FCC Radio Test Report

FCC ID: UZZBTBE1A

This report concerns (check one): ☒**Original Grant** ☐**Class I Change** ☐**Class II Change**

Project No.	:	1604C186
Equipment	:	Bluetooth Module
Model Name	:	BTBE1A
Applicant	:	Beautiful Enterprise Co.
Address	:	27th Floor, Beautiful Group Tower, 77 Connaught Road Central, Hong Kong

Date of Receipt	:	Apr. 14, 2016
Date of Test	:	Apr. 14, 2016 ~ May 06, 2016
Issued Date	:	May 09, 2016
Tested by	:	BTL Inc.

Testing Engineer : Shawn Xiao
(Shawn Xiao)

Technical Manager : David Mao
(David Mao)

Authorized Signatory : Steven Lu
(Steven Lu)

BTL INC.

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Limitation

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

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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-1-1604C186	Original Issue.	May 09, 2016

1. CERTIFICATION

Equipment	:	Bluetooth Module
Brand Name	:	N/A
Model Name	:	BTBE1A
Applicant	:	Beautiful Enterprise Co.
Manufacturer	:	Beautiful Enterprise Co.
Address	:	27th Floor, Beautiful Group Tower, 77 Connaught Road Central, Hong Kong
Factory	:	Shenzhen Synchron Electronics Co., Ltd
Address	:	No. 9 Mei Li Road, Xia Mei Lin, Fu Tian Area, Shenzhen, Guangdong, P.R. China.
Date of Test	:	Apr. 14, 2016 ~ May 06, 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-1-1604C186) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

Applied Standard(s): 47 CFR Part 15, 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)(1)	Hopping Channel Separation	PASS	
15.247(a)(1)	Bandwidth	PASS	
15.247(b)(1)	Peak Output Power	PASS	
15.247(d) 15.209	Radiated Spurious Emission	PASS	
15.247(a)(1)(iii)	Number of Hopping Frequency	PASS	
15.247(a)(1)(iii)	Dwell Time	PASS	
15.205	Restricted Bands	PASS	
15.203	Antenna Requirement	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 is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.
BTL's test firm number for FCC: 319330

2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2.

The reported uncertainty of measurement **y** ± **U**, where expanded uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately **95** %.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U, (dB)
DG-C02	CISPR	150 KHz ~ 30MHz	2.32

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
DG-CB03	CISPR	9KHz~30MHz	V	3.79
		9KHz~30MHz	H	3.57
		30MHz ~ 200MHz	V	3.82
		30MHz ~ 200MHz	H	3.78
		200MHz ~ 1,000MHz	V	4.10
		200MHz ~ 1,000MHz	H	4.06
		1GHz~18GHz	V	3.12
		1GHz~18GHz	H	3.68
		18GHz~40GHz	V	4.15
		18GHz~40GHz	H	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.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Bluetooth Module	
Brand Name	N/A	
Model Name	BTBE1A	
Model Difference	N/A	
Output Power (Max.)	Operation Frequency	2402~2480 MHz
	Modulation Technology	GFSK(1Mbps) π/4-DQPSK(2Mbps) 8-DPSK(3Mbps)
	Bit Rate of Transmitter	
	Output Power Max.	2.27dBm (1Mbps) 1.71dBm (3Mbps)
Power Source	Supplied from system.	
Power Rating	DC 3.3V	

Note:

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

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

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Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Printed	N/A	1.37

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)**

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 1	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.

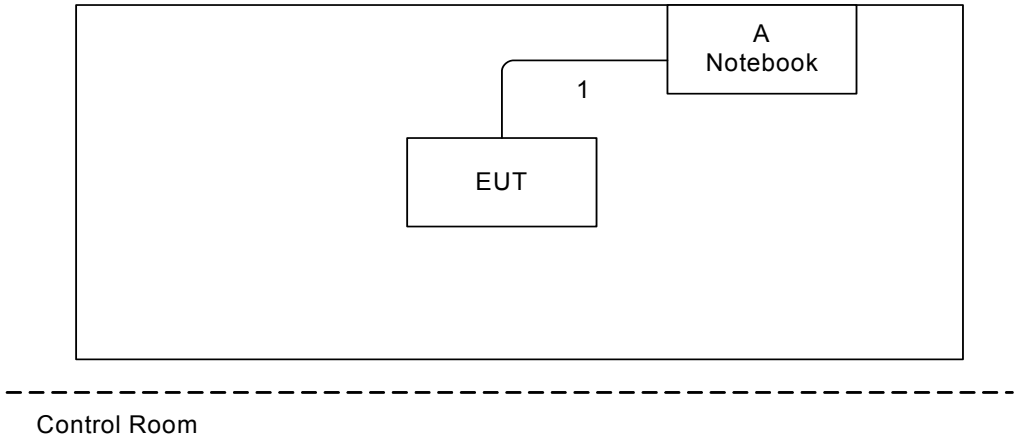
(2) The measurements for Hopping Channel Separation, Bandwidth and Peak Output Power were tested during 1Mbps, 2Mbps and 3Mbps, the worst case are 1Mbps and 3Mbps, only worst case was documented.

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

Test Software Version	BlueTest3		
Frequency	2402 MHz	2441 MHz	2480 MHz
Parameters(1Mbps)	50.00	50.00	50.00
Parameters(3Mbps)	50.00	50.00	50.00

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	Lenovo	H2510	DOC	SS07999198

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	1.2m	Data Cable

4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION LIMITS (Frequency Range 150KHz-30MHz)

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 -0.50	66 to 56*	56 to 46*
0.50 -5.0	56	46
5.0 -30.0	60	50

Note:

(1) The limit of " * " decreases with the logarithm of the frequency

(2) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
Margin Level = Measurement Value - Limit Value

The following table is the setting of the receiver

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

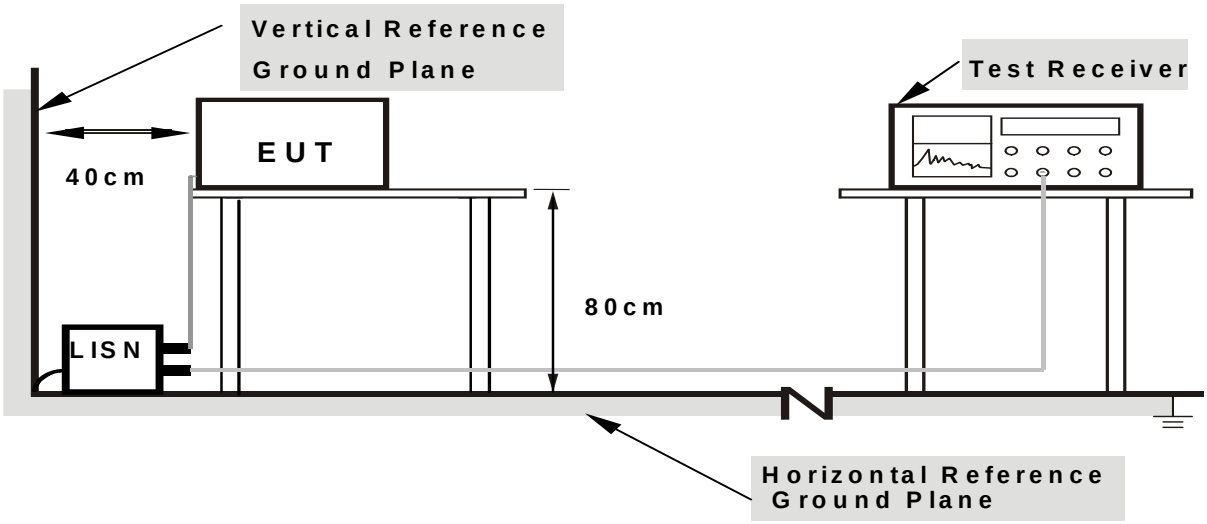
4.1.2 TEST PROCEDURE

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

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 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.

4.2 RADIATED EMISSION MEASUREMENT

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

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.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (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)	dB(uV/m) (at 3 meters)	
	Peak	Average
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m) =20log Emission level (uV/m).

(4) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

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

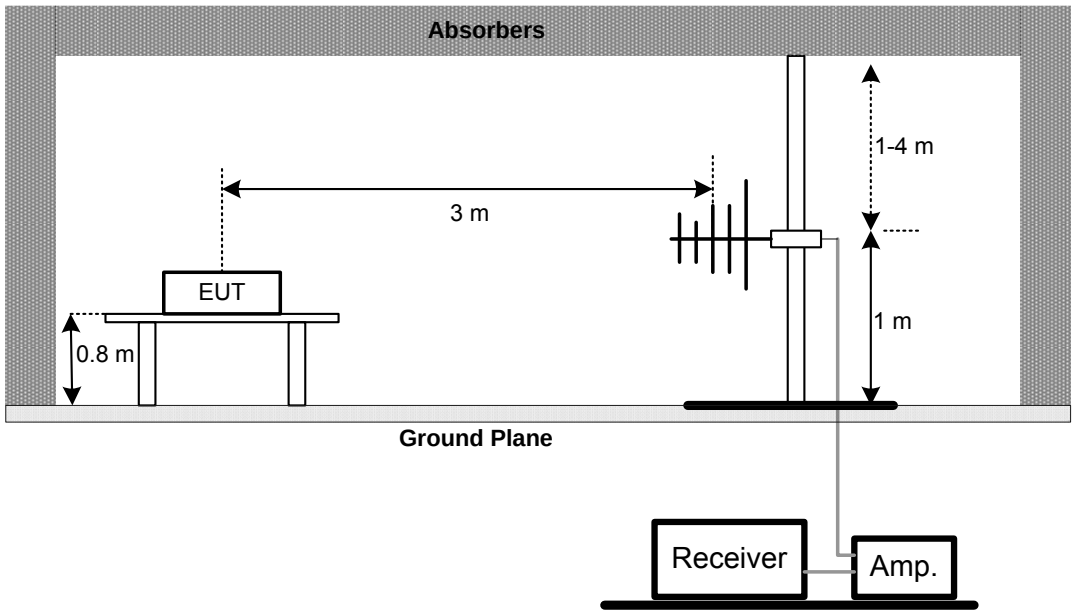
a. The measuring distance of at 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The measuring distance of at 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. The initial step in collecting conducted 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.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.3 DEVIATION FROM TEST STANDARD

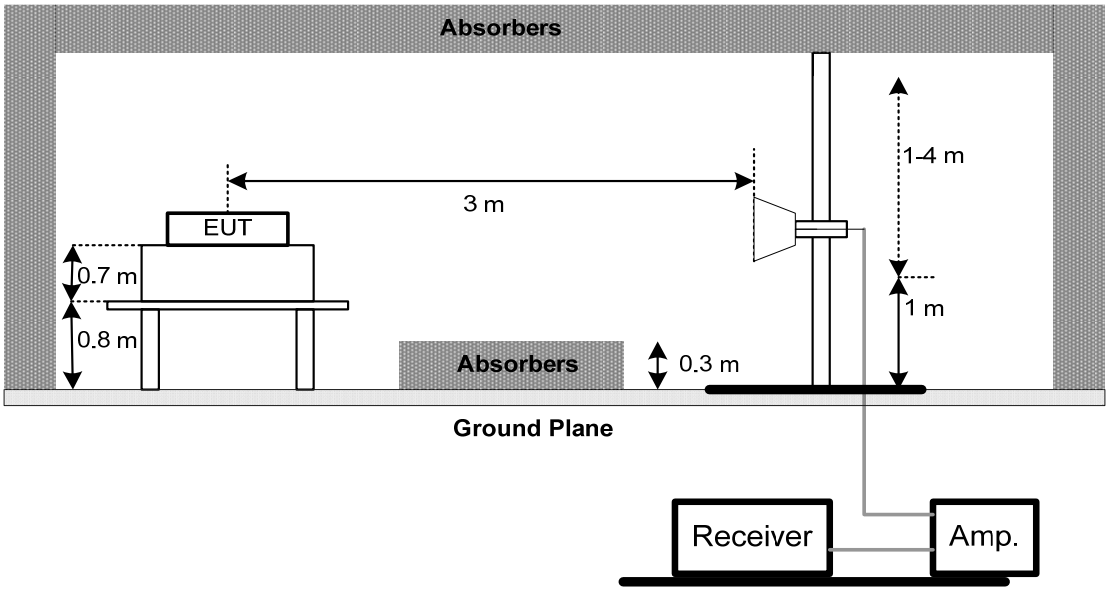
No deviation

4.2.4 TEST SETUP

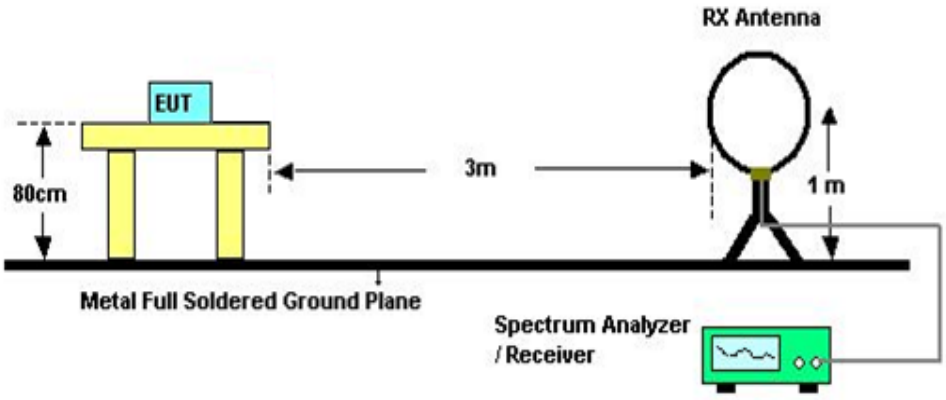
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



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



(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: 25°C
Relative Humidity: 55%
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.

4.2.8 TEST RESULTS (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.

5. NUMBER OF HOPPING CHANNEL

5.1 APPLIED PROCEDURES

FCC Part15 (15.247) , Subpart C			
Section	Test Item	Frequency Range (MHz)	Result
15.247(a)(1)(iii)	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

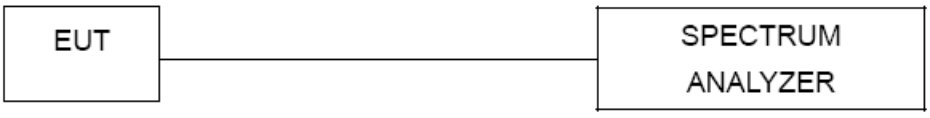
5.1.1 TEST PROCEDURE

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



5.1.4 EUT OPERATION CONDITIONS

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

5.1.5 EUT TEST CONDITIONS

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

5.1.6 TEST RESULTS

Please refer to the Attachment E

6. AVERAGE TIME OF OCCUPANCY

6.1 APPLIED PROCEDURES / LIMIT

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

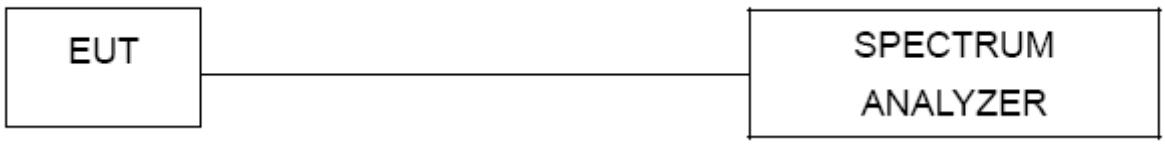
6.1.1 TEST PROCEDURE

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



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

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

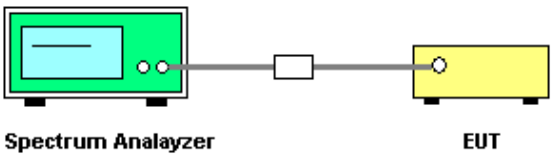
a. The EUT must have its hopping function enabled

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

8. BANDWIDTH TEST

8.1 APPLIED PROCEDURES

FCC Part15 (15.247) , Subpart C		
Section	Test Item	Frequency Range (MHz)
15.247(a)(2)	Bandwidth	2400-2483.5

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

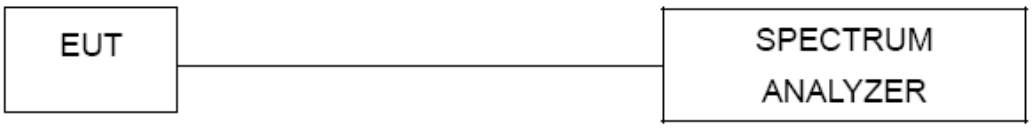
8.1.1 TEST PROCEDURE

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

9. PEAK OUTPUT POWER TEST

9.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(1)	Peak Output Power	1 Watt or 30dBm (hopping channel >75) 0.125Watt or 21dBm (hopping channel <75	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

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

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.

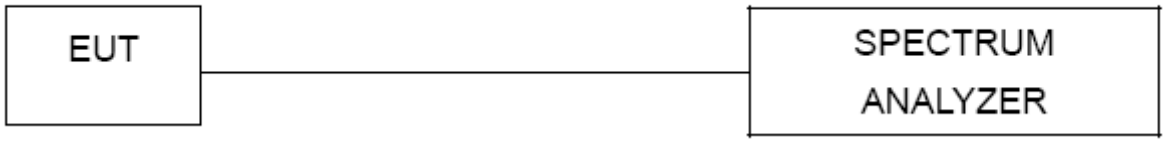
10.1.1 TEST PROCEDURE

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.
c. Offset=antenna gain+cable loss

10.1.2 DEVIATION FROM STANDARD

No deviation.

10.1.3 TEST SETUP



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

11. MEASUREMENT INSTRUMENTS LIST

Conducted Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	0052765	Mar. 27, 2017
2	LISN	R&S	ENV216	101447	Mar. 27, 2017
3	Test Cable	emci	RG223(9KHz-30 MHz)	C_17	Mar. 10, 2017
4	EMI Test Receiver	R&S	ESCI	100382	Mar. 27, 2017
5	50Ω Terminator	SHX	TF2-3G-A	08122901	Mar. 27, 2017
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. 27, 2017
2	Amplifier	HP	8447D	2944A09673	Nov. 09, 2016
3	Receiver	AGILENT	N9038A	MY52130039	Oct. 11, 2016
4	Test Cable	emci	LMR-400(30MHz-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. 27, 2017
8	Amplifier	Agilent	8449B	3008A02274	Nov. 01, 2016
9	Receiver	AGILENT	N9038A	MY52130039	Oct. 11, 2016
10	Test Cable	emci	EMC104-SM-SM-10000(1GHz－26.5GHz)	C-68	Jun. 28, 2016
11	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Apr. 23, 2017
12	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 27, 2017
13	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Sep. 07, 2016

Number of Hopping Channel					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Oct. 11, 2016

Average Time of Occupancy					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Oct. 11, 2016

Hopping Channel Separation Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Oct. 11, 2016

Bandwidth					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Oct. 11, 2016

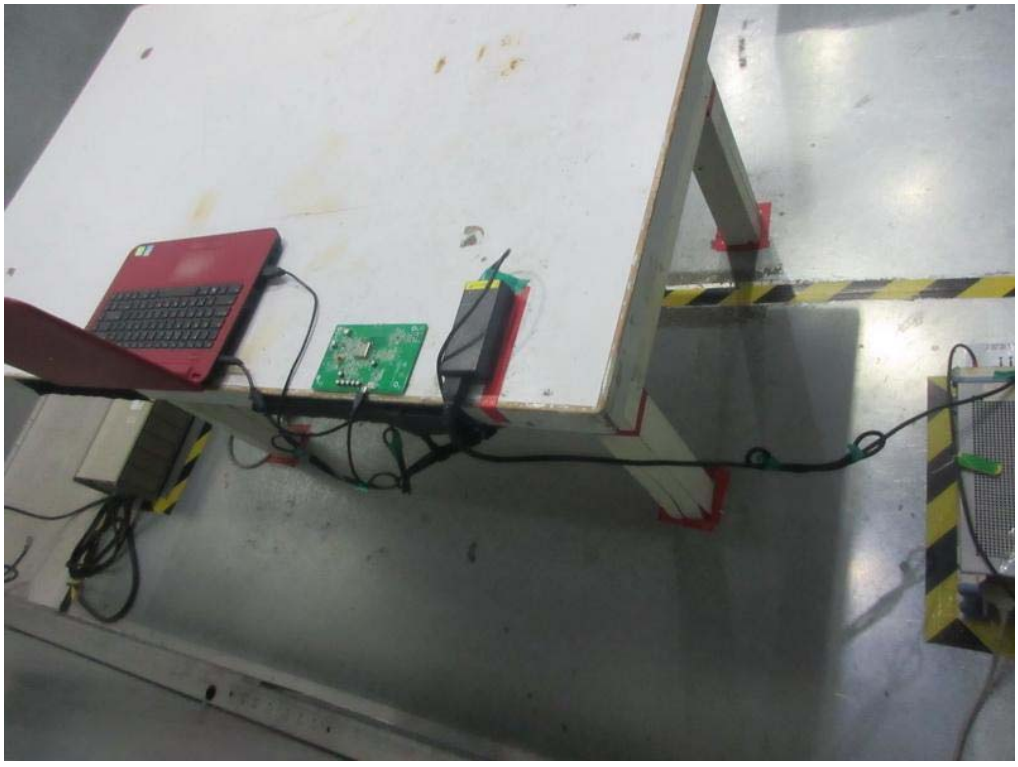
Peak Output Power					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Oct. 11, 2016

Antenna Conducted Spurious Emission					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Oct. 11, 2016

