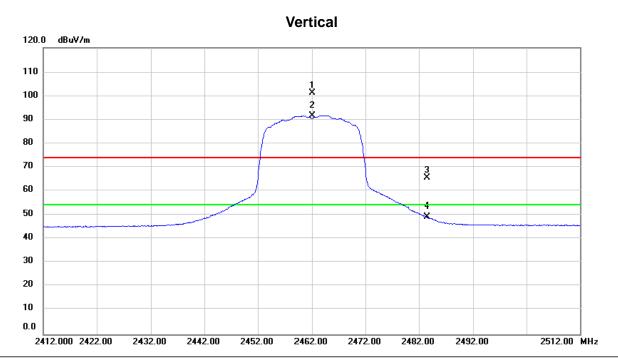
11200.00 13750.00 16300.00 18850.00

Report No.: BTL-FCCP-2-1608248 Page 73 of 115





Test Mode: TX N-20M MODE 2462MHz

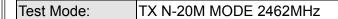


	No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
_			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1	X	2462.000	69.33	31.98	101.31	74.00	27.31	peak	No Limit
	2	*	2462.000	59.78	31.98	91.76	54.00	37.76	AVG	No Limit
	3		2483.533	33.37	32.06	65.43	74.00	-8.57	peak	
	4		2483.533	17.28	32.06	49.34	54.00	-4.66	AVG	

Report No.: BTL-FCCP-2-1608248 Page 74 of 115







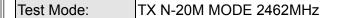
Vertical 120.0 dBuV/m 110 100 90 80 70 60 50 X 40 4 × 30 20 10 0.0 1000.000 3550.00 6100.00 8650.00 11200.00 13750.00 16300.00 18850.00 21400.00 26500.00 MHz

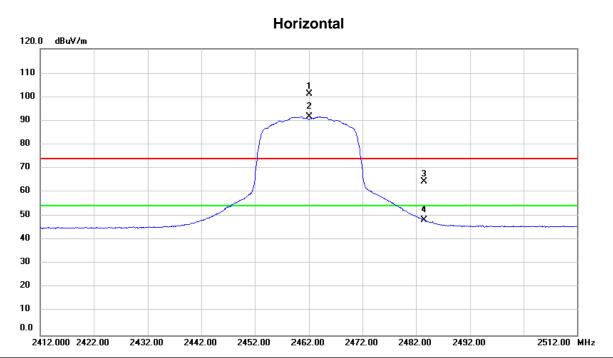
MHz dBuV dB dBuV/m dBuV/m dB Detector Comment	No.	Mk	. Freq.	Reading Level		Measure- ment	Limit	Margin		
1 4100,000 66,67 11,50 55,08 74,00 18,02 poak			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1 4100.000 00.07 -11.39 33.00 74.00 -10.92 peak	1		4100.000	66.67	-11.59	55.08	74.00	-18.92	peak	
2 * 4100.000 57.03 -11.59 45.44 54.00 -8.56 AVG	2	*	4100.000	57.03	-11.59	45.44	54.00	-8.56	AVG	
3 4924.000 59.52 -10.32 49.20 74.00 -24.80 peak	3		4924.000	59.52	-10.32	49.20	74.00	-24.80	peak	
4 4924.000 46.05 -10.32 35.73 54.00 -18.27 AVG	4		4924.000	46.05	-10.32	35.73	54.00	-18.27	AVG	

Report No.: BTL-FCCP-2-1608248 Page 75 of 115









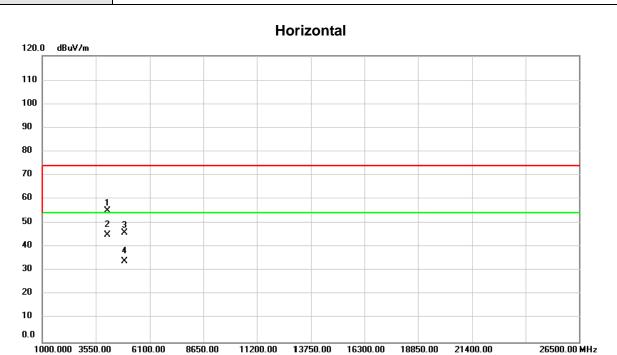
No.	Mk	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2462.000	69.21	31.98	101.19	74.00	27.19	peak	No Limit
2	*	2462.000	59.66	31.98	91.64	54.00	37.64	AVG	No Limit
3		2483.566	32.37	32.06	64.43	74.00	-9.57	peak	
4		2483.566	16.54	32.06	48.60	54.00	-5.40	AVG	

Report No.: BTL-FCCP-2-1608248 Page 76 of 115





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 4	4100.000	66.75	-11.59	55.16	74.00	-18.84	peak	
2 * 4	4100.000	56.67	-11.59	45.08	54.00	-8.92	AVG	
3 4	4924.000	56.46	-10.32	46.14	74.00	-27.86	peak	
4 4	4924.000	44.27	-10.32	33.95	54.00	-20.05	AVG	

