FCC&IC Radio Test Report

FCC ID: Q3N-2564

IC: 5121A-2564

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

Project No.	:	1612074
Equipment	:	BT Scanner
Test Model	:	2564
Series Model	:	N/A
Applicant	:	CIPHERLAB CO., LTD.
Address	:	12F, 333, Dunhua S. Rd., Sec. 2, Taipei, Taiwan

Date of Receipt	:	Jan. 13, 2017
Date of Test	:	Jan. 13, 2017 ~ Feb. 02, 2017
Issued Date	:	Feb. 09, 2017
Tested by	:	BTL Inc.

Testing Engineer : Rush Kao
(Rush Kao)

Technical Manager : Jeff Yang
(Jeff Yang)

Authorized Signatory :
(Andy Chiu)

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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.

Table of Contents Page

Table of Contents Page

Table of Contents Page

REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FICP-1-1612074	Original Issue.	Feb. 09, 2017

1. CERTIFICATION

Equipment	:	BT Scanner
Brand Name	:	CIPHERLAB
Test Model	:	2564
Series Model	:	N/A
Applicant	:	CIPHERLAB CO., LTD.
Manufacturer	:	CIPHERLAB CO., LTD.
Address	:	12F, 333, Dunhua S. Rd., Sec. 2, Taipei, Taiwan
Factory Address	:	CIPHERLAB CO., LTD. 2nd 7 F., No. 198 and 7F., No. 196, Sec. 3, Da Tong Rd., Shiji Dist., New Taipei City 221, Taiwan.
Date of Test	:	Jan. 13, 2017 ~ Feb. 02, 2017
Test Sample	:	Engineering Sample
Standard(s)	:	FCC Part15, Subpart C (15.247)/ ANSI C63.10-2013 RSS-247 Issue 1, May 2015 RSS-GEN Issue 4, Nov 2014

The above equipment has been tested and found in 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-1-1612074) 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).

Test results included in this report is only for the Bluetooth EDR part.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

Applied Standard(s): FCC Part15, Subpart C (15.247) ; RSS-247 Issue 1, May 2015; RSS-GEN Issue 4, Nov				
Standard(s) Section		Test Item	Judgment	Remark
FCC	IC			
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

2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

Conducted emission Test:

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

Radiated emission Test (Below 1 GHz):

CB15: (FCC RN:674415; FCC DN:TW0659)
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

Radiated emission Test (Above 1 GHz):

CB15: (FCC RN:674415; FCC DN:TW0659)
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{cispr} requirement.
The reported uncertainty of measurement y ± U, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

A. Conducted emission test:

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

B. Radiated emission test:

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

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

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

Test Site	Method	Measurement Frequency Range	U,(dB)
CB15 (1m)	CISPR	18 ~ 26.5 GHz	4.72
		26.5 ~ 40 GHz	5.20

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above.
These are our U_{lab} values in CISPR 16-4-2 terminology.
Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U_{CISPR}, as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz: 3.6 dB
Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz: 5.2 dB

It can be seen that our U_{lab} values are smaller than U_{CISPR}.
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	BT Scanner	
Brand Name	CIPHERLAB	
Test Model	2564	
Series Model	N/A	
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.	5.82 dBm(1Mbps) 4.45 dBm(3Mbps)
Power Source	Battery supplied.(Li-ion Battery Pack: BA-010800)	
Power Rating	3.7V ⎓ 800 mAh 2.96Wh	

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	QuieTek	2560MB_20150830A	Printed	N/A	3.54

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.

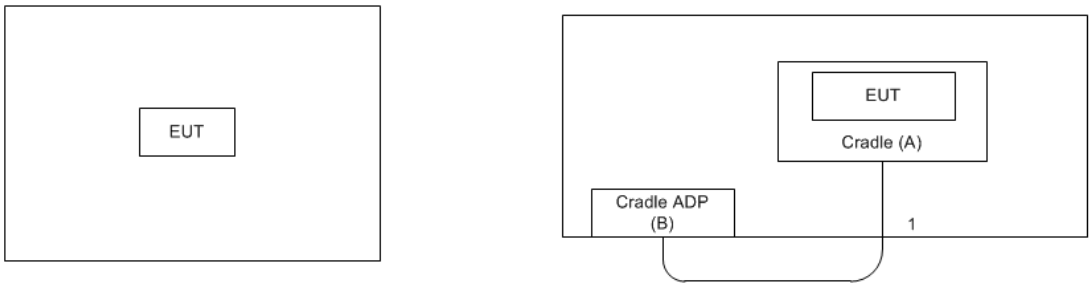
(2) The measurements for Hopping Channel Separation, Bandwidth and Peak Output Power were tested during 1Mbps, 2Mbps and 3Mbps, the worst case are 1Mbps and 3Mbps, only worst case was documented.