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

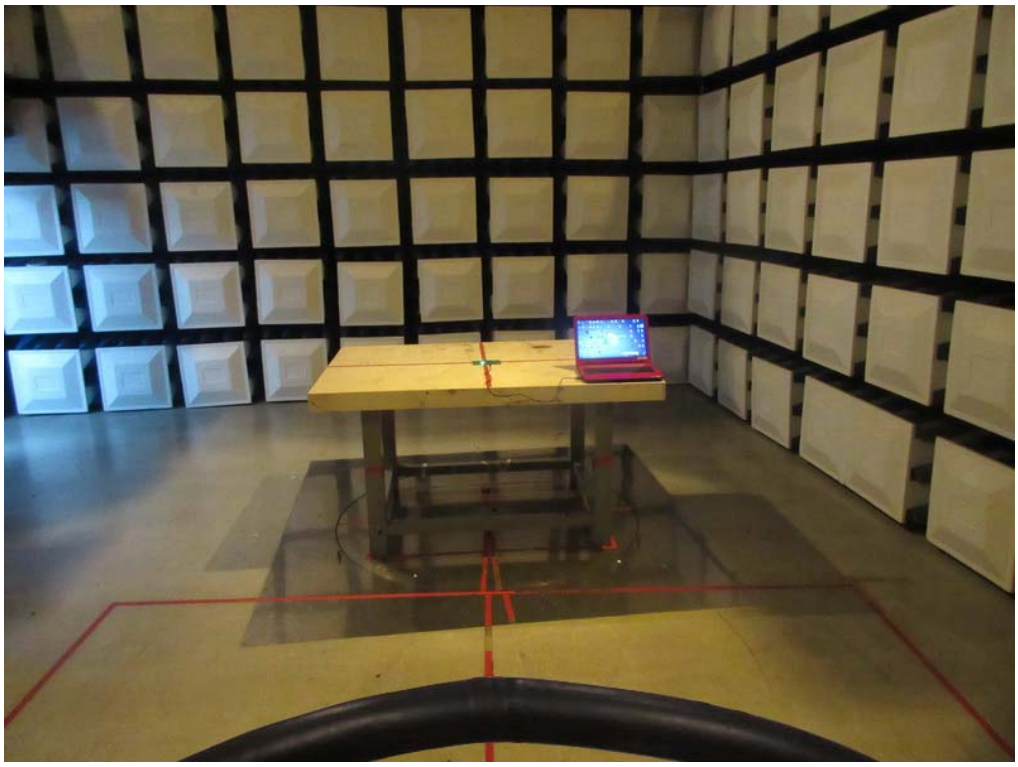
12. EUT TEST PHOTO

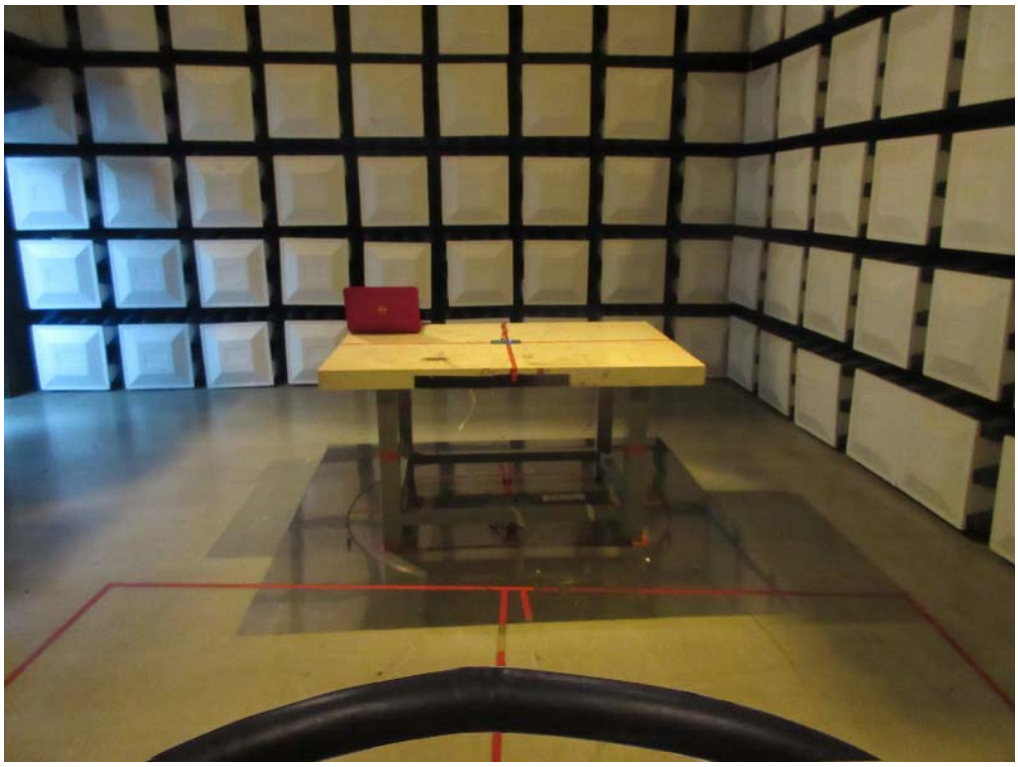
Conducted Measurement Photos



Radiated Measurement Photos

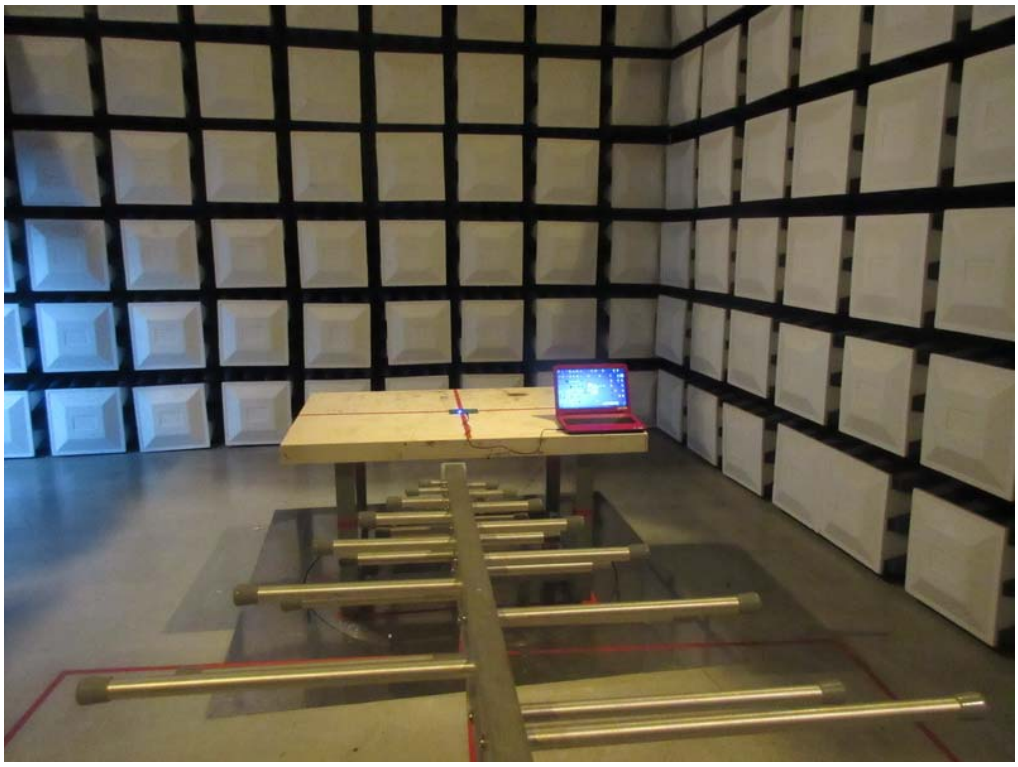
9KHz to 30MHz





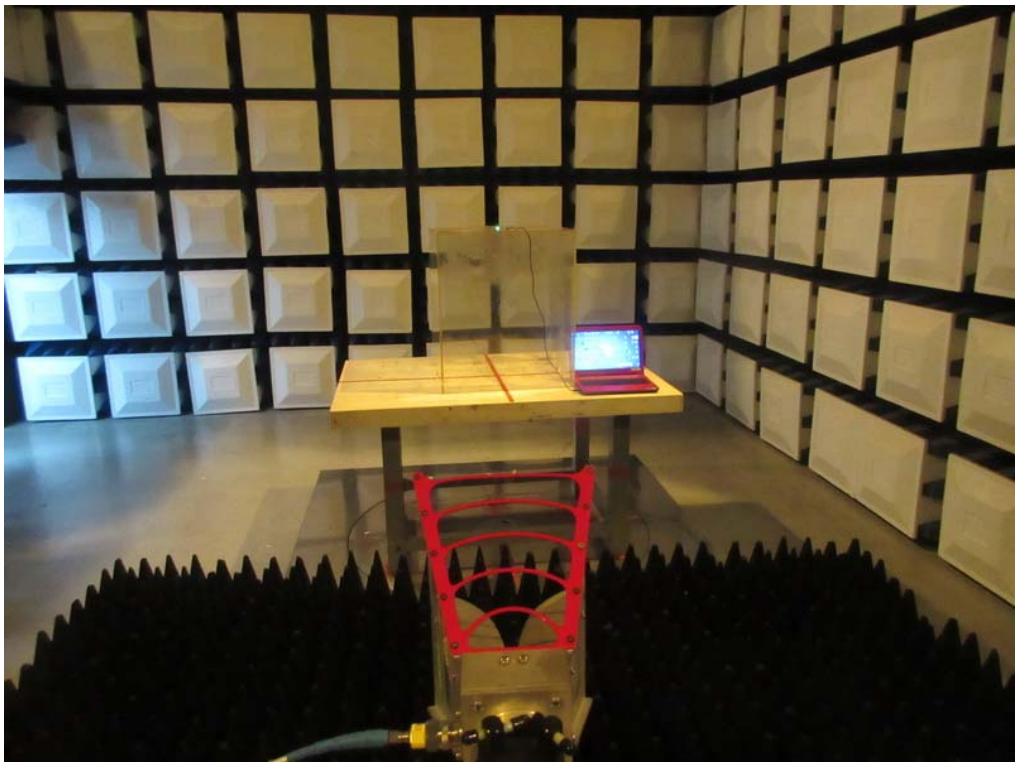
Radiated Measurement Photos

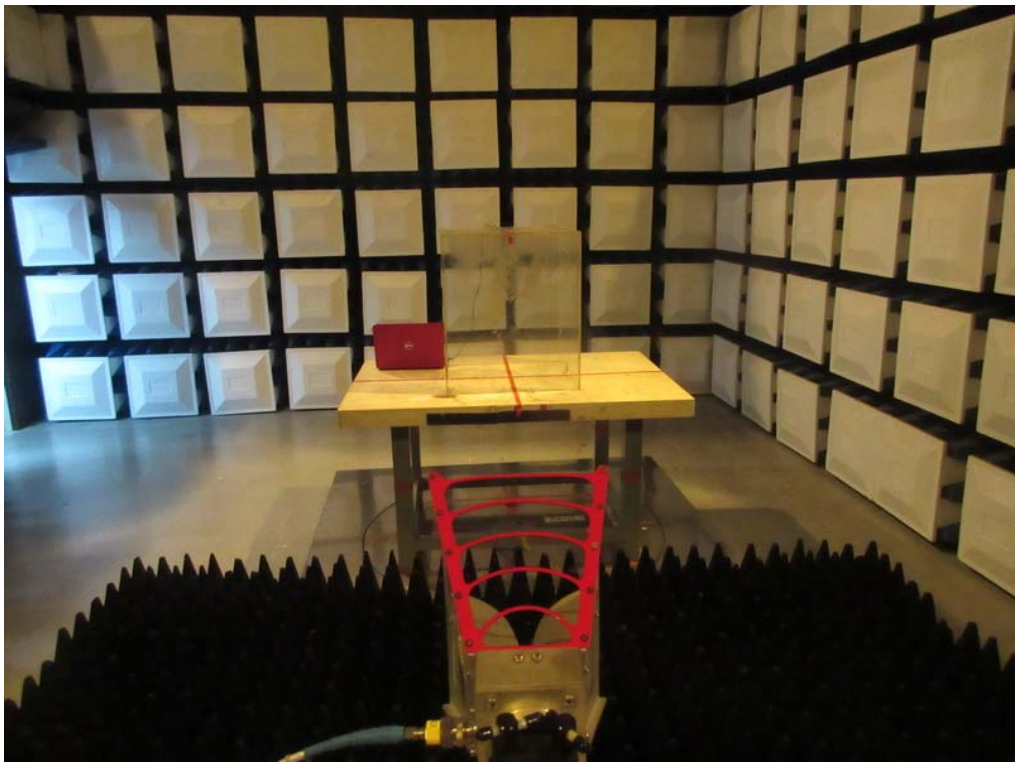
30MHz to 1000MHz



Radiated Measurement Photos

Above 1000MHz

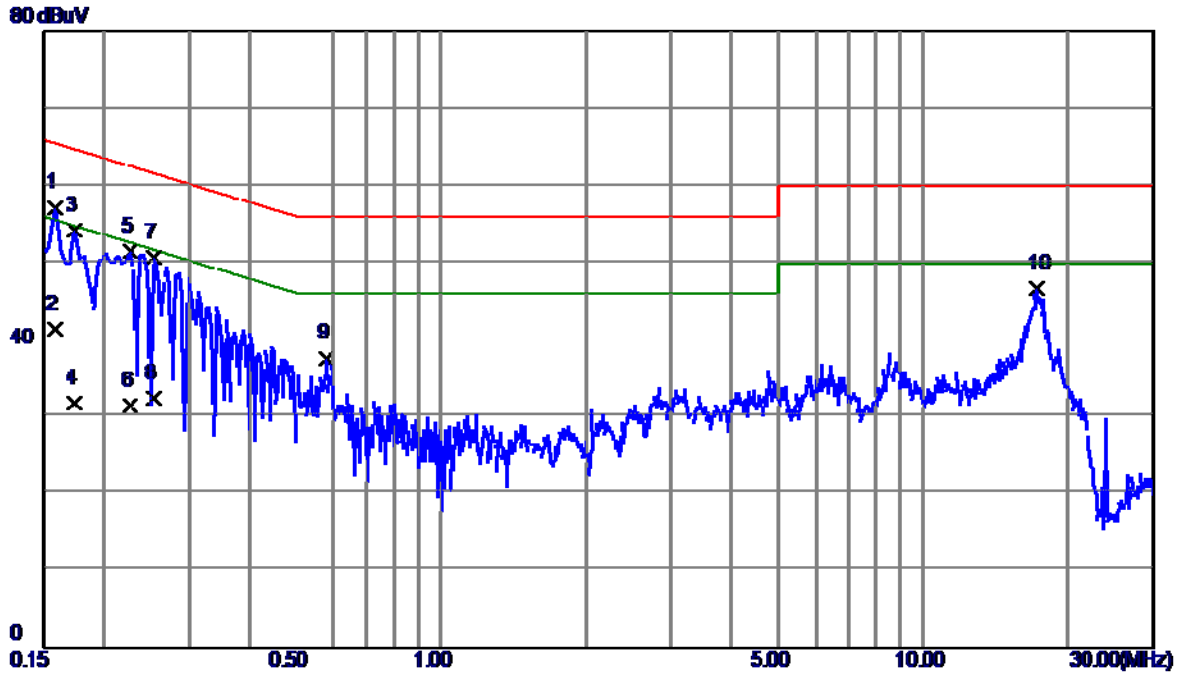




ATTACHMENT A - CONDUCTED EMISSION

Test Mode:	TX Mode

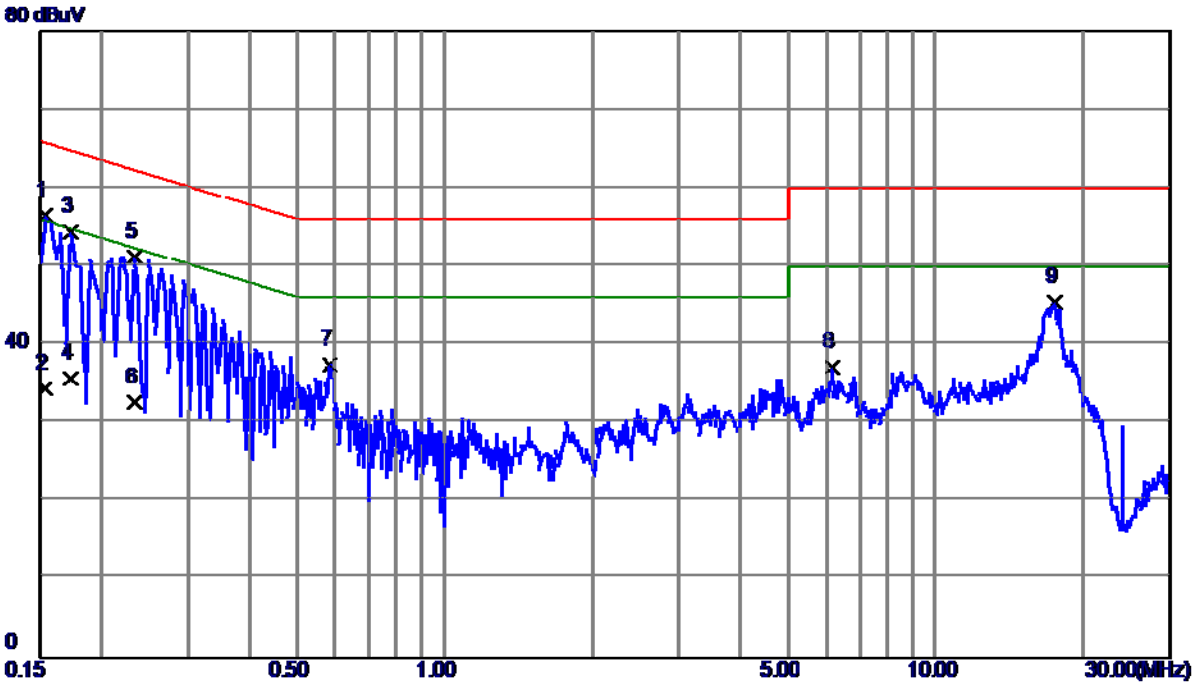
Line



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1580	47.68	9.52	57.20	65.57	-8.37	Peak	
2	0.1580	31.90	9.52	41.42	55.57	-14.15	AVG	
3	0.1740	44.76	9.52	54.28	64.77	-10.49	Peak	
4	0.1740	22.35	9.52	31.87	54.77	-22.90	AVG	
5	0.2260	41.96	9.53	51.49	62.60	-11.11	Peak	
6	0.2260	21.93	9.53	31.46	52.60	-21.14	AVG	
7	0.2540	41.21	9.53	50.74	61.63	-10.89	Peak	
8	0.2540	23.01	9.53	32.54	51.63	-19.09	AVG	
9	0.5780	28.04	9.64	37.68	56.00	-18.32	Peak	
10	17.2340	36.30	10.38	46.68	60.00	-13.32	Peak	

Test Mode:	TX Mode

Neutral



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1539	47.01	9.50	56.51	65.79	-9.28	Peak	
2	0.1539	24.84	9.50	34.34	55.79	-21.45	AVG	
3	0.1740	44.98	9.44	54.42	64.77	-10.35	Peak	
4	0.1740	26.20	9.44	35.64	54.77	-19.13	AVG	
5	0.2340	41.74	9.53	51.27	62.31	-11.04	Peak	
6	0.2340	23.08	9.53	32.61	52.31	-19.70	AVG	
7	0.5860	27.98	9.44	37.42	56.00	-18.58	Peak	
8	6.1420	27.15	9.97	37.12	60.00	-22.88	Peak	
9	17.4060	34.99	10.43	45.42	60.00	-14.58	Peak	

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

Test Mode:	TX Mode

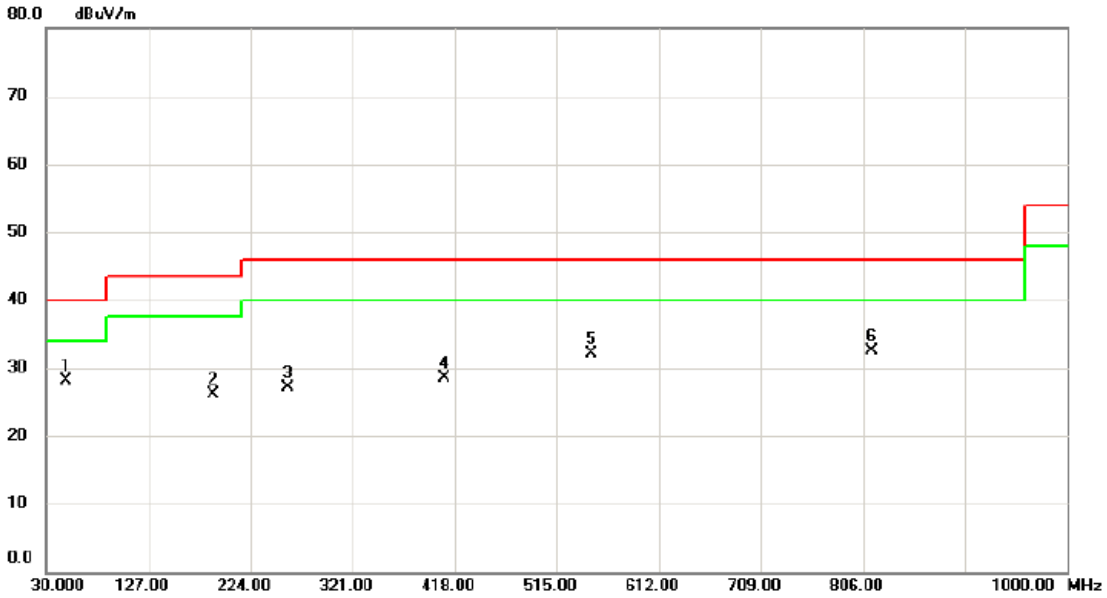
Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0158	0°	12.19	24.5660	36.7560	123.6311	-86.8751	AVG
0.0158	0°	13.58	24.5660	38.1460	143.6311	-105.4851	PEAK
0.0293	0°	6.37	23.7110	30.0810	118.2669	-88.1859	AVG
0.0293	0°	8.12	23.7110	31.8310	138.2669	-106.4359	PEAK
0.0374	0°	3.26	23.1980	26.4580	116.1468	-89.6888	AVG
0.0374	0°	5.63	23.1980	28.8280	136.1468	-107.3188	PEAK
0.0618	0°	1.64	22.1640	23.8040	111.7845	-87.9805	AVG
0.0618	0°	2.79	22.1640	24.9540	131.7845	-106.8305	PEAK
0.5783	0°	19.55	20.0506	39.6006	72.3612	-32.7606	QP
2.7519	0°	23.38	19.0489	42.4289	69.5400	-27.1111	QP

Frequency (MHz)	Ant 0°/90°	Read level dBuV/m	Factor (dB)	Measured(FS) (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Note
0.0131	90°	13.17	24.3000	37.4700	125.2588	-87.7888	AVG
0.0131	90°	14.79	24.3000	39.0900	145.2588	-106.1688	PEAK
0.0308	90°	7.25	23.6160	30.8660	117.8332	-86.9672	AVG
0.0308	90°	8.65	23.6160	32.2660	137.8332	-105.5672	PEAK
0.0437	90°	5.12	22.7990	27.9190	114.7946	-86.8756	AVG
0.0437	90°	6.78	22.7990	29.5790	134.7946	-105.2156	PEAK
0.0578	90°	1.29	22.2440	23.5340	112.3657	-88.8317	AVG
0.0578	90°	2.33	22.2440	24.5740	132.3657	-107.7917	PEAK
0.7285	90°	22.48	20.5312	43.0112	70.3556	-27.3444	QP
2.0192	90°	24.74	19.4885	44.2285	69.5400	-25.3115	QP

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

Test Mode:	TX 2402MHz _CH00_1Mbps

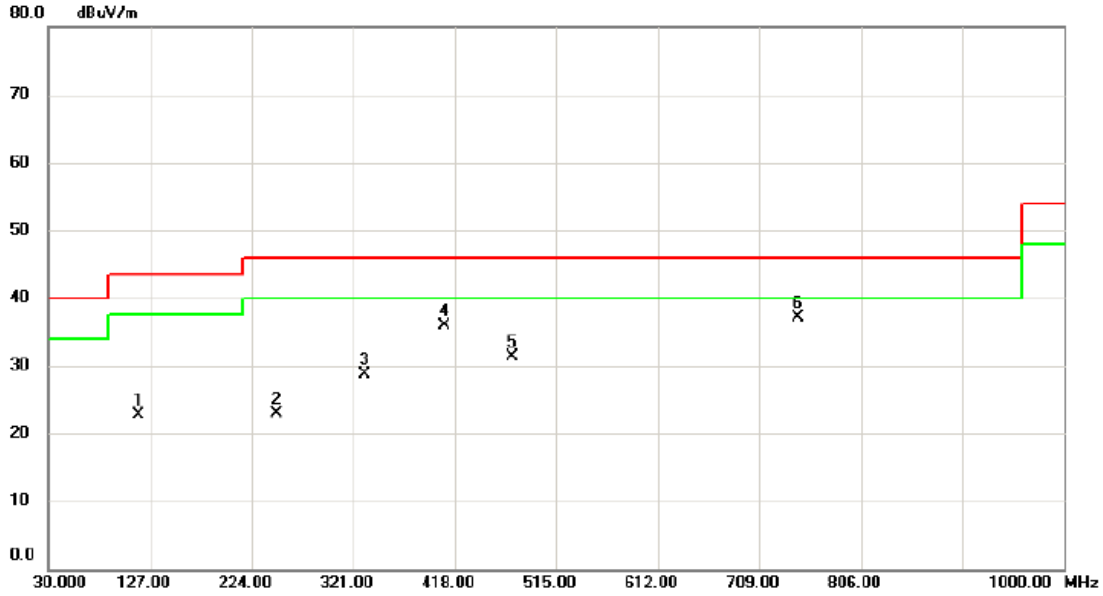
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	48.4300	41.23	-13.07	28.16	40.00	-11.84	peak	
2		188.1100	39.94	-13.82	26.12	43.50	-17.38	peak	
3		259.8900	41.58	-14.43	27.15	46.00	-18.85	peak	
4		408.3000	36.75	-8.32	28.43	46.00	-17.57	peak	
5		547.9800	37.50	-5.48	32.02	46.00	-13.98	peak	
6		813.7600	33.61	-1.17	32.44	46.00	-13.56	peak	

Test Mode:	TX 2402MHz _CH00_1Mbps

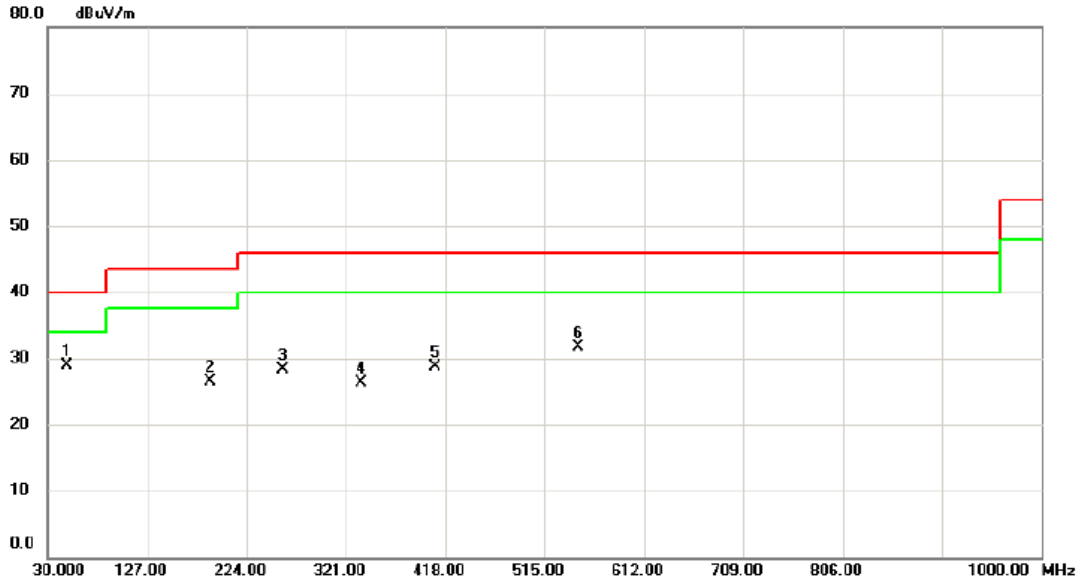
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		116.3300	36.55	-13.88	22.67	43.50	-20.83	peak	
2		248.2500	37.16	-14.32	22.84	46.00	-23.16	peak	
3		331.6700	39.95	-11.19	28.76	46.00	-17.24	peak	
4		408.3000	44.13	-8.32	35.81	46.00	-10.19	peak	
5		472.3200	40.78	-9.39	31.39	46.00	-14.61	peak	
6	*	745.8600	39.94	-2.93	37.01	46.00	-8.99	peak	

Test Mode:	TX 2441MHz _CH39_1Mbps

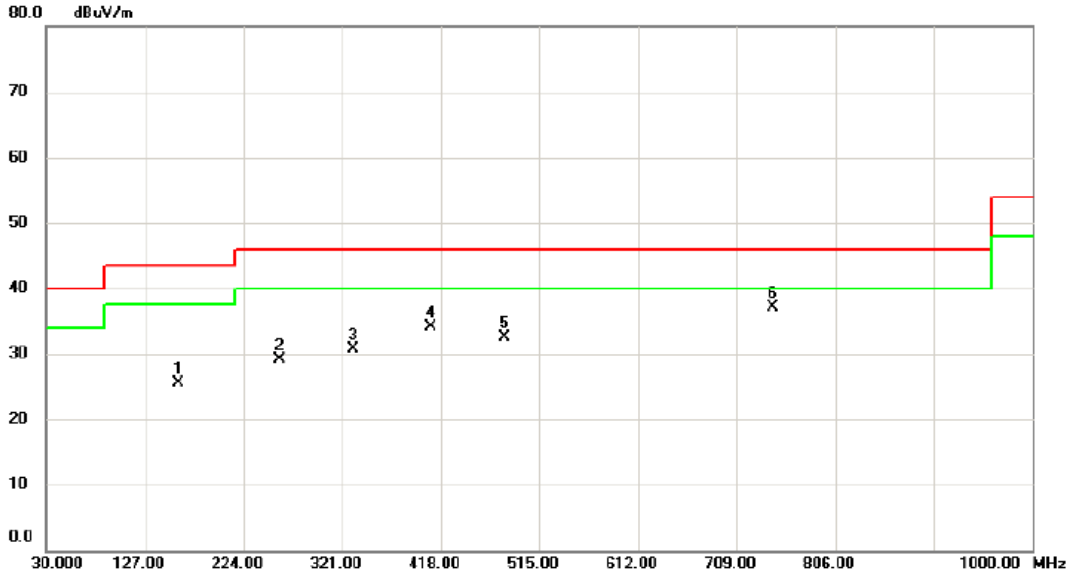
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	48.4300	41.91	-13.07	28.84	40.00	-11.16	peak	
2		188.1100	40.39	-13.82	26.57	43.50	-16.93	peak	
3		259.8900	42.69	-14.43	28.26	46.00	-17.74	peak	
4		335.5500	37.51	-11.28	26.23	46.00	-19.77	peak	
5		408.3000	37.11	-8.32	28.79	46.00	-17.21	peak	
6		547.9800	37.24	-5.48	31.76	46.00	-14.24	peak	

Test Mode:	TX 2441MHz _CH39_1Mbps

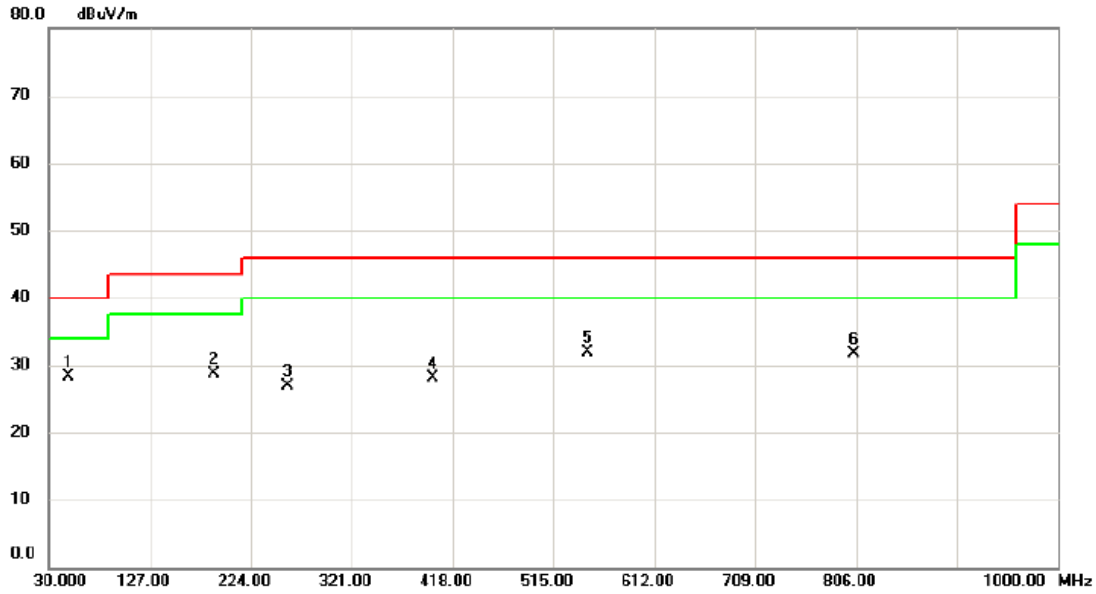
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		159.9800	37.70	-12.19	25.51	43.50	-17.99	peak	
2		259.8900	43.45	-14.43	29.02	46.00	-16.98	peak	
3		331.6700	41.82	-11.19	30.63	46.00	-15.37	peak	
4		408.3000	42.40	-8.32	34.08	46.00	-11.92	peak	
5		480.0800	42.22	-9.65	32.57	46.00	-13.43	peak	
6	*	743.9200	40.14	-2.94	37.20	46.00	-8.80	peak	

Test Mode:	TX 2480MHz _CH78_1Mbps

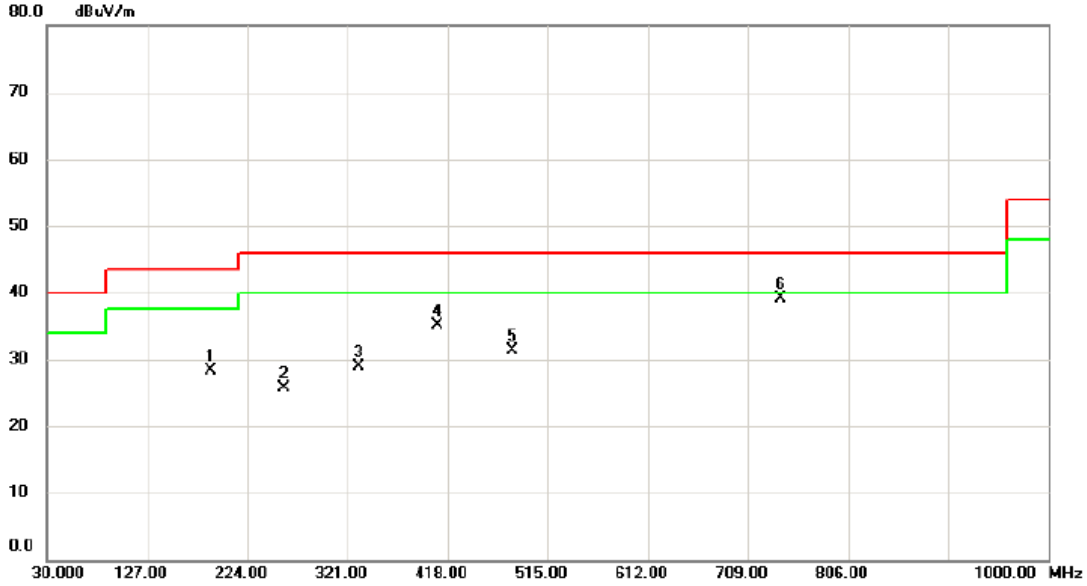
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	48.4300	41.42	-13.07	28.35	40.00	-11.65	peak	
2		188.1100	42.61	-13.82	28.79	43.50	-14.71	peak	
3		259.8900	41.34	-14.43	26.91	46.00	-19.09	peak	
4		399.5700	36.36	-8.30	28.06	46.00	-17.94	peak	
5		547.9800	37.42	-5.48	31.94	46.00	-14.06	peak	
6		804.0600	32.54	-0.86	31.68	46.00	-14.32	peak	

Test Mode:	TX 2480MHz _CH78_1Mbps

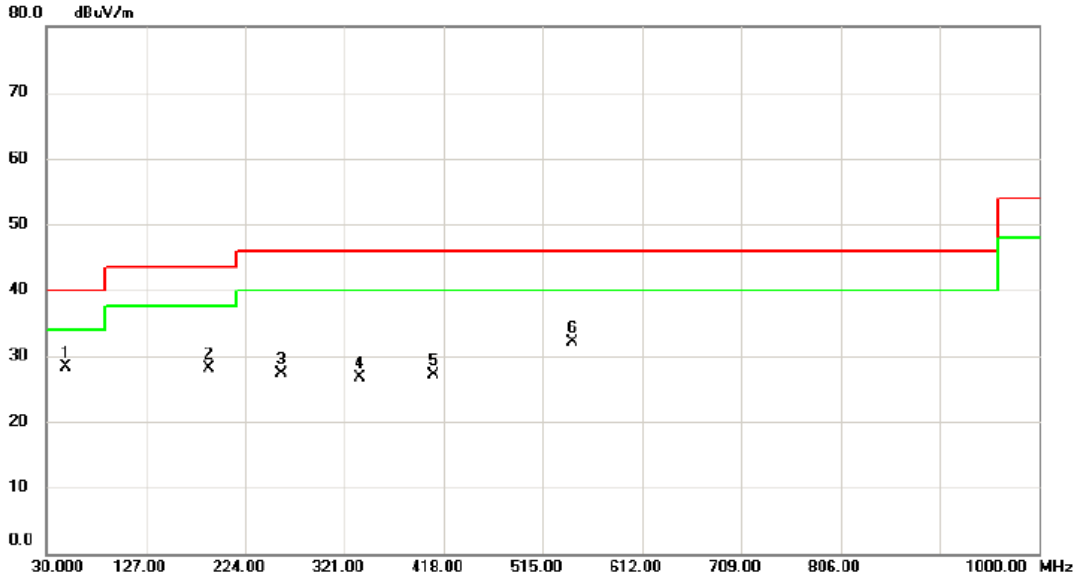
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		188.1100	42.17	-13.82	28.35	43.50	-15.15	peak	
2		259.8900	40.21	-14.43	25.78	46.00	-20.22	peak	
3		331.6700	40.09	-11.19	28.90	46.00	-17.10	peak	
4		408.3000	43.52	-8.32	35.20	46.00	-10.80	peak	
5		480.0800	40.87	-9.65	31.22	46.00	-14.78	peak	
6	*	741.0100	41.95	-2.93	39.02	46.00	-6.98	peak	