Report No.: BTL-FCCP-2-1608248 Page 77 of 115





	"Ille"
ATTACHMENT E - BANDWIDT	н
	•

Report No.: BTL-FCCP-2-1608248 Page 78 of 115

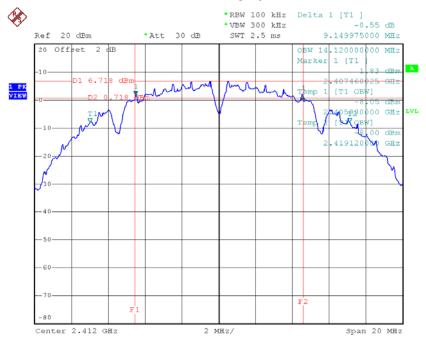




Test Mode: TX B Mode_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	9.15	14.12	500	Complies
2437	9.38	14.04	500	Complies
2462	9.16	13.96	500	Complies

TX CH01

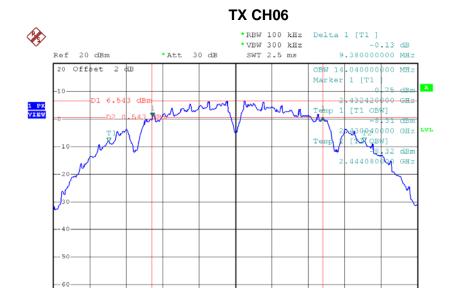


Date: 25.JUL.2016 15:28:27

Report No.: BTL-FCCP-2-1608248 Page 79 of 115



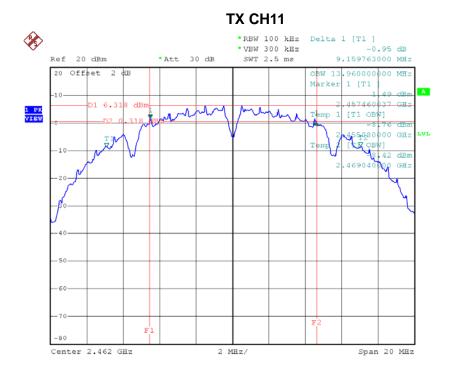




Span 20 MHz

Date: 25.JUL.2016 15:30:07

Center 2.437 GHz



Date: 25.JUL.2016 15:31:57

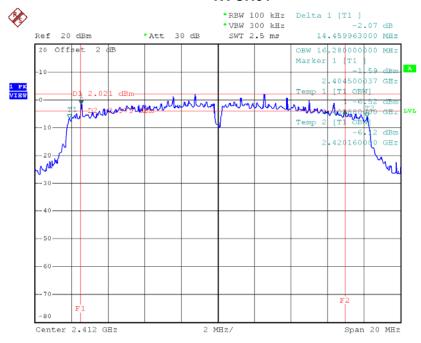




Test Mode: TX G Mode_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	14.46	16.28	500	Complies
2437	15.06	16.36	500	Complies
2462	15.02	16.28	500	Complies

TX CH01

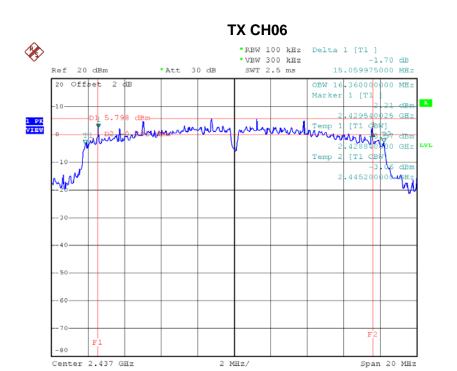


Date: 25.JUL.2016 15:33:14

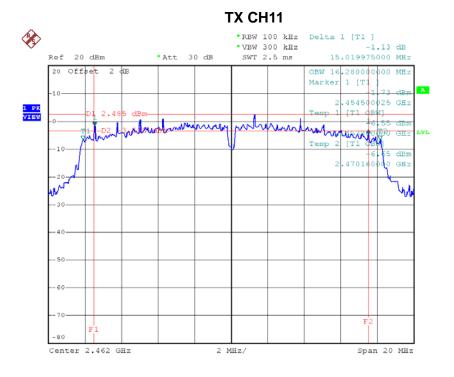
Report No.: BTL-FCCP-2-1608248 Page 81 of 115







Date: 25.JUL.2016 15:34:55



Date: 25.JUL.2016 15:36:05

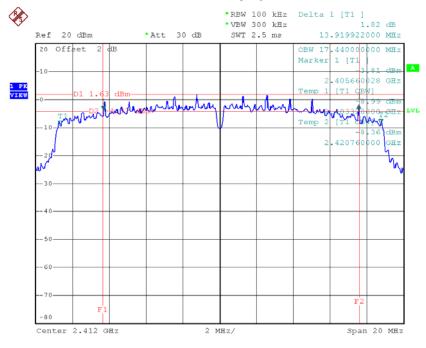




Test Mode: TX N-20MHz Mode_CH01/06/11

Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Min. Limit (kHz)	Test Result
2412	13.92	17.44	500	Complies
2437	13.90	17.48	500	Complies
2462	15.07	17.44	500	Complies