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	CSR		
Frequency	2402 MHz	2441 MHz	2480 MHz
Parameters(1Mbps)	DEF	DEF	DEF
Parameters(3Mbps)	DEF	DEF	DEF

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.	Note
A	Bluetooth Scanner Cradle	CIPHER LAB	2560 BT BASE	N/A	BSFDV00001054	
B	Cradle Adapter	I.T.E	AU1100506U	DOC	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
1	Yes	No	1m	Power 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.

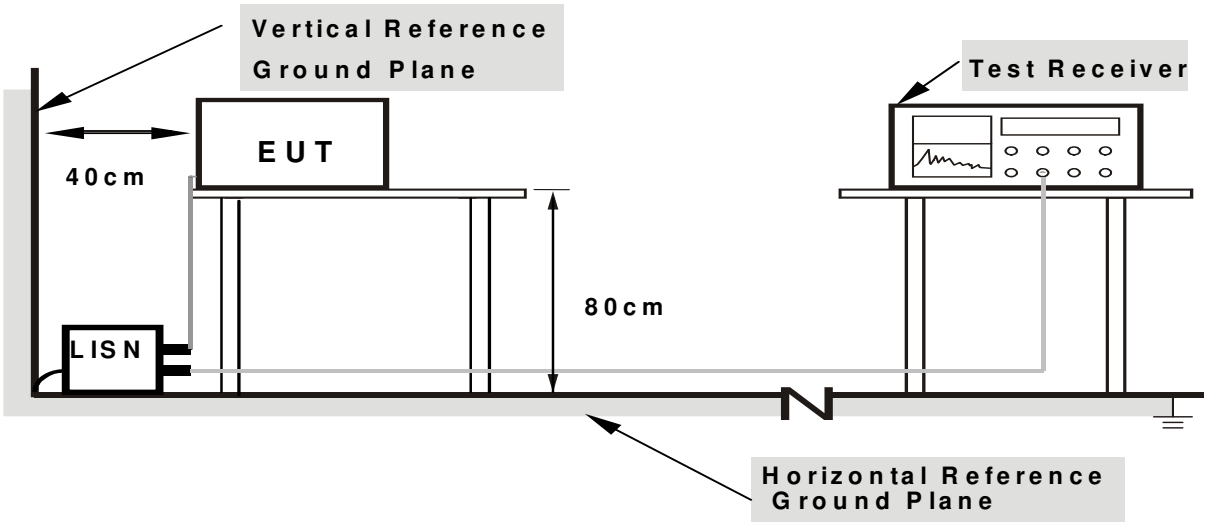
d. LISN at least 80 cm from nearest part of EUT chassis.

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) & RSS-247 5.5, then the 15.209(a) & RSS-Gen 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)	Band edge at 3m (dBμV/m)		Harmonic at 1.5m (dBμV/m)	
	Peak	Average	Peak	Average
Above 1000	74	54	80 (Note 5)	60(Note 5)

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C/RSS-247.

(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

(5)

$$FS_{\text{limit}} = FS_{\max} - 20\log\left(\frac{d_{\text{limit}}}{d_{\text{measure}}}\right)$$

20log d limit/d measure=20log 3/1.5=6dB.

