

FCC&IC Radio Test Report

FCC ID: TXTPB360C

IC: 909H-PB360C-C

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

Project No. : 1507C050 Equipment : Power Box Model Name for FCC: PB360C Model Name for IC : PB360C-C

Applicant : Robert Bosch Tool Corporation

Address : 1800 West Central Road, Mount Prosect, Illinois,

60056 United States

Date of Receipt : Jul. 02, 2015
Date of Test : Jul. 02, 2015 ~ Jul. 07, 2015
- Jul. 08, 2015 : BTL Inc. Tested by

Testing Engineer

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Declaration

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Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FICP-1-1507C050	Original Issue.	Jul. 08, 2015

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1. CERTIFICATION

Equipment : Power Box Brand Name : BOSCH Model Name : PB360C

for FCC

Model Name: PB360C-C

for IC

Applicant Robert Bosch Tool Corporation Manufacturer : Robert Bosch Tool Corporation

Address : 1800 West Central Road, Mount Prosect, Illinois, 60056 United States

Factory : Shenzhen Synchron Electronics Co., Ltd.

Address : No. 9 Mei Li Road, Xia Mei Lin, Fu Tian Area, Shenzhen, Guangdong, China

Date of Test : Jul. 02, 2015 ~ Jul. 07, 2015 Test Sample : ENGINEERING SAMPLE

Standard(s): FCC Part15, Subpart C: 2014 (15.247) / ANSI C63.10-2013 /

FCC Public Notice DA 00-705, March 30, 2000.

RSS-247 Issue 1, May 2015 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-1-1507C050) 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).

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2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

Applied Standard(s): 47 CFR Part 15, Subpart C: 2014; RSS-247 Issue 1, May 2015; RSS-GEN Issue 4, Nov 2014				
Standa	rd(s) Section	Test Item	Judgment	Remark
FCC	IC	iest iteiii	Judgment	Remark
15.207	RSS-GEN 8.8	Conducted Emission	PASS	
15.247(d)	RSS-247 5.5	Antenna conducted Spurious Emission	PASS	
15.247 (a)(1)	RSS-247 5.1 (2)	Hopping Channel Separation	PASS	
15.247(a)(1)	RSS-247 5.1 (1)	Bandwidth	PASS	
15.247 (b)(1)	RSS-247 5.4 (2)	Peak Output Power	PASS	
15.247(d) 15.209	RSS-247 5.5	Radiated Spurious Emission	PASS	
15.247 (a)(1)(iii)	RSS-247 5.1 (4)	Number of Hopping Frequency	PASS	
15.247 (a)(1)(iii)	RSS-247 5.1 (4)	Dwell Time	PASS	
15.205	RSS-GEN 8.10	Restricted Bands	PASS	
15.203	-	Antenna Requirement	PASS	

Note:

- (1)" N/A" denotes test is not applicable in this test report
- (2) According to FCC Public Notice DA 00-705, March 30, 2000.

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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.

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 measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.

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)	Note
DG-C02	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)	Note
		9KHz~30MHz	V	3.79	
		9KHz~30MHz	Н	3.57	
		30MHz ~ 200MHz	V	3.82	
	CISPR	30MHz ~ 200MHz	Н	3.60	
DG-CB03		200MHz ~ 1,000MHz	V	3.86	
DG-CB03	CISEIX	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	

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

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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Power Box		
Brand Name	BOSCH		
Model Name for FCC	PB360C		
Model Name for IC	PB360C-C		
Model Difference	Only differ in model name.		
	Operation Frequency	2402~2480 MHz	
	Modulation Technology	GFSK(1Mbps) π/4-DQPSK(2Mbps)	
Output Power (Max.)	Bit Rate of Transmitter	8-DPSK(3Mbps)	
	Output Power Max. 6.26 dBm(1Mbps) 4.99 dBm(3Mbps)		
Power Source	AC mains.		
Power Rating	AC 120V-60Hz 12A		

Note:

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

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2. Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

3 Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	AN-BT001-ID50	PCB	N/A	-2.09

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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 Mode Note (1)
Mode 2	TX Mode

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

	For Conducted Emission
Final Test Mode	Description
Mode 2	TX Mode

	For Radiated Emission
Final Test Mode Description	
Mode 1 TX Mode Note (1)	

Note:

- (1) The measurements are performed at the high, middle, low available channels.
- (2) The measurements for Hopping Channel Separation, Bandwidth and Peak Output Power were tested during 1Mbps, 2Mbps and 3Mbps, the worst case are 1Mbps and 3Mbps, only worst case was documented.

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 FHSS

1Mbps

Test Software Version	CSR		
Frequency (MHz)	2402	2441	2480
Parameters	63	63	63

3Mbps

Test Software Version	CSR		
Frequency (MHz)	2402	2441	2480
Parameters	100	100	100

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3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED		
EUT		

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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.	Note
-	-	-	-	-	-	

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	

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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.

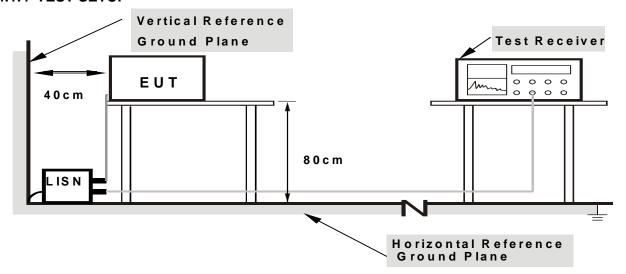
4.1.3 DEVIATION FROM TEST STANDARD

No deviation

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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 configured for testing in a typical function (as a customer would normally use it), EUT was programmed to be in continuously transmitting/receiving data or hopping on mode.

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.

Remark:

- (1) All readings are QP Mode value unless otherwise stated AVG in column of Note. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform in this case, a "*" marked in AVG Mode column of Interference Voltage Measured.
- (2) Measuring frequency range from 150KHz to 30MHz.

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4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9KHz -1000MHz)

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-247 5.5, then the 15.209(a) & RSS-Gen limit in the table below has to be followed.

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)	dB(uV/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	4 Mile / 4 Mile for Dook 4 Mile / 40He for Average
(emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

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Spectrum 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 1.5 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.(above 1GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8 m or 1.5m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting 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

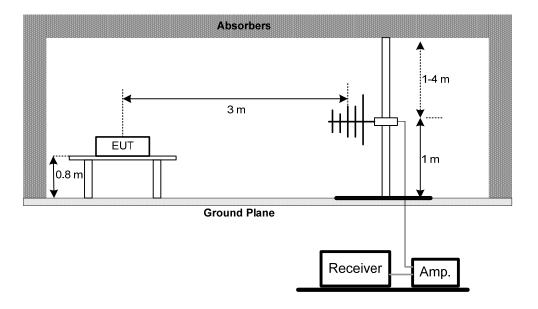
No deviation

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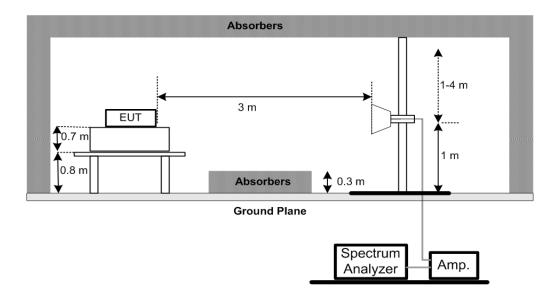


4.2.4 TEST SETUP

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



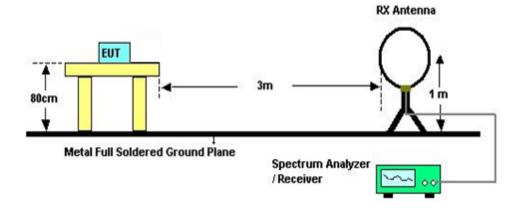
(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



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(C) For radiated emissions below 30MHz



4.2.5 EUT OPERATING CONDITIONS

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

4.2.6 EUT TEST CONDITIONS

Temperature: 28°C Relative Humidity: 60% Test Voltage: AC 120V/60Hz

4.2.7 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the Attachment B

Remark:

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

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4.2.8 TEST RESULTS (BETWEEN 30MHZ TO 1000 MHZ)

Please refer to the Attachment C.

Remark:

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz.
- (2) 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.
- (3) Measuring frequency range from 30MHz to 1000MHz.
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.

4.2.9 TEST RESULTS (ABOVE 1000 MHZ)

Please refer to the Attachment D.

Remark:

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (2) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (3) EUT Orthogonal Axis:
 - "X" denotes Laid on Table; "Y" denotes Vertical Stand; "Z" denotes Side Stand
- (4) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (5) No limit: This is fundamental signal, the judgment is not applicable. For fundamental signal judgment was referred to Peak output test.

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5. NUMBER OF HOPPING CHANNEL

5.1 APPLIED PROCEDURES

011 711 EIED 1 110 0 ED 0 11 E					
FCC Part15 (15.247) , Subpart C/ RSS-GEN and RSS-247					
Section	Test Item	Frequency Range (MHz)	Result		
15.247(a)(1)(iii) RSS-247 5.1 (4)	Number of Hopping Channel	2400-2483.5	PASS		

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RBW	100 KHz
VBW	100 KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

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=100KHz, Sweep time = Auto.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP

EUT	SPECTRUM	
	ANALYZER	

5.1.4 EUT OPERATION CONDITIONS

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

5.1.5 EUT TEST CONDITIONS

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

5.1.6 TEST RESULTS

Please refer to the Attachment E

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6. AVERAGE TIME OF OCCUPANCY

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C/ RSS-GEN and RSS-247				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(1)(iii) RSS-247 5.1 (4)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS

6.1.1 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyzer
- b. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
- c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
- d. Sweep Time is more than once pulse time.
- e. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- f. Measure the maximum time duration of one single pulse.
- g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
- h. Measure the maximum time duration of one single pulse.
- i. DH5 Packet permit maximum 1600/ 79 / 6 = 3.37 hops per second in each channel (5 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times 3.37 x 31.6 = 106.6 within 31.6 seconds.
- j. DH3 Packet permit maximum 1600 / 79 / 4 = 5.06 hops per second in each channel (3 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times 5.06 x 31.6 = 160 within 31.6 seconds.
- k. DH1 Packet permit maximum 1600 / 79 /2 = 10.12 hops per second in each channel (1 time slot TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times 10.12 x 31.6 = 320 within 31.6 seconds.

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP

EUT	SPECTRUM	
	ANALYZER	

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6.1.4 EUT OPERATION CONDITIONS

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

6.1.5 EUT TEST CONDITIONS

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

6.1.6 TEST RESULTS

Please refer to the Attachment F

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7. HOPPING CHANNEL SEPARATION MEASUREMENT

7.1 APPLIED PROCEDURES / LIMIT

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 KHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

Spectrum Parameter	Setting	
Attenuation	Auto	
Span Frequency	> Measurement Bandwidth or Channel Separation	
RBW	30 KHz	
VBW	100 KHz	
Detector	Peak	
Trace	Max Hold	
Sweep Time	Auto	

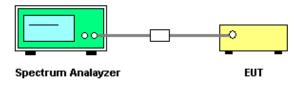
7.1.1 TEST PROCEDURE

- a. The EUT must have its hopping function enabled
- b. Span = wide enough to capture the peaks of two adjacent channels Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span Video (or Average) Bandwidth (VBW) ≥ RBW Sweep = Auto Detector function = Peak Trace = Max Hold

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP



7.1.4 EUT TEST CONDITIONS

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

7.1.5 TEST RESULTS

Please refer to the Attachment G

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8. BANDWIDTH TEST

8.1 APPLIED PROCEDURES

FCC Part15 (15.247) , Subpart C/ RSS-GEN and RSS-247			
Section	Test Item	Frequency Range (MHz)	
15.247(a)(2)			
RSS-GEN 6.6	Bandwidth	2400-2483.5	
RSS-247 5.1 (1)			

Spectrum Parameter	Setting		
Attenuation	Auto		
Span Frequency	> Measurement Bandwidth or Channel Separation		
RBW	30 KHz (20dB Bandwidth) / 30 KHz (Channel Separation)		
VBW	100 KHz (20dB Bandwidth) / 100 KHz (Channel Separation)		
Detector	Peak		
Trace	Max Hold		
Sweep Time	Auto		

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= 30KHz, VBW=100KHz, Sweep Time = Auto.