TX CH01



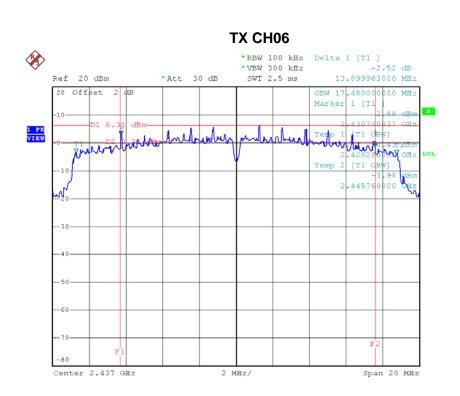
Date: 25.JUL.2016 15:37:43

Report No.: BTL-FCCP-2-1608248 Page 83 of 115

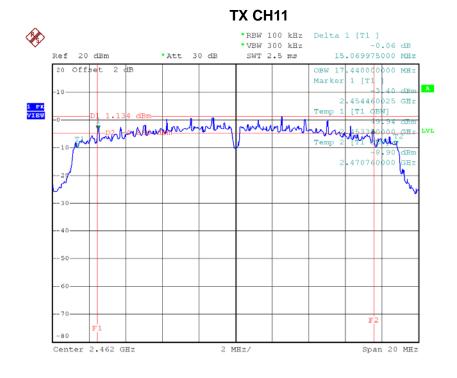




Page 84 of 115



Date: 25.JUL.2016 15:39:17



Date: 25.JUL.2016 15:40:29

Report No.: BTL-FCCP-2-1608248





ATTACHMENT F – MAXIMUM PEAK CONDUCTED OUTPUT POWER

Report No.: BTL-FCCP-2-1608248 Page 85 of 115





	Test Mode: TX B Mode_CH01/06/11						
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Dogult		
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result		
2412	18.82	0.0762	30.00	1.00	Complies		
2437	19.17	0.0826	30.00	1.00	Complies		
2462	19.23	0.0838	30.00	1.00	Complies		

Test Mode: TX G Mode_CH01/06/11						
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result	
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result	
2412	20.83	0.1211	30.00	1.00	Complies	
2437	21.16	0.1306	30.00	1.00	Complies	
2462	20.46	0.1112	30.00	1.00	Complies	

	Test Mode: TX N20 Mode_CH01/06/11						
Frequency	Conducted	Conducted	Max. Limit	Max. Limit	Result		
(MHz)	Power (dBm)	Power (W)	(dBm)	(W)	Result		
2412	20.49	0.1119	30.00	1.00	Complies		
2437	21.11	0.1291	30.00	1.00	Complies		
2462	20.49	0.1119	30.00	1.00	Complies		

Report No.: BTL-FCCP-2-1608248 Page 86 of 115



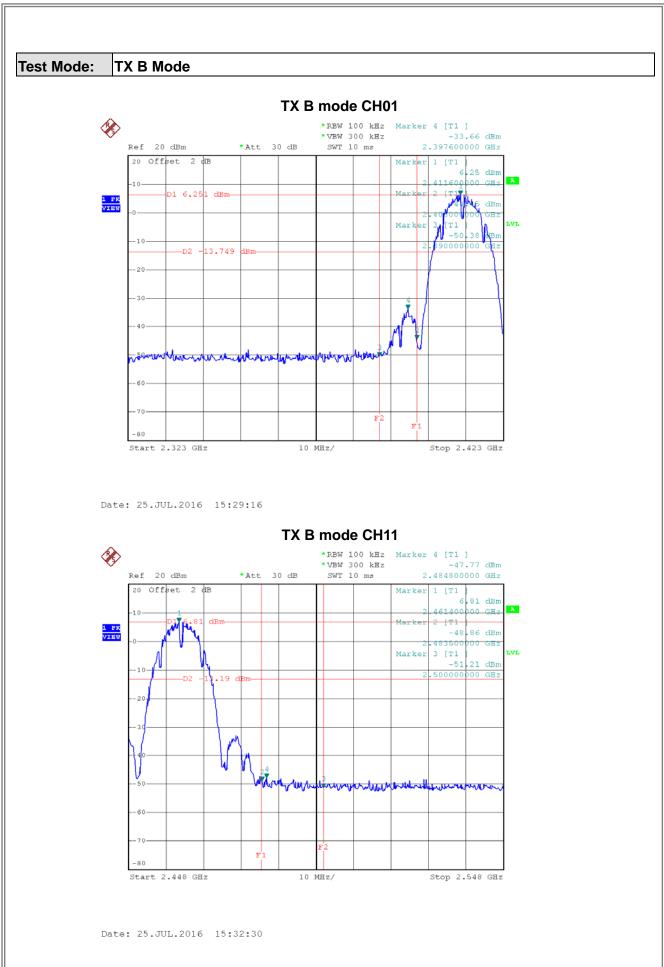


ATTACHMENT G - ANTENNA CONDUCTED SPURIOUS EMISSION

Report No.: BTL-FCCP-2-1608248 Page 87 of 115





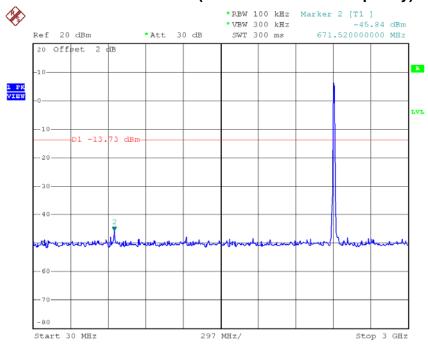


Report No.: BTL-FCCP-2-1608248

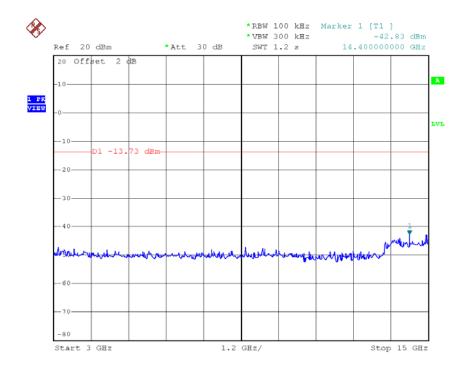




TX B mode CH01 (10 Harmonic of the frequency)