Test Mode:	TX 2402MHz _CH00_3Mbps

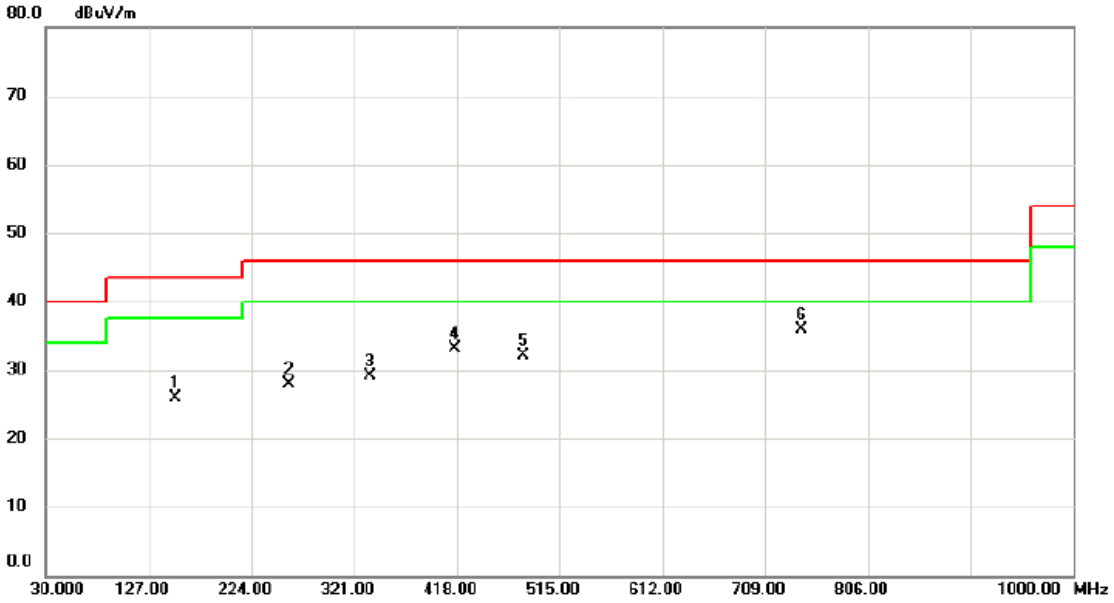
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	48.4300	41.47	-13.07	28.40	40.00	-11.60	peak	
2		188.1100	41.98	-13.82	28.16	43.50	-15.34	peak	
3		259.8900	41.69	-14.43	27.26	46.00	-18.74	peak	
4		335.5500	37.93	-11.28	26.65	46.00	-19.35	peak	
5		408.3000	35.52	-8.32	27.20	46.00	-18.80	peak	
6		544.1000	38.07	-5.87	32.20	46.00	-13.80	peak	

Test Mode:	TX 2402MHz _CH00_3Mbps

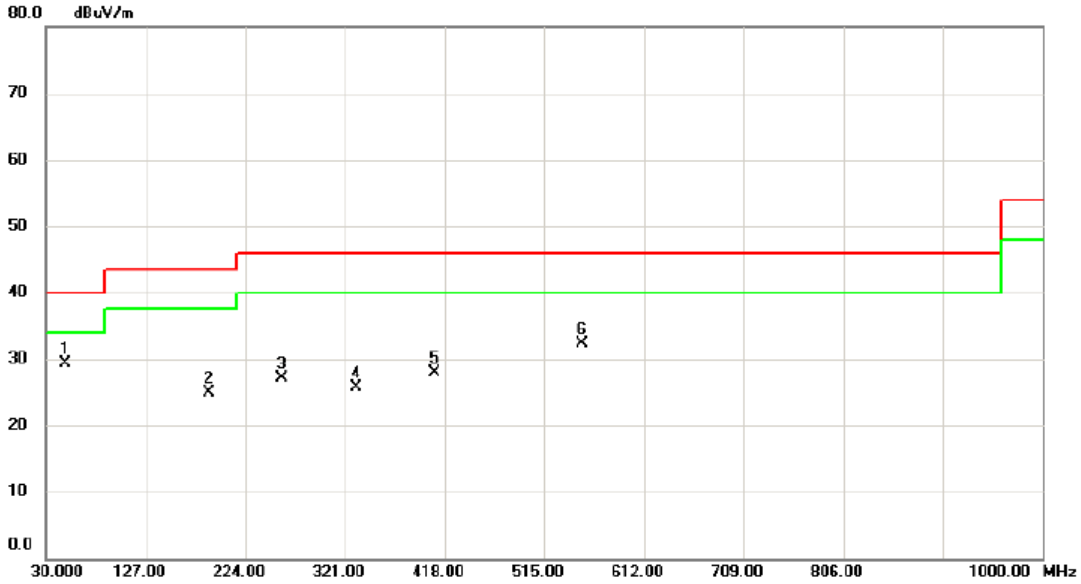
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		152.2200	38.67	-12.80	25.87	43.50	-17.63	peak	
2		259.8900	42.42	-14.43	27.99	46.00	-18.01	peak	
3		335.5500	40.41	-11.28	29.13	46.00	-16.87	peak	
4		416.0600	41.52	-8.36	33.16	46.00	-12.84	peak	
5		480.0800	41.80	-9.65	32.15	46.00	-13.85	peak	
6	*	742.9500	38.90	-2.94	35.96	46.00	-10.04	peak	

Test Mode:	TX 2441MHz _CH39_3Mbps

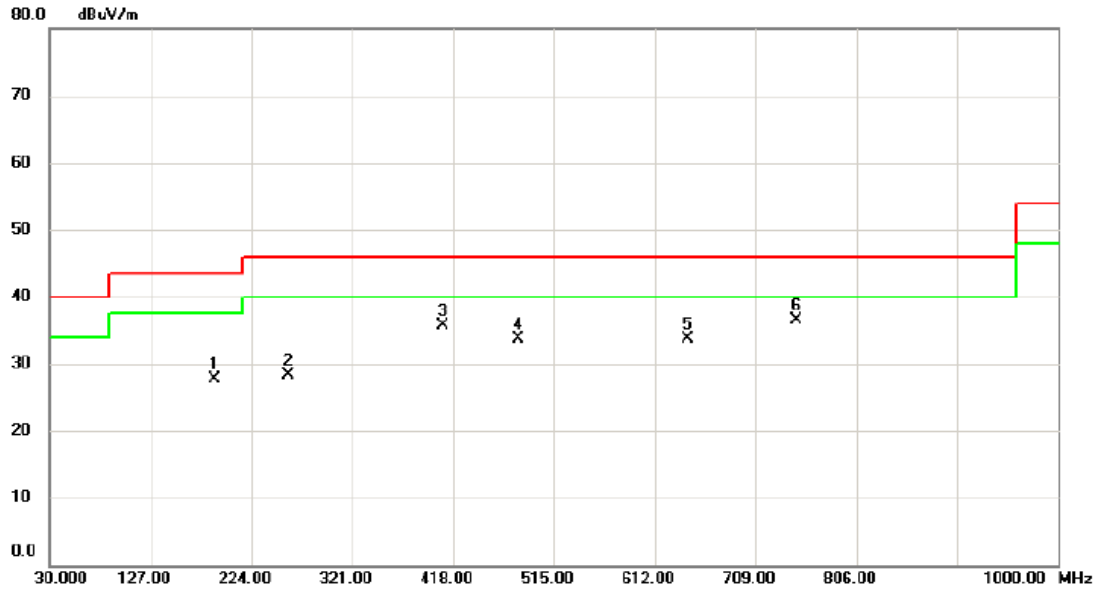
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	48.4300	42.30	-13.07	29.23	40.00	-10.77	peak	
2		188.1100	38.64	-13.82	24.82	43.50	-18.68	peak	
3		259.8900	41.60	-14.43	27.17	46.00	-18.83	peak	
4		331.6700	36.97	-11.19	25.78	46.00	-20.22	peak	
5		408.3000	36.30	-8.32	27.98	46.00	-18.02	peak	
6		551.8600	37.67	-5.37	32.30	46.00	-13.70	peak	

Test Mode:	TX 2441MHz _CH39_3Mbps

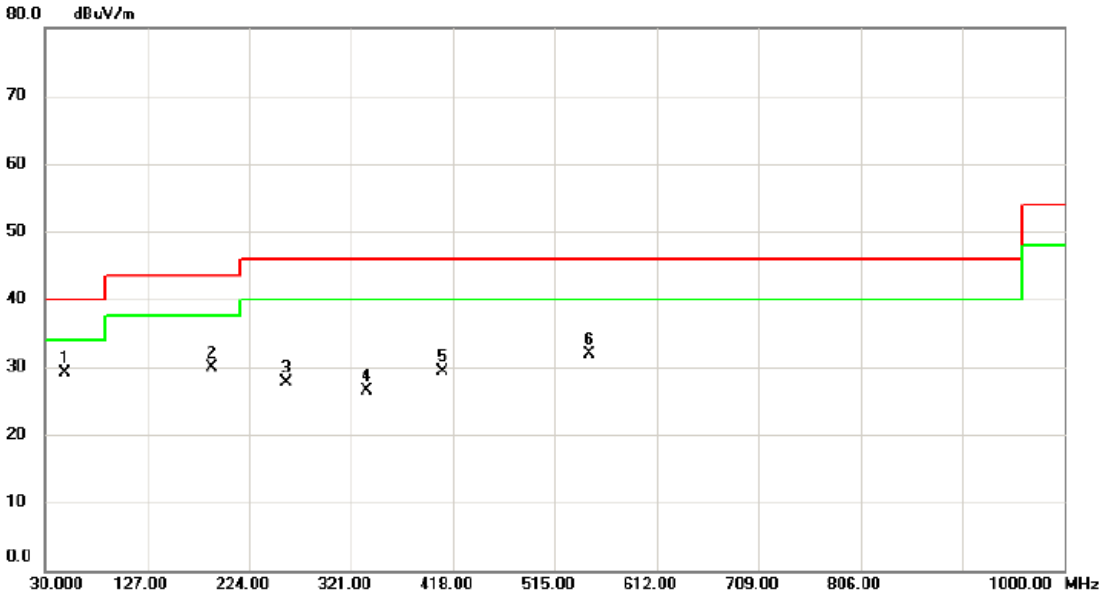
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		188.1100	41.59	-13.82	27.77	43.50	-15.73	peak	
2		259.8900	42.74	-14.43	28.31	46.00	-17.69	peak	
3		408.3000	44.08	-8.32	35.76	46.00	-10.24	peak	
4		480.0800	43.35	-9.65	33.70	46.00	-12.30	peak	
5		644.0100	39.04	-5.38	33.66	46.00	-12.34	peak	
6	*	747.8000	39.40	-2.92	36.48	46.00	-9.52	peak	

Test Mode:	TX 2480MHz _CH78_3Mbps

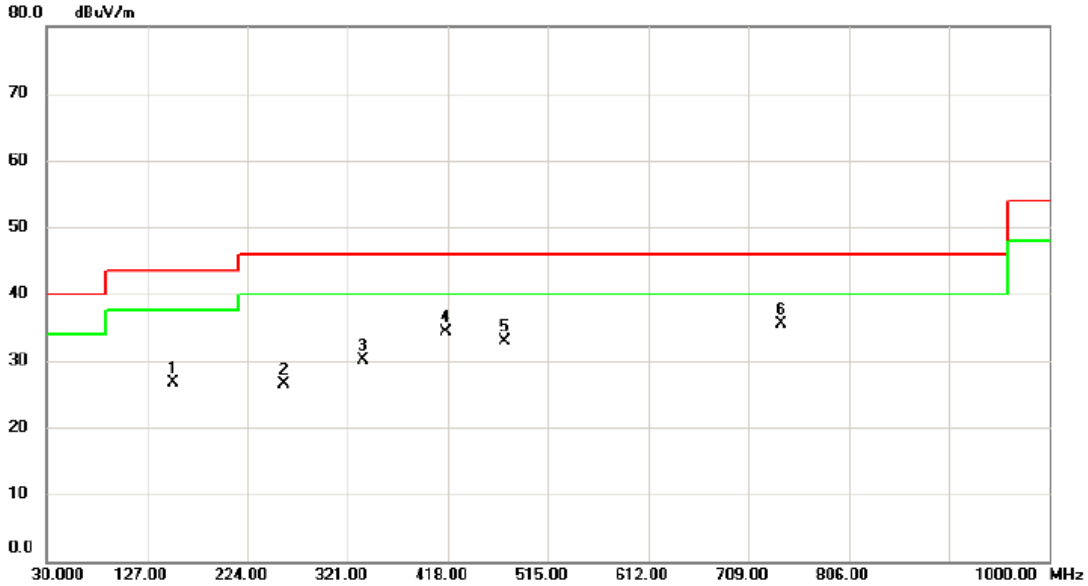
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	48.4300	42.17	-13.07	29.10	40.00	-10.90	peak	
2		188.1100	43.72	-13.82	29.90	43.50	-13.60	peak	
3		259.8900	42.18	-14.43	27.75	46.00	-18.25	peak	
4		335.5500	37.87	-11.28	26.59	46.00	-19.41	peak	
5		408.3000	37.57	-8.32	29.25	46.00	-16.75	peak	
6		547.9800	37.46	-5.48	31.98	46.00	-14.02	peak	

Test Mode:	TX 2480MHz _CH78_3Mbps

Horizontal

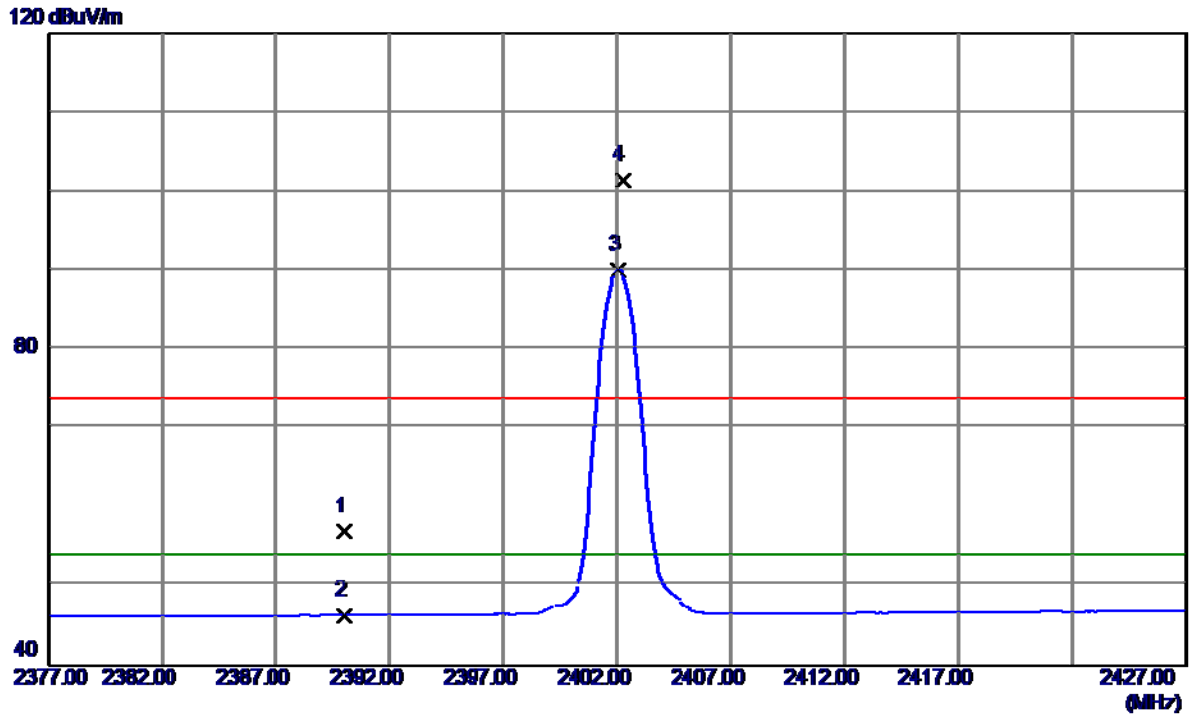


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		152.2200	39.50	-12.80	26.70	43.50	-16.80	peak	
2		259.8900	40.92	-14.43	26.49	46.00	-19.51	peak	
3		335.5500	41.48	-11.28	30.20	46.00	-15.80	peak	
4		416.0600	42.74	-8.36	34.38	46.00	-11.62	peak	
5		472.3200	42.25	-9.39	32.86	46.00	-13.14	peak	
6	*	740.0400	38.37	-2.94	35.43	46.00	-10.57	peak	

ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)

Test Mode :	TX 2402MHz _CH00_1Mbps

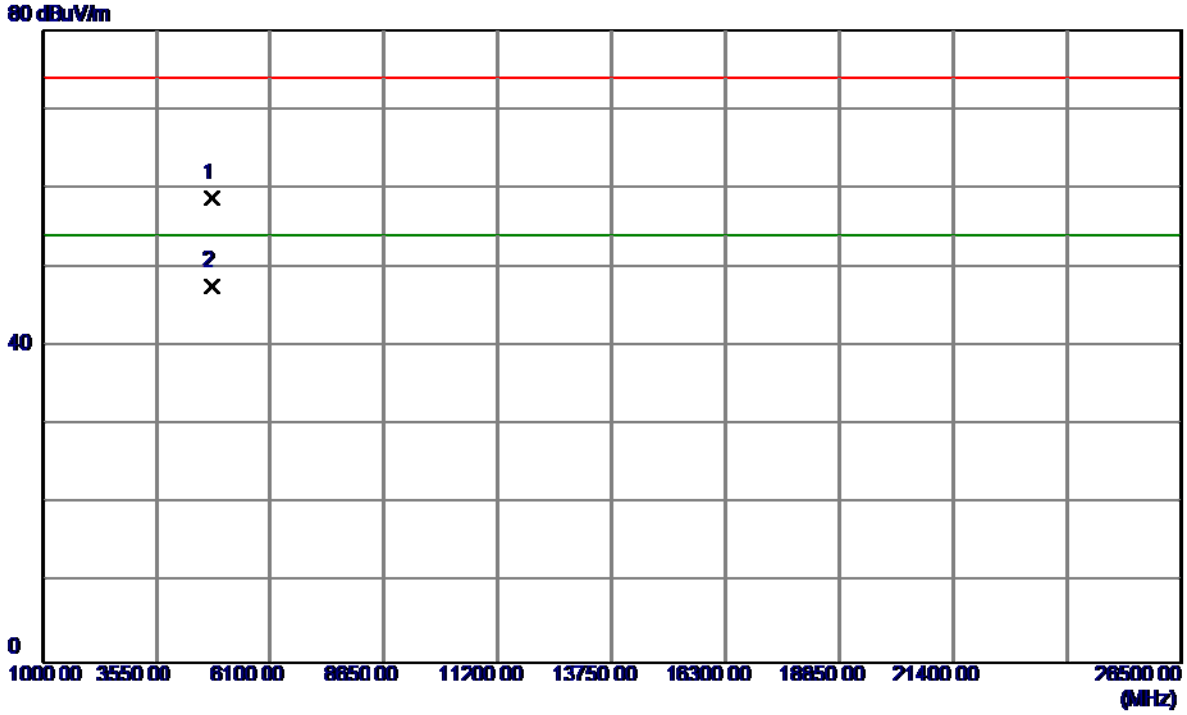
Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	23.43	33.51	56.94	74.00	-17.06	Peak	
2	2390.0000	12.81	33.51	46.32	54.00	-7.68	AVG	
3	2402.0500	56.56	33.58	90.14	54.00	36.14	AVG	NO LIMIT
4	2402.2500	67.91	33.58	101.49	74.00	27.49	Peak	NO LIMIT

Test Mode :	TX 2402MHz _CH00_1Mbps

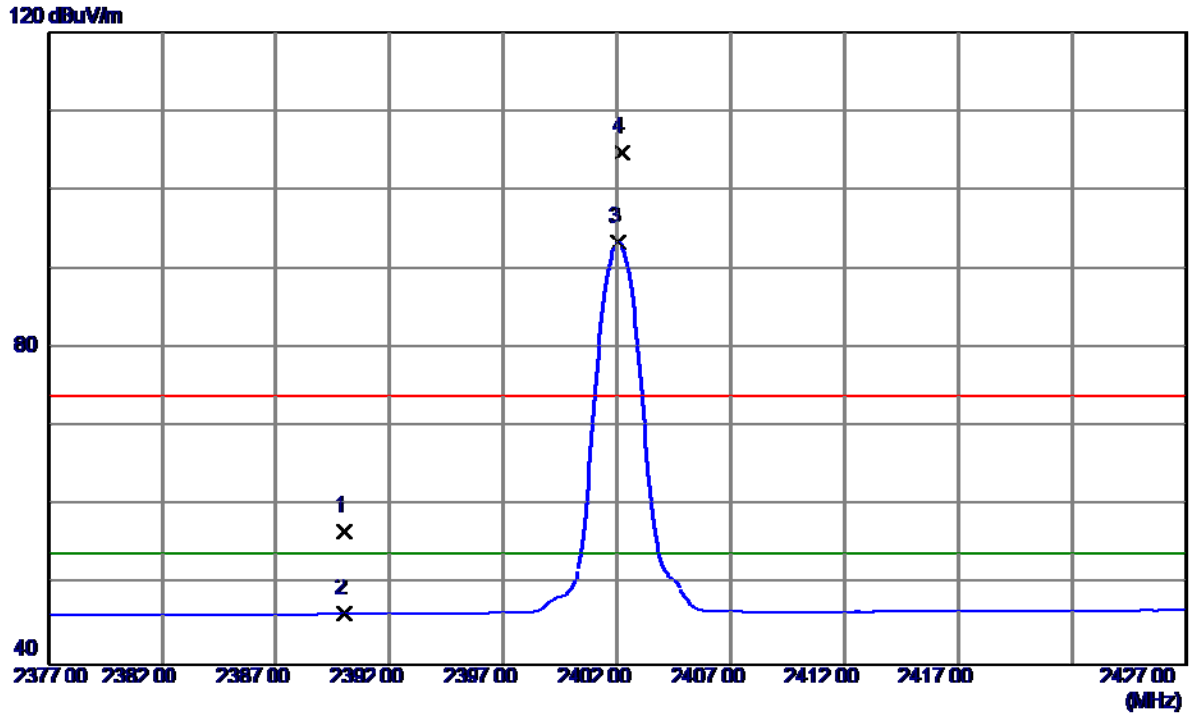
Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4803.9630	53.75	4.92	58.67	74.00	-15.33	Peak	
2	4804.0179	42.68	4.92	47.60	54.00	-6.40	AVG	

Test Mode :	TX 2402MHz _CH00_1Mbps

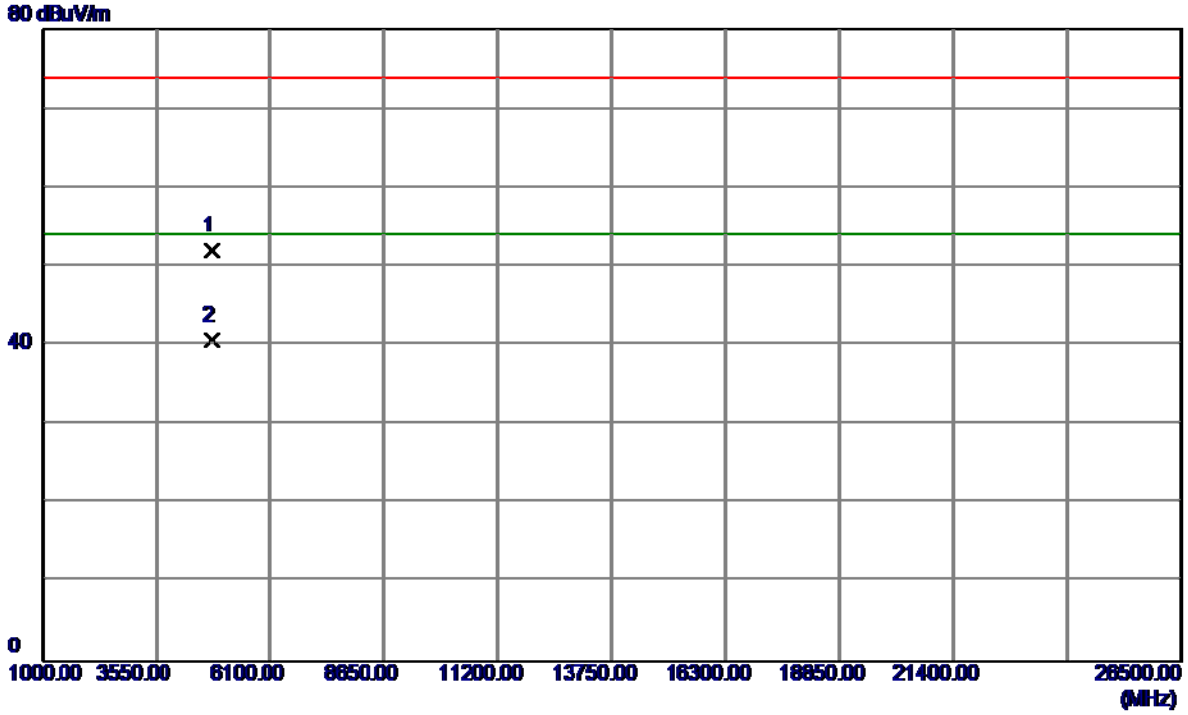
Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	23.32	33.51	56.83	74.00	-17.17	Peak	
2	2390.0000	12.82	33.51	46.33	54.00	-7.67	AVG	
3	2402.0500	59.81	33.58	93.39	54.00	39.39	AVG	NO LIMIT
4	2402.2000	71.22	33.58	104.80	74.00	30.80	Peak	NO LIMIT

Test Mode :	TX 2402MHz _CH00_1Mbps

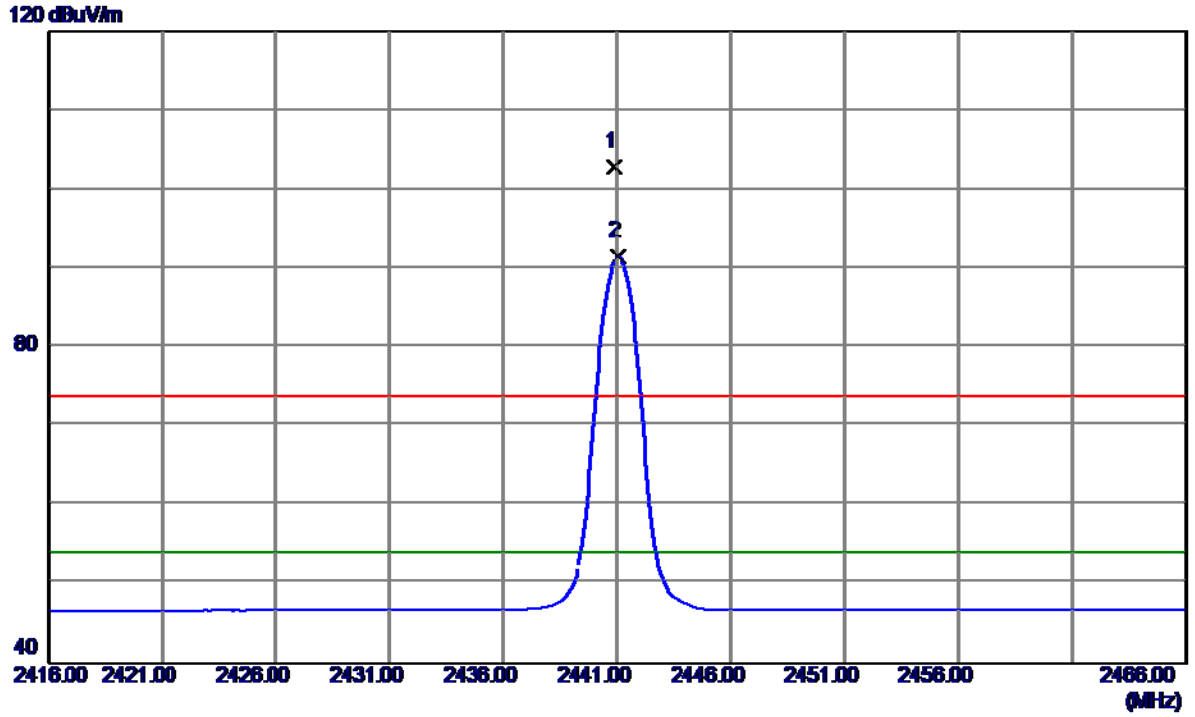
Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4804.0299	47.06	4.92	51.98	74.00	-22.02	Peak	
2	4804.0500	35.72	4.92	40.64	54.00	-13.36	AVG	

Test Mode :	TX 2441MHz _CH39_1Mbps

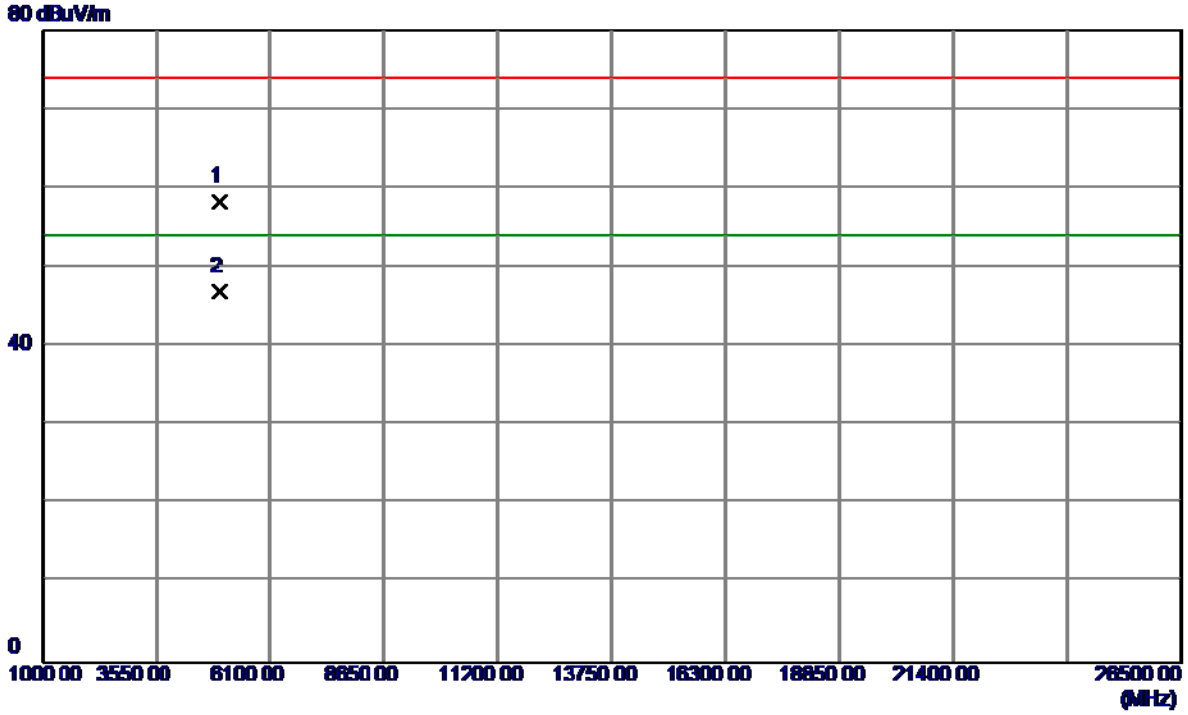
Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2440.9000	69.07	33.79	102.86	74.00	28.86	Peak	NO LIMIT
2	2441.0500	57.71	33.79	91.50	54.00	37.50	AVG	NO LIMIT