8.1.2 DEVIATION FROM STANDARD

No deviation.

8.1.3 TEST SETUP



8.1.4 EUT OPERATION CONDITIONS

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

8.1.5 EUT TEST CONDITIONS

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

8.1.6 TEST RESULTS

Please refer to the Attachment H

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9. PEAK OUTPUT POWER TEST

9.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C/ RSS-247				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(1) Peak Output RSS-247 5.4 (2) Power		1 Watt or 30dBm	2400-2483.5	PASS

9.1.1 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= 1MHz/3MHz, VBW= 1MHz/3MHz, Sweep time = Auto.

9.1.2 DEVIATION FROM STANDARD

No deviation.

9.1.3 TEST SETUP

EUT	SPECTRUM	
	ANALYZER	

9.1.4 EUT OPERATION CONDITIONS

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

9.1.5 EUT TEST CONDITIONS

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

9.1.6 TEST RESULTS

Please refer to the Attachment I

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10. ANTENNA CONDUCTED SPURIOUS EMISSION

10.1 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.

10.1.1 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=100KHz, Sweep time = Auto.

10.1.2 DEVIATION FROM STANDARD

No deviation.

10.1.3 TEST SETUP

EUT	SPECTRUM	
	ANALYZER	

10.1.4 EUT OPERATION CONDITIONS

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

10.1.5 EUT TEST CONDITIONS

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

10.1.6 TEST RESULTS

Please refer to the Attachment J

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11. MEASUREMENT INSTRUMENTS LIST

	Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	
1	LISN	EMCO	3816/2	00052765	Mar. 28, 2016	
2	LISN	R&S	ENV216	101447	Mar. 28, 2016	
3	Test Cable	emci	RG223(9KHz-30 MHz)	C_17	Mar. 13, 2016	
4	EMI TEST RECEIVER	R&S	ESCS30	833364/017	Mar. 28, 2016	
5	50Ω Terminator	SHX	TF2-3G-A	08122902	Mar. 28, 2016	
6	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A	

	Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	
1	Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 28, 2016	
2	Amplifier	HP	8447D	2944A09673	Nov. 17, 2015	
3	Receiver	AGILENT	N9038A	MY52130039	Sep. 30, 2015	
4	Test Cable	emci	LMR-400(30MH z-1GHz)	C-01	Jun. 28, 2016	
5	Controller	CT	SC100	N/A	N/A	
6	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A	
7	Antenna	ETS	3115	00075789	Mar. 28, 2016	
8	Amplifier	Agilent	8449B	3008A02274	Nov. 02, 2015	
9	Receiver	AGILENT	N9038A	MY52130039	Sep. 30, 2015	
10	Test Cable	emci	EMC104-SM-S M-10000(1GHz -26.5GHz)	C-68	Jun. 28, 2016	
11	Controller	CT	SC100	N/A	N/A	
12	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Mar. 28, 2016	
13	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Aug. 16, 2015	

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	Number of Hopping Channel				
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 02, 2015

	Average Time of Occupancy				
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 02, 2015

	Hopping Channel Separation Measurement				
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 02, 2015

		Ва	ndwidth		
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 02, 2015

		Peak O	utput Power		
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 02, 2015

	Antenna Conducted Spurious Emission				
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.

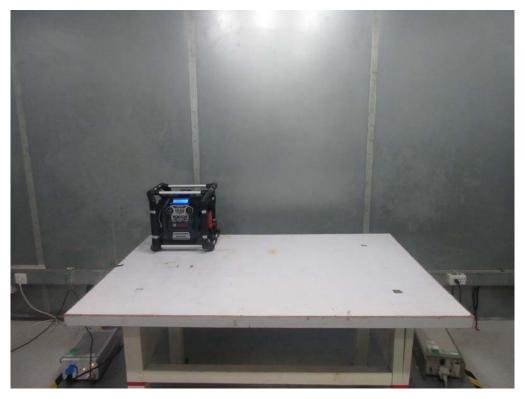
All calibration period of equipment list is one year.

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12. EUT TEST PHOTO







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Radiated Measurement Photos

9KHz to 30MHz





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Radiated Measurement Photos

30MHz to 1000MHz





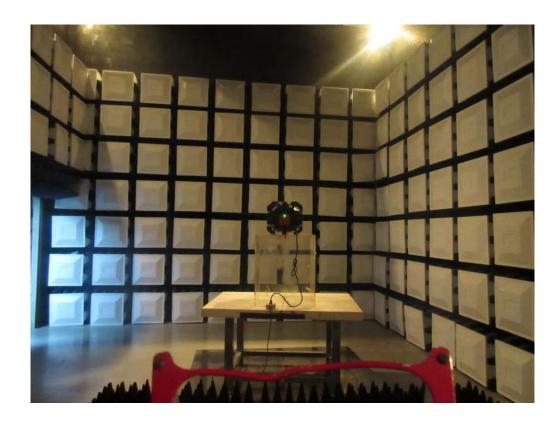
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Radiated Measurement Photos

Above 1000MHz





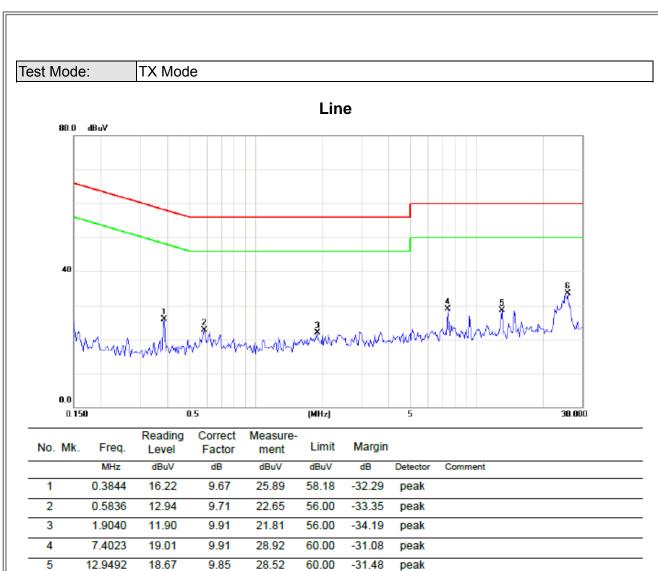
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ATTACHMENT A - CONDUCTED EMISSION

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6

25.6953

23.51

9.97

33.48

60.00

-26.52

peak

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30.000



Neutral 80.0 dBuV 0.0 0.150

No. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.3844	16.24	9.53	25.77	58.18	-32.41	peak	
2	0.6227	12.66	9.56	22.22	56.00	-33.78	peak	
3	2.0211	14.71	9.72	24.43	56.00	-31.57	peak	
4	7.4023	19.25	9.85	29.10	60.00	-30.90	peak	
5	14.8047	18.34	9.92	28.26	60.00	-31.74	peak	
6 *	24.9063	22.31	10.00	32.31	60.00	-27.69	peak	

(MHz)

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

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Test Mode: TX Mode

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0082	0°	11.69	25.05	36.74	129.33	-92.59	AVG
0.0082	0°	14.03	25.05	39.08	149.33	-110.25	PK
0.0219	0°	9.67	24.18	33.85	120.80	-86.95	AVG
0.0219	0°	11.52	24.18	35.70	140.80	-105.10	PK
0.0326	0°	6.02	23.50	29.52	117.34	-87.82	AVG
0.0326	0°	8.16	23.50	31.66	137.34	-105.68	PK
0.0452	0°	1.39	22.70	24.09	114.50	-90.41	AVG
0.0452	0°	3.97	22.70	26.67	134.50	-107.83	PK
0.4936	0°	21.69	19.82	41.51	73.74	-32.23	QP
1.7539	0°	23.69	19.52	43.21	69.54	-26.33	QP

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0072	90°	10.28	24.30	34.58	130.46	-95.88	AVG
0.0072	90°	12.71	24.30	37.01	150.46	-113.45	PK
0.0136	90°	9.13	24.30	33.43	124.93	-91.50	AVG
0.0136	90°	11.81	24.30	36.11	144.93	-108.82	PK
0.0385	90°	6.58	23.13	29.71	115.90	-86.19	AVG
0.0385	90°	8.17	23.13	31.30	135.90	-104.60	PK
0.0458	90°	5.03	22.67	27.70	114.39	-86.69	AVG
0.0458	90°	7.96	22.67	30.63	134.39	-103.76	PK
0.4963	90°	19.86	19.81	39.67	73.69	-34.02	QP
1.7639	90°	22.76	19.52	42.28	69.54	-27.26	QP

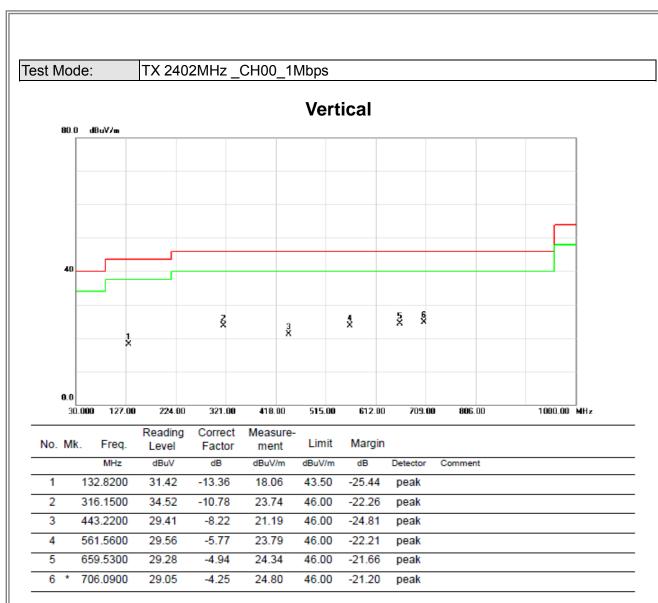
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ATTACHMENT C - RADIATED EMISSION (30MHZ TO 1000MHZ)