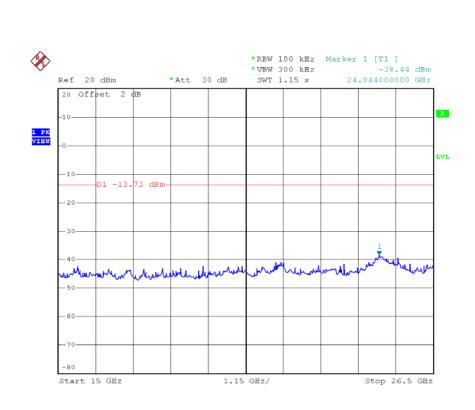
Date: 25.JUL.2016 15:28:39



Date: 25.JUL.2016 15:28:46







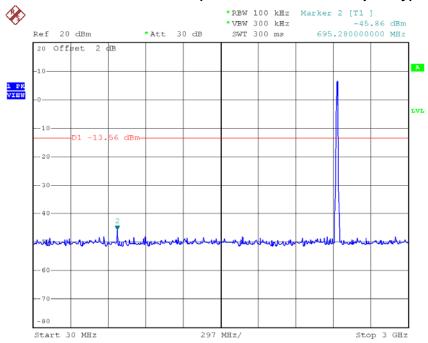
Date: 25.JUL.2016 15:28:53

Report No.: BTL-FCCP-2-1608248 Page 90 of 115

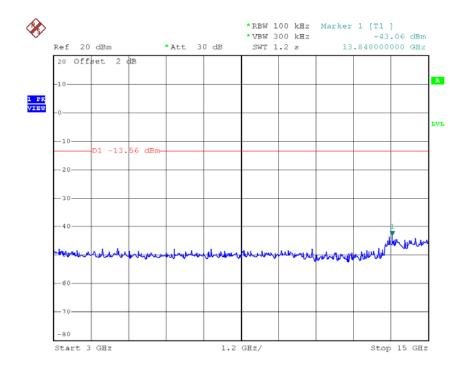




TX B mode CH06 (10 Harmonic of the frequency)



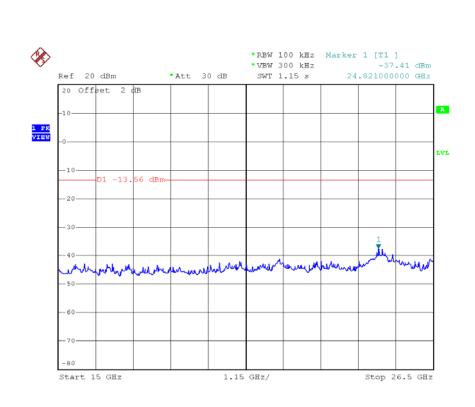
Date: 25.JUL.2016 15:30:20



Date: 25.JUL.2016 15:30:26





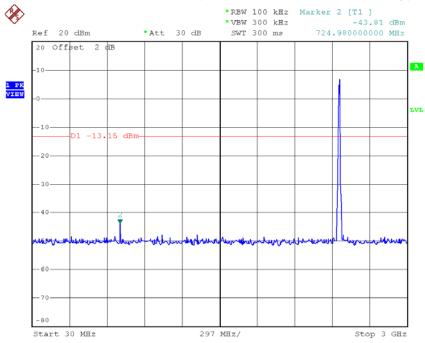


Date: 25.JUL.2016 15:30:33

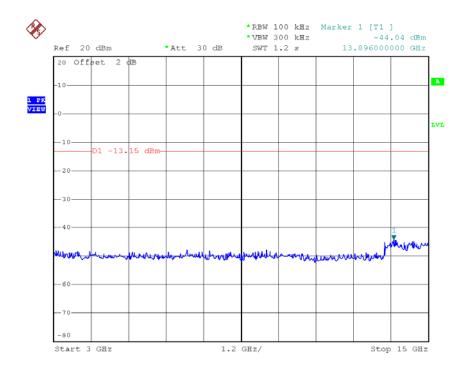




TX B mode CH11 (10 Harmonic of the frequency)