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

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

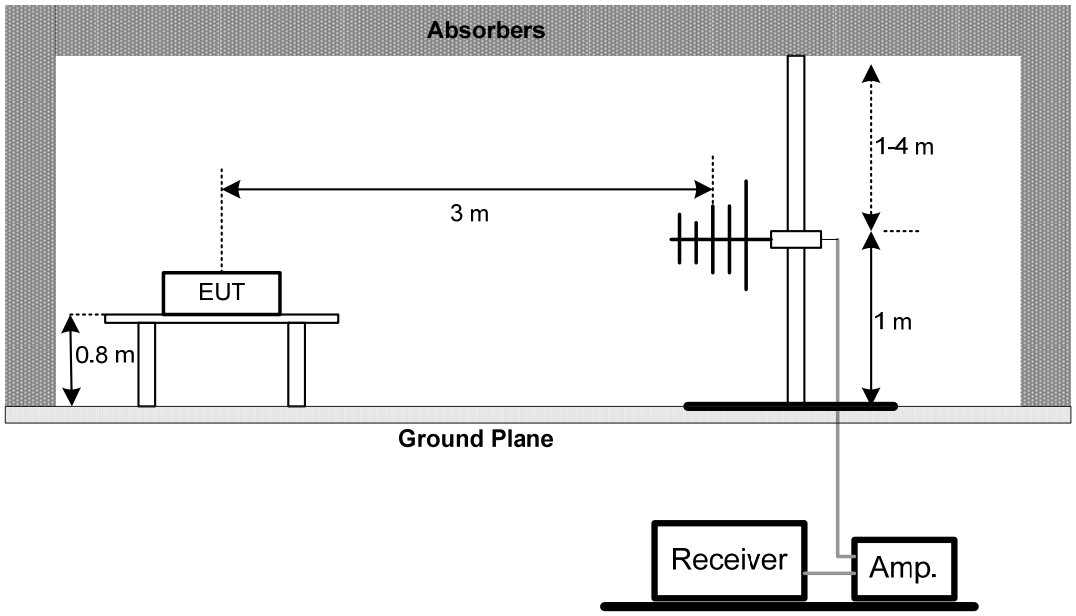
a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The measuring distance of 3 m or 1.5m 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 0.8m 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. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform. (below 1GHz)
h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn‘t perform. (above 1GHz)
i. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.3 DEVIATION FROM TEST STANDARD