Test Mode :	TX 2441MHz _CH39_1Mbps

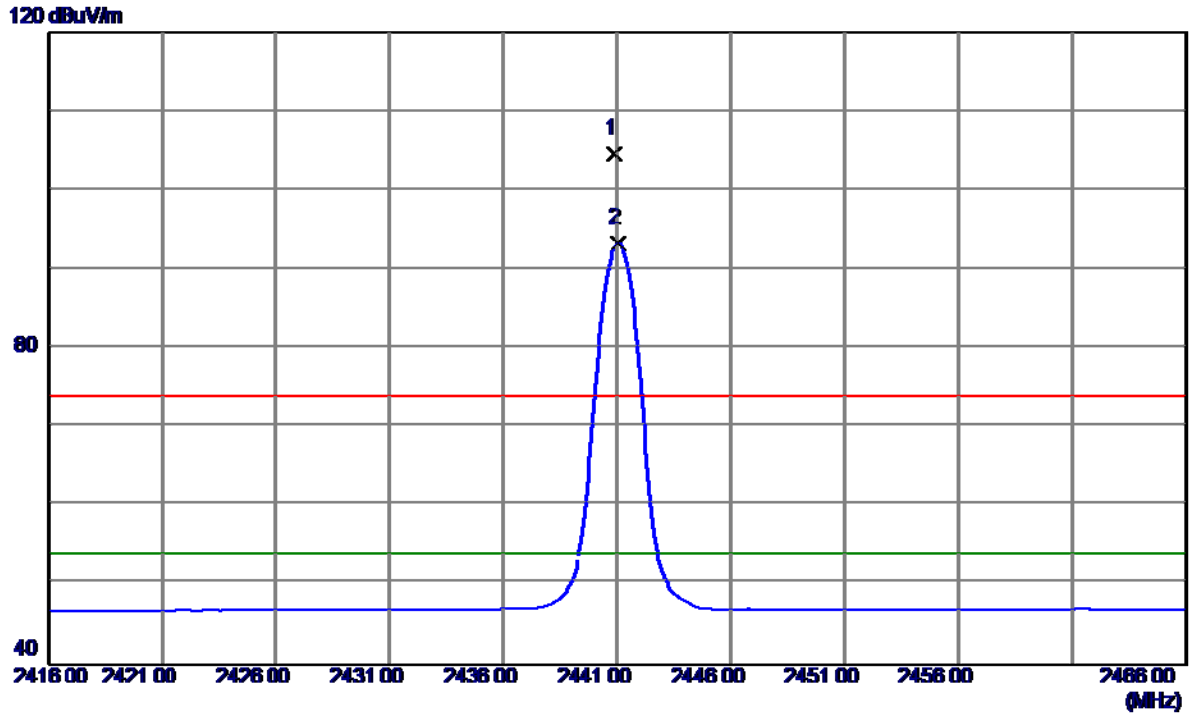
Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4959.8430	52.62	5.68	58.30	74.00	-15.70	Peak	
2	4960.0690	41.19	5.68	46.87	54.00	-7.13	AVG	

Test Mode :	TX 2441MHz _CH39_1Mbps

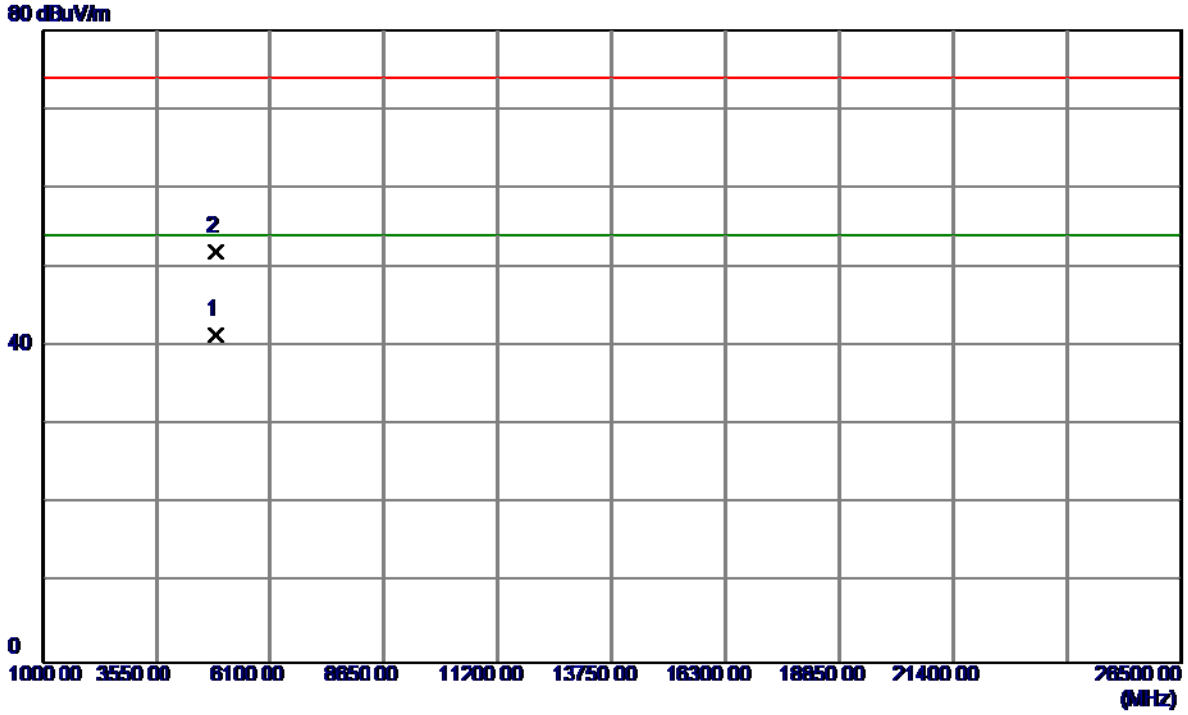
Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2440.9000	70.89	33.79	104.68	74.00	30.68	Peak	NO LIMIT
2	2441.0500	59.52	33.79	93.31	54.00	39.31	AVG	NO LIMIT

Test Mode :	TX 2441MHz _CH39_1Mbps

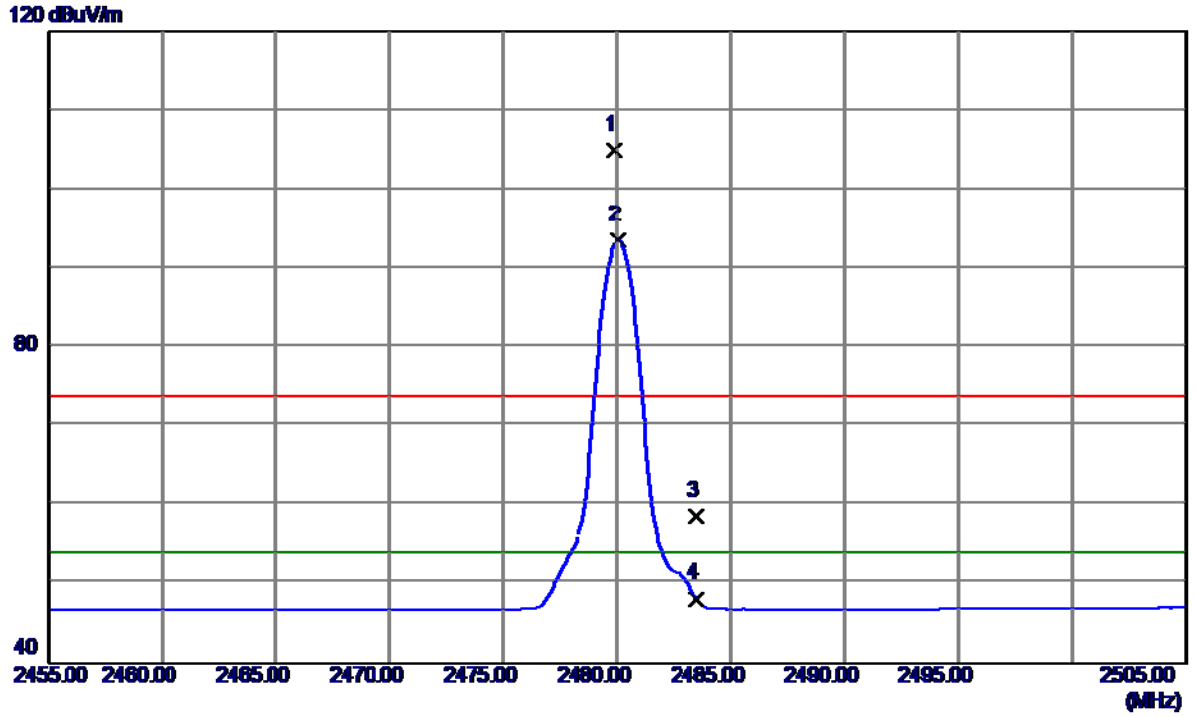
Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4881.8900	36.19	5.30	41.49	54.00	-12.51	AVG	
2	4882.0390	46.75	5.30	52.05	74.00	-21.95	Peak	

Test Mode :	TX 2480MHz _CH78_1Mbps

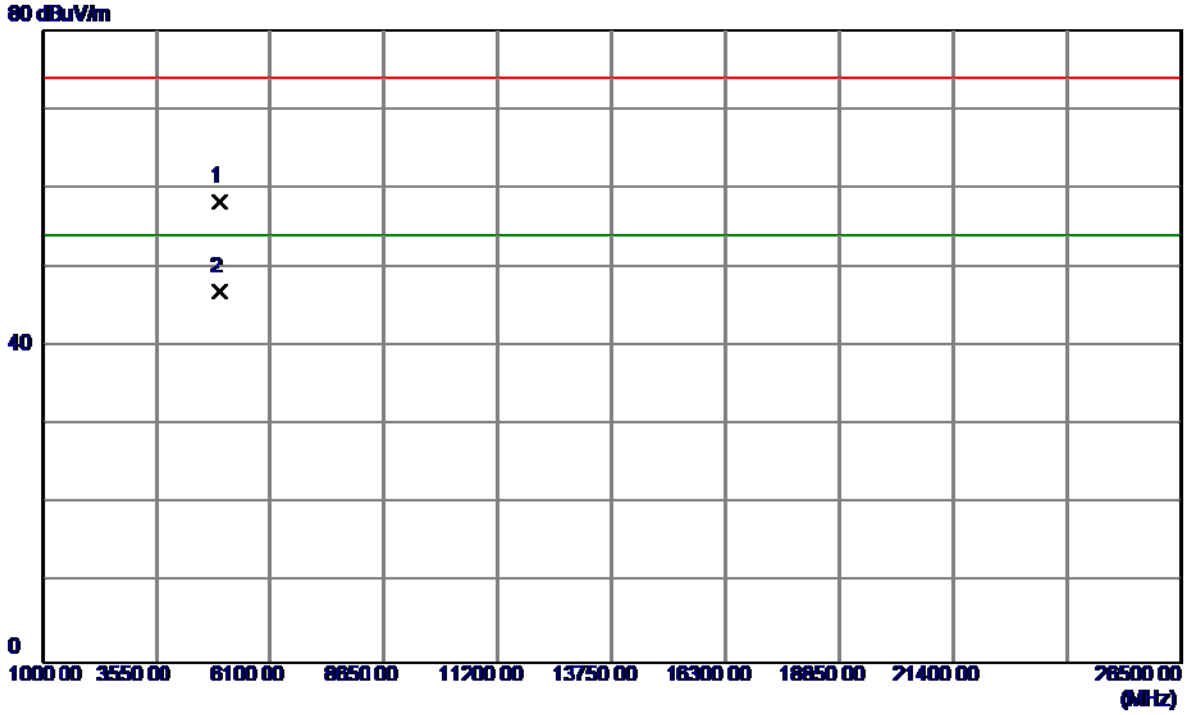
Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2479.9000	70.92	34.01	104.93	74.00	30.93	Peak	NO LIMIT
2	2480.0500	59.56	34.01	93.57	54.00	39.57	AVG	NO LIMIT
3	2483.5000	24.73	34.03	58.76	74.00	-15.24	Peak	
4	2483.5000	14.21	34.03	48.24	54.00	-5.76	AVG	

Test Mode :	TX 2480MHz _CH78_1Mbps

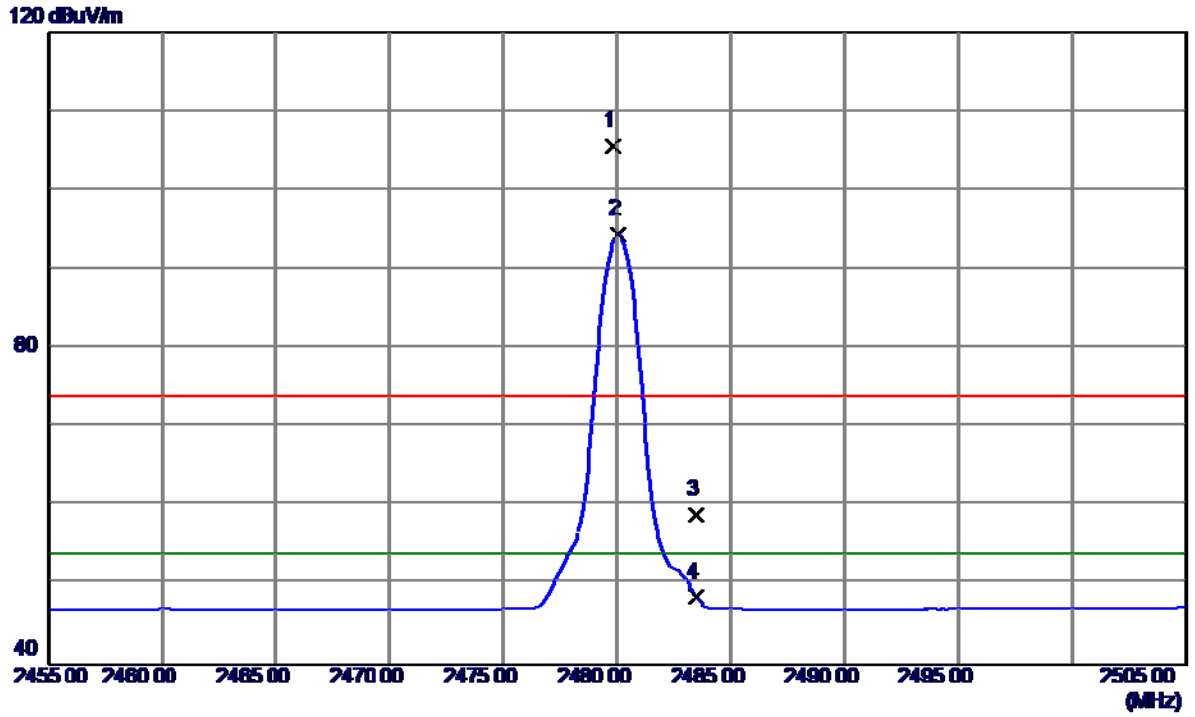
Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4959.8430	52.62	5.68	58.30	74.00	-15.70	Peak	
2	4960.0690	41.19	5.68	46.87	54.00	-7.13	AVG	

Test Mode :	TX 2480MHz _CH78_1Mbps

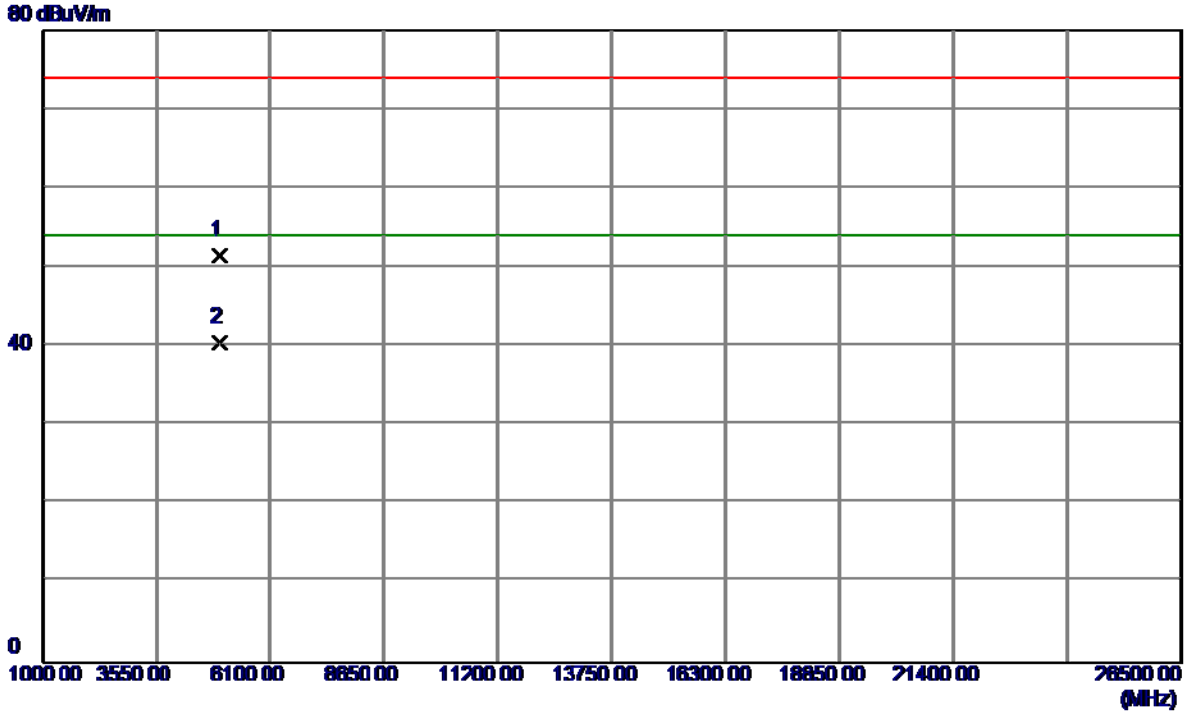
Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2479.8500	71.65	34.01	105.66	74.00	31.66	Peak	NO LIMIT
2	2480.0500	60.33	34.01	94.34	54.00	40.34	AVG	NO LIMIT
3	2483.5000	24.83	34.03	58.86	74.00	-15.14	Peak	
4	2483.5000	14.39	34.03	48.42	54.00	-5.58	AVG	

Test Mode :	TX 2480MHz _CH78_1Mbps

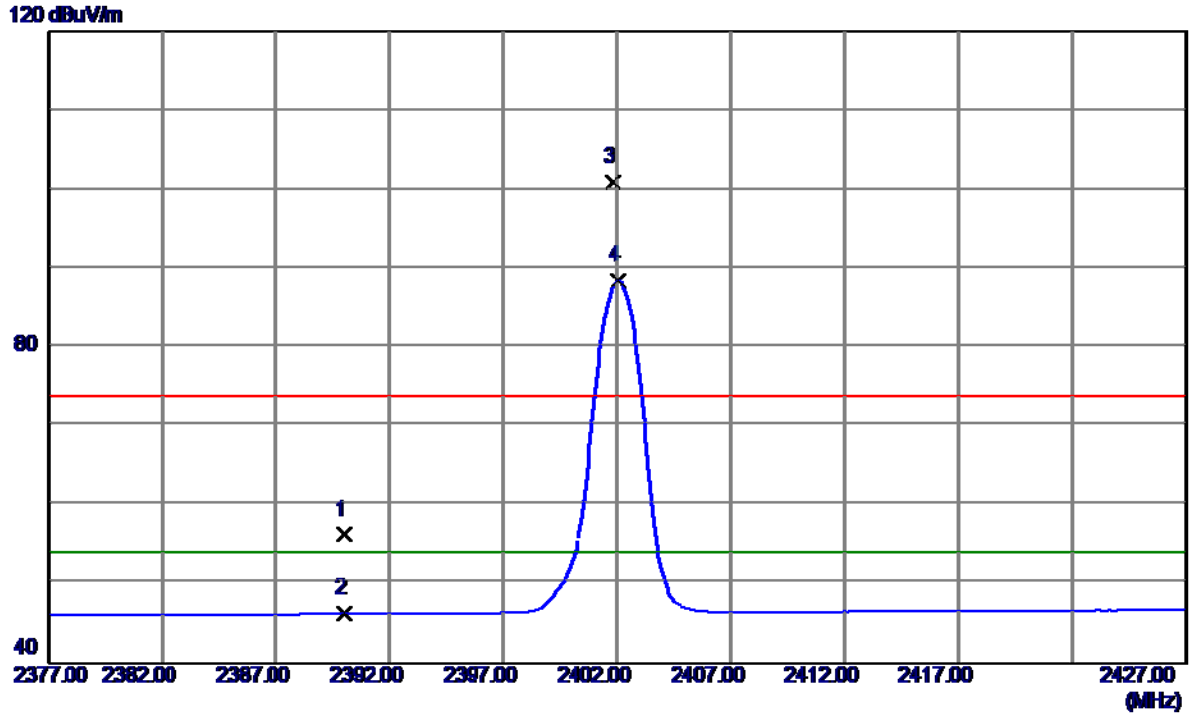
Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4960.0600	45.90	5.68	51.58	74.00	-22.42	Peak	
2	4960.0800	34.77	5.68	40.45	54.00	-13.55	AVG	

Test Mode :	TX 2402MHz _CH00_3Mbps

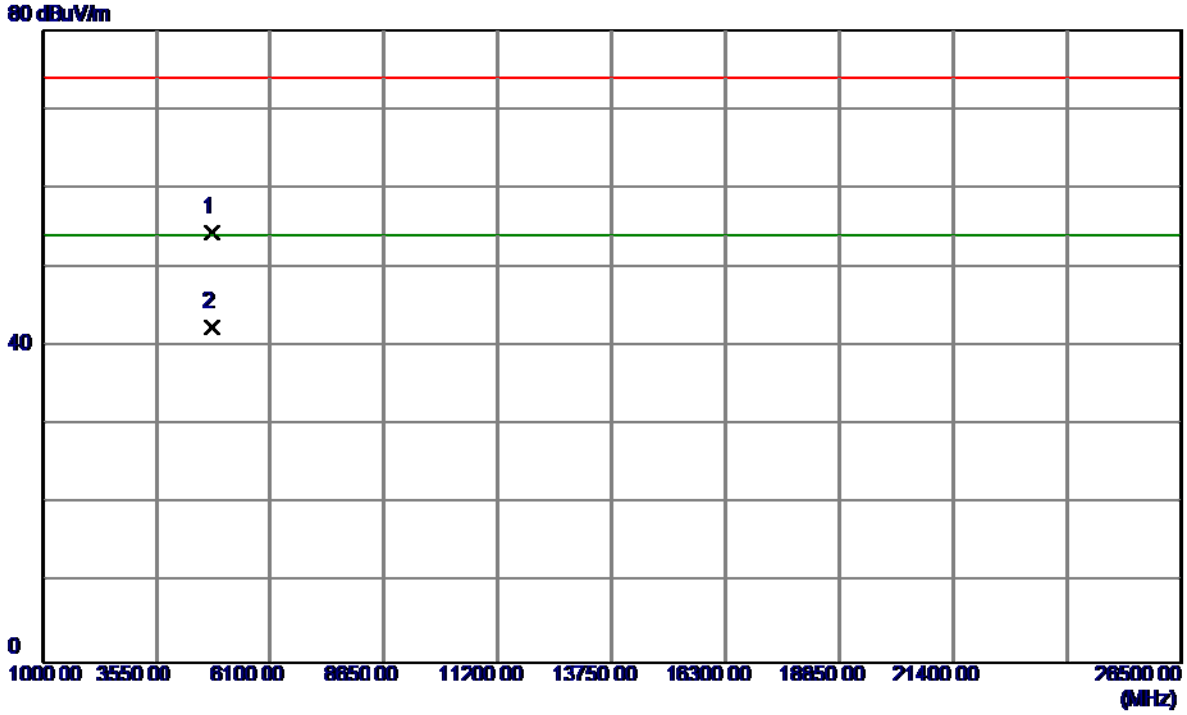
Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	22.79	33.51	56.30	74.00	-17.70	Peak	
2	2390.0000	12.84	33.51	46.35	54.00	-7.65	AVG	
3	2401.8500	67.37	33.58	100.95	74.00	26.95	Peak	NO LIMIT
4	2402.0500	54.88	33.58	88.46	54.00	34.46	AVG	NO LIMIT

Test Mode :	TX 2402MHz _CH00_3Mbps

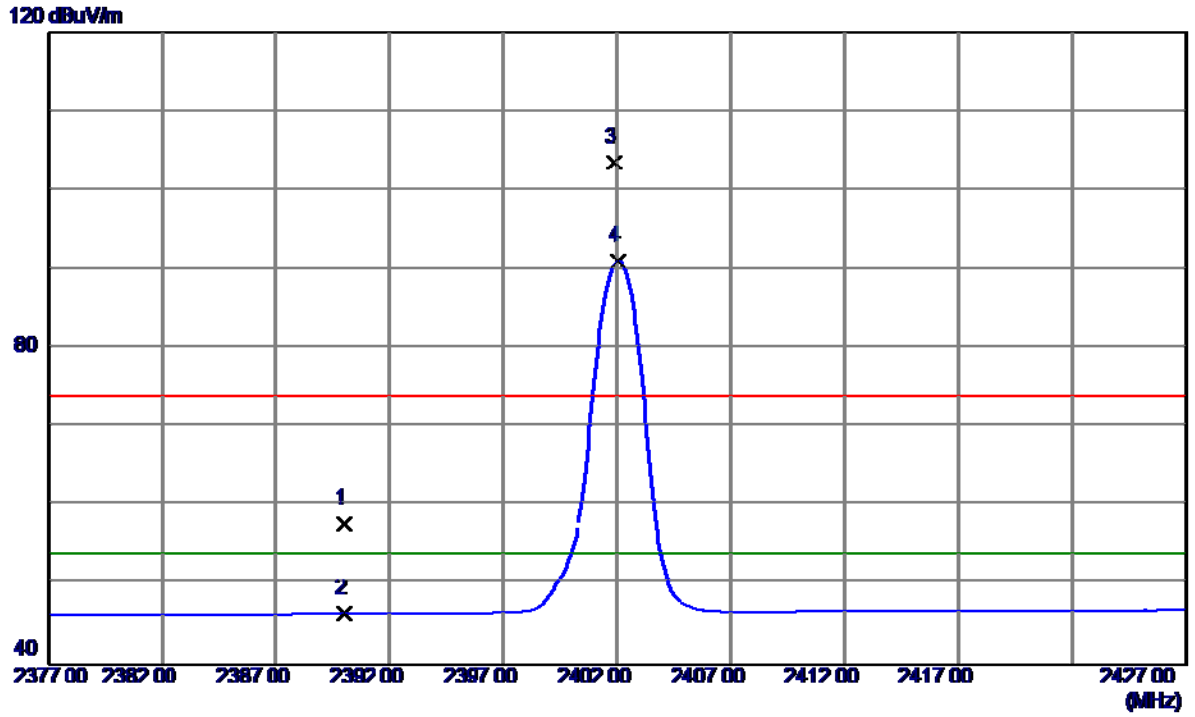
Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4803.7799	49.48	4.92	54.40	74.00	-19.60	Peak	
2	4804.0800	37.55	4.92	42.47	54.00	-11.53	AVG	

Test Mode :	TX 2402MHz _CH00_3Mbps

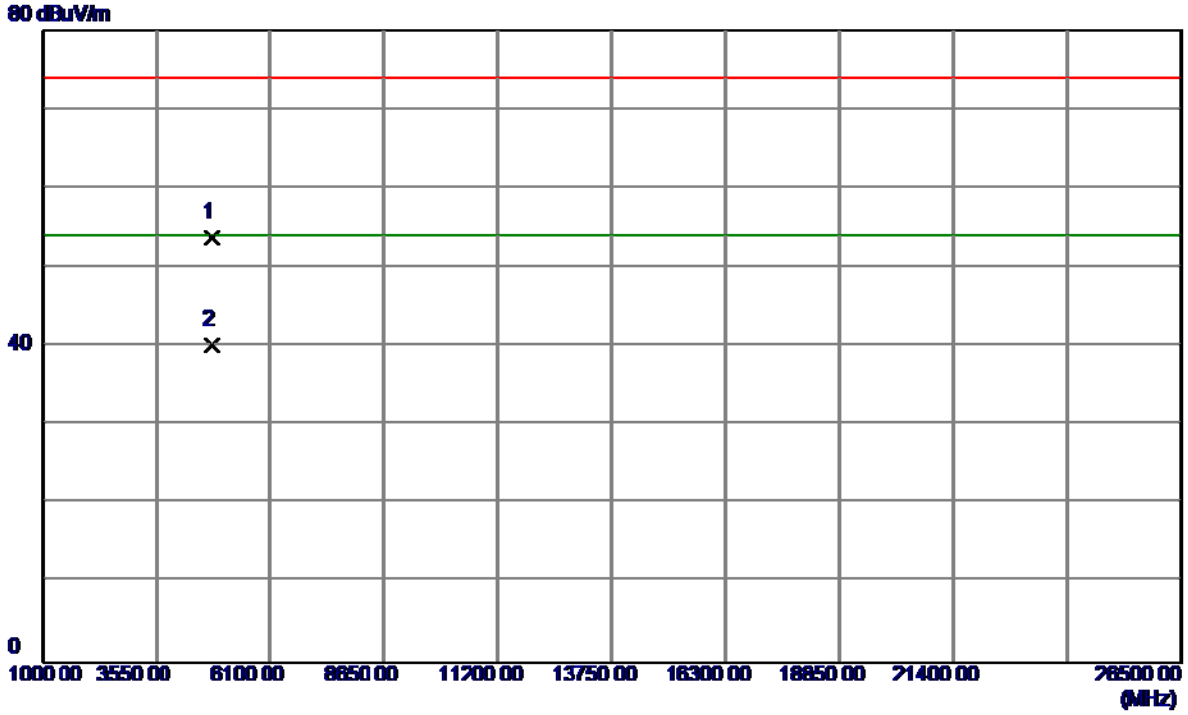
Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2390.0000	24.27	33.51	57.78	74.00	-16.22	Peak	
2	2390.0000	12.85	33.51	46.36	54.00	-7.64	AVG	
3	2401.9000	69.97	33.58	103.55	74.00	29.55	Peak	NO LIMIT
4	2402.0500	57.51	33.58	91.09	54.00	37.09	AVG	NO LIMIT