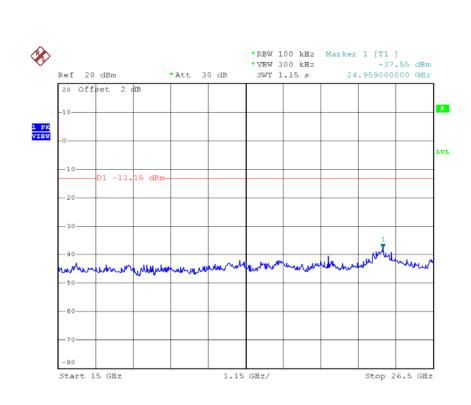
Date: 25.JUL.2016 15:32:10



Date: 25.JUL.2016 15:32:16







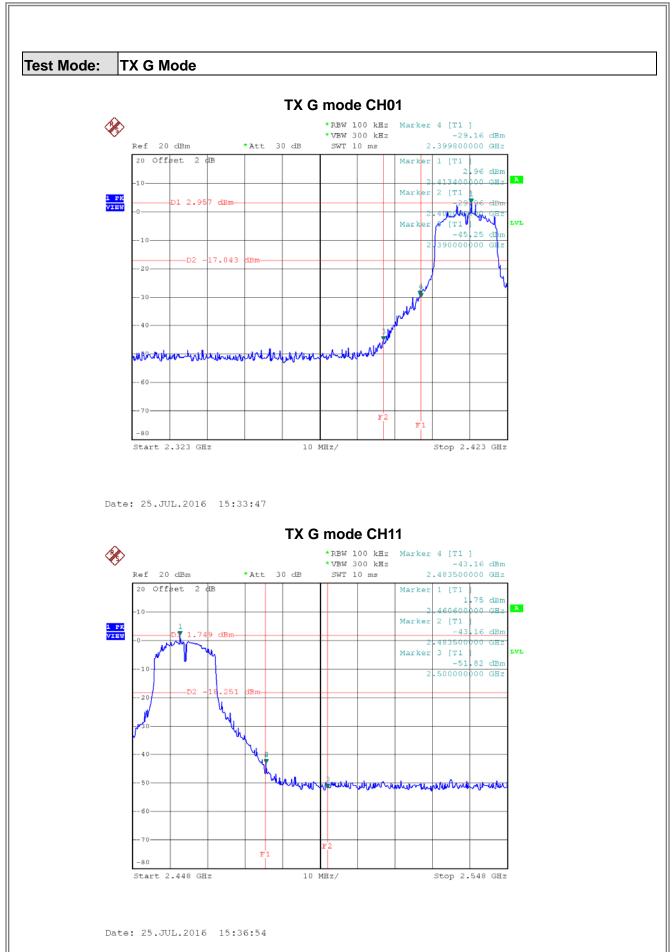
Date: 25.JUL.2016 15:32:23

Report No.: BTL-FCCP-2-1608248 Page 94 of 115





Page 95 of 115

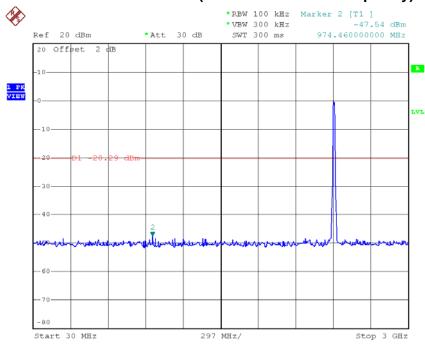


Report No.: BTL-FCCP-2-1608248

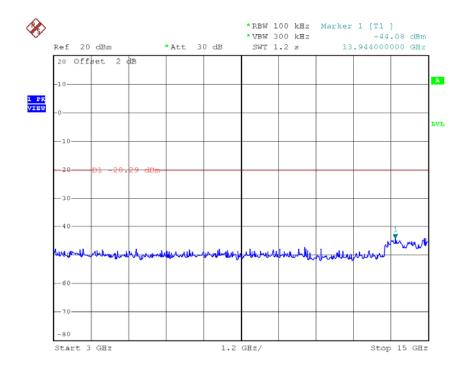




TX G mode CH01 (10 Harmonic of the frequency)



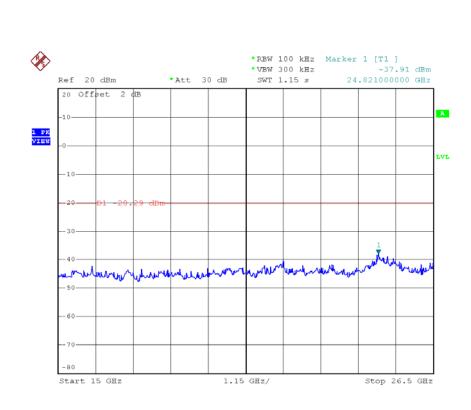
Date: 25.JUL.2016 15:33:27



Date: 25.JUL.2016 15:33:34







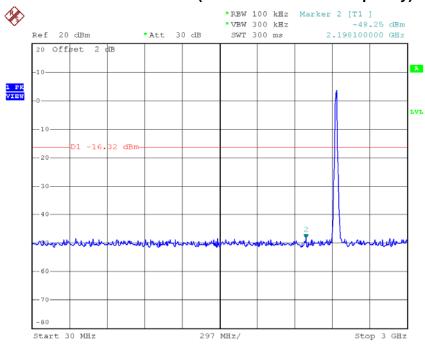
Date: 25.JUL.2016 15:33:40

Report No.: BTL-FCCP-2-1608248 Page 97 of 115

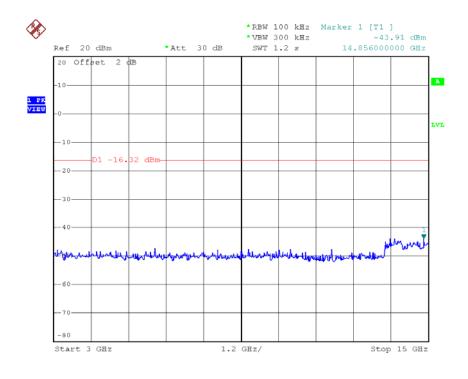




TX G mode CH06 (10 Harmonic of the frequency)