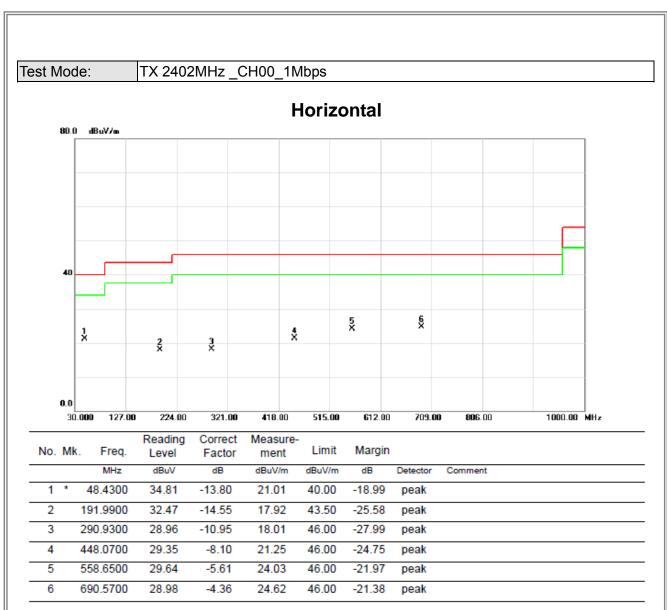
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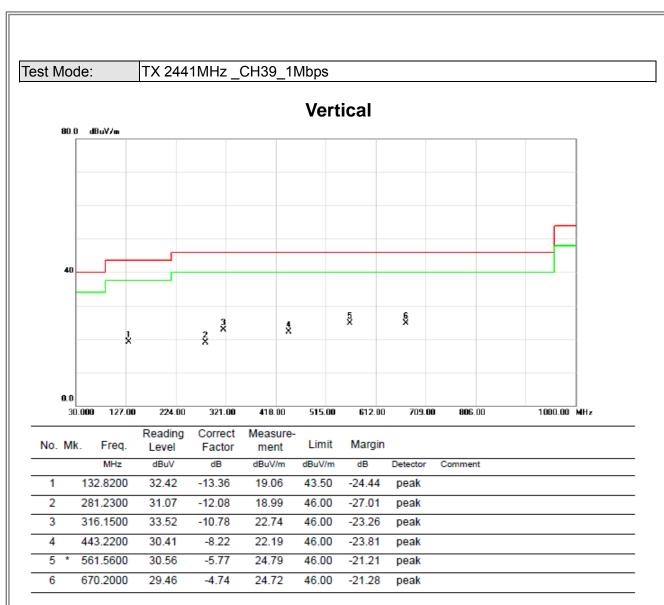
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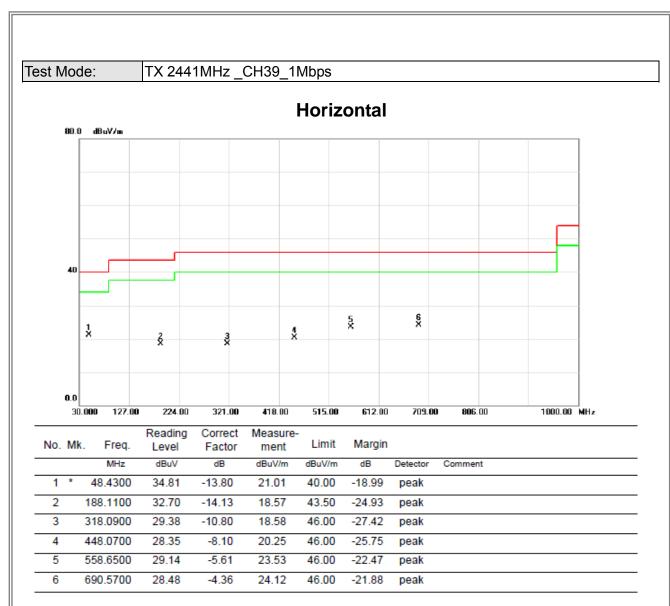
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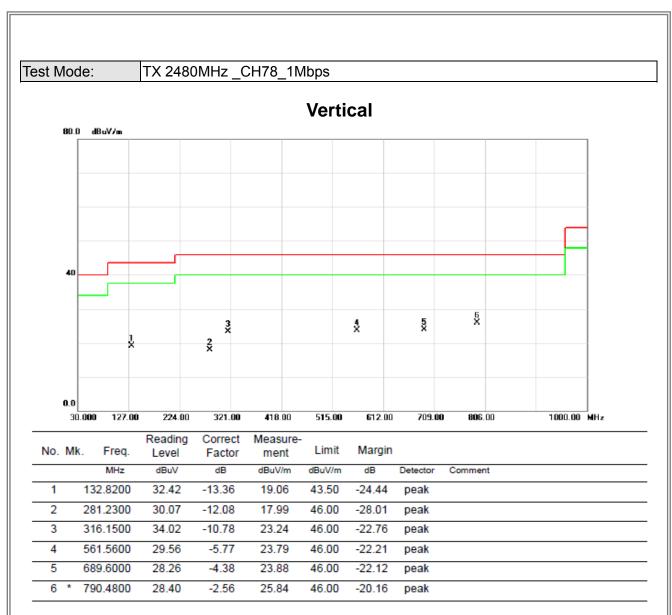
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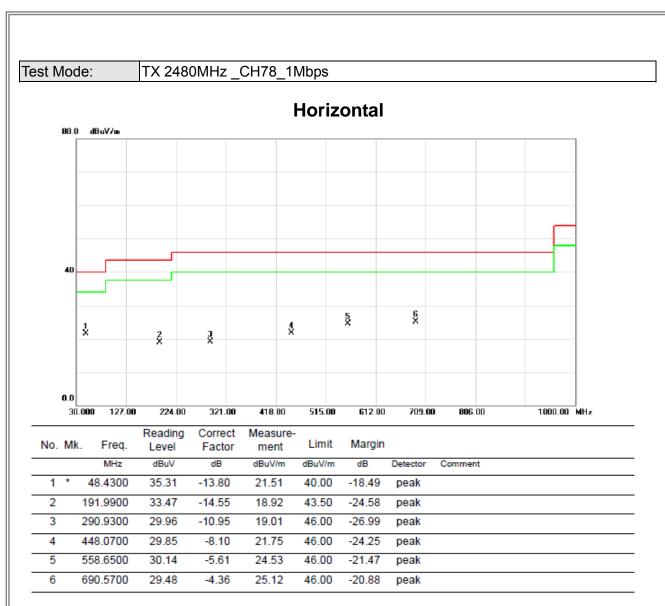
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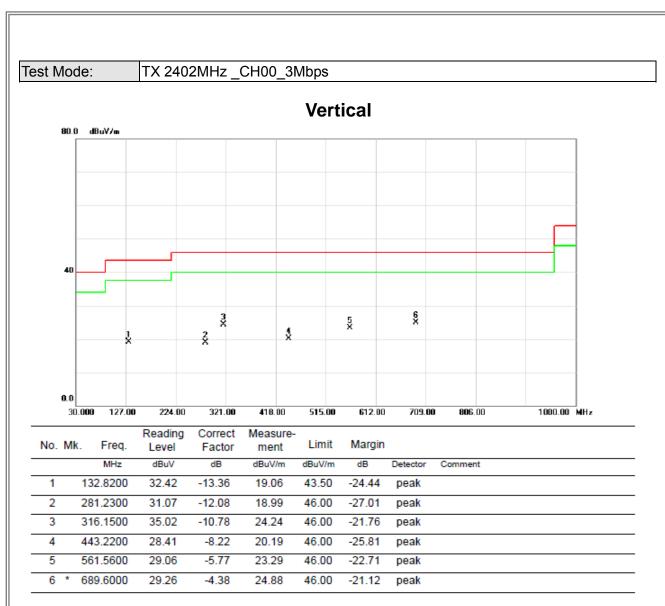
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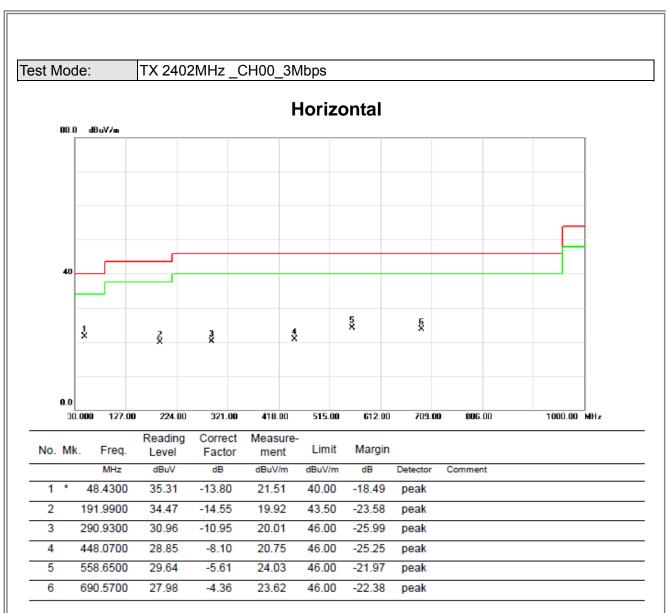
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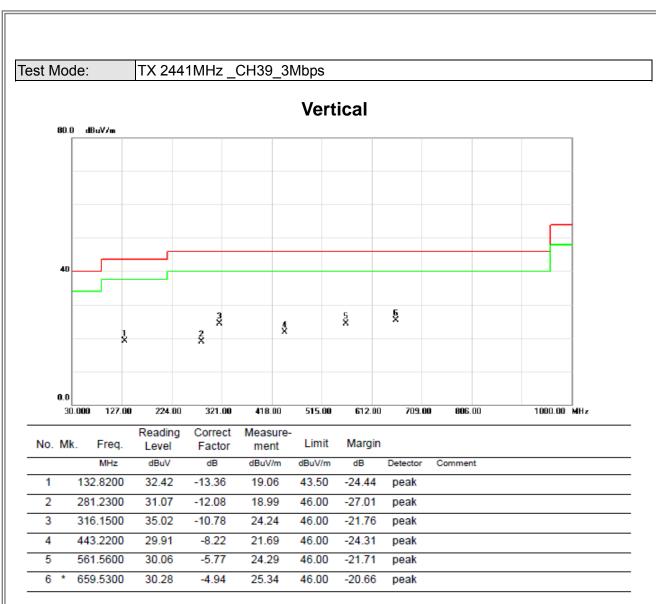
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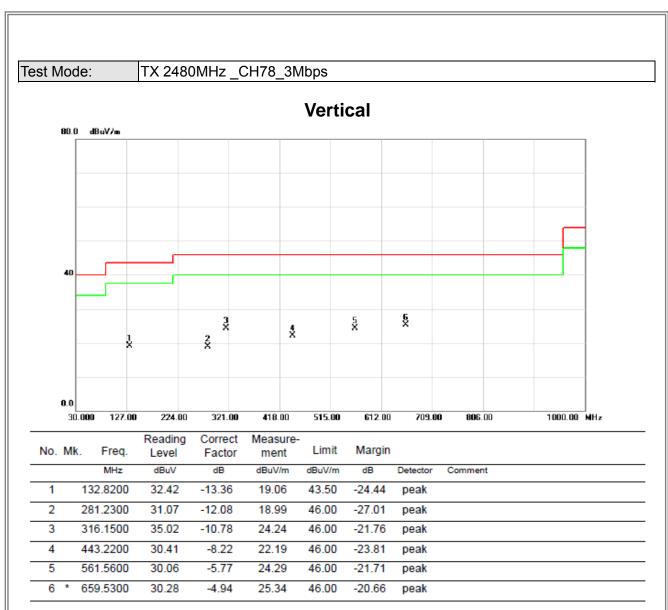
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ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)

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Orthogonal Axis: X Test Mode: TX 2402MHz _CH00_1Mbps

Vertical 114.0 dBuV/m 1 X 34.0 2377.000 2382.00 2387.00 2392.00 2417.00 2427.00 MHz

No.	М	k.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		239	90.000	23.85	32.68	56.53	74.00	-17.47	peak	
2		239	90.000	15.19	32.68	47.87	54.00	-6.13	AVG	
3	Х	240	02.000	61.28	32.69	93.97	74.00	19.97	peak	no limit
4	*	240	02.050	53.52	32.69	86.21	54.00	32.21	AVG	no limit