Test Mode :	TX 2402MHz _CH00_3Mbps

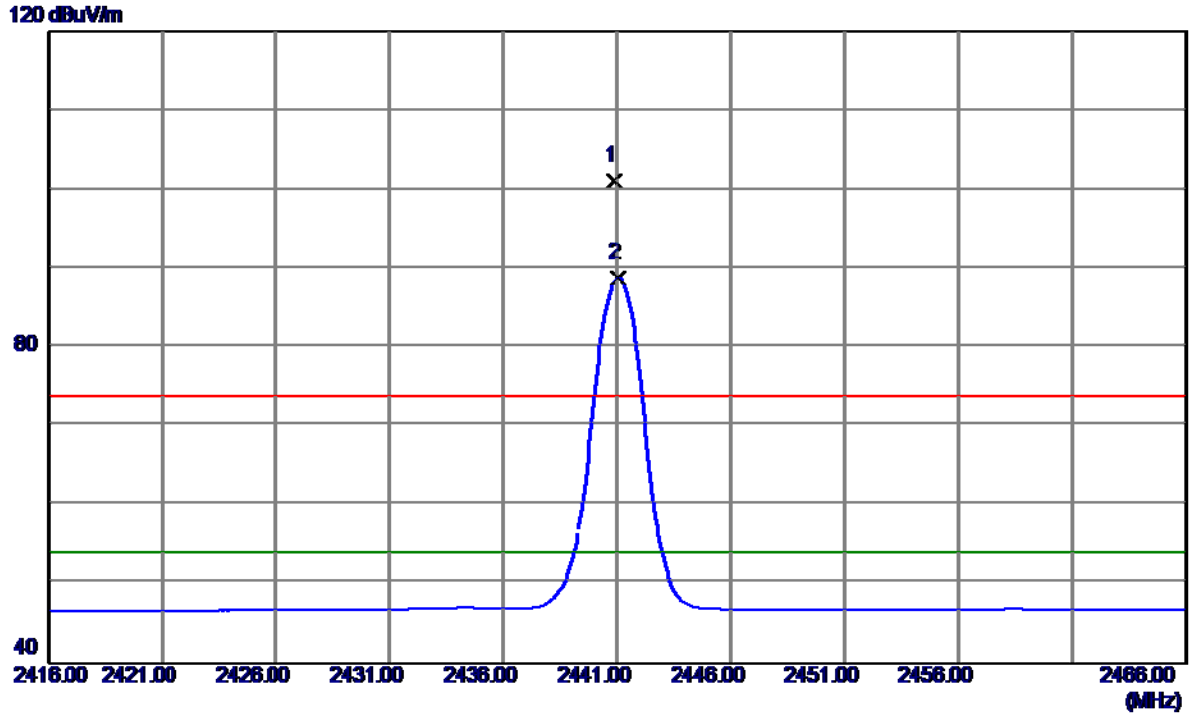
Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4803.8800	48.91	4.92	53.83	74.00	-20.17	Peak	
2	4804.0600	35.26	4.92	40.18	54.00	-13.82	AVG	

Test Mode :	TX 2441MHz _CH39_3Mbps

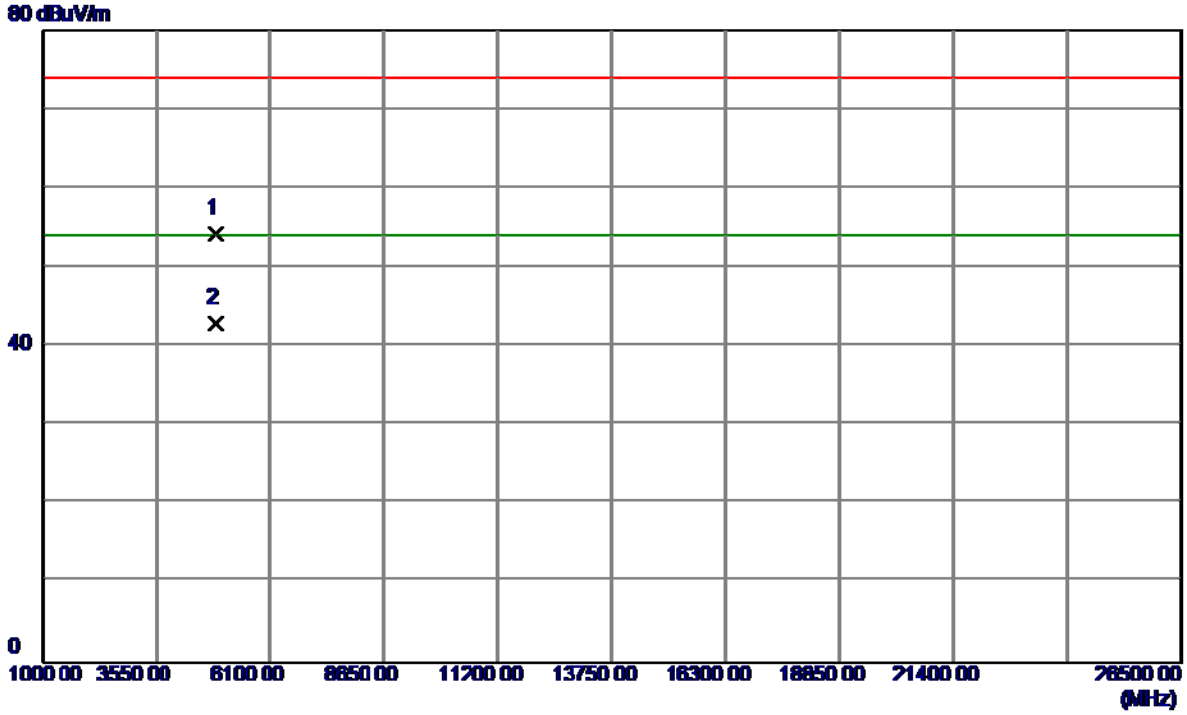
Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2440.9000	67.38	33.79	101.17	74.00	27.17	Peak	NO LIMIT
2	2441.0500	55.08	33.79	88.87	54.00	34.87	AVG	NO LIMIT

Test Mode :	TX 2441MHz _CH39_3Mbps

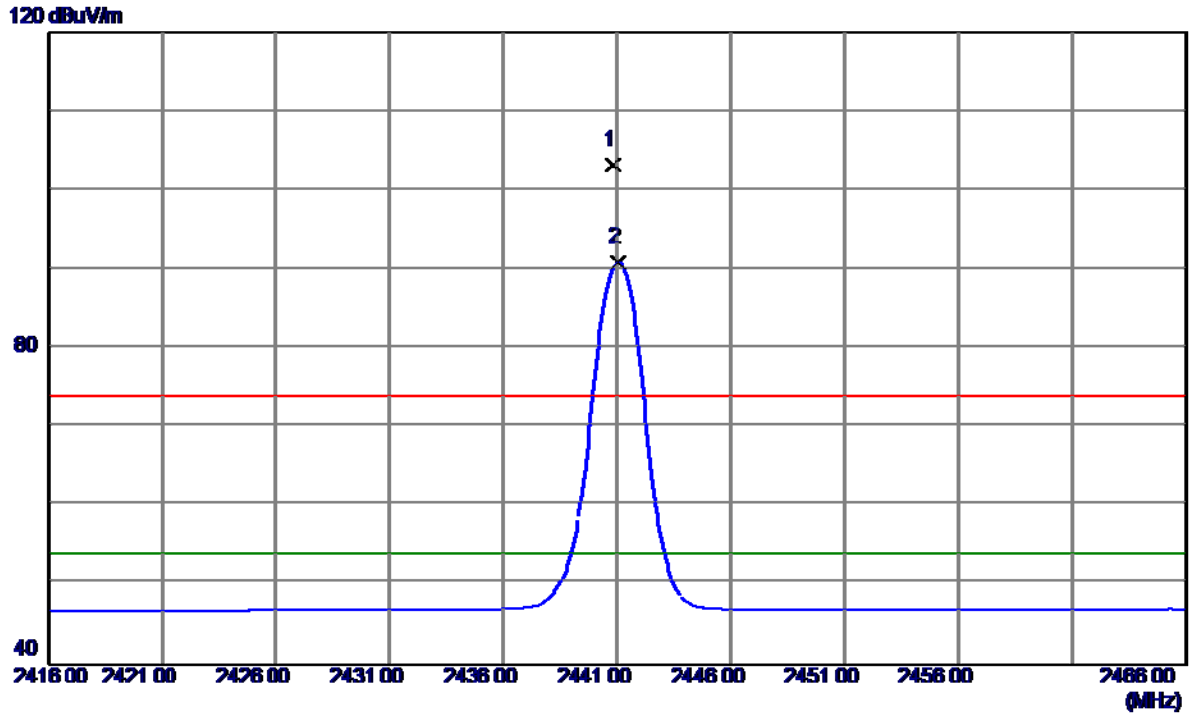
Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4882.0099	48.95	5.30	54.25	74.00	-19.75	Peak	
2	4882.0200	37.52	5.30	42.82	54.00	-11.18	AVG	

Test Mode :	TX 2441MHz _CH39_3Mbps

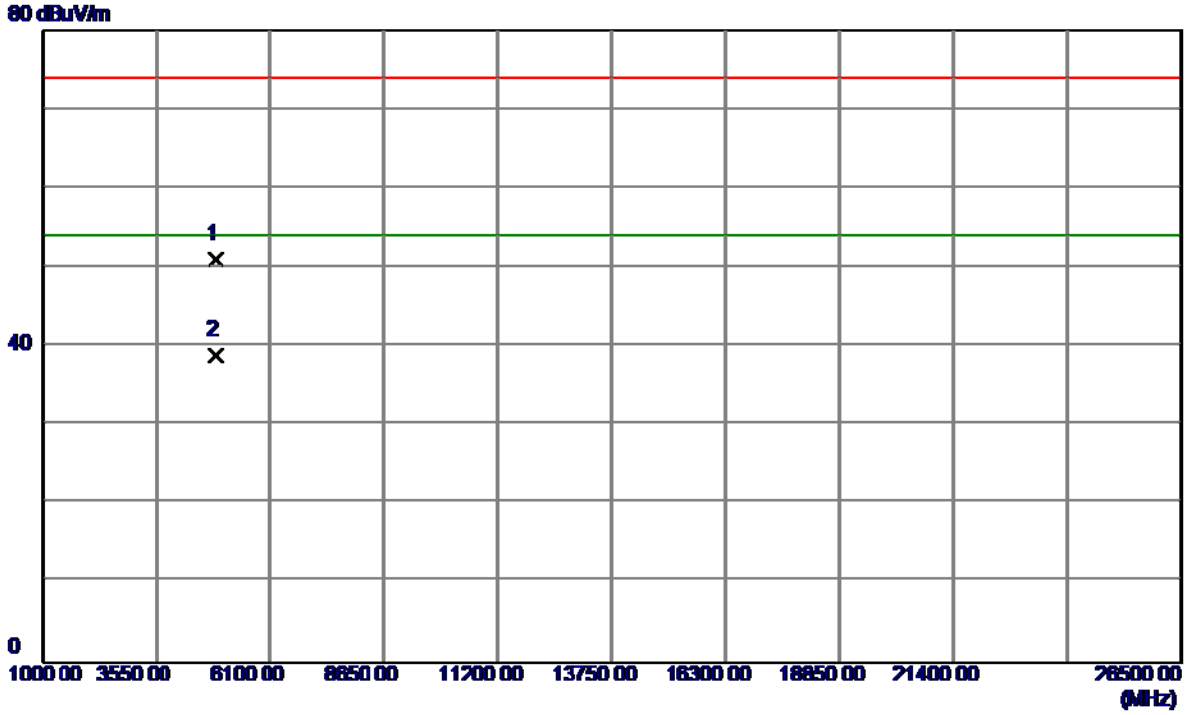
Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2440.8500	69.45	33.79	103.24	74.00	29.24	Peak	NO LIMIT
2	2441.0500	57.12	33.79	90.91	54.00	36.91	AVG	NO LIMIT

Test Mode :	TX 2441MHz _CH39_3Mbps

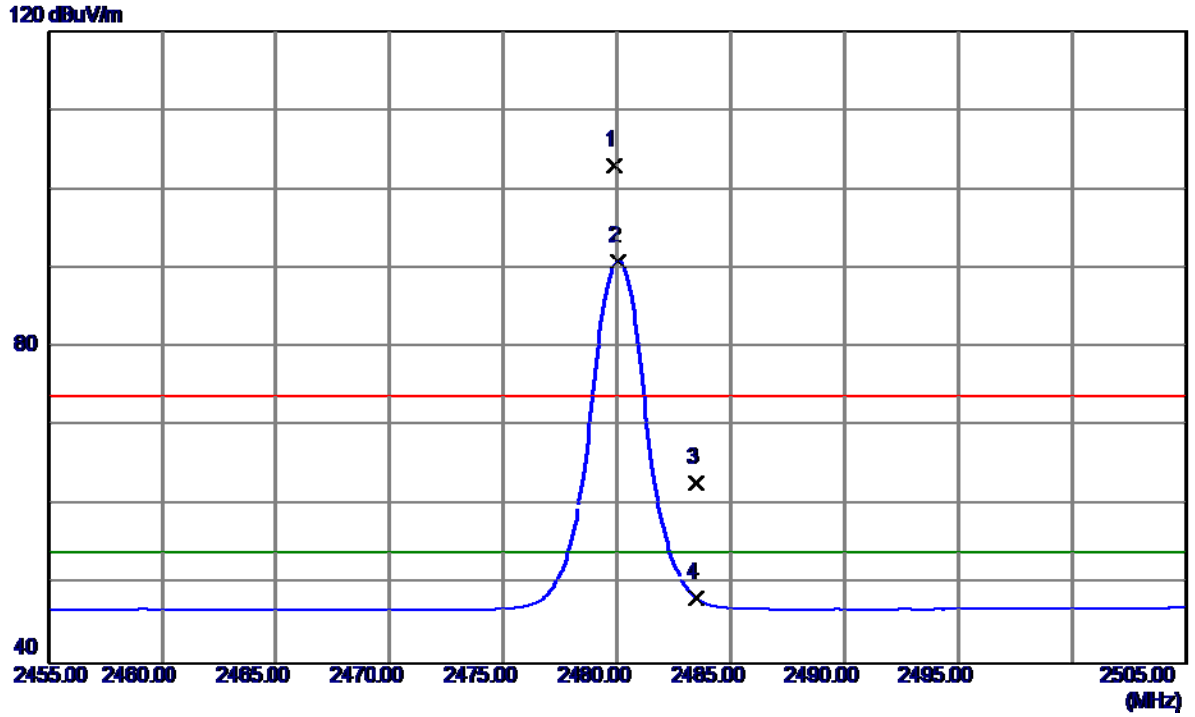
Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4881.8500	45.69	5.30	50.99	74.00	-23.01	Peak	
2	4882.0299	33.57	5.30	38.87	54.00	-15.13	AVG	

Test Mode :	TX 2480MHz _CH78_3Mbps

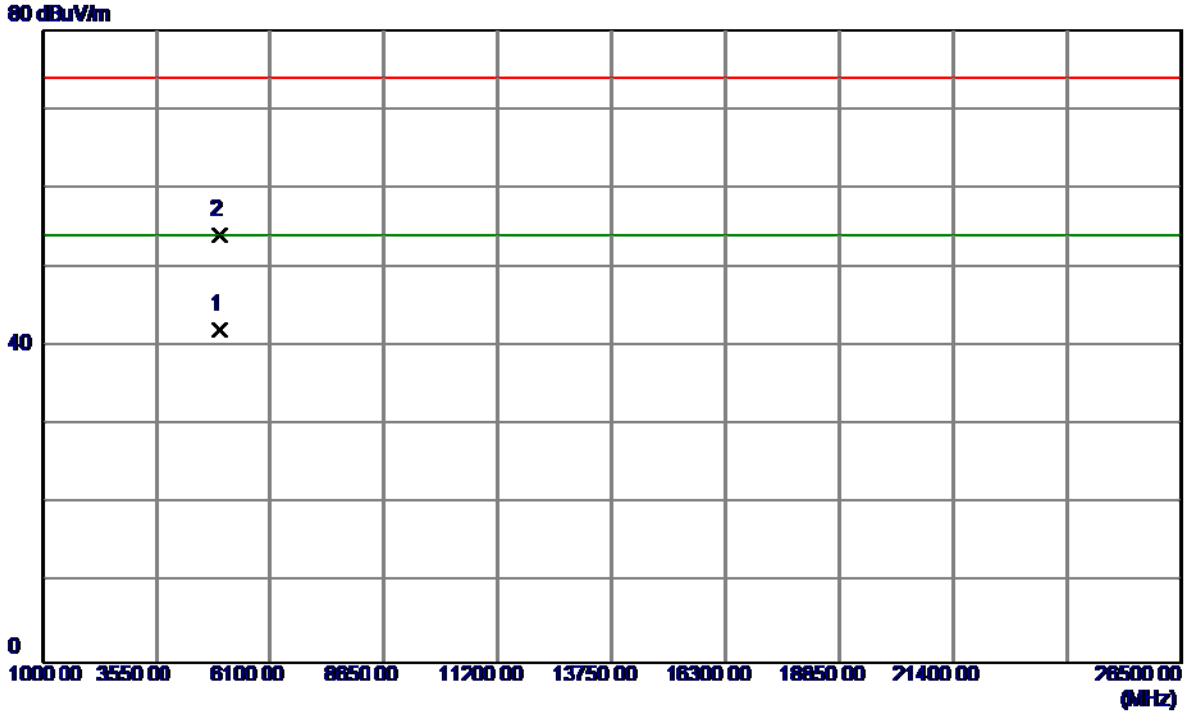
Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2479.9000	69.09	34.01	103.10	74.00	29.10	Peak	NO LIMIT
2	2480.0500	56.95	34.01	90.96	54.00	36.96	AVG	NO LIMIT
3	2483.5000	28.79	34.03	62.82	74.00	-11.18	Peak	
4	2483.5000	14.26	34.03	48.29	54.00	-5.71	AVG	

Test Mode :	TX 2480MHz _CH78_3Mbps

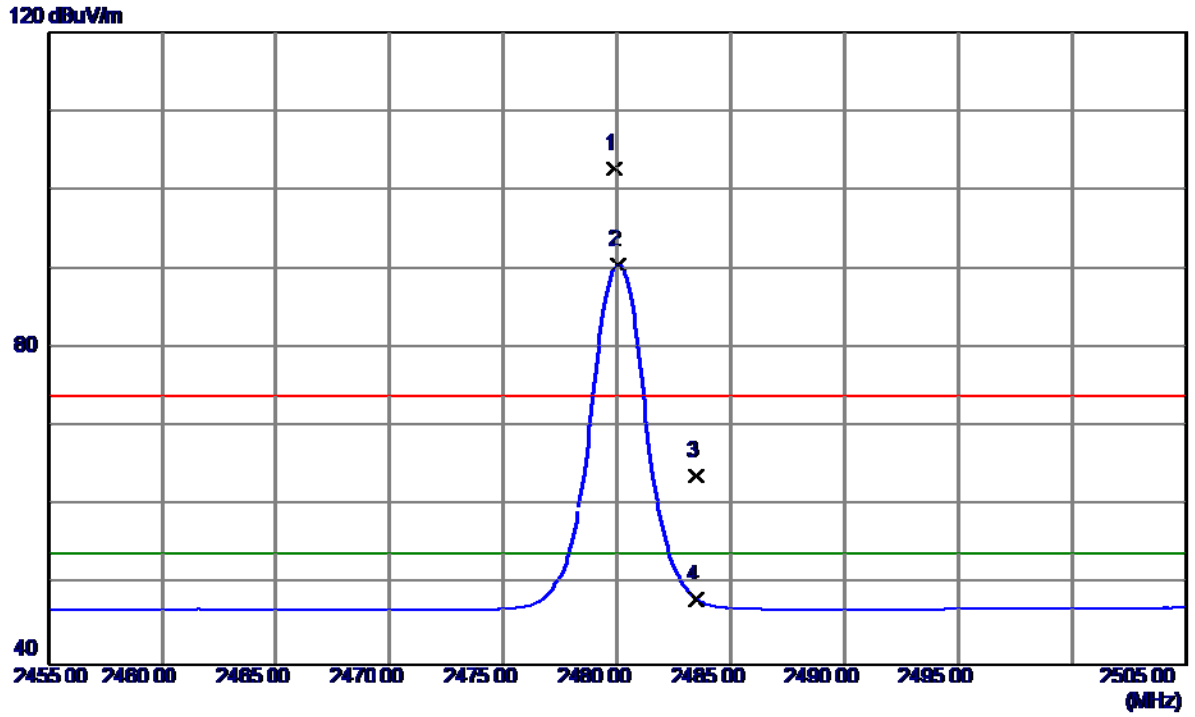
Vertical



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4960.0600	36.34	5.68	42.02	54.00	-11.98	AVG	
2	4960.1800	48.42	5.68	54.10	74.00	-19.90	Peak	

Test Mode :	TX 2480MHz _CH78_3Mbps

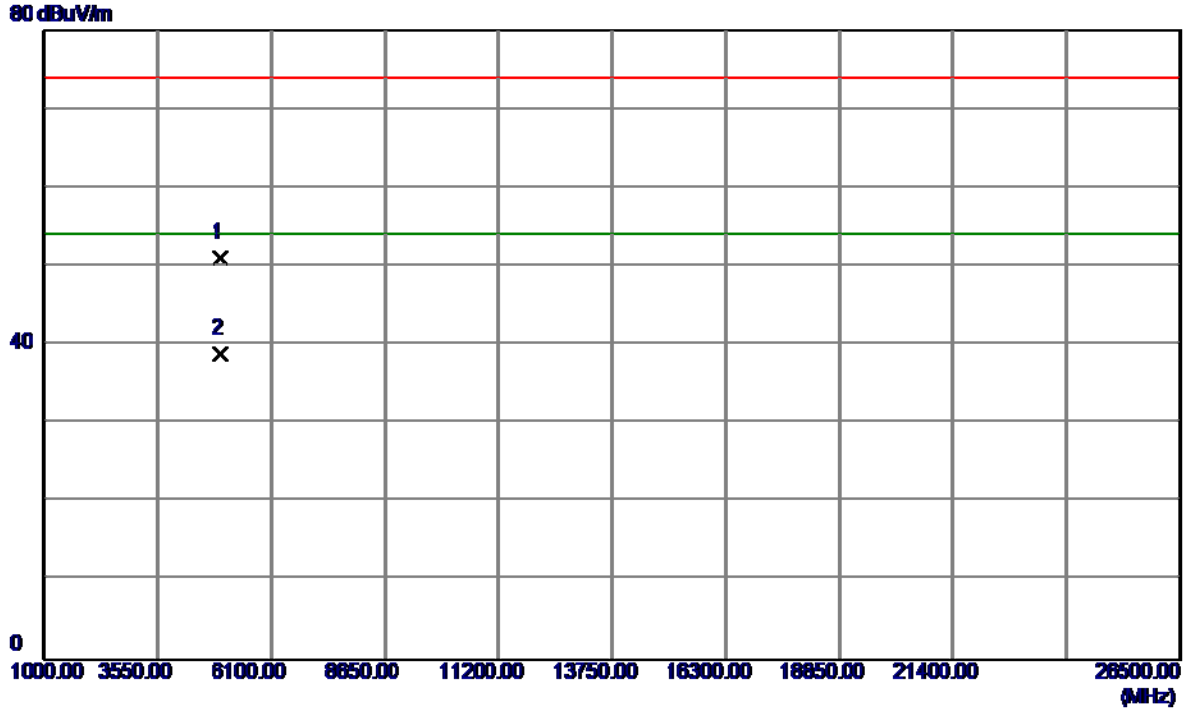
Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	2479.9000	68.72	34.01	102.73	74.00	28.73	Peak	NO LIMIT
2	2480.0500	56.55	34.01	90.56	54.00	36.56	AVG	NO LIMIT
3	2483.5000	29.86	34.03	63.89	74.00	-10.11	Peak	
4	2483.5000	14.17	34.03	48.20	54.00	-5.80	AVG	

Test Mode :	TX 2480MHz _CH78_3Mbps

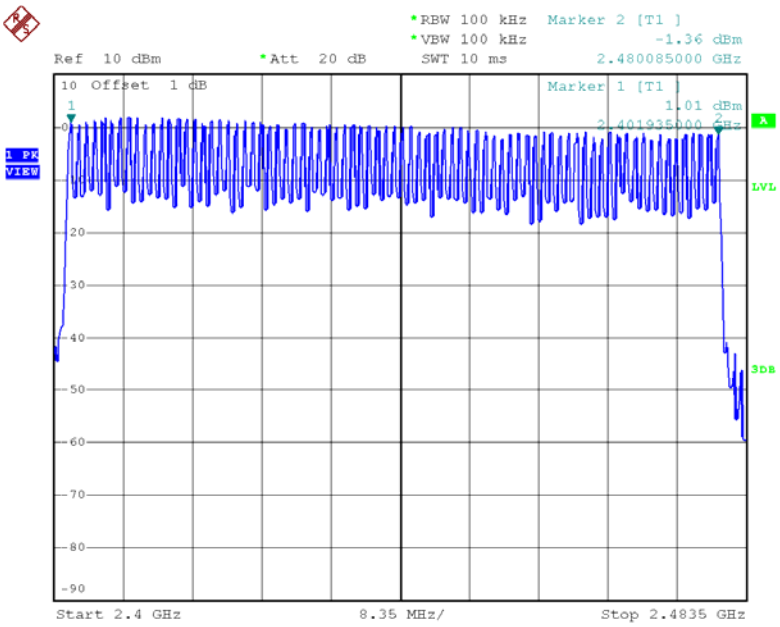
Horizontal



No.	Freq.	Reading Level	Correct Factor	Measure ment	Limit	Margin		
	MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	4959.7400	45.31	5.68	50.99	74.00	-23.01	Peak	
2	4960.0800	33.19	5.68	38.87	54.00	-15.13	AVG	

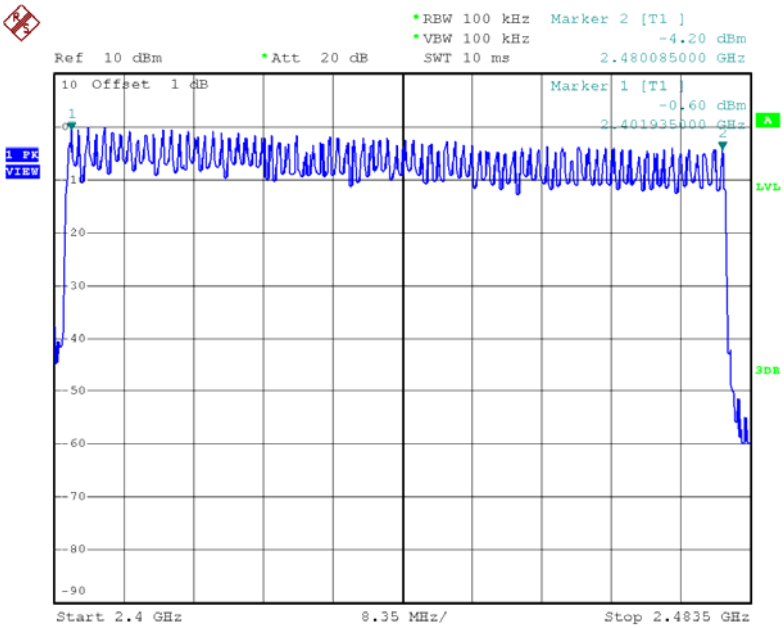
ATTACHMENT E - NUMBER OF HOPPING CHANNEL

Test Mode	Hopping Mode_1Mbps
Number of Hopping Channel	79



Date: 21.APR.2016 10:38:34

Test Mode	Hopping Mode_3Mbps
Number of Hopping Channel	79



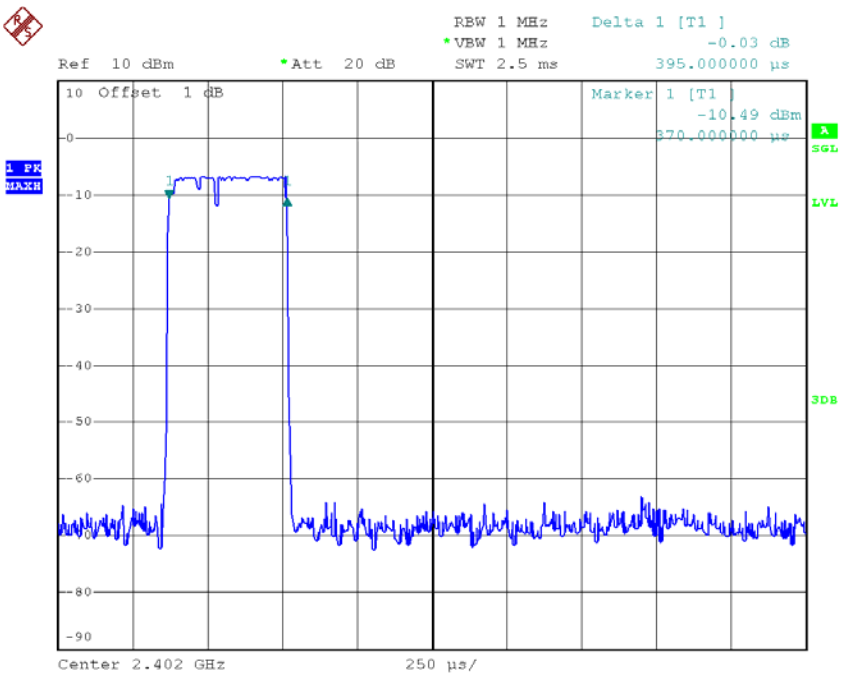
Date: 21.APR.2016 10:54:07

ATTACHMENT F - AVERAGE TIME OF OCCUPANCY

Test Mode :	TX Mode_1Mbps

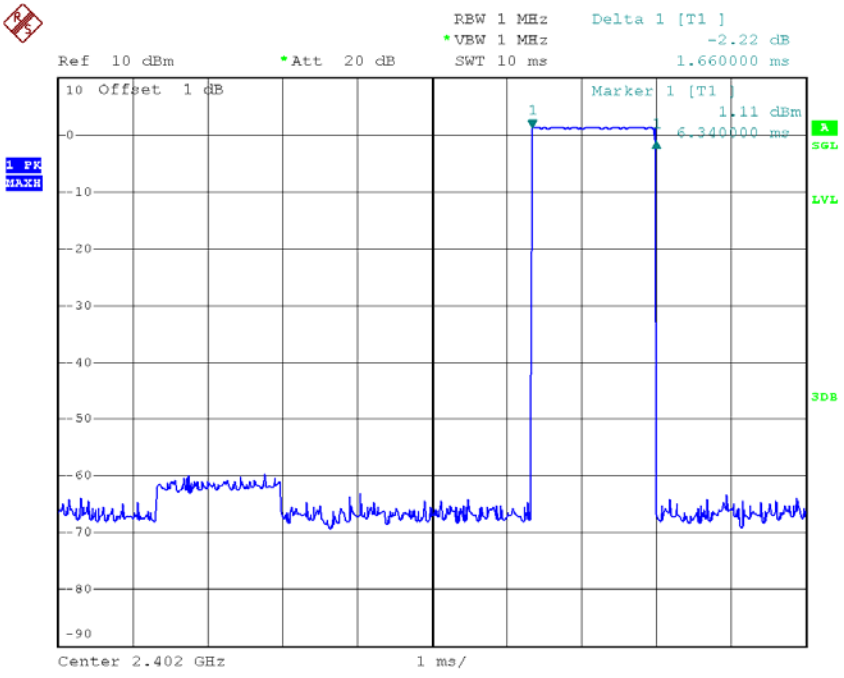
Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)	Test Result
DH5	2402	2.9200	0.3115	0.4000	Pass
DH3	2402	1.6600	0.1771	0.4000	Pass
DH1	2402	0.3950	0.0421	0.4000	Pass
DH5	2441	2.9200	0.3115	0.4000	Pass
DH3	2441	1.6600	0.1771	0.4000	Pass
DH1	2441	0.3950	0.0421	0.4000	Pass
DH5	2480	2.9200	0.3115	0.4000	Pass
DH3	2480	1.6600	0.1771	0.4000	Pass
DH1	2480	0.3900	0.0416	0.4000	Pass