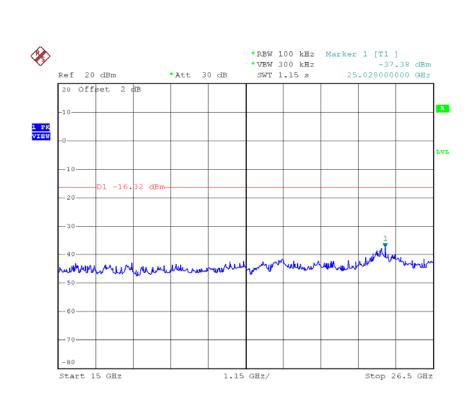
Date: 25.JUL.2016 15:35:08



Date: 25.JUL.2016 15:35:14







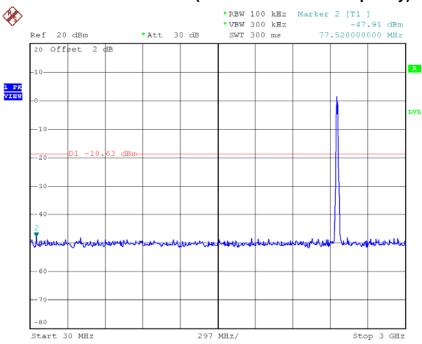
Date: 25.JUL.2016 15:35:21

Report No.: BTL-FCCP-2-1608248 Page 99 of 115

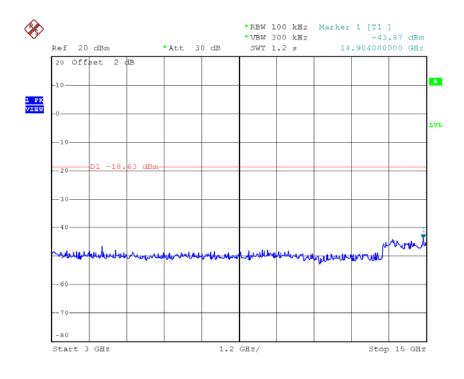




TX G mode CH11 (10 Harmonic of the frequency)