No deviation

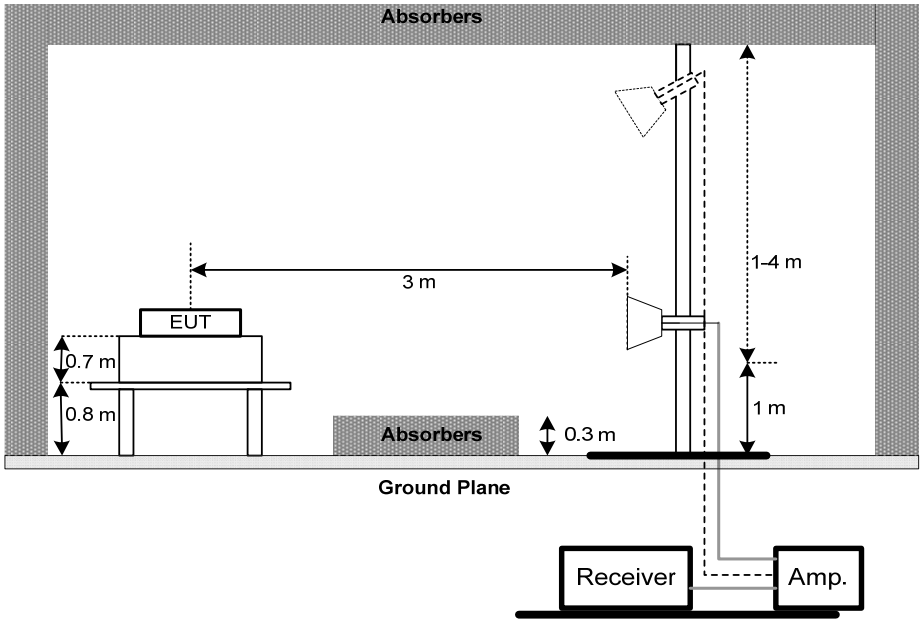
4.2.4 TEST SETUP

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

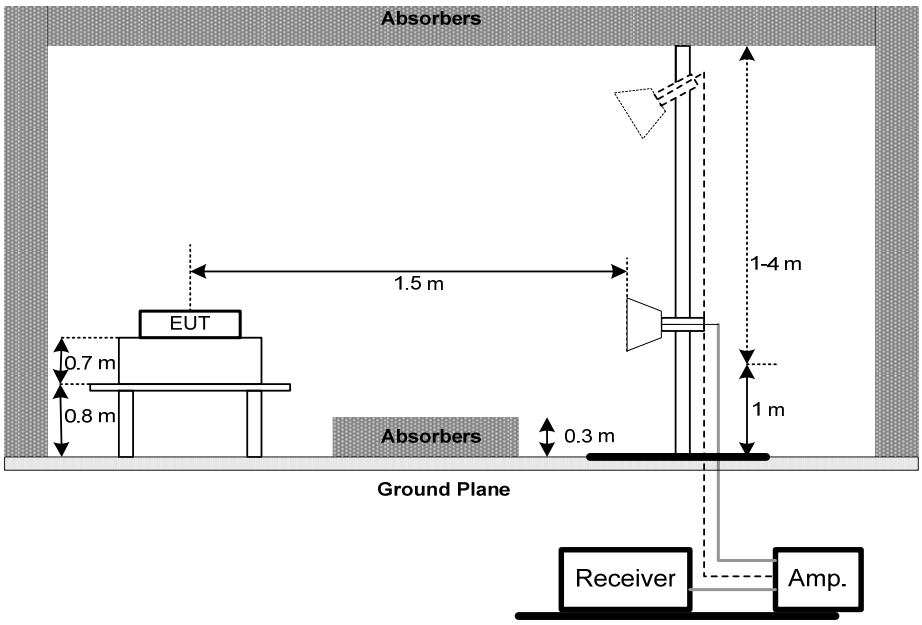


(B) Radiated Emission Test Set-Up Frequency Above 1 GHz

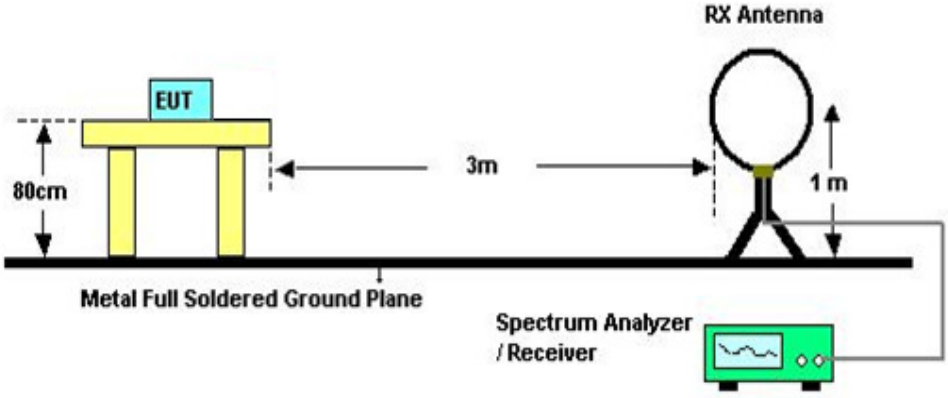
Band edge



Harmonic



(C) For Radiated Emissions Below 30MHz



4.2.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.2.6 EUT TEST CONDITIONS

Temperature: 25°C
Relative Humidity: 55%
Test Voltage: DC 3.7V

4.2.7 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the Attachment B

Remark:

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

4.2.8 TEST RESULTS (30MHZ TO 1000 MHZ)

Please refer to the Attachment C.

4.2.9 TEST RESULTS (ABOVE 1000 MHZ)

Please refer to the Attachment D.

Remark:

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

5. NUMBER OF HOPPING CHANNEL

5.1 APPLIED PROCEDURES

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

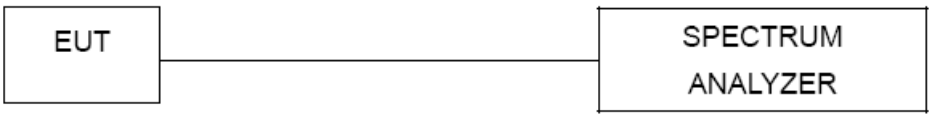
5.1.1 TEST PROCEDURE

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



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: DC 3.7V

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/ 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

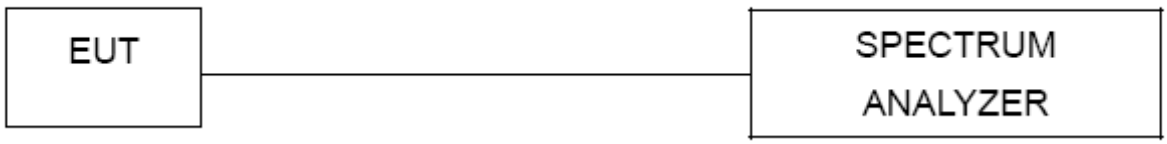
6.1.1 TEST PROCEDURE

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



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: DC 3.7V

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

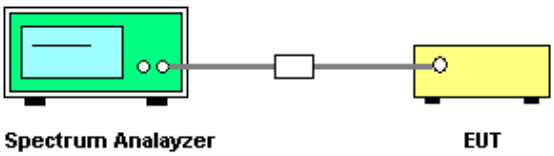
a. The EUT must have its hopping function enabled

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: DC 3.7V

7.1.5 TEST RESULTS

Please refer to the Attachment G

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 RSS-247 5.1 (1)	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