2402.00

2407.00

2397.00

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Test Mode: TX 2402MHz _CH00_1Mbps

Vertical



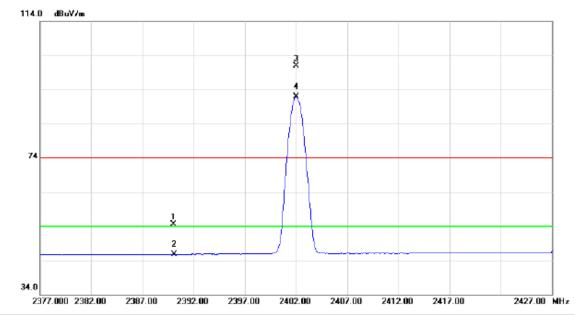
No.	M	ſk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		48	04.030	40.47	5.81	46.28	74.00	-27.72	peak	
2	*	48	04.030	31.32	5.81	37.13	54.00	-16.87	AVG	

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Test Mode: TX 2402MHz _CH00_1Mbps

Horizontal



	No.	Mk	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
-			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
Ī	1		2390.000	21.85	32.68	54.53	74.00	-19.47	peak	
Ī	2		2390.000	13.11	32.68	45.79	54.00	-8.21	AVG	
	3	Х	2402.000	68.13	32.69	100.82	74.00	26.82	peak	no limit
	4	*	2402.000	59.16	32.69	91.85	54.00	37.85	AVG	no limit
-										

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Test Mode: TX 2402MHz _CH00_1Mbps

Horizontal



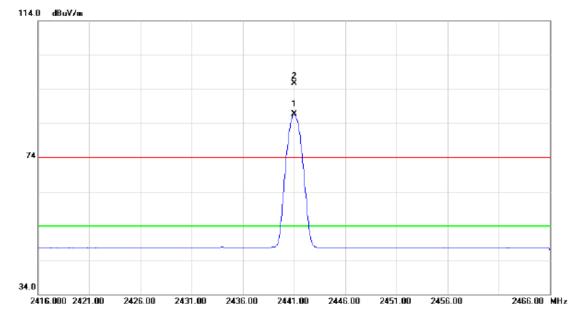
No.	М	k.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		48	04.100	40.16	5.81	45.97	74.00	-28.03	peak	
2	*	48	04.100	31.55	5.81	37.36	54.00	-16.64	AVG	

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Orthogonal Axis: X
Test Mode: TX 2441MHz _CH39_1Mbps

Vertical



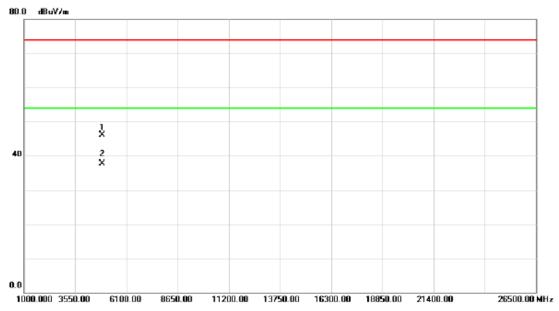
No.	Mk	c. F		Reading Level		Measure- ment	Limit	Margin		
		1	ИНz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2441	.000	53.87	32.75	86.62	54.00	32.62	AVG	no limit
2	X	2441	.010	63.02	32.75	95.77	74.00	21.77	peak	no limit

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Test Mode: TX 2441MHz _CH39_1Mbps

Vertical



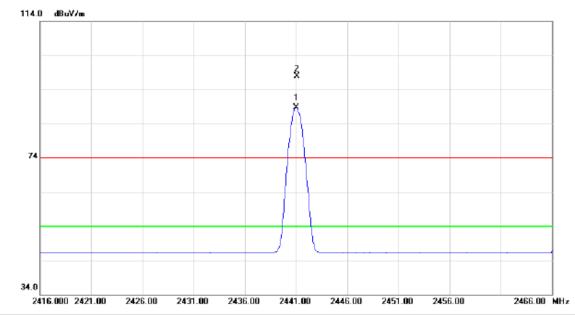
No.	М	k.	Freq.	Reading Level		Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		48	82.710	40.16	6.03	46.19	74.00	-27.81	peak	
2	*	48	82.710	31.66	6.03	37.69	54.00	-16.31	AVG	

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Test Mode: TX 2441MHz _CH39_1Mbps

Horizontal



No.	М	lk.	Freq.	Reading Level		Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	24	441.000	55.99	32.75	88.74	54.00	34.74	AVG	no limit
2	Х	24	441.120	65.23	32.75	97.98	74.00	23.98	peak	no limit

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Test Mode: TX 2441MHz _CH39_1Mbps

Horizontal



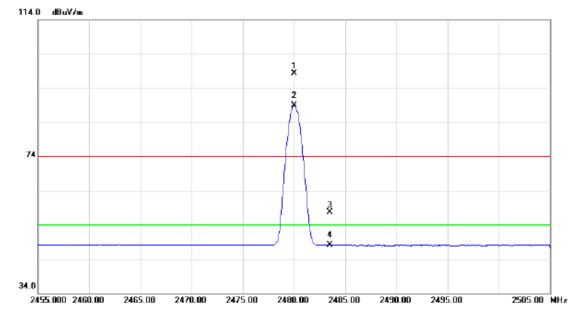
No.	М	k.	Freq.	Reading Level		Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		48	82.060	39.69	6.03	45.72	74.00	-28.28	peak	
2	*	48	82.060	31.65	6.03	37.68	54.00	-16.32	AVG	

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Orthogonal Axis: X
Test Mode: TX 2480MHz _CH78_1Mbps

Vertical



	No.	MI	k. Fr		Reading Level	Correct Factor	Measure- ment	Limit	Margin		
-			M	Ηz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
-	1	Х	2480.0	000	65.52	32.80	98.32	74.00	24.32	peak	no limit
-	2	*	2480.0	000	56.06	32.80	88.86	54.00	34.86	AVG	no limit
-	3		2483.5	500	24.85	32.81	57.66	74.00	-16.34	peak	
-	4		2483.5	500	15.27	32.81	48.08	54.00	-5.92	AVG	
-											

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Test Mode: TX 2480MHz _CH78_1Mbps

Vertical



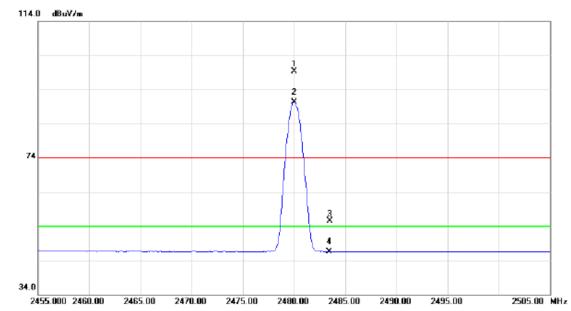
No.	М	lk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	49	60.000	31.05	6.23	37.28	54.00	-16.72	AVG	
2		49	60.090	39.08	6.23	45.31	74.00	-28.69	peak	

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Test Mode: TX 2480MHz _CH78_1Mbps

Horizontal



	No.	M	c. Freq	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
-			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1	Х	2480.050	66.41	32.80	99.21	74.00	25.21	peak	no limit
	2	*	2480.050	57.52	32.80	90.32	54.00	36.32	AVG	no limit
	3		2483.500	22.76	32.81	55.57	74.00	-18.43	peak	
	4		2483.500	13.74	32.81	46.55	54.00	-7.45	AVG	
-										

Report No.: BTL-FICP-1-1507C050 Page 64 of 116



Test Mode: TX 2480MHz _CH78_1Mbps

Horizontal



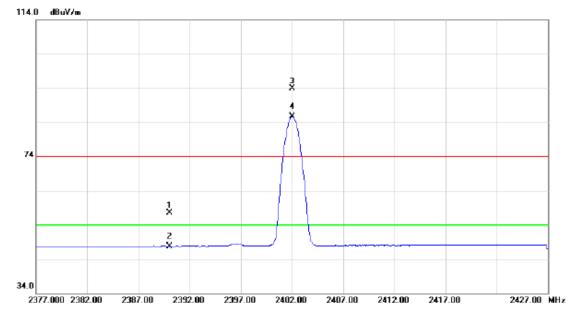
No.	Mk	. Freq.	Reading Level		Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.310	40.58	6.23	46.81	74.00	-27.19	peak	
2	*	4960.310	31.46	6.23	37.69	54.00	-16.31	AVG	

Report No.: BTL-FICP-1-1507C050 Page 65 of 116



Orthogonal Axis: X
Test Mode: TX 2402MHz _CH00_3Mbps

Vertical



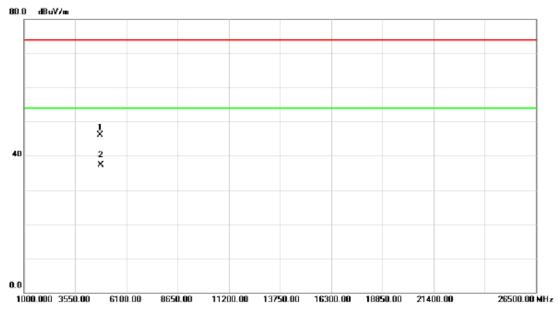
No.	Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	24.82	32.68	57.50	74.00	-16.50	peak	
2		2390.000	15.11	32.68	47.79	54.00	-6.21	AVG	
3	Х	2402.000	61.25	32.69	93.94	74.00	19.94	peak	no limit
4	*	2402.000	52.96	32.69	85.65	54.00	31.65	AVG	no limit

Report No.: BTL-FICP-1-1507C050 Page 66 of 116



Test Mode: TX 2402MHz _CH00_3Mbps

Vertical



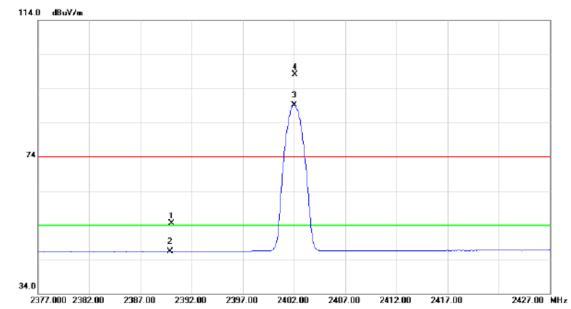
No.	М	k.	Freq.	Reading Level		Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		48	04.010	40.22	5.81	46.03	74.00	-27.97	peak	
2	*	48	04.010	31.47	5.81	37.28	54.00	-16.72	AVG	

Report No.: BTL-FICP-1-1507C050 Page 67 of 116



Test Mode: TX 2402MHz _CH00_3Mbps

Horizontal



	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	21.86	32.68	54.54	74.00	-19.46	peak	
	2		2390.000	13.54	32.68	46.22	54.00	-7.78	AVG	
	3	*	2402.000	56.48	32.69	89.17	54.00	35.17	AVG	no limit
	4	Х	2402.100	65.32	32.69	98.01	74.00	24.01	peak	no limit
-										