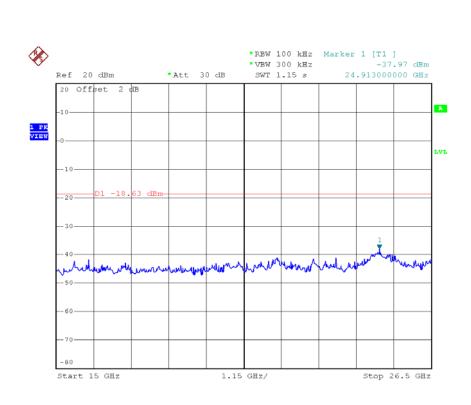
Date: 25.JUL.2016 15:36:18



Date: 25.JUL.2016 15:36:24





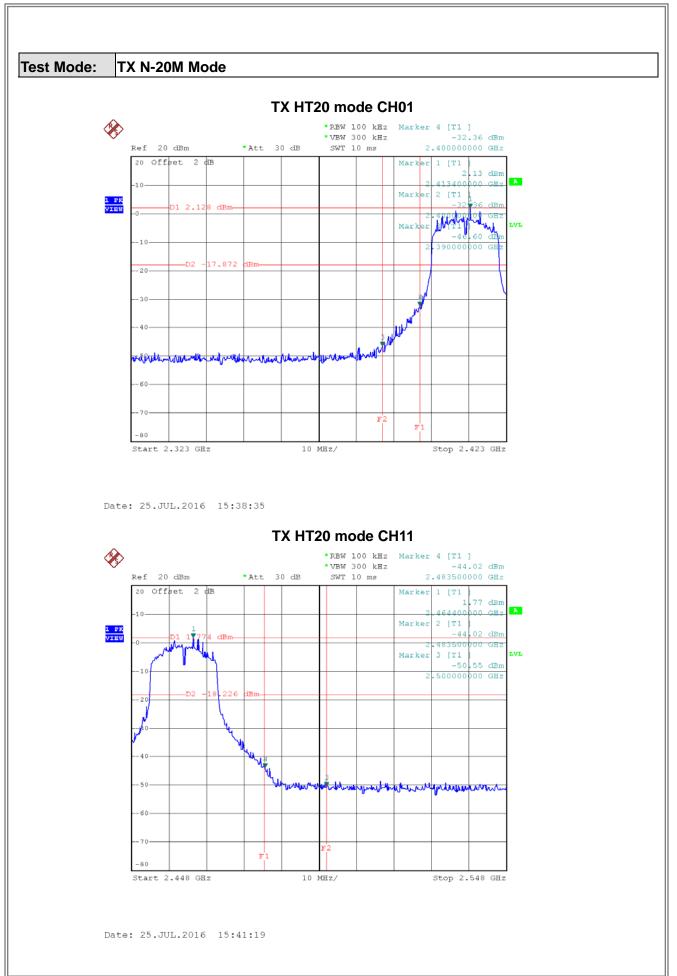


Date: 25.JUL.2016 15:36:31

Report No.: BTL-FCCP-2-1608248 Page 101 of 115





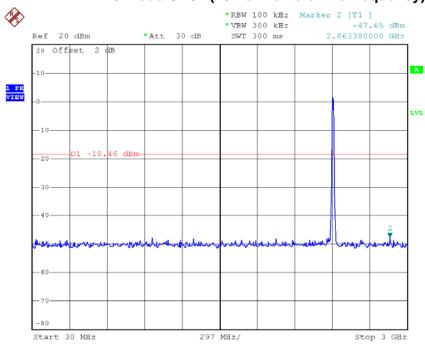


Report No.: BTL-FCCP-2-1608248 Page 102 of 115

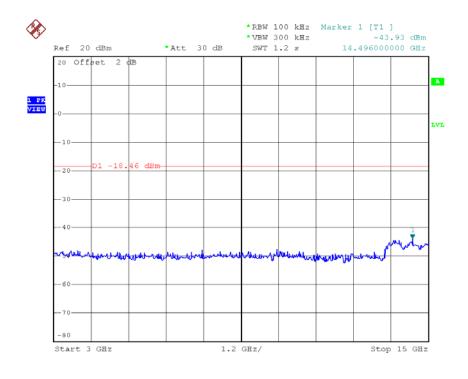




TX HT20 mode CH01 (10 Harmonic of the frequency)



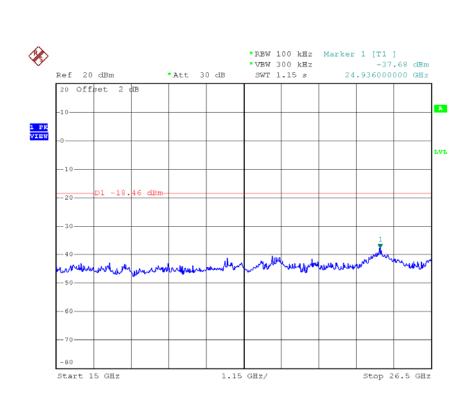
Date: 25.JUL.2016 15:37:56



Date: 25.JUL.2016 15:38:03







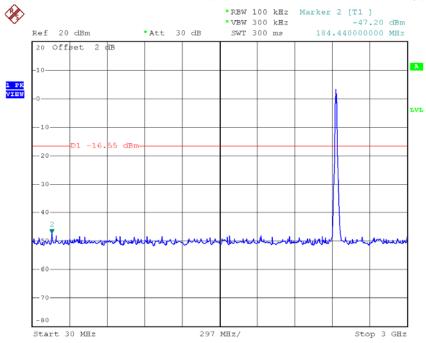
Date: 25.JUL.2016 15:38:09

Report No.: BTL-FCCP-2-1608248 Page 104 of 115

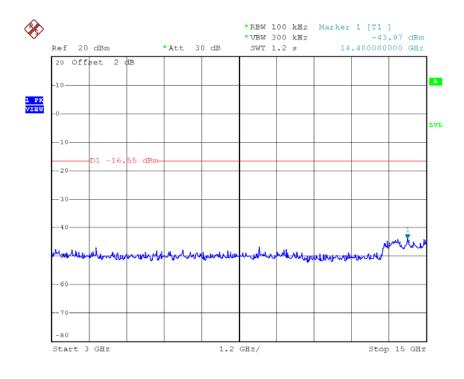




TX HT20 mode CH06 (10 Harmonic of the frequency)



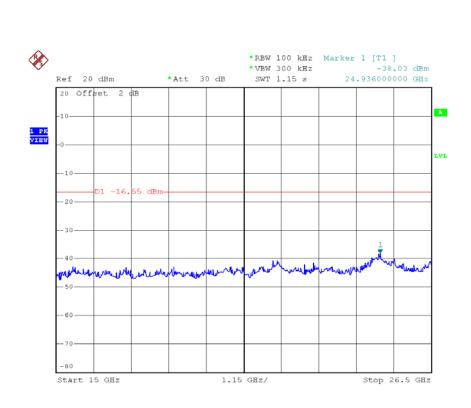
Date: 25.JUL.2016 15:39:30



Date: 25.JUL.2016 15:39:36







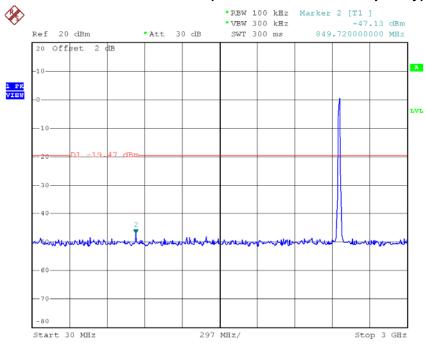
Date: 25.JUL.2016 15:39:43

Report No.: BTL-FCCP-2-1608248 Page 106 of 115

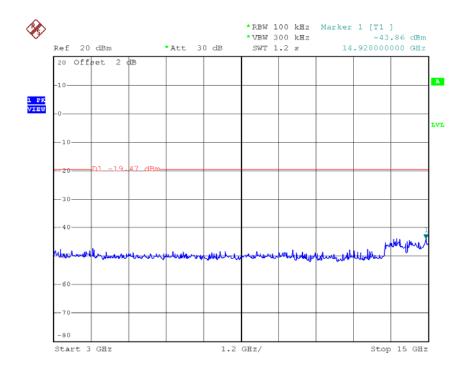




TX HT20 mode CH11 (10 Harmonic of the frequency)