CH00-DH1



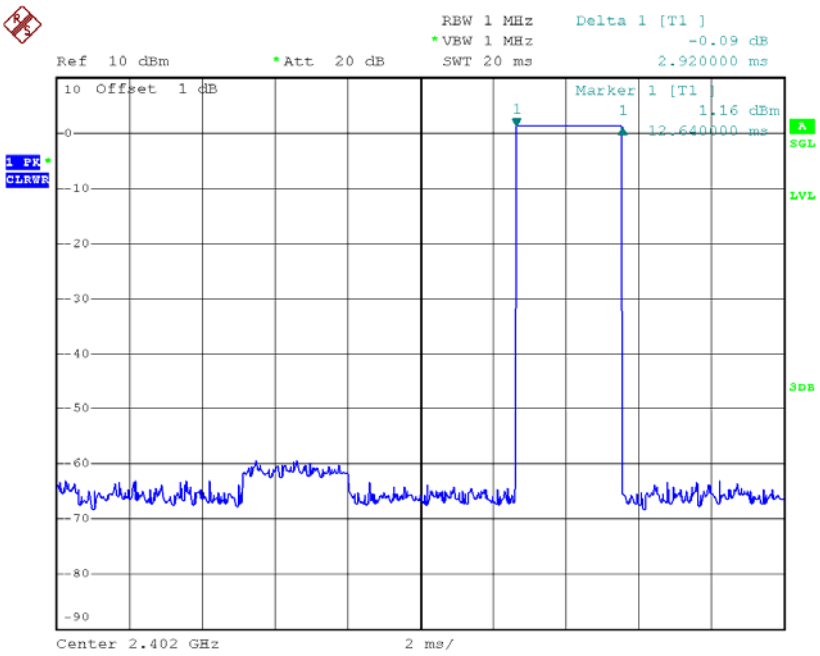
Date: 21.APR.2016 10:33:15

CH00-DH3



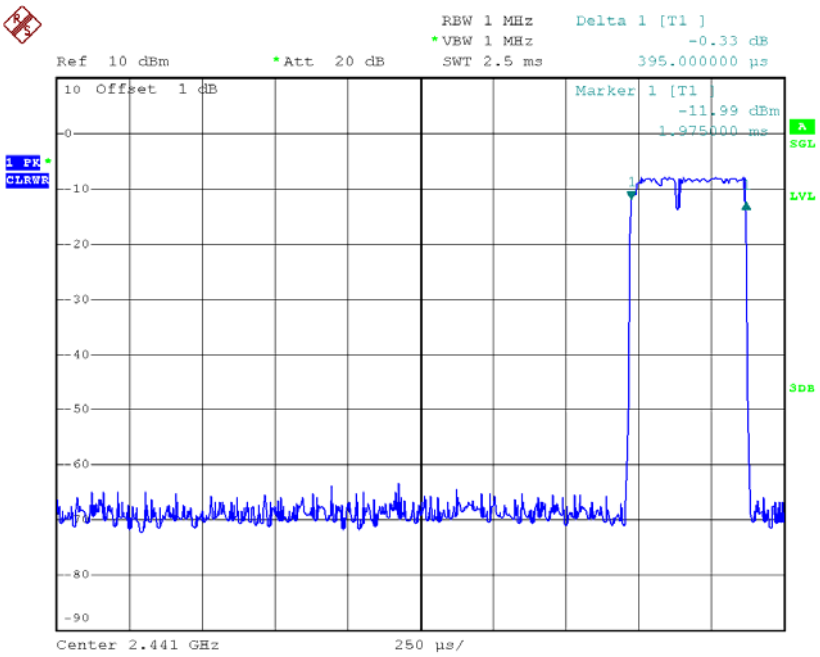
Date: 21.APR.2016 10:42:06

CH00-DH5



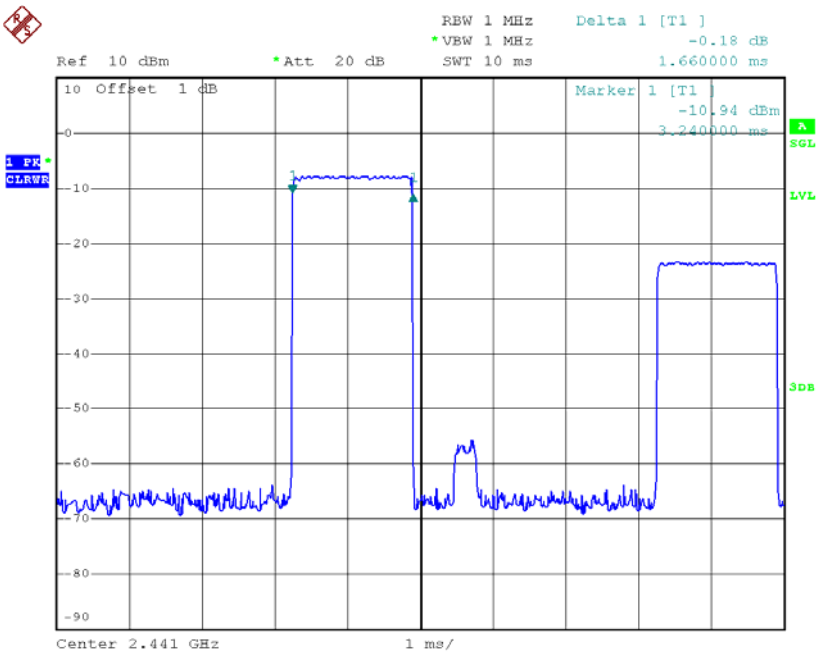
Date: 21.APR.2016 10:43:02

CH39-DH1



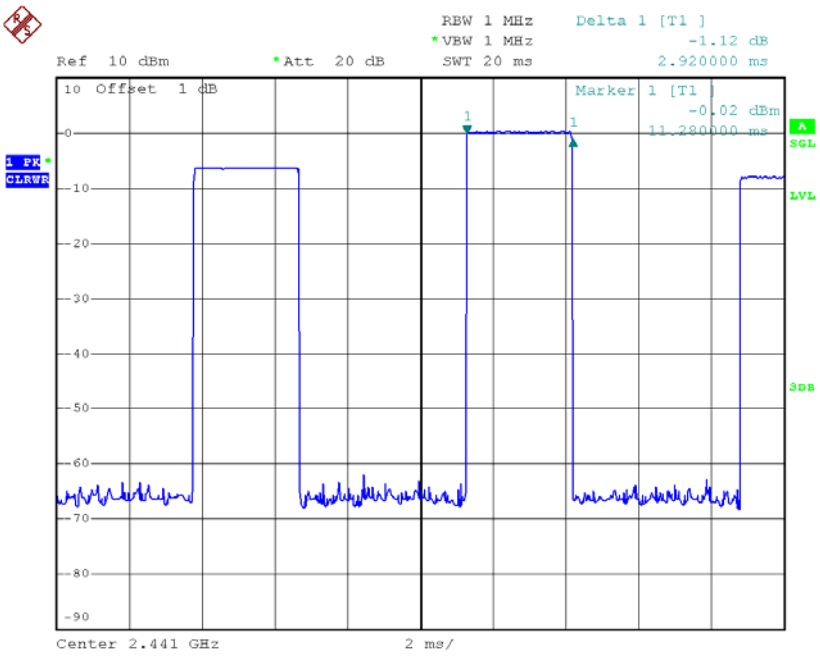
Date: 21.APR.2016 10:33:19

CH39-DH3



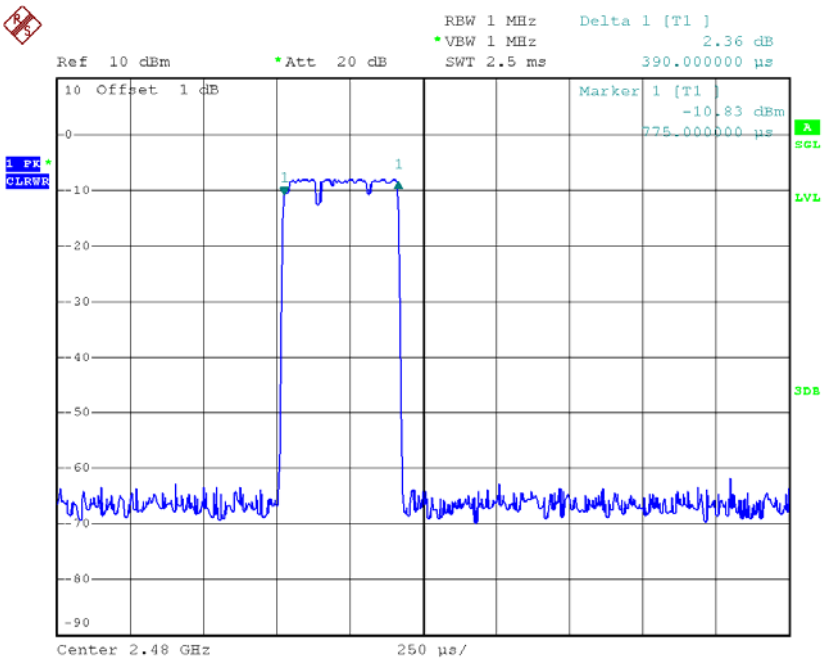
Date: 21.APR.2016 10:42:12

CH39-DH5



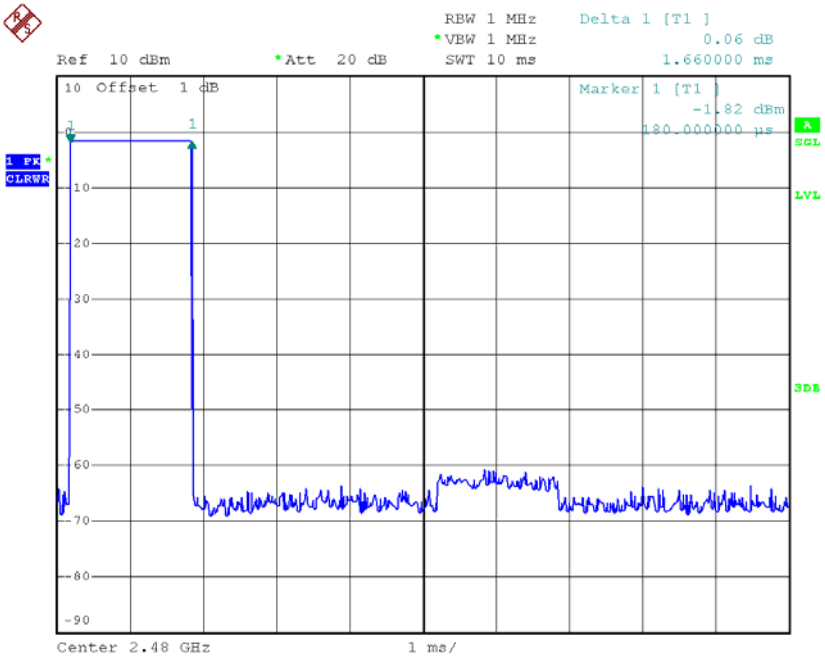
Date: 21.APR.2016 10:43:08

CH78-DH1



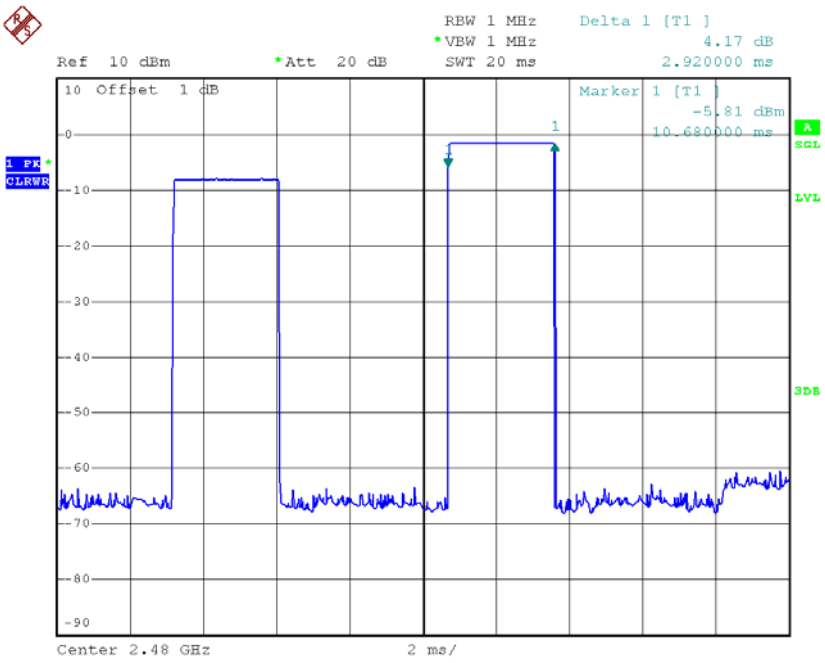
Date: 21.APR.2016 10:33:23

CH78-DH3



Date: 21.APR.2016 10:42:17

CH78-DH5

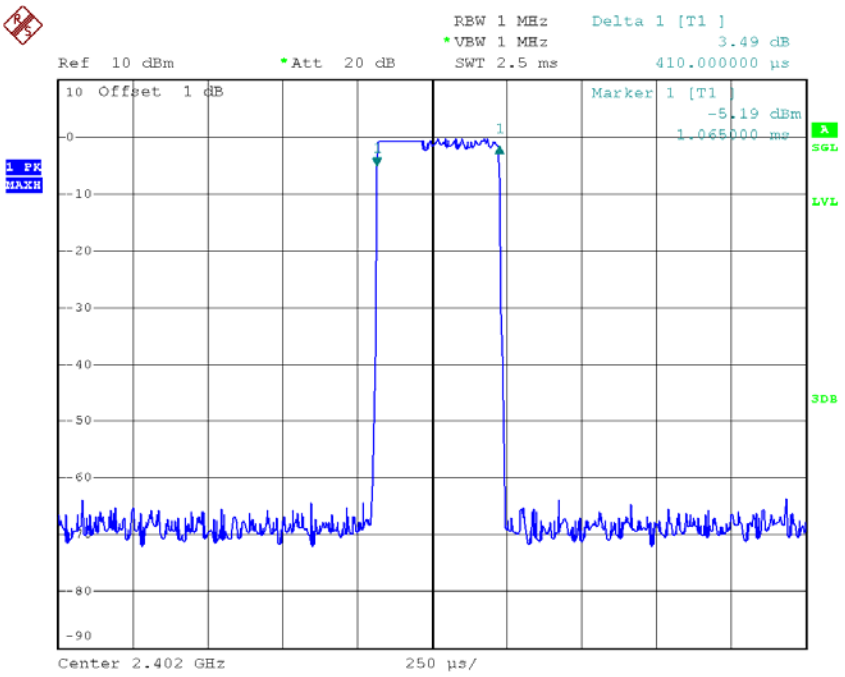


Date: 21.APR.2016 10:43:13

Test Mode :	TX Mode_3Mbps

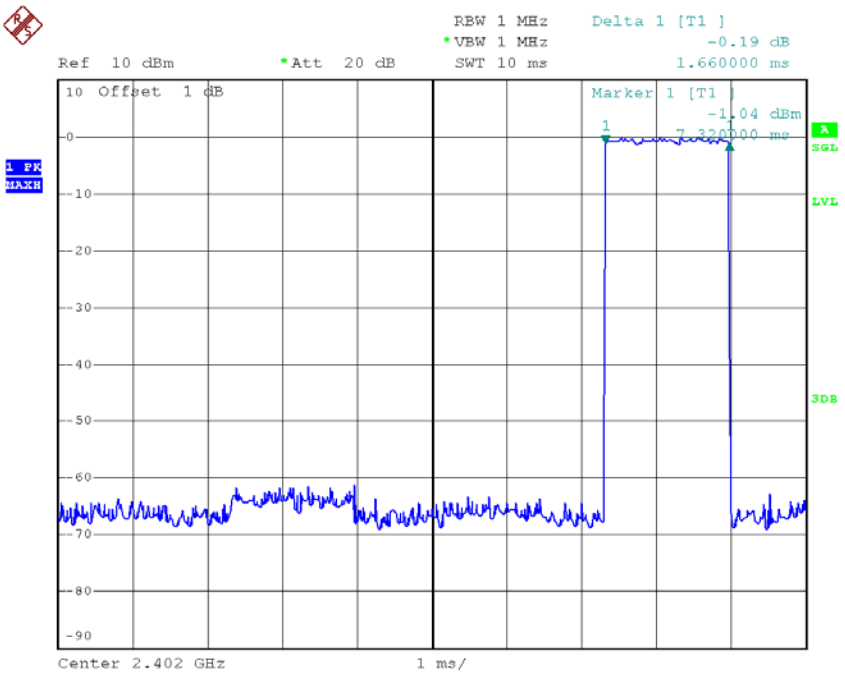
Data Packet	Frequency	Pulse Duration(ms)	Dwell Time(s)	Limits(s)	Test Result
DH5	2402	2.8800	0.3072	0.4000	Pass
DH3	2402	1.6600	0.1771	0.4000	Pass
DH1	2402	0.4100	0.0437	0.4000	Pass
DH5	2441	2.9200	0.3115	0.4000	Pass
DH3	2441	1.6600	0.1771	0.4000	Pass
DH1	2441	0.4000	0.0427	0.4000	Pass
DH5	2480	2.9200	0.3115	0.4000	Pass
DH3	2480	1.6600	0.1771	0.4000	Pass
DH1	2480	0.4050	0.0432	0.4000	Pass

CH00-DH1



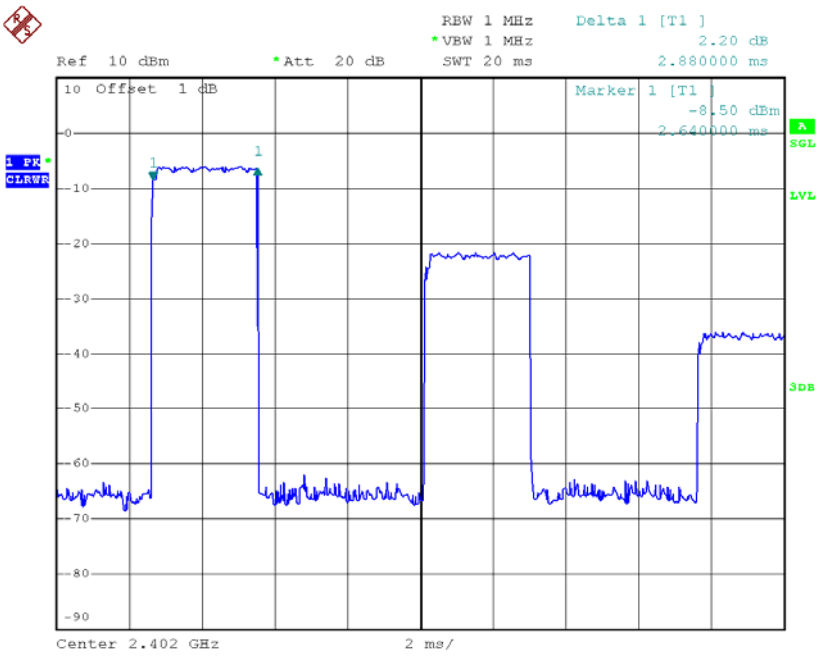
Date: 21.APR.2016 10:48:52

CH00-DH3



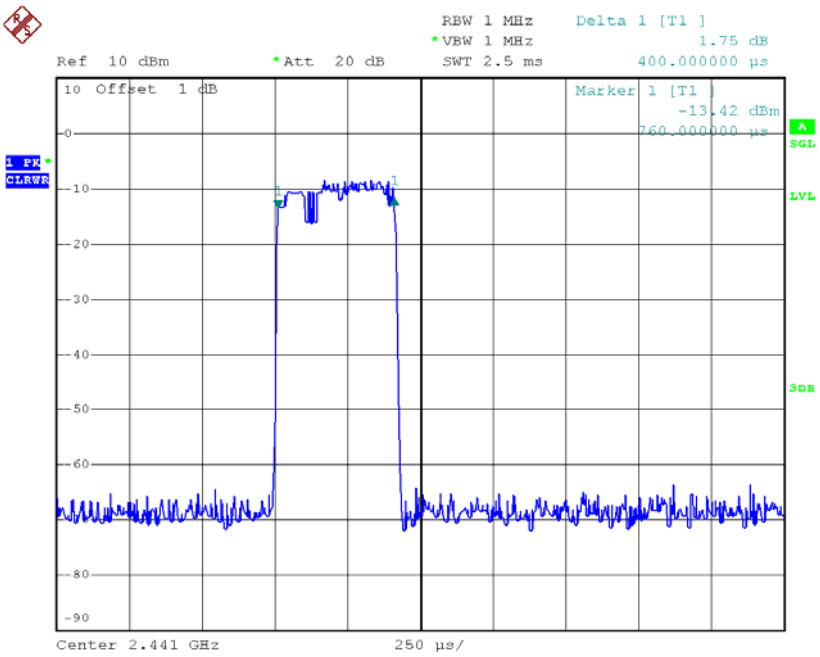
Date: 21.APR.2016 11:04:41

CH00-DH5



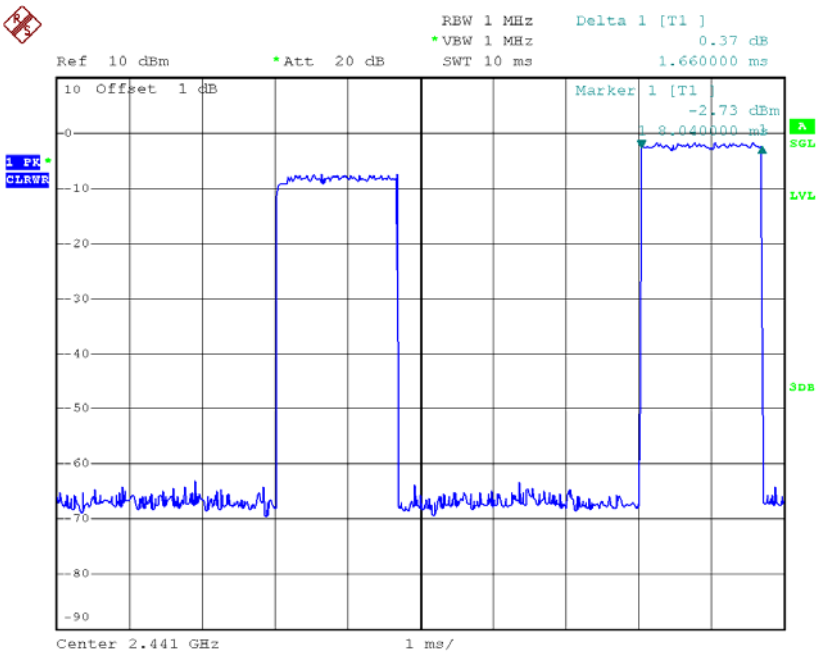
Date: 21.APR.2016 11:05:25

CH39-DH1



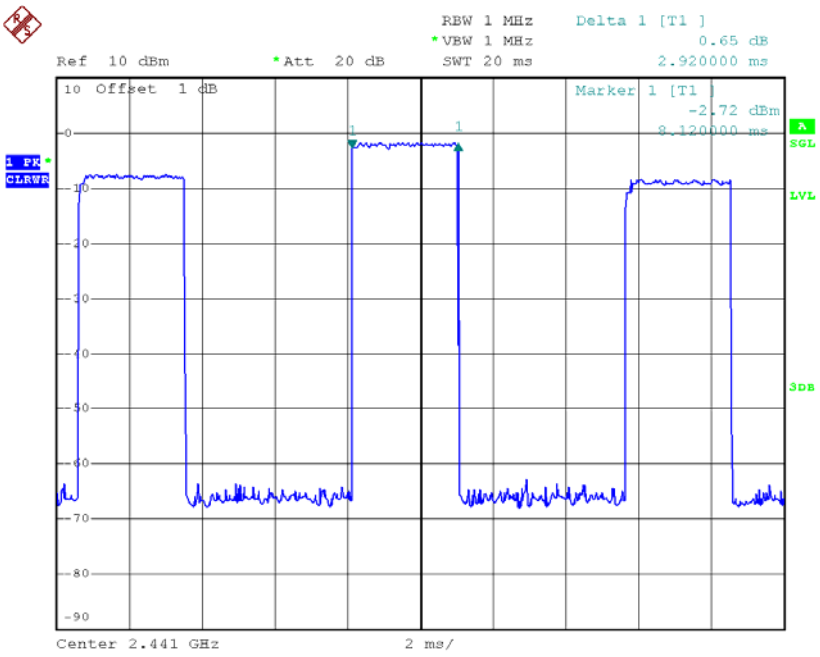
Date: 21.APR.2016 10:48:56

CH39-DH3



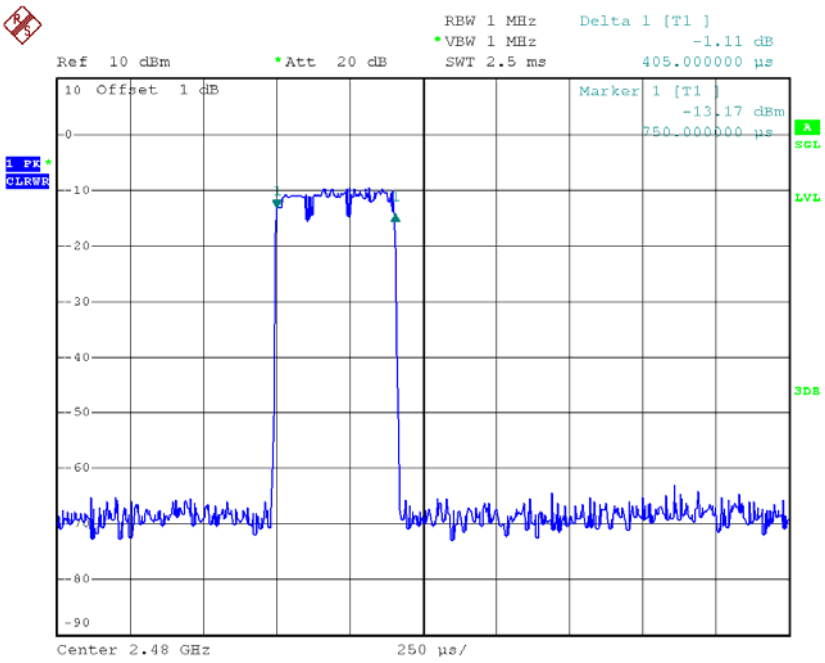
Date: 21.APR.2016 11:04:46

CH39-DH5



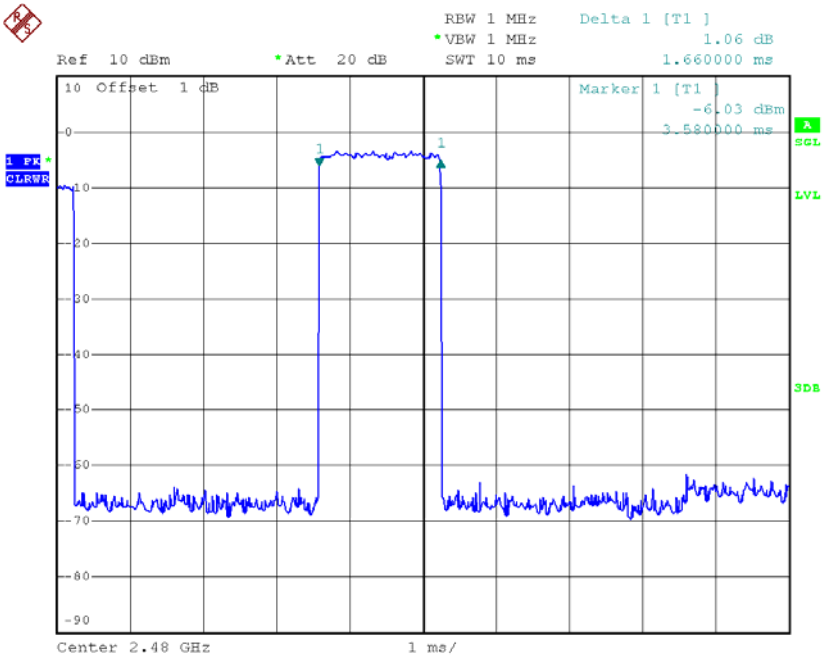
Date: 21.APR.2016 11:05:30

CH78-DH1



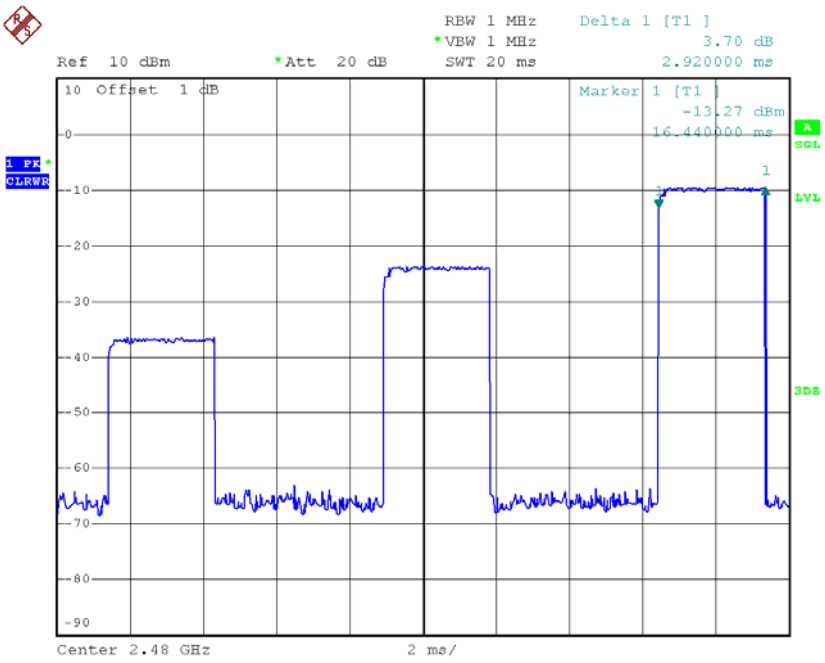
Date: 21.APR.2016 10:49:01

CH78-DH3



Date: 21.APR.2016 11:04:55

CH78-DH5



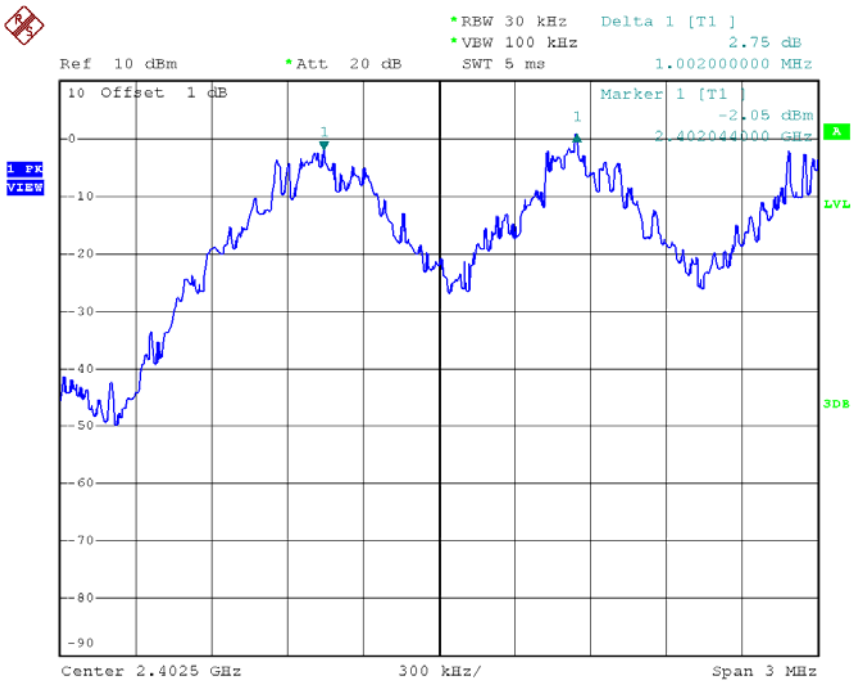
Date: 21.APR.2016 11:05:36

ATTACHMENT G - HOPPING CHANNEL SEPARATION MEASUREMENT

Test Mode :	Hopping on _1Mbps

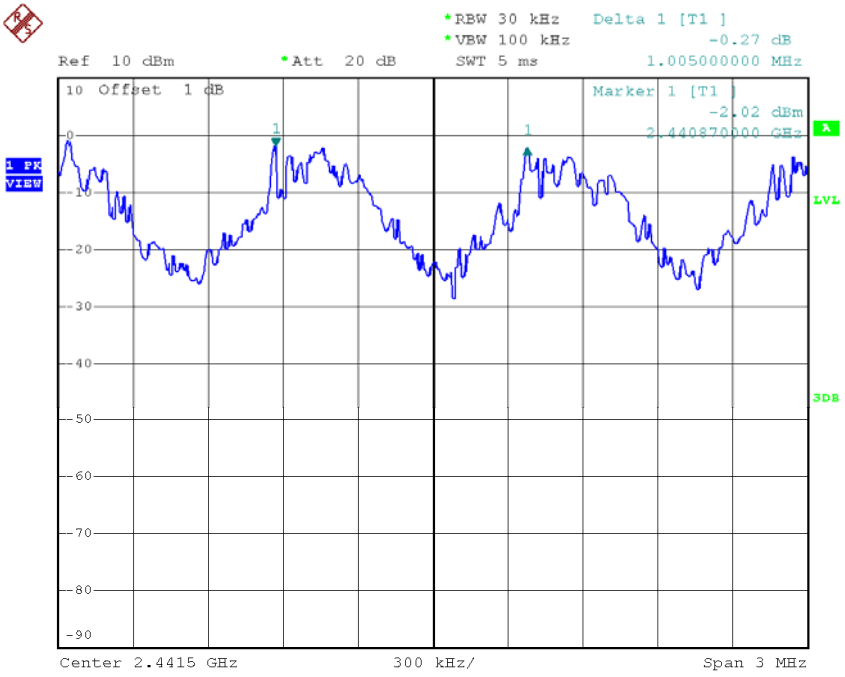
Frequency (MHz)	Channel Separation (MHz)	2/3 of 20dB Bandwidth (MHz)	Test Result
2402	1.002	0.624	Pass
2441	1.005	0.583	Pass
2480	1.173	0.562	Pass