Report No.: BTL-FICP-1-1507C050 Page 68 of 116



Test Mode: TX 2402MHz _CH00_3Mbps

Horizontal



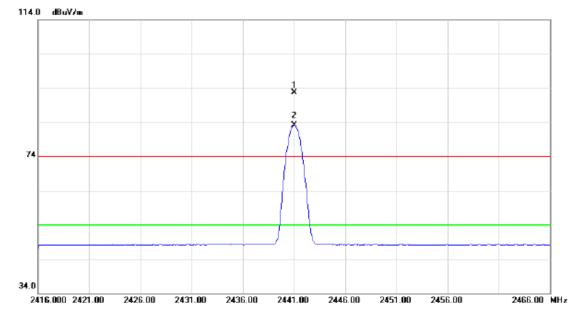
No	. 1	Mk.	Freq.	Reading Level		Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4	4804.000	39.90	5.81	45.71	74.00	-28.29	peak	
2	1	*	4804.000	31.35	5.81	37.16	54.00	-16.84	AVG	

Report No.: BTL-FICP-1-1507C050 Page 69 of 116



Orthogonal Axis: X
Test Mode: TX 2441MHz _CH39_3Mbps

Vertical



N	0.	Mk	۲.	Freq.	Reading Level		Measure- ment	Limit	Margin		
				MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1	Х	24	41.050	60.03	32.75	92.78	74.00	18.78	peak	no limit
	2	*	24	41.050	50.41	32.75	83.16	54.00	29.16	AVG	no limit

Report No.: BTL-FICP-1-1507C050 Page 70 of 116



Test Mode: TX 2441MHz _CH39_3Mbps

Vertical



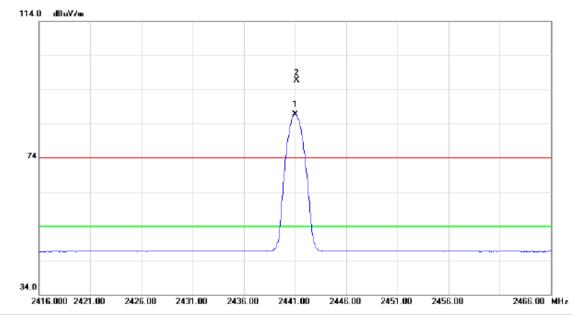
No.	М	lk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		48	82.000	39.36	6.03	45.39	74.00	-28.61	peak	
2	*	48	82.000	31.25	6.03	37.28	54.00	-16.72	AVG	

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Test Mode: TX 2441MHz _CH39_3Mbps

Horizontal



No.	Mk	. Freq.	Reading Level		Measure- ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2441.000	54.05	32.75	86.80	54.00	32.80	AVG	no limit
2	Х	2441.150	63.98	32.75	96.73	74.00	22.73	peak	no limit

Report No.: BTL-FICP-1-1507C050 Page 72 of 116



Test Mode: TX 2441MHz _CH39_3Mbps

Horizontal



No.	М	k.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		48	82.150	39.15	6.03	45.18	74.00	-28.82	peak	
2	*	48	82.150	31.18	6.03	37.21	54.00	-16.79	AVG	

Report No.: BTL-FICP-1-1507C050 Page 73 of 116



Orthogonal Axis: X
Test Mode: TX 2480MHz _CH78_3Mbps

No.	М	lk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	24	480.000	53.86	32.80	86.66	54.00	32.66	AVG	no limit
2	Х	24	480.300	62.86	32.80	95.66	74.00	21.66	peak	no limit
3		24	483.500	24.51	32.81	57.32	74.00	-16.68	peak	
4		24	483.500	15.22	32.81	48.03	54.00	-5.97	AVG	

2480.00

2485.00

2490.00

2495.00

2505.00 MHz

2455.000 2460.00

2465.00

2470.00

2475.00

Report No.: BTL-FICP-1-1507C050 Page 74 of 116



Test Mode: TX 2480MHz _CH78_3Mbps

Vertical



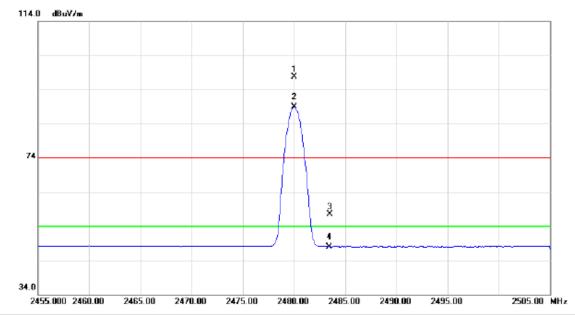
No	M	ſk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		49	60.000	39.35	6.23	45.58	74.00	-28.42	peak	
2	*	49	60.000	30.82	6.23	37.05	54.00	-16.95	AVG	

Report No.: BTL-FICP-1-1507C050 Page 75 of 116



Test Mode: TX 2480MHz _CH78_3Mbps

Horizontal



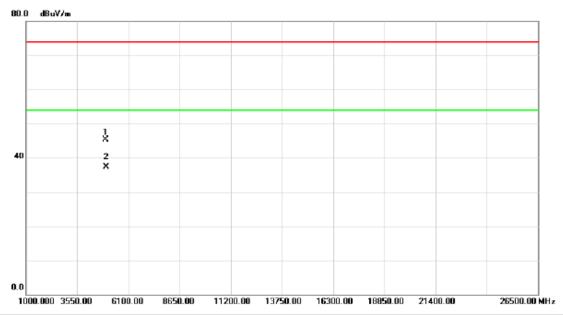
	No.	M	c. Freq	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
-			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
	1	Х	2480.020	64.98	32.80	97.78	74.00	23.78	peak	no limit
	2	*	2480.050	56.05	32.80	88.85	54.00	34.85	AVG	no limit
	3		2483.500	24.76	32.81	57.57	74.00	-16.43	peak	
	4		2483.500	15.19	32.81	48.00	54.00	-6.00	AVG	
-										

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Test Mode: TX 2480MHz _CH78_3Mbps

Horizontal



	No.	Mk	c. Freq.	Reading Level		Measure- ment	Limit	Margin		
-			MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
-	1		4960.010	39.16	6.23	45.39	74.00	-28.61	peak	
	2	*	4960.010	31.00	6.23	37.23	54.00	-16.77	AVG	
_										

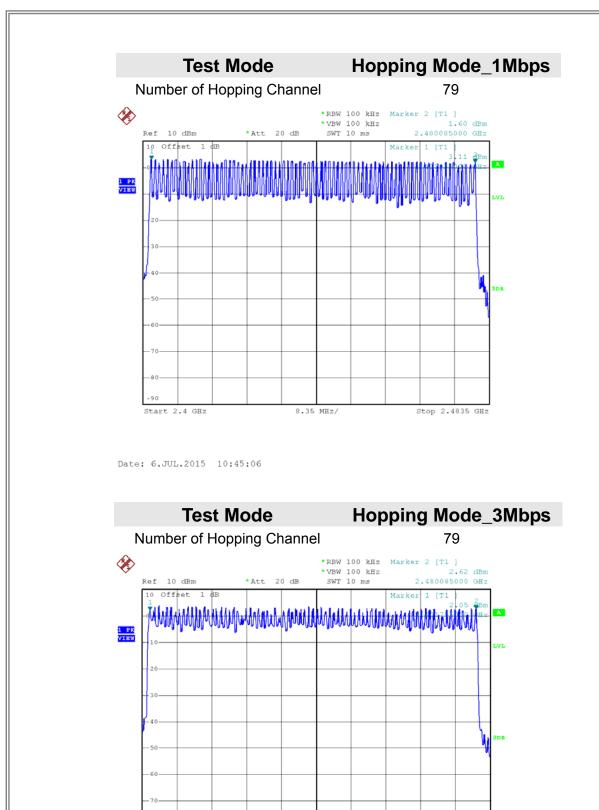
Report No.: BTL-FICP-1-1507C050 Page 77 of 116



ATTACHMENT E - NUMBER OF HOPPING CHANNEL

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Date: 6.JUL.2015 11:01:09

Start 2.4 GHz

8.35 MHz/

Stop 2.4835 GHz



ATTACHMENT F - AVERAGE TIME OF OCCUPANCY

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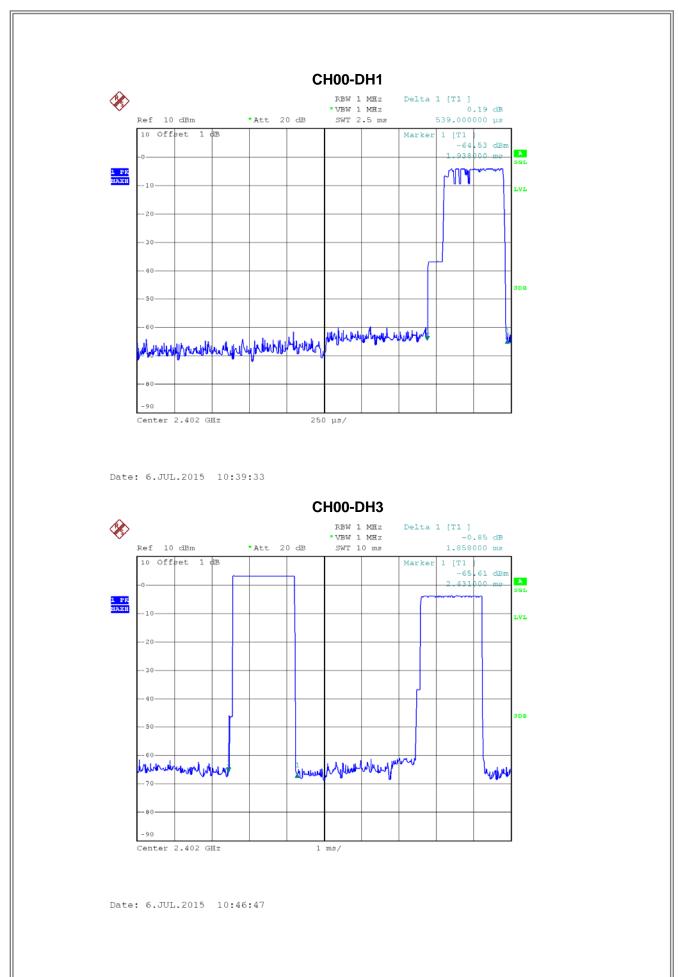


Test Mode : TX Mode_1Mbps

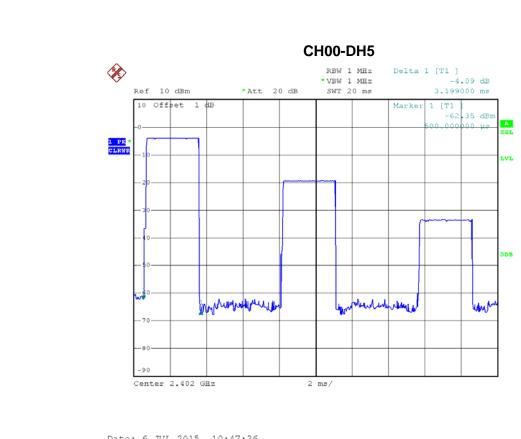
Data Packet	Frequency	Pulse Duration	Dwell Time	Limits	Test
Dala Facket	(MHz)	(ms)	(s)	(s)	Result
DH5	2402	3.1990	0.3412	0.4000	Complies
DH3	2402	1.8580	0.2973	0.4000	Complies
DH1	2402	0.5390	0.1725	0.4000	Complies
DH5	2441	3.1990	0.3412	0.4000	Complies
DH3	2441	1.8600	0.2976	0.4000	Complies
DH1	2441	0.5590	0.1789	0.4000	Complies
DH5	2480	3.2390	0.3455	0.4000	Complies
DH3	2480	1.8590	0.2974	0.4000	Complies
DH1	2480	0.5440	0.1741	0.4000	Complies