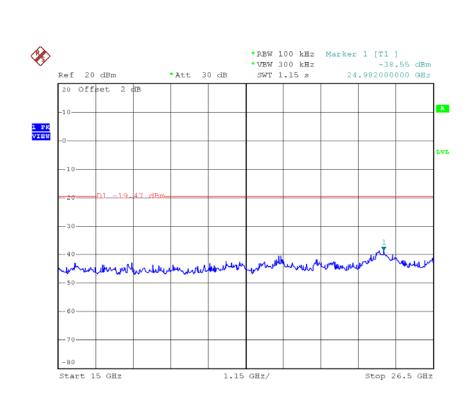
Date: 25.JUL.2016 15:40:42



Date: 25.JUL.2016 15:40:48







Date: 25.JUL.2016 15:40:55

Report No.: BTL-FCCP-2-1608248 Page 108 of 115





ATTACHMENT H - POWER SPECTRAL DENSITY

Report No.: BTL-FCCP-2-1608248 Page 109 of 115





Test Mode: TX B Mode_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-10.44	0.09	8.00	Complies
2437	-8.10	0.15	8.00	Complies
2462	-7.99	0.16	8.00	Complies

TX CH01



Date: 25.JUL.2016 15:29:25

Report No.: BTL-FCCP-2-1608248 Page 110 of 115







2.5 MHz/

Span 25 MHz

Date: 25.JUL.2016 15:30:42

Center 2.437 GHz

Date: 25.JUL.2016 15:32:38

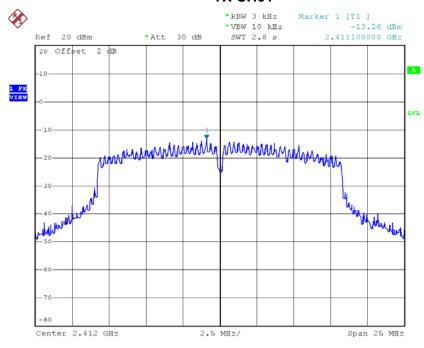




Test Mode: TX G Mode_CH01/06/11

Frequency	Power Density	Power Density	Max. Limit	Result
(MHz)	(dBm/3kHz)	(mW/3kHz)	(dBm/3kHz)	result
2412	-13.26	0.05	8.00	Complies
2437	-10.09	0.10	8.00	Complies
2462	-14.12	0.04	8.00	Complies

TX CH01



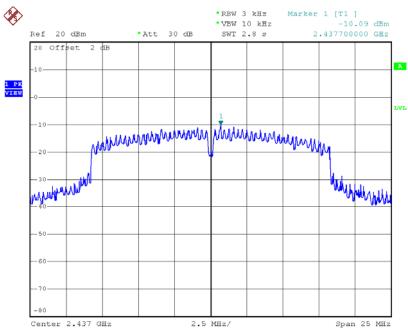
Date: 25.JUL.2016 15:33:56

Report No.: BTL-FCCP-2-1608248 Page 112 of 115



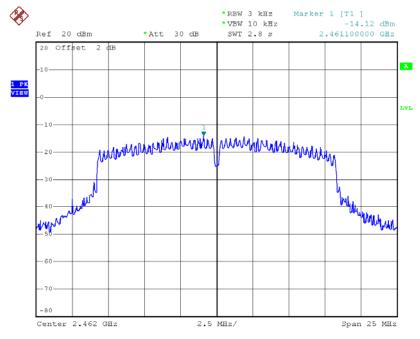






Date: 25.JUL.2016 15:35:30

TX CH11



Date: 25.JUL.2016 15:37:03

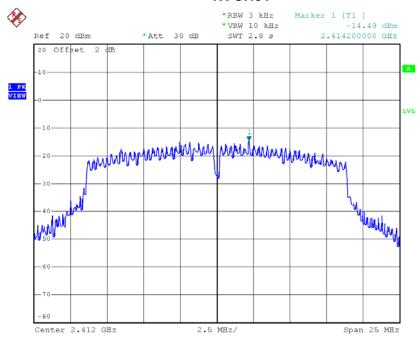




Test Mode: TX N-20M Mode_CH01/06/11

Frequency (MHz)	Power Density (dBm/3kHz)	Power Density (mW/3kHz)	Max. Limit (dBm/3kHz)	Result
2412	-14.49	0.04	8.00	Complies
2437	-11.35	0.07	8.00	Complies
2462	-13.83	0.04	8.00	Complies

TX CH01



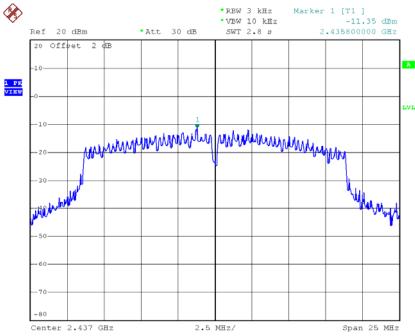
Date: 25.JUL.2016 15:38:43

Report No.: BTL-FCCP-2-1608248 Page 114 of 115



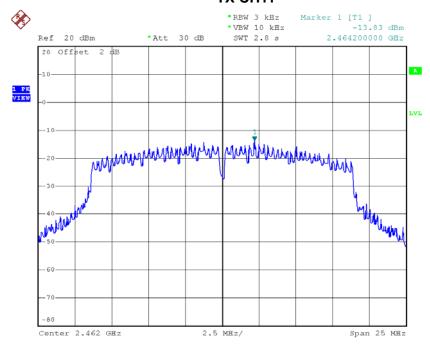






Date: 25.JUL.2016 15:39:52

TX CH11



Date: 25.JUL.2016 15:41:27