CH00



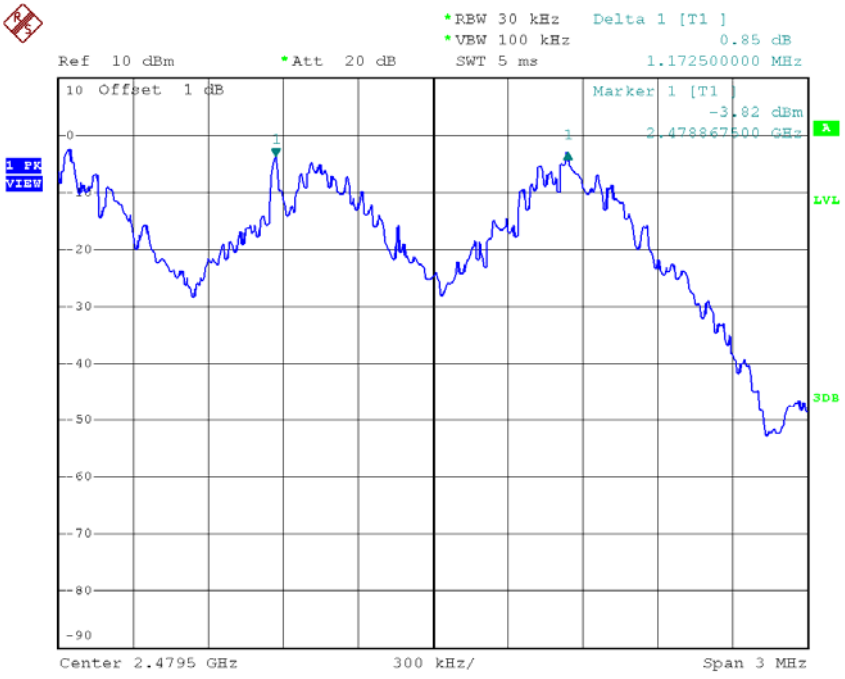
Date: 21.APR.2016 10:34:29

CH39



Date: 21.APR.2016 10:35:37

CH78

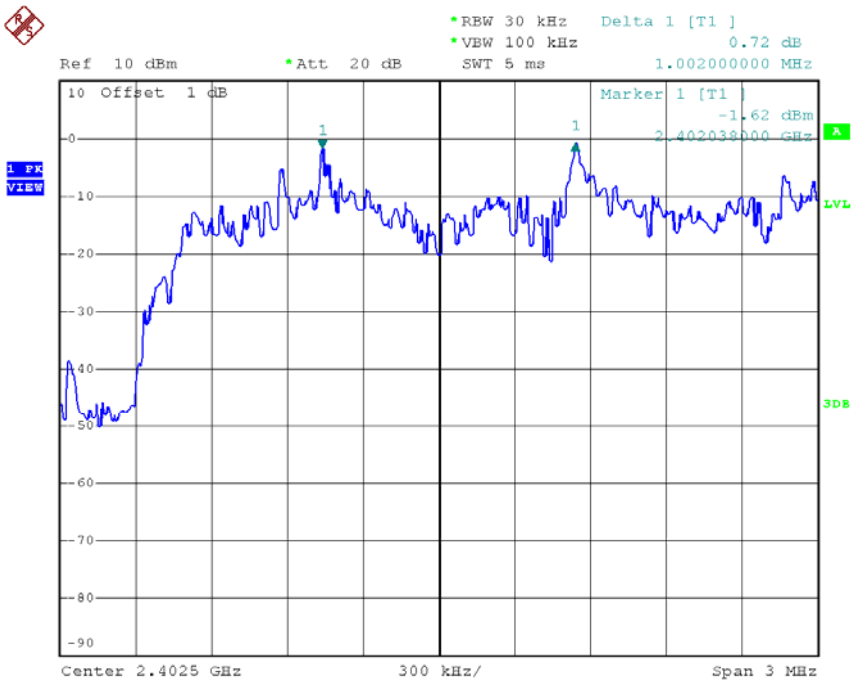


Date: 21.APR.2016 10:36:45

Test Mode :	Hopping on _3Mbps

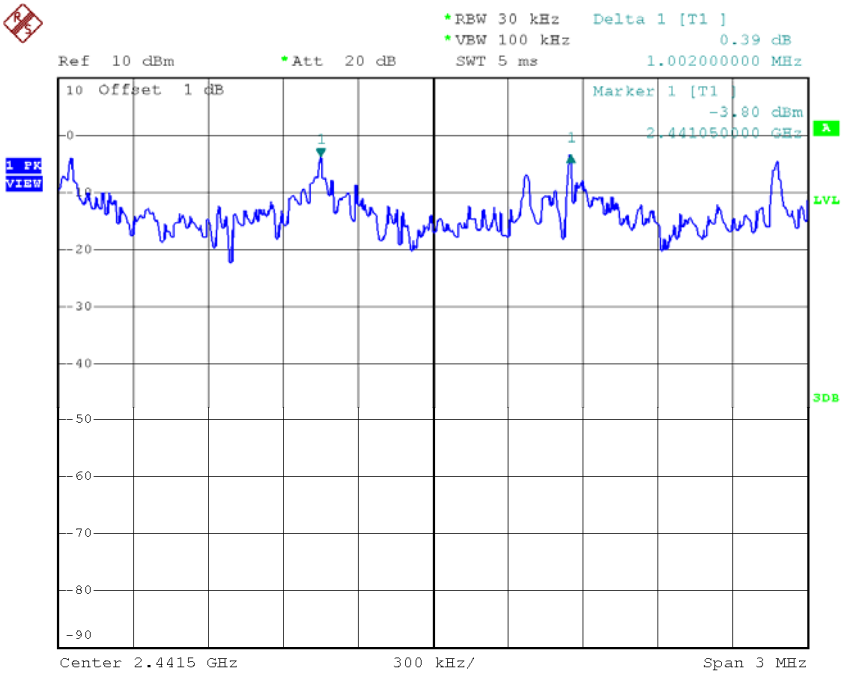
Frequency (MHz)	Channel Separation (MHz)	2/3 of 20dB Bandwidth (MHz)	Test Result
2402	1.002	0.803	Pass
2441	1.002	0.821	Pass
2480	0.999	0.803	Pass

CH00



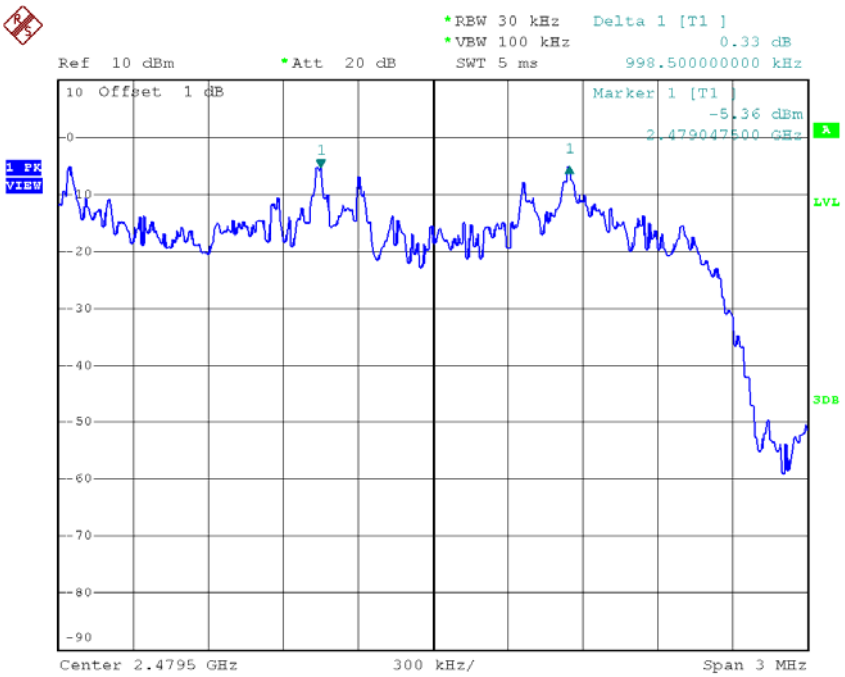
Date: 21.APR.2016 10:50:06

CH39



Date: 21.APR.2016 10:51:10

CH78



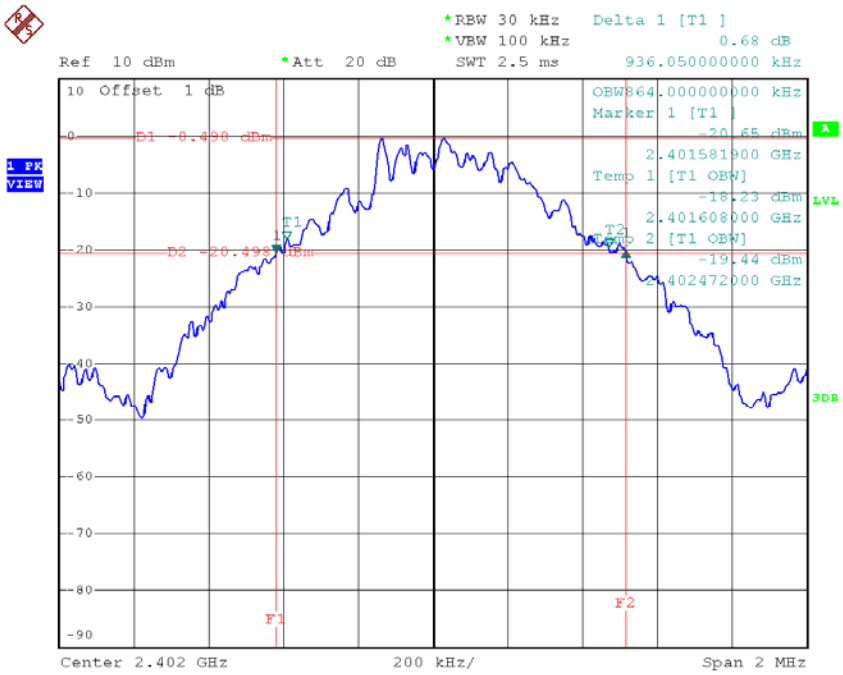
Date: 21.APR.2016 10:59:25

ATTACHMENT H - BANDWIDTH

Test Mode :	TX Mode _1Mbps

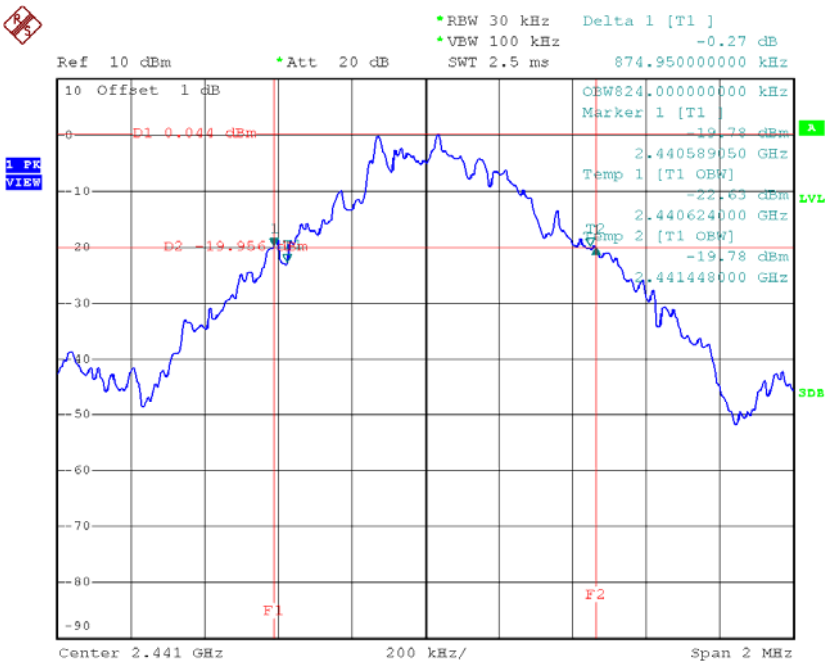
Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Test Result
2402	0.936	0.864	Pass
2441	0.875	0.824	Pass
2480	0.842	0.832	Pass

CH00



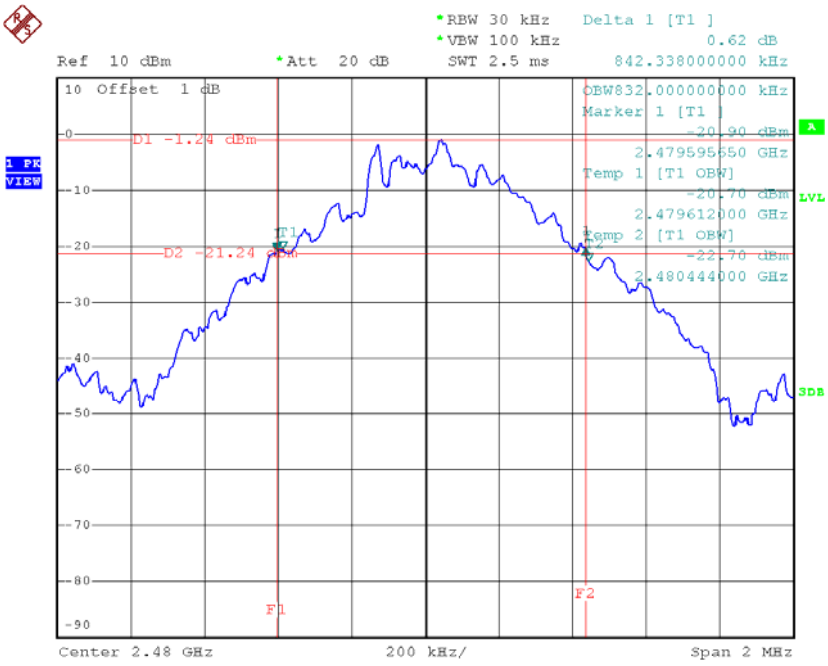
Date: 21.APR.2016 10:30:00

CH39



Date: 21.APR.2016 10:31:13

CH78

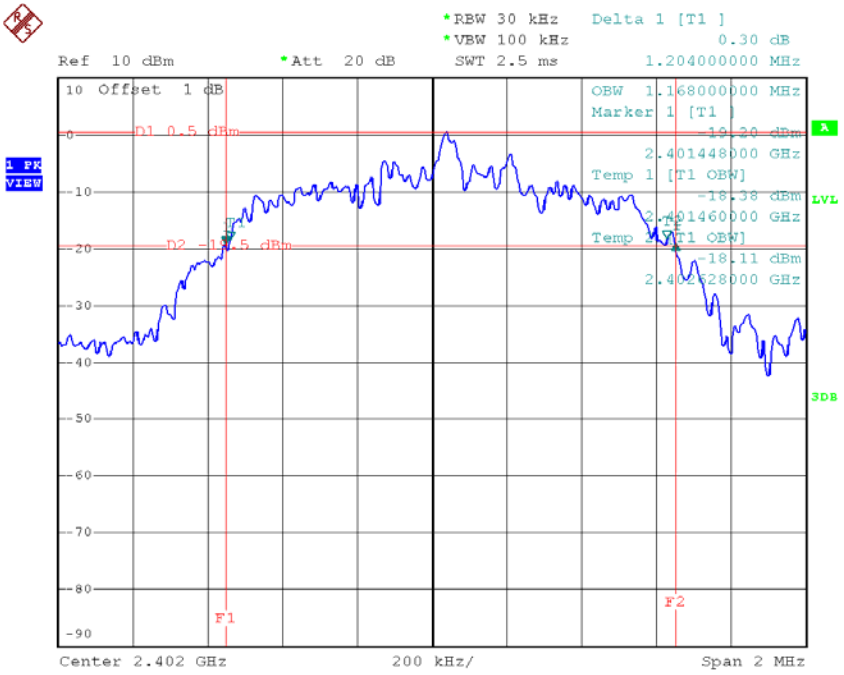


Date: 21.APR.2016 10:31:59

Test Mode :	TX Mode _3Mbps

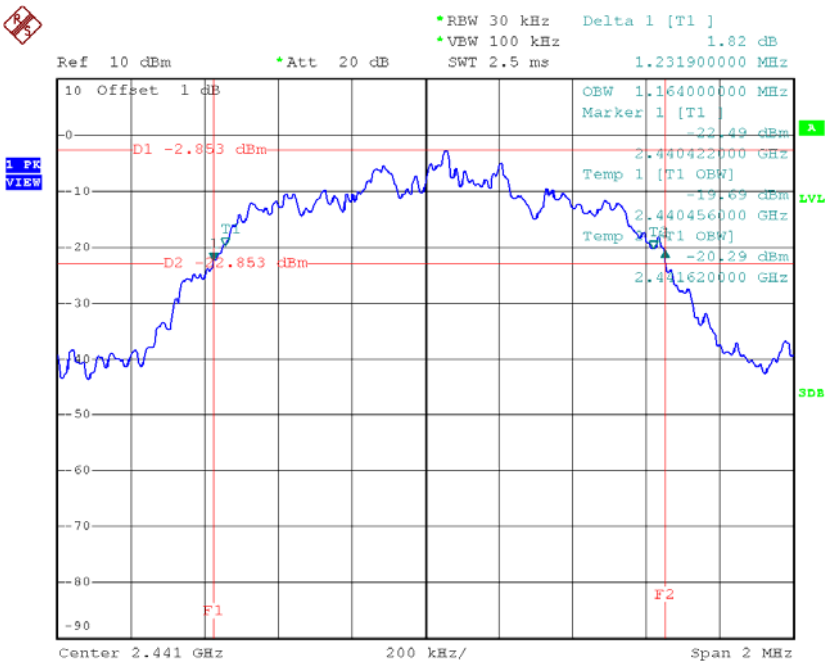
Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Test Result
2402	1.204	1.168	Pass
2441	1.232	1.164	Pass
2480	1.204	1.160	Pass

CH00



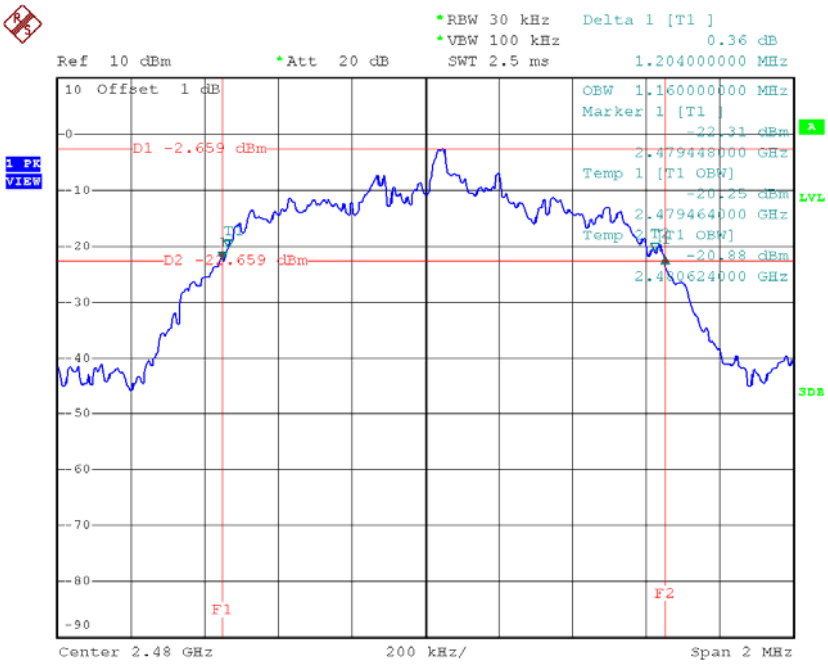
Date: 21.APR.2016 10:45:24

CH39



Date: 21.APR.2016 10:47:25

CH78



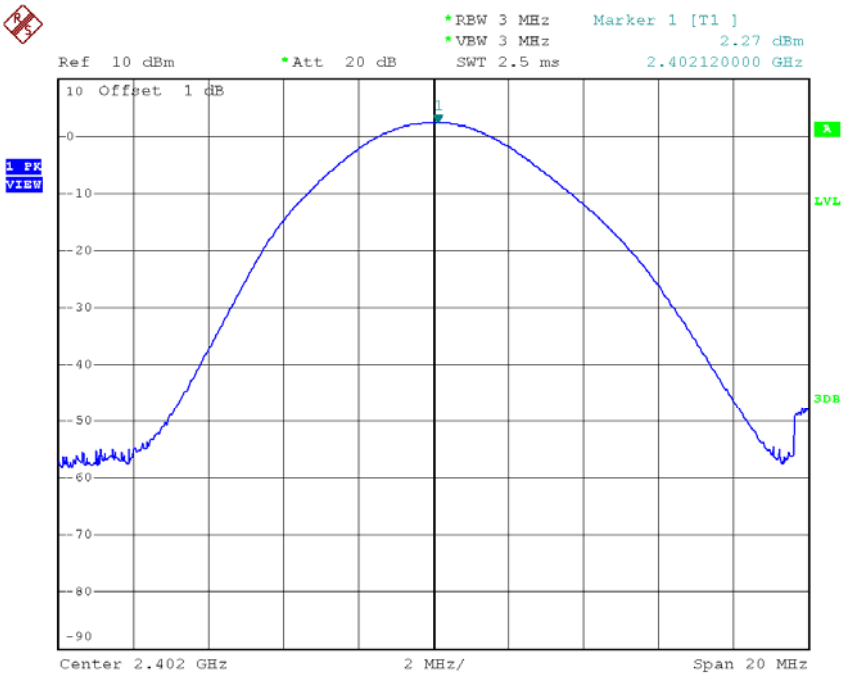
Date: 21.APR.2016 10:48:14

ATTACHMENT I - PEAK OUTPUT POWER

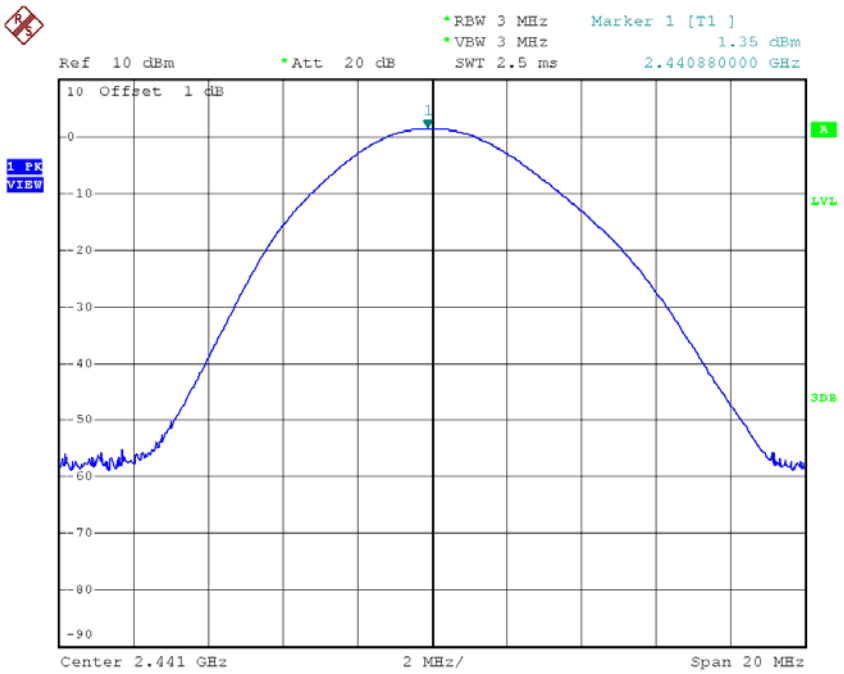
Test Mode :	TX Mode _1Mbps

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	2.27	0.0017	30.00	1.00	Pass
2441	1.35	0.0014	30.00	1.00	Pass
2480	-0.34	0.0009	30.00	1.00	Pass

CH00

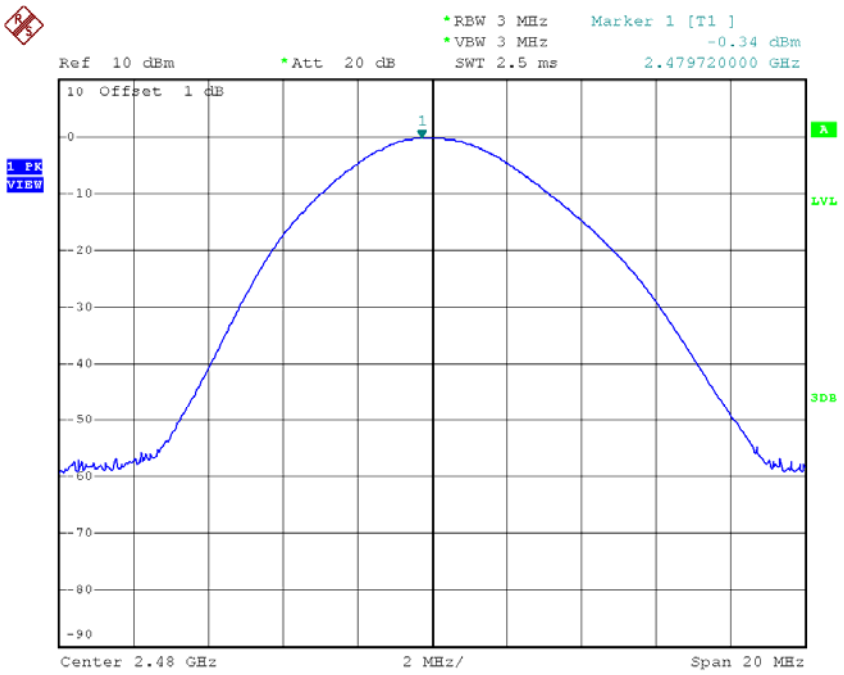


CH39



Date: 21.APR.2016 10:23:37

CH78

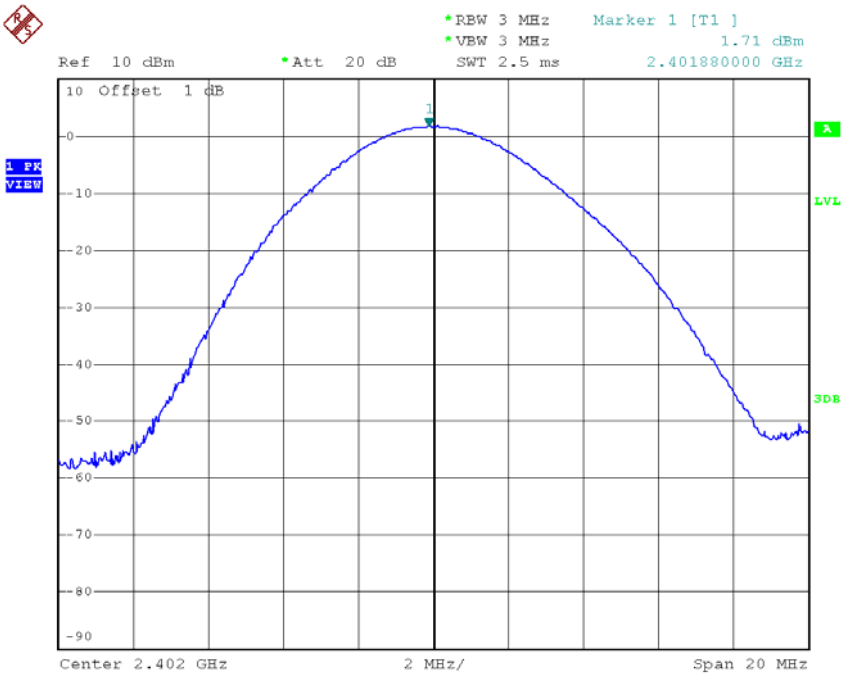


Date: 21.APR.2016 10:23:50

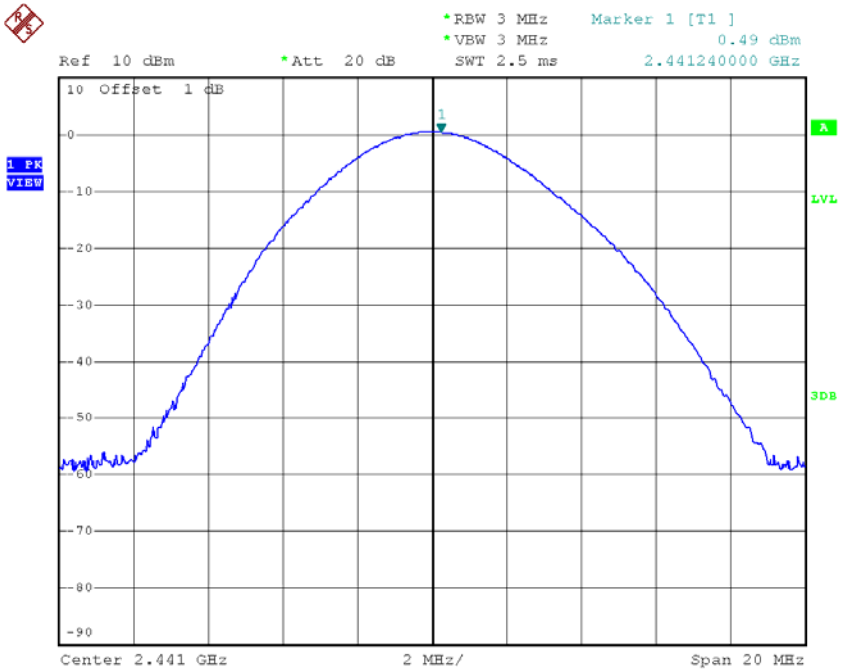
Test Mode :	TX Mode _3Mbps

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	1.71	0.0015	30.00	1.00	Pass
2441	0.49	0.0011	30.00	1.00	Pass
2480	-1.10	0.0008	30.00	1.00	Pass