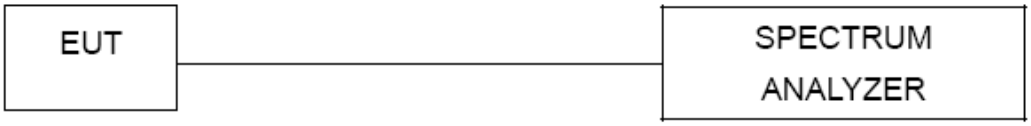
8.1.1 TEST PROCEDURE

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: DC 3.7V

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/ RSS-247				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(1) RSS-247 5.4 (2)	Peak Output Power	1 Watt or 30dBm (hopping channel >75) 0.125Watt or 21dBm (hopping channel <75	2400-2483.5	PASS

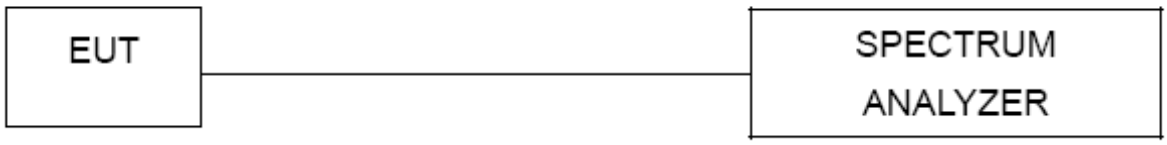
9.1.1 TEST PROCEDURE

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: DC 3.7V

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.

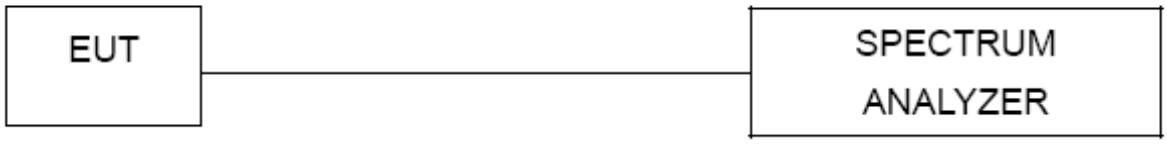
10.1.1 TEST PROCEDURE

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: DC 3.7V

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	Preamplifier	EMCI	012645B	980267	Mar. 01, 2017
2	Preamplifier	EMCI	EMC02325	980217	Dec. 29, 2017
3	Test Cable	EMCI	EMC104-SM-SM-8000	8m	Jan. 04, 2018
4	Test Cable	EMCI	EMC104-SM-SM-800	150207	Jan. 04, 2018
5	Test Cable	EMCI	EEMC104-SM-SM-3000	151205	Jan. 04, 2018
6	MXE EMI Receiver	Agilent	N9038A	MY55420127	Jan. 09, 2018
7	Signal Analyzer	Agilent	N9010A	MY52220990	Feb. 23, 2017
8	Loop Ant	EMCO	6502	42960	Nov. 24, 2017
9	Horm Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	Mar. 01, 2017
10	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-548	Jan. 16, 2018
11	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0623	Jan. 16, 2018
12	Horm Ant	SCHWARZBECK	BBHA 9170	187	May 12,2017

Number of Hopping Channel					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jul. 27, 2017

Average Time of Occupancy					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jul. 27, 2017

Hopping Channel Separation Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jul. 27, 2017

Bandwidth					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
2	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jul. 27, 2017

Peak Output Power					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
2	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jul. 27, 2017