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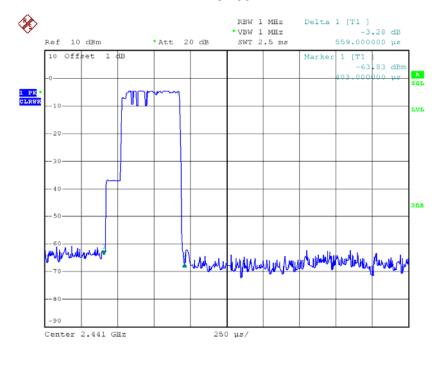






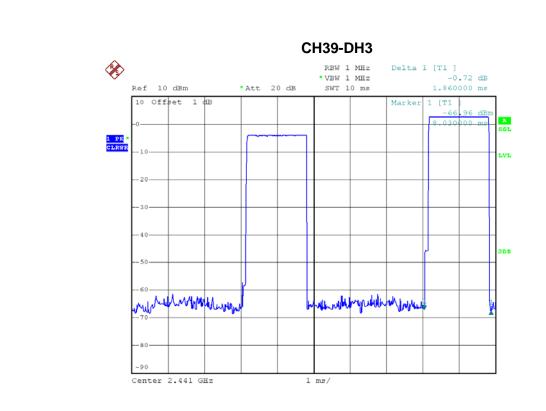
Date: 6.JUL.2015 10:47:36

CH39-DH1

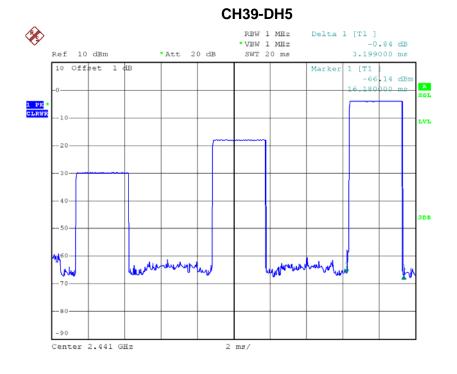


Date: 6.JUL.2015 10:39:42



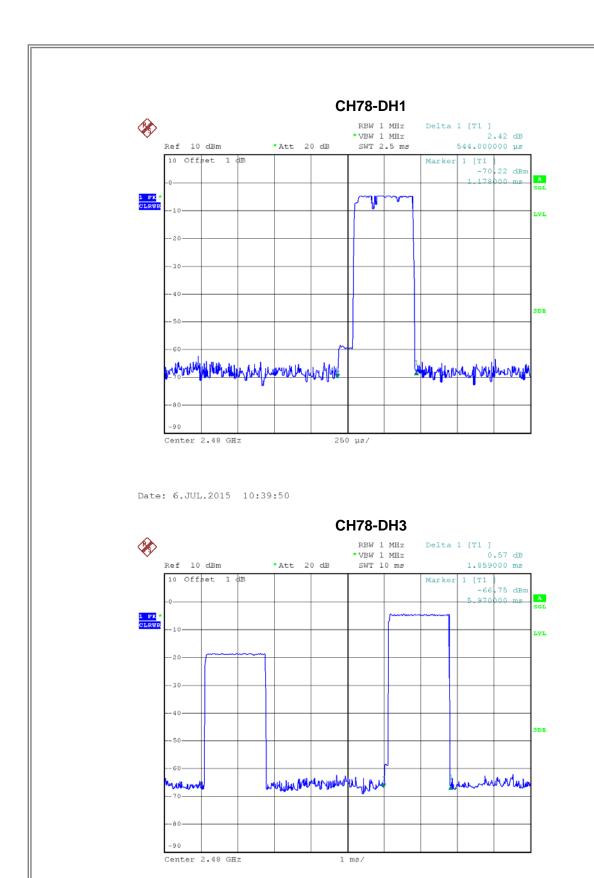


Date: 6.JUL.2015 10:46:54



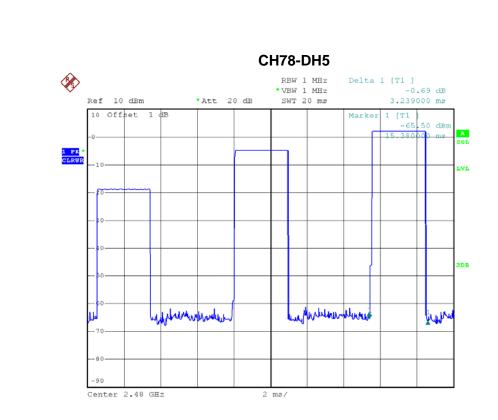
Date: 6.JUL.2015 10:48:42





Date: 6.JUL.2015 10:47:06





Date: 6.JUL.2015 10:48:55

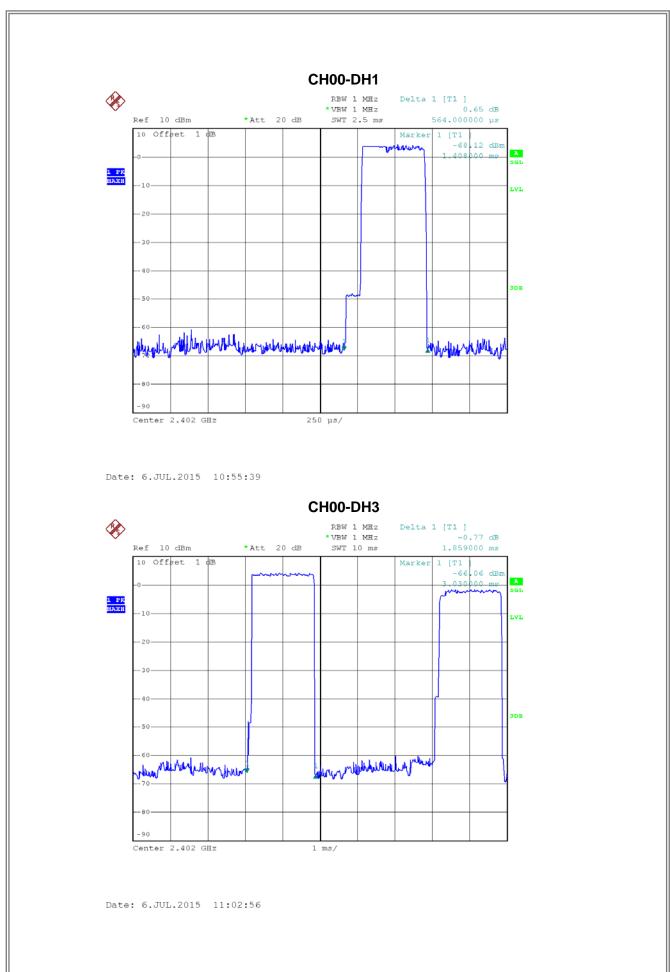


Test Mode : TX Mode_3Mbps

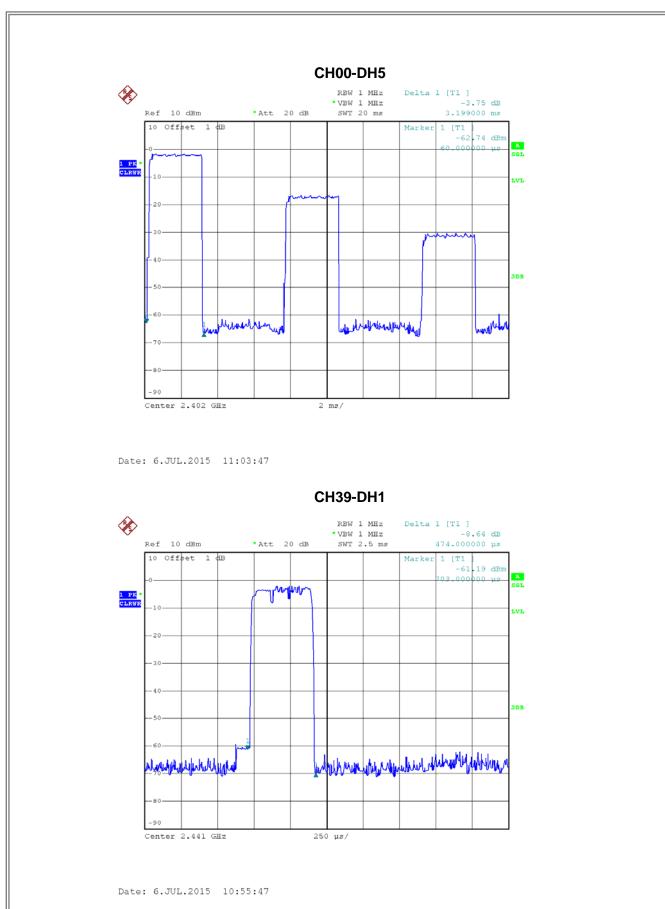
Data Packet	Frequency	Pulse Duration	Dwell Time	Limits	Test
Data Packet	(MHz)	(ms)	(s)	(s)	Result
DH5	2402	3.1990	0.3412	0.4000	Complies
DH3	2402	1.8590	0.2974	0.4000	Complies
DH1	2402	0.5640	0.1805	0.4000	Complies
DH5	2441	3.3190	0.3540	0.4000	Complies
DH3	2441	1.8600	0.2976	0.4000	Complies
DH1	2441	0.4740	0.1517	0.4000	Complies
DH5	2480	3.0790	0.3284	0.4000	Complies
DH3	2480	1.9200	0.3072	0.4000	Complies
DH1	2480	0.5590	0.1789	0.4000	Complies

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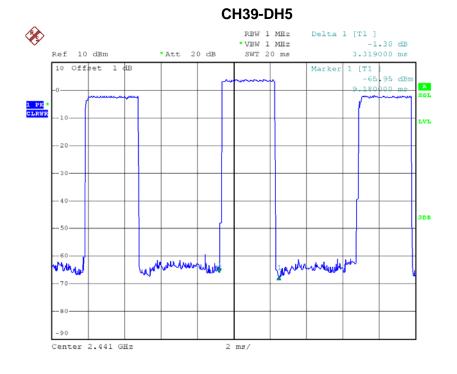






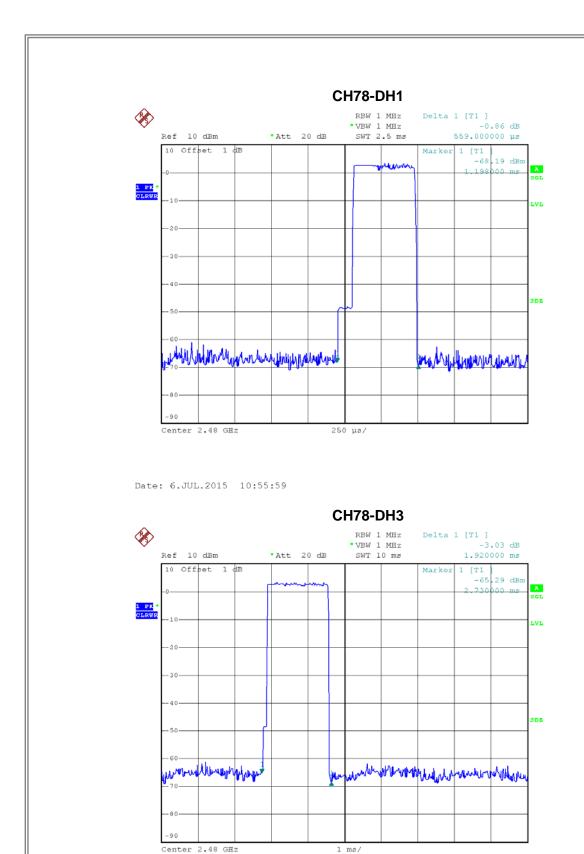


Date: 6.JUL.2015 11:03:06



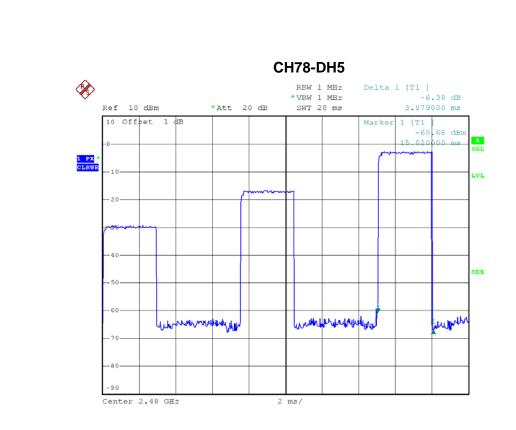
Date: 6.JUL.2015 11:04:02





Date: 6.JUL.2015 11:03:23





Date: 6.JUL.2015 11:04:15



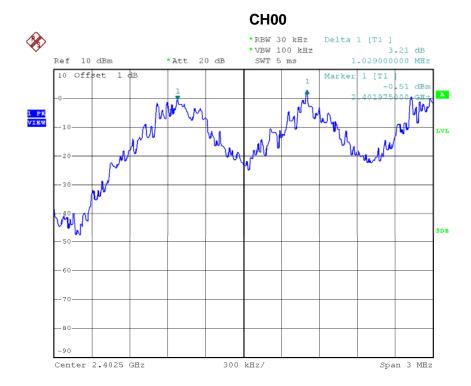
ATTACHMENT G - HOPPING CHANNEL SEPARATION MEASUREMENT