CH00

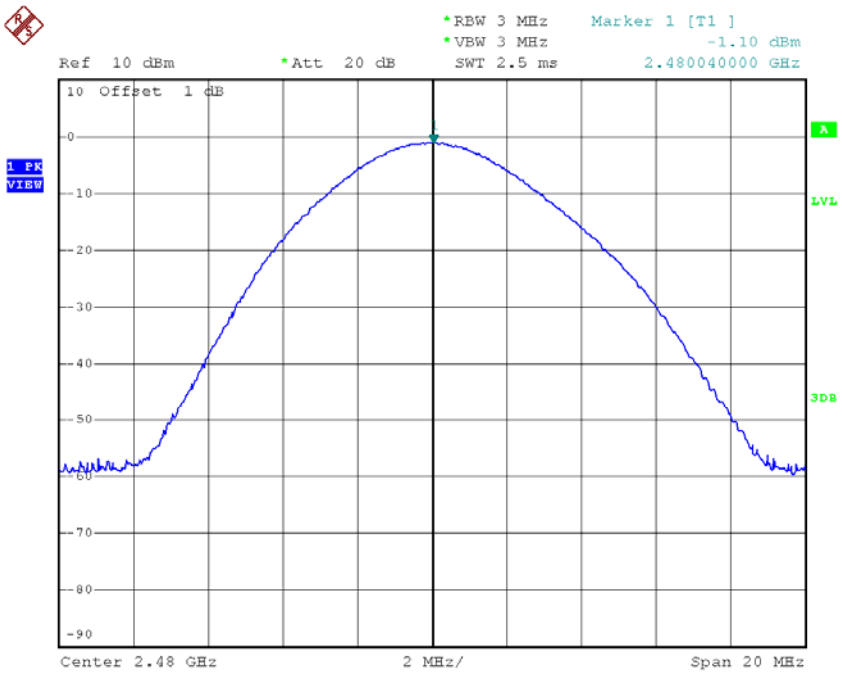


CH39



Date: 21.APR.2016 10:26:06

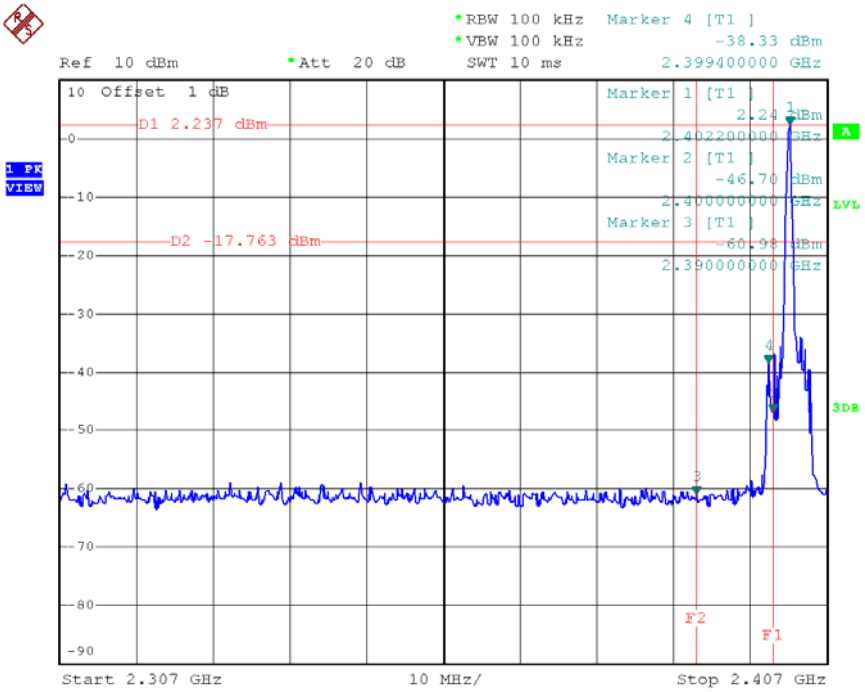
CH78



Date: 21.APR.2016 10:27:27

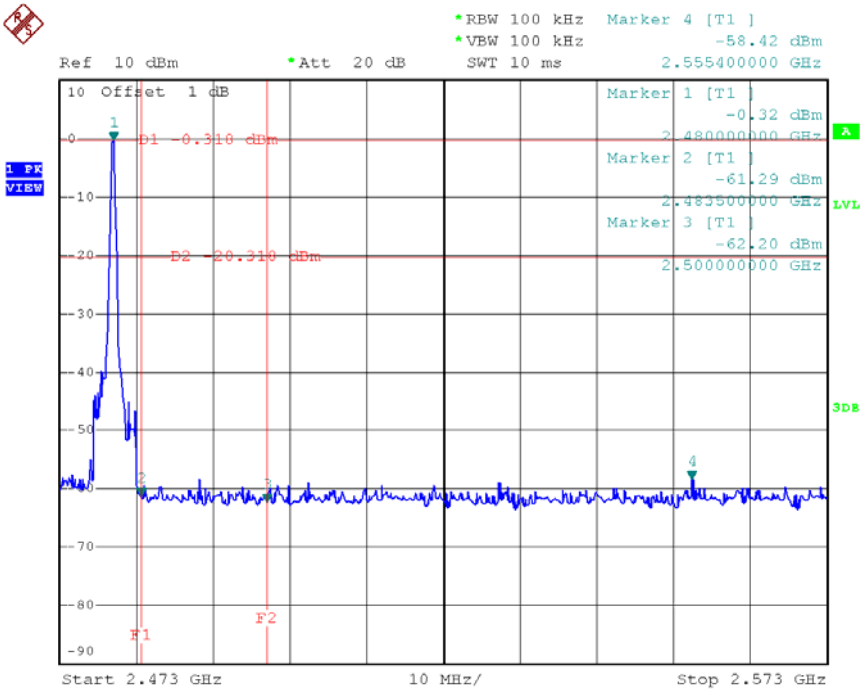
ATTACHMENT J - ANTENNA CONDUCTED SPURIOUS EMISSION

CH00 (Lower)_1Mbps



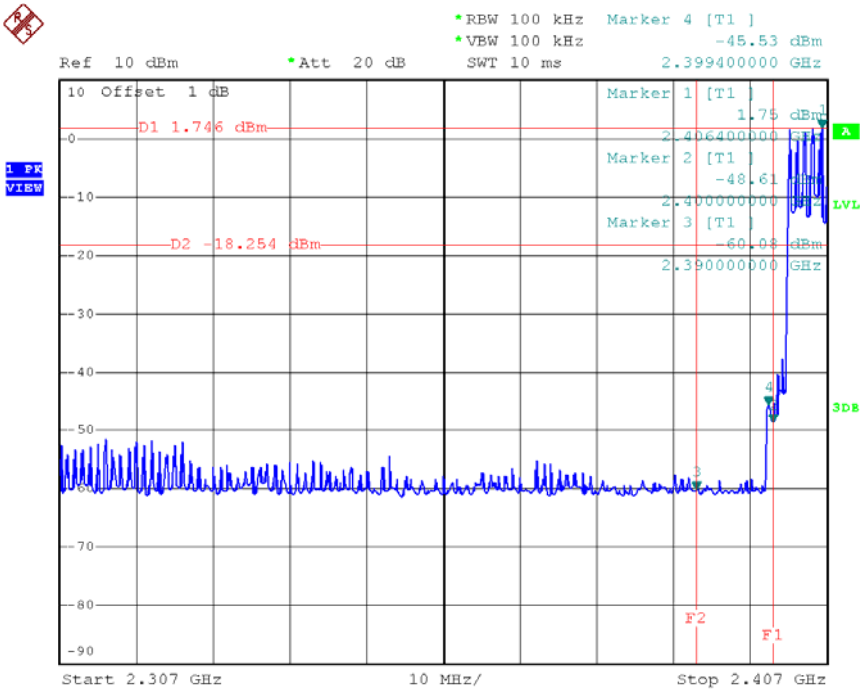
Date: 21.APR.2016 10:29:32

CH78 (Upper) _1Mbps



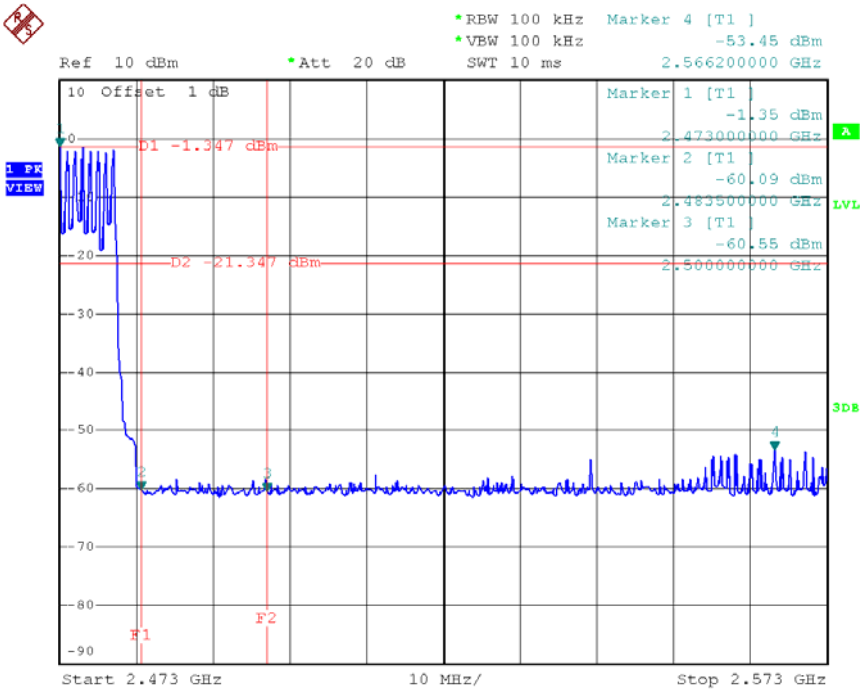
Date: 21.APR.2016 10:31:30

CH00 Hopping on mode (Lower)_1Mbps



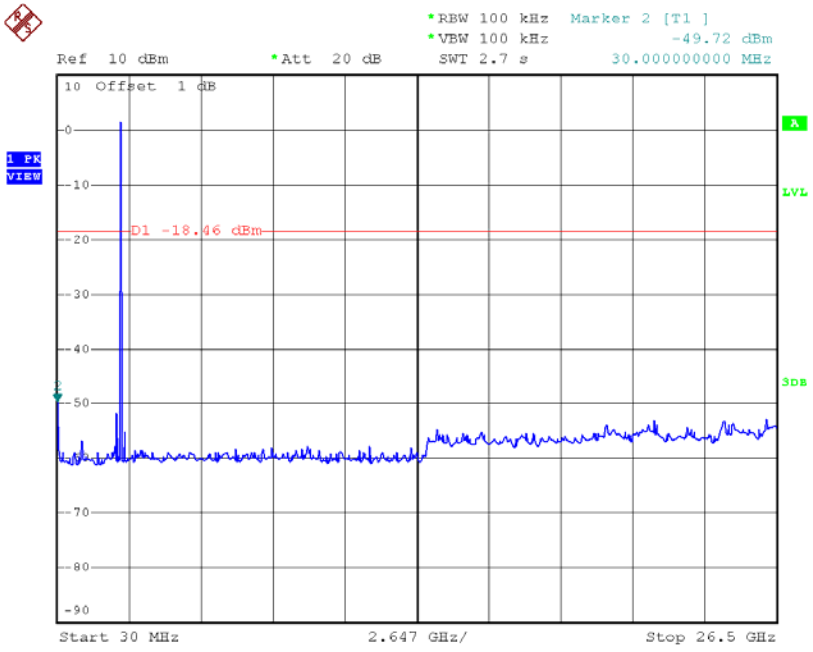
Date: 21.APR.2016 10:39:10

CH78 Hopping on mode (Upper) _1Mbps



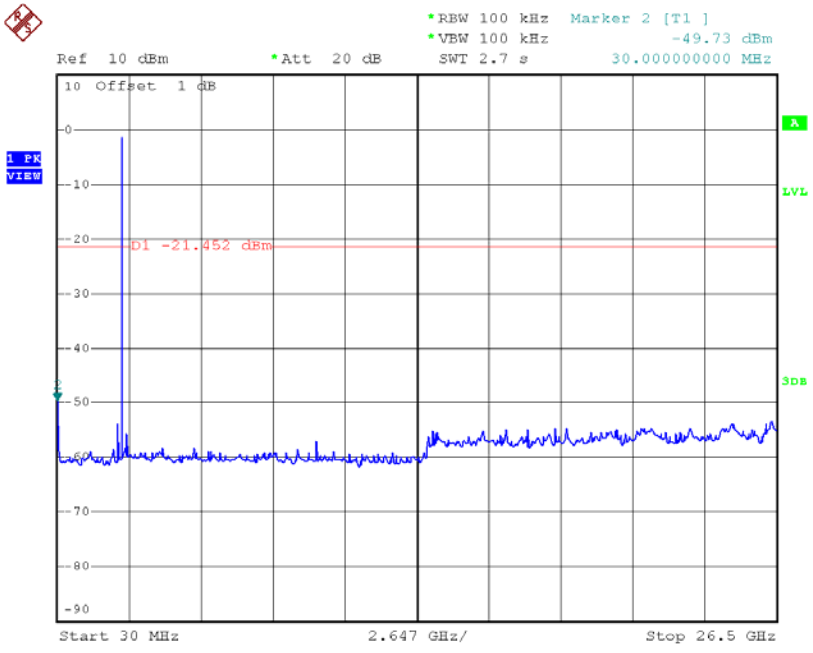
Date: 21.APR.2016 10:41:02

CH00 (10 Harmonic of the frequency) _1Mbps



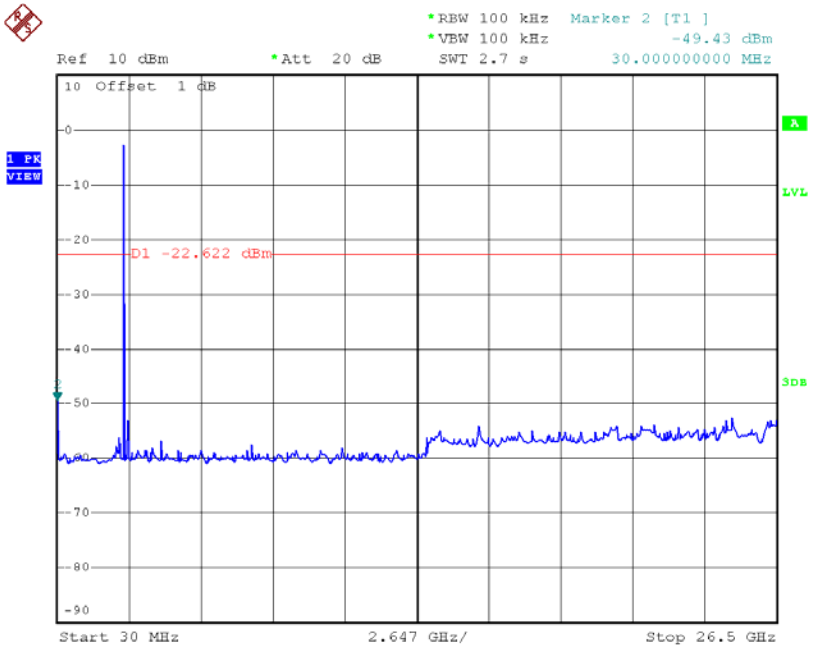
Date: 21.APR.2016 10:30:21

CH39 (10 Harmonic of the frequency) _1Mbps



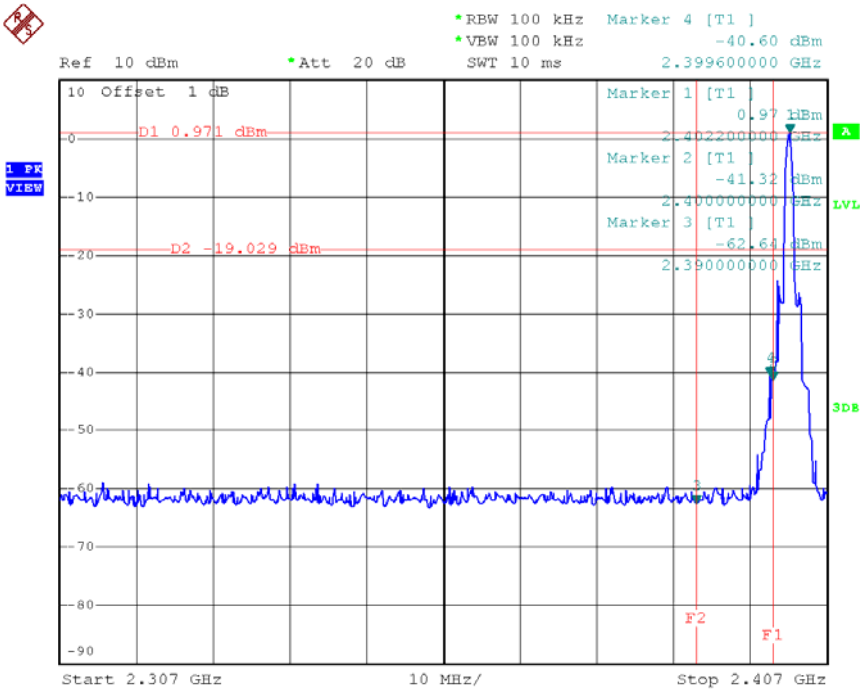
Date: 21.APR.2016 10:30:46

CH78 (10 Harmonic of the frequency) _1Mbps



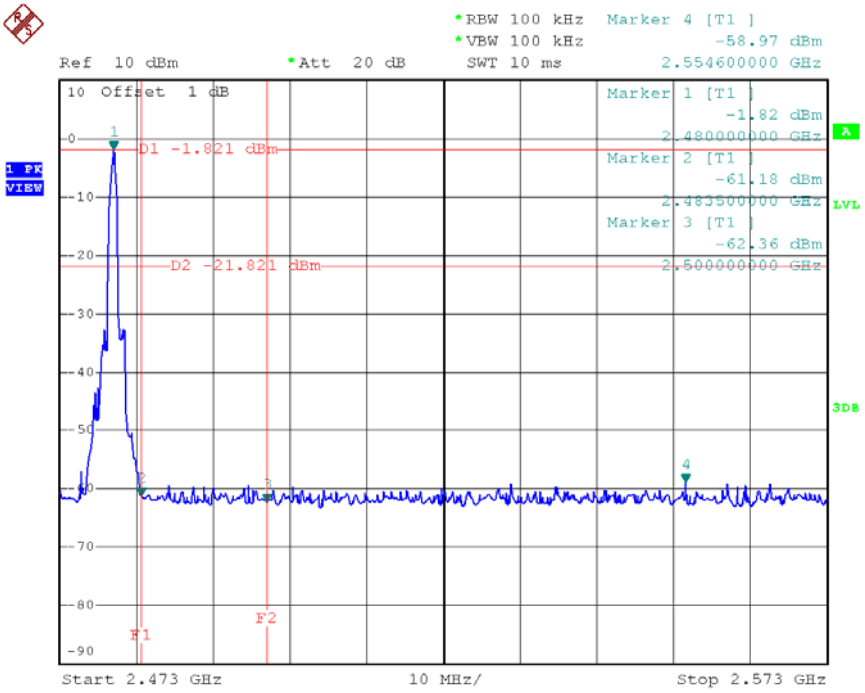
Date: 21.APR.2016 10:32:20

CH00 (Lower) _3Mbps



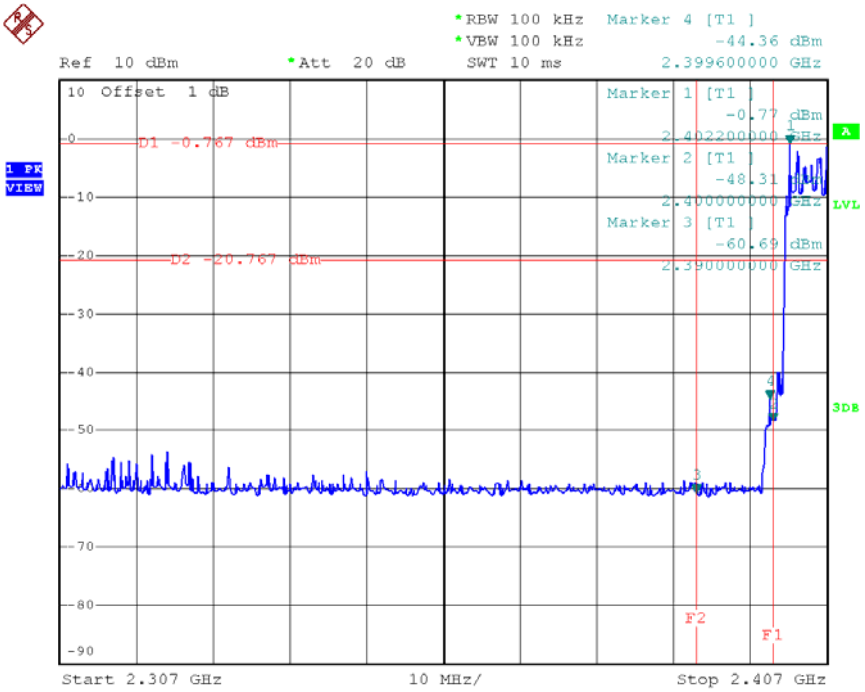
Date: 21.APR.2016 10:45:03

CH78 (Upper) _3Mbps



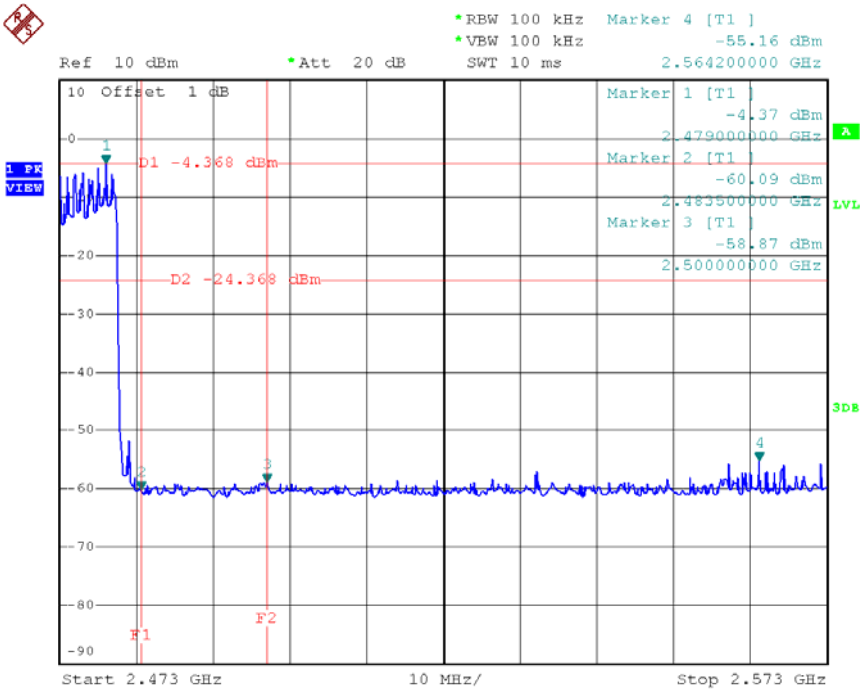
Date: 21.APR.2016 10:47:53

CH00 Hopping on mode (Lower)_3Mbps



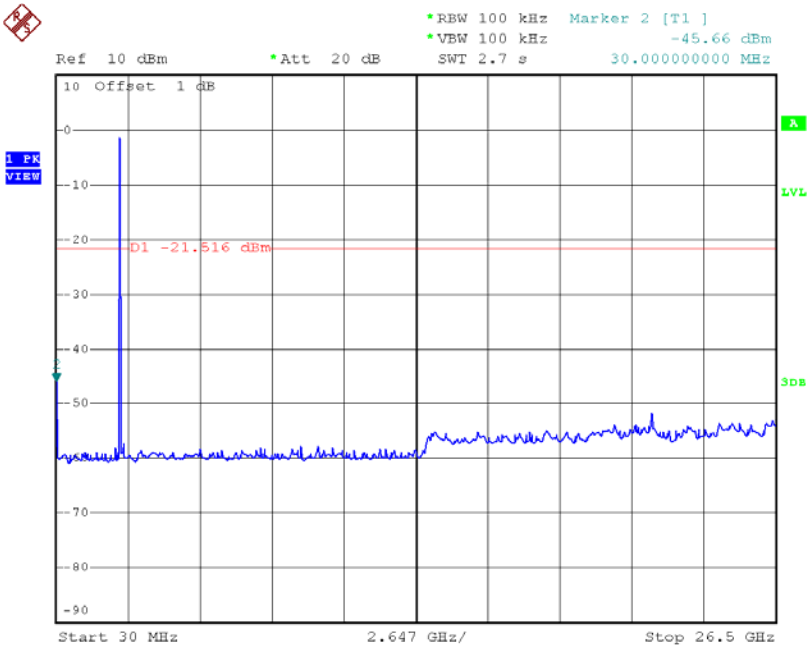
Date: 21.APR.2016 10:54:42

CH78 Hopping on mode (Upper) _3Mbps



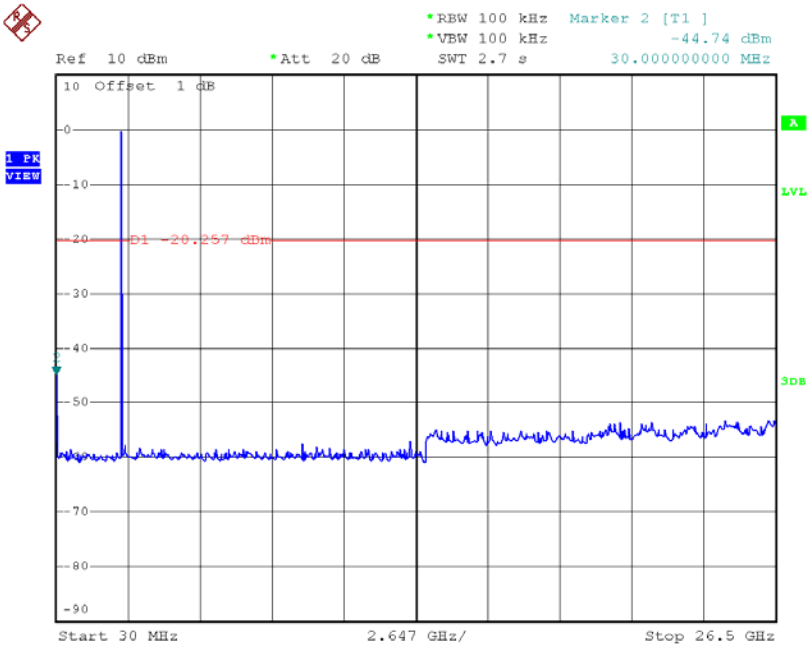
Date: 21.APR.2016 10:55:17

CH00 (10 Harmonic of the frequency) _3Mbps



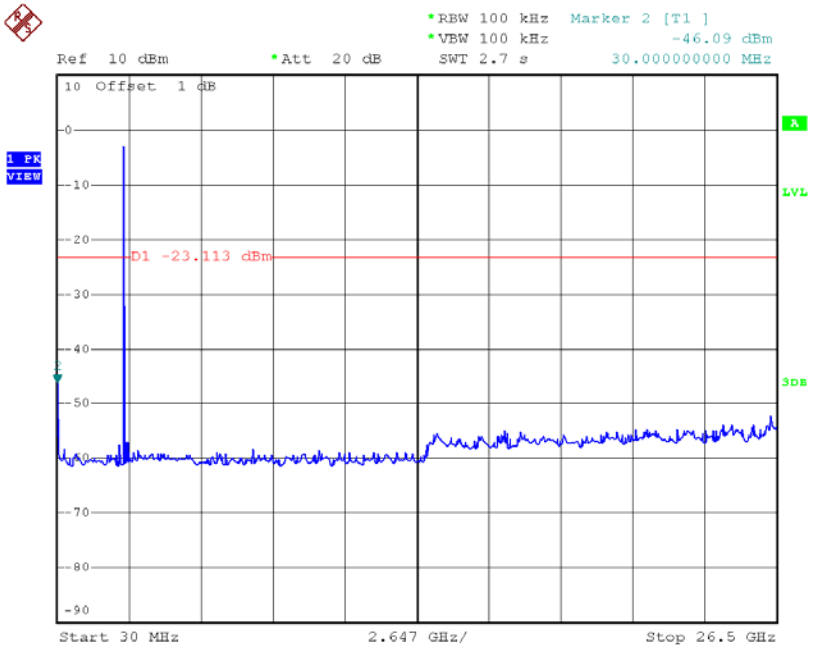
Date: 21.APR.2016 10:46:02

CH39 (10 Harmonic of the frequency) _3Mbps



Date: 21.APR.2016 10:47:03

CH78 (10 Harmonic of the frequency) _3Mbps



Date: 21.APR.2016 10:48:28