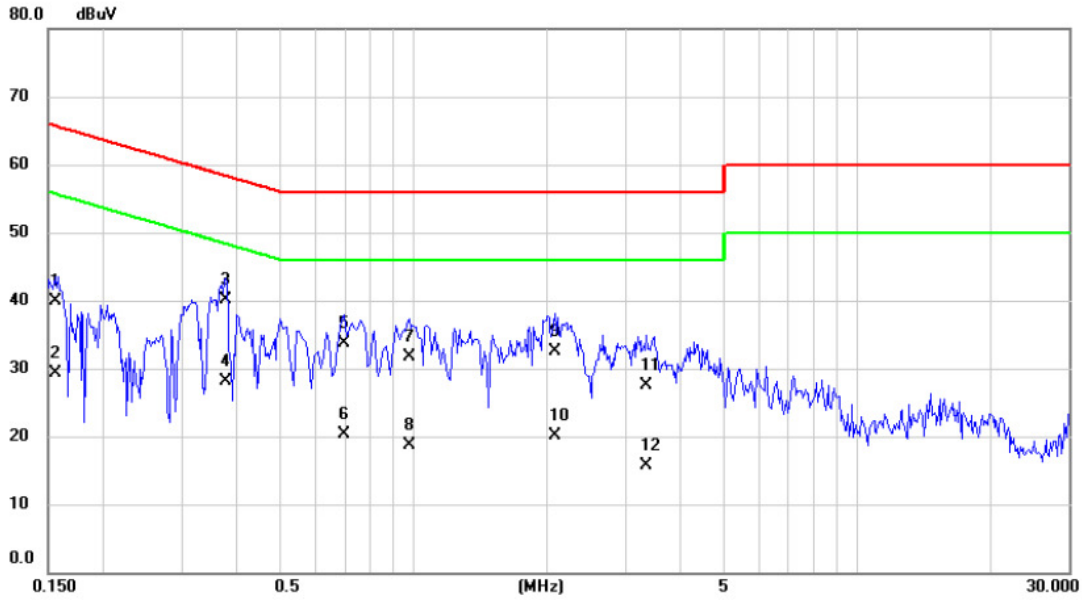
Antenna Conducted Spurious Emission					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY51160196	Jul. 27, 2017

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

ATTACHMENT A - CONDUCTED EMISSION

Test Mode:	TX Mode

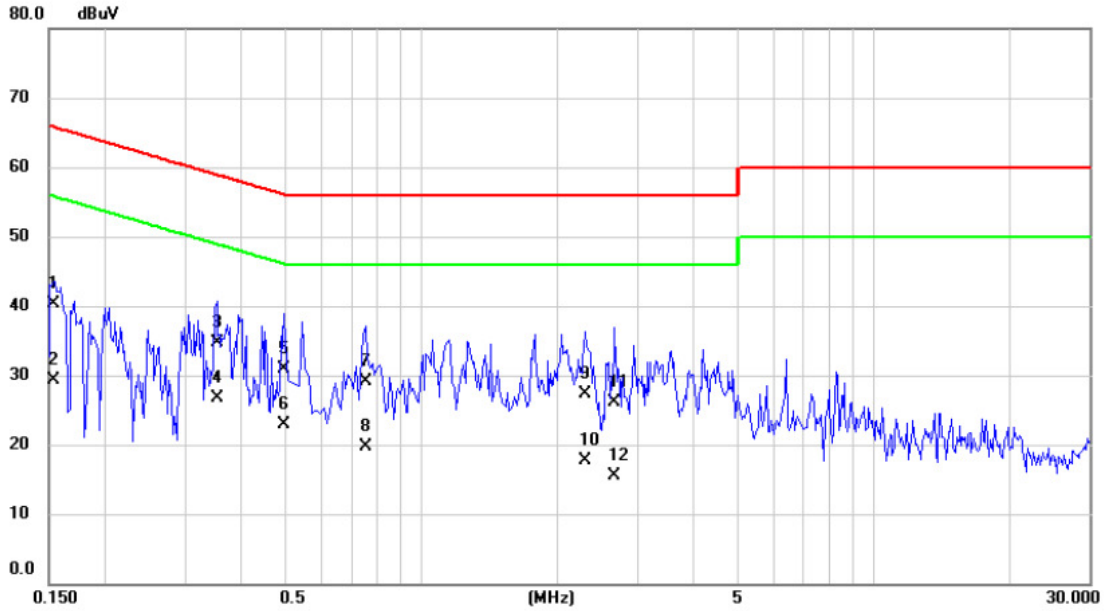
Line



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1563	30.20	9.76	39.96	65.66	-25.70	QP	
2		0.1563	19.50	9.76	29.26	55.66	-26.40	AVG	
3	*	0.3768	30.40	9.74	40.14	58.35	-18.21	QP	
4		0.3768	18.30	9.74	28.04	48.35	-20.31	AVG	
5		0.6980	24.00	9.75	33.75	56.00	-22.25	QP	
6		0.6980	10.50	9.75	20.25	46.00	-25.75	AVG	
7		0.9770	22.00	9.75	31.75	56.00	-24.25	QP	
8		0.9770	9.00	9.75	18.75	46.00	-27.25	AVG	
9		2.0840	22.60	9.82	32.42	56.00	-23.58	QP	
10		2.0840	10.30	9.82	20.12	46.00	-25.88	AVG	
11		3.3530	17.70	9.85	27.55	56.00	-28.45	QP	
12		3.3530	5.80	9.85	15.65	46.00	-30.35	AVG	

Test Mode:	TX Mode

Neutral