Report No.: BTL-FICP-1-1507C050 Page 93 of 116



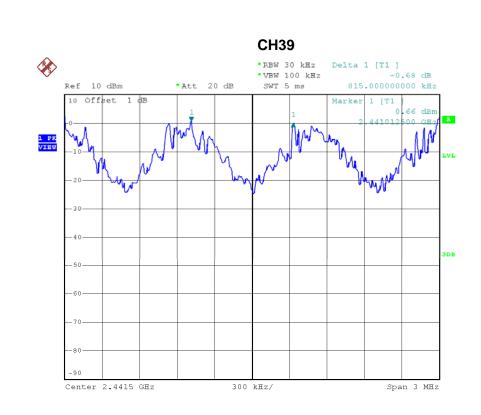
Test Mode : Hopping on _1Mbps

Frequency (MHz)	Channel Separation (MHz)	2/3 of 20dB Bandwidth (MHz)	Test Result
2402	1.029	0.545	Complies
2441	0.815	0.611	Complies
2480	1.022	0.561	Complies

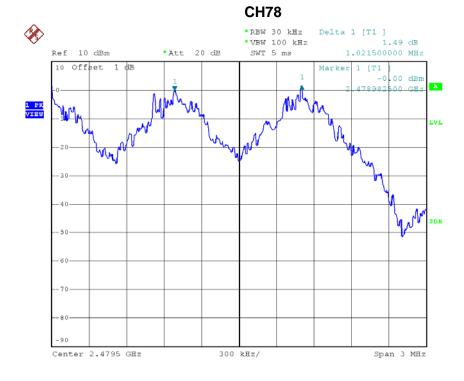


Date: 6.JUL.2015 10:40:59





Date: 6.JUL.2015 10:42:10



Date: 6.JUL.2015 10:43:17



Test Mode: Hopping on _3Mbps

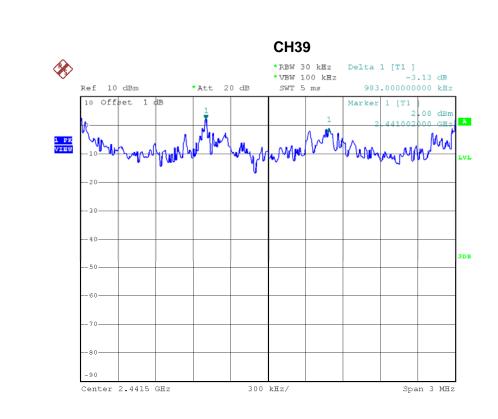
Frequency (MHz)	Channel Separation (MHz)	2/3 of 20dB Bandwidth (MHz)	Test Result
2402	1.046	0.806	Complies
2441	0.983	0.791	Complies
2480	0.996	0.791	Complies

*RBW 30 kHz Delta 1 [T1] *VBW 100 kHz 0.19 dB *Ref 10 dBm *Att 20 dB SWT 5 ms 1.045500000 MHz 10 Offset 1 dB 1 2 401992500 GHz -20 -30 -30 -50 -60 -70 -80 -90 Center 2.4025 GHz 300 kHz/ Span 3 MHz

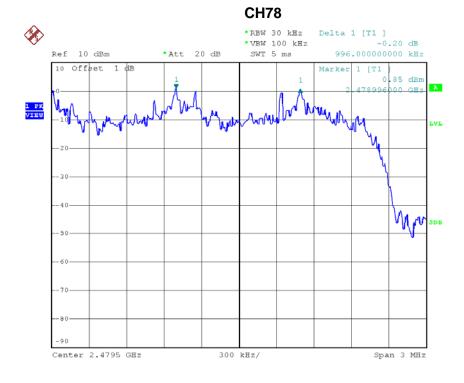
Date: 6.JUL.2015 10:57:08

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Date: 6.JUL.2015 10:58:16



Date: 6.JUL.2015 10:59:20

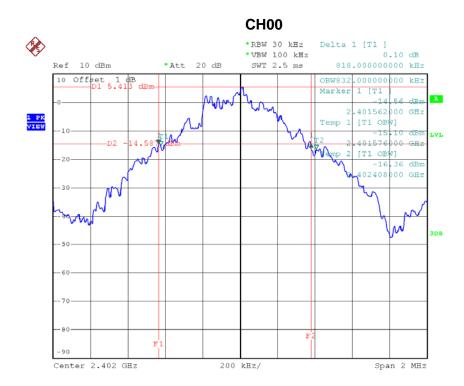


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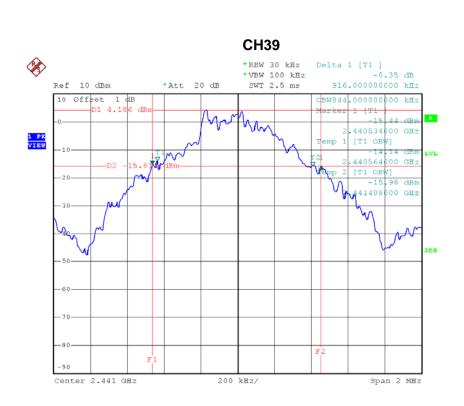
Test Mode: TX Mode _1Mbps

Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Test Result	
2402	0.818	0.832	Complies	
2441	0.916	0.844	Complies	
2480	0.842	0.820	Complies	

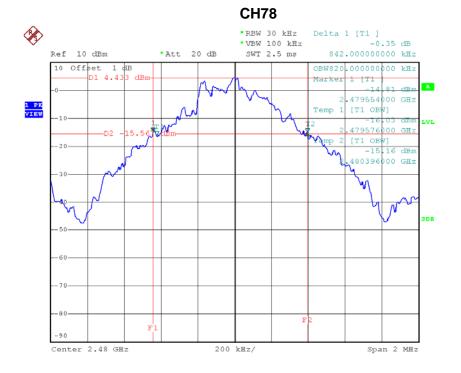


Date: 6.JUL.2015 10:36:06







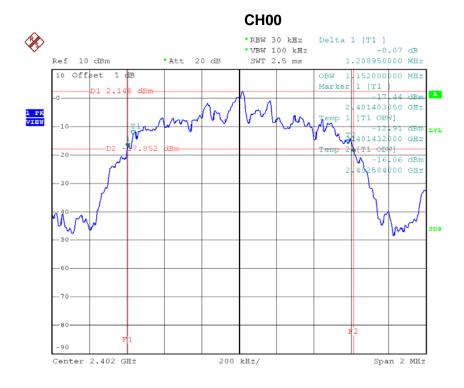


Date: 6.JUL.2015 10:38:55



Test Mode: TX Mode _3Mbps

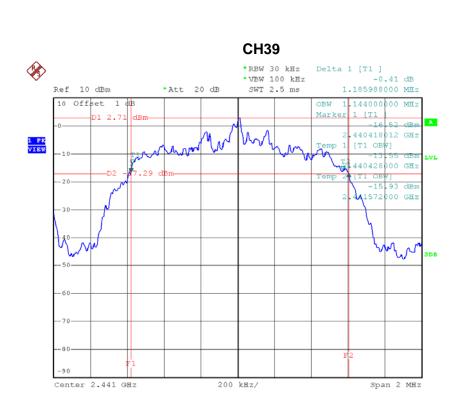
Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Test Result	
2402	1.209	1.152	Complies	
2441	1.186	1.144	Complies	
2480	1.186	1.124	Complies	



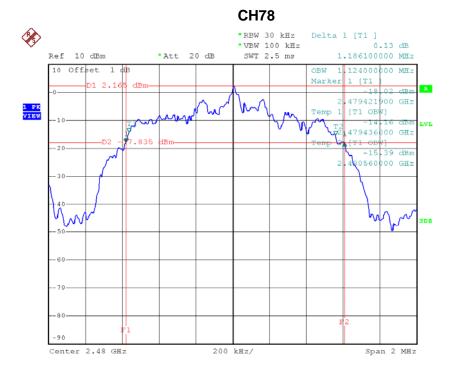
Date: 6.JUL.2015 10:51:31

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Date: 6.JUL.2015 10:52:41



Date: 6.JUL.2015 10:54:52



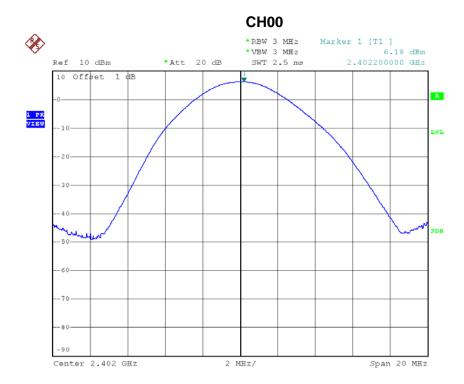
ATTACHMENT I - PEAK OUTPUT POWER				

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Test Mode :	TX Mode 1Mbps
	_ '

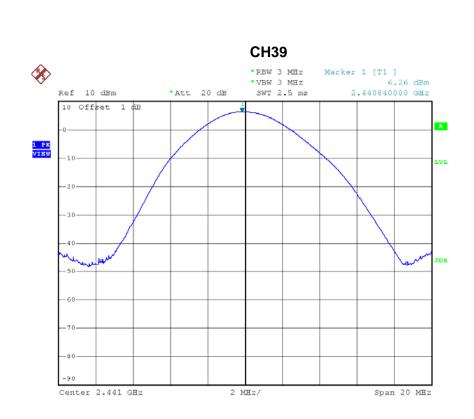
Frequency	Conducted Power	Conducted Power	Max. Limit	Max. Limit	Test
(MHz)	(dBm)	(Watt)	(dBm)	(Watt)	Result
2402	6.18	0.0041	30.00	1.0000	Complies
2441	6.26	0.0042	30.00	1.0000	Complies
2480	5.68	0.0037	30.00	1.0000	Complies

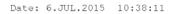


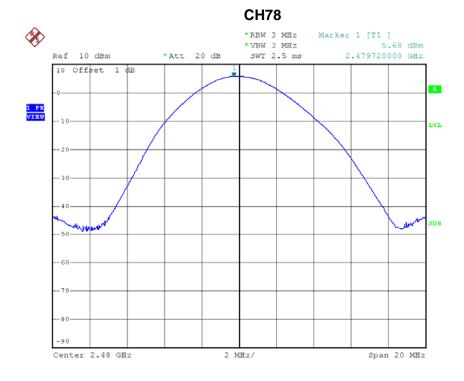
Date: 6.JUL.2015 10:37:16

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Date: 6.JUL.2015 10:39:15



Test Mode : TX Mode _3Mbps

Frequency	Conducted Power	Conducted Power	Max. Limit	Max. Limit	Test
(MHz)	(dBm)	(Watt)	(dBm)	(Watt)	Result
2402	4.99	0.0032	30.00	1.0000	Complies
2441	4.59	0.0029	30.00	1.0000	Complies
2480	3.95	0.0025	30.00	1.0000	Complies

2 MHz/

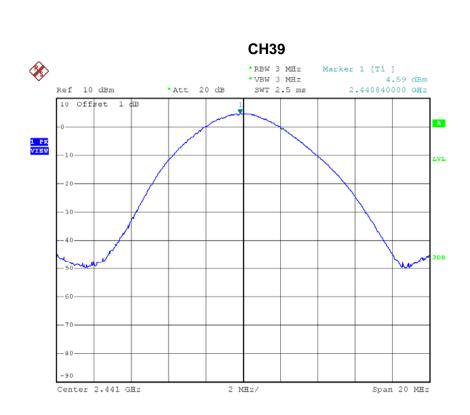
Date: 6.JUL.2015 10:51:58

Center 2.402 GHz

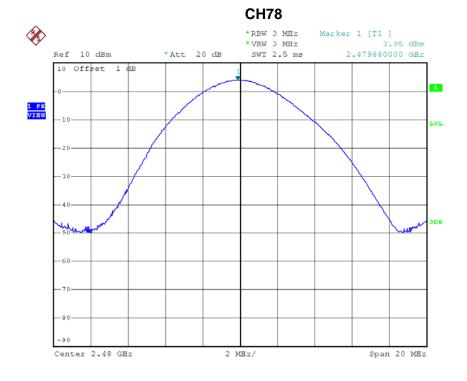
Report No.: BTL-FICP-1-1507C050 Page 106 of 116

Span 20 MHz





Date: 6.JUL.2015 10:52:48



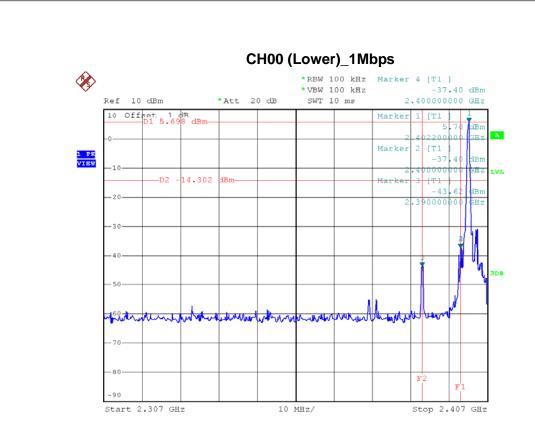
Date: 6.JUL.2015 10:55:19

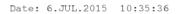


ATTACHMENT J - ANTENNA CONDUCTED SPURIOUS EMISSION

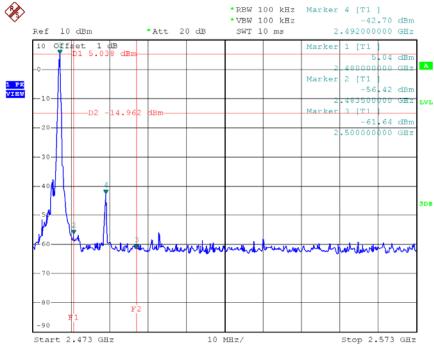
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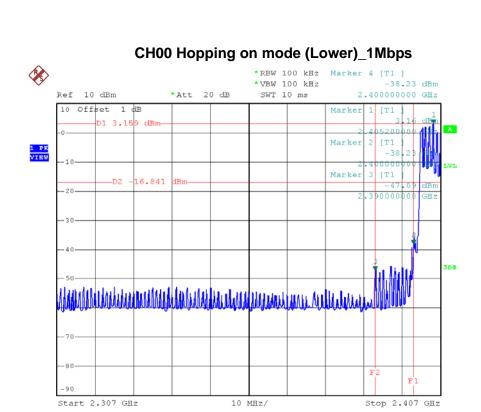


CH78 (Upper) _1Mbps *RBW 100 kHz Marker 4 [T1] *VBW 100 kHz -42.70 dBm



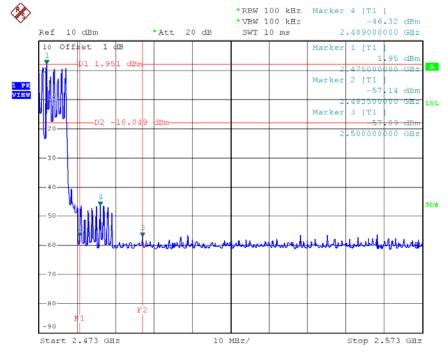
Date: 6.JUL.2015 10:38:26





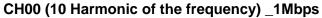
Date: 6.JUL.2015 10:45:44

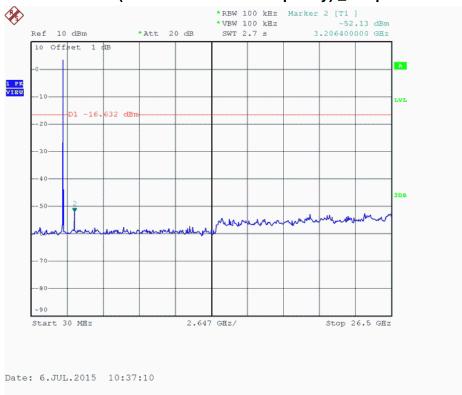
CH78 Hopping on mode (Upper) _1Mbps



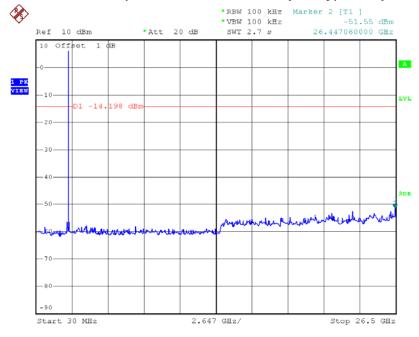
Date: 6.JUL.2015 10:46:19





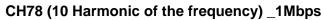


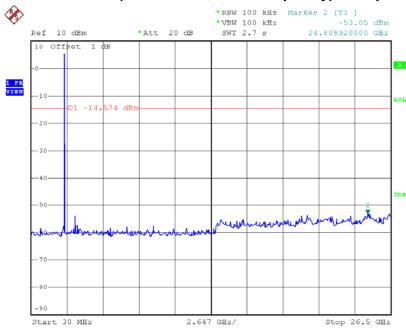
CH39 (10 Harmonic of the frequency) _1Mbps



Date: 6.JUL.2015 10:37:36



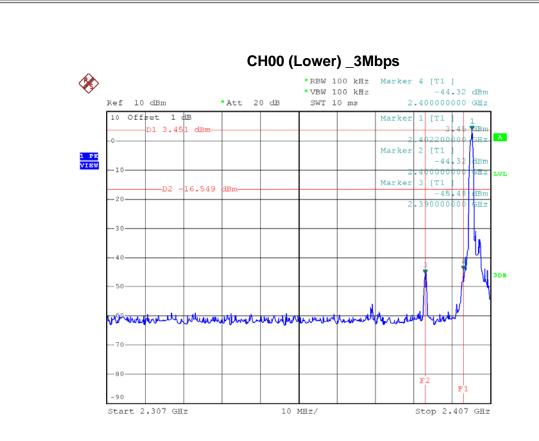




Date: 6.JUL.2015 10:39:09

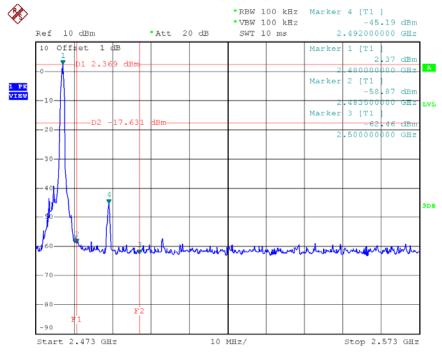
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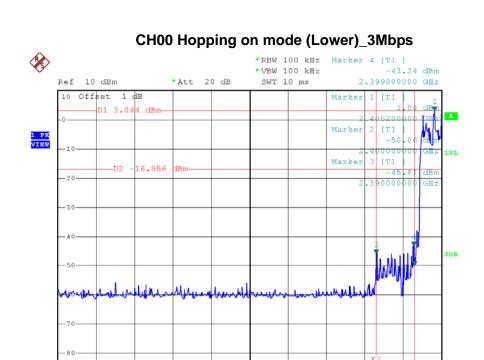


CH78 (Upper) _3Mbps



Date: 6.JUL.2015 10:54:29





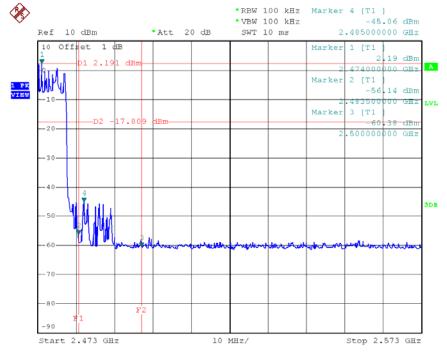
Date: 6.JUL.2015 11:01:44

Start 2.307 GHz

CH78 Hopping on mode (Upper) _3Mbps

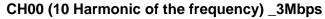
Stop 2.407 GHz

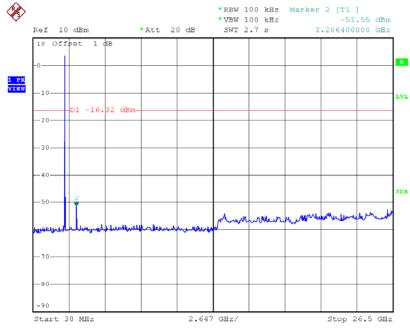
10 MHz/



Date: 6.JUL.2015 11:02:20

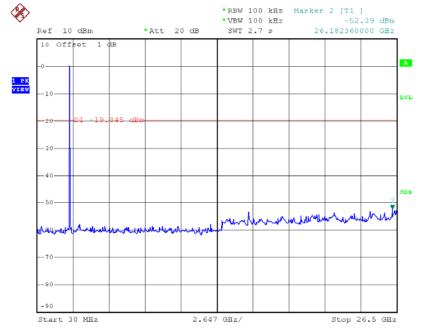






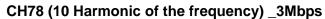
Date: 6.JUL.2015 10:51:52

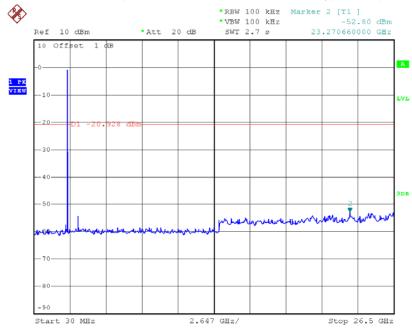
CH39 (10 Harmonic of the frequency) _3Mbps



Date: 6.JUL.2015 10:52:18







Date: 6.JUL.2015 10:55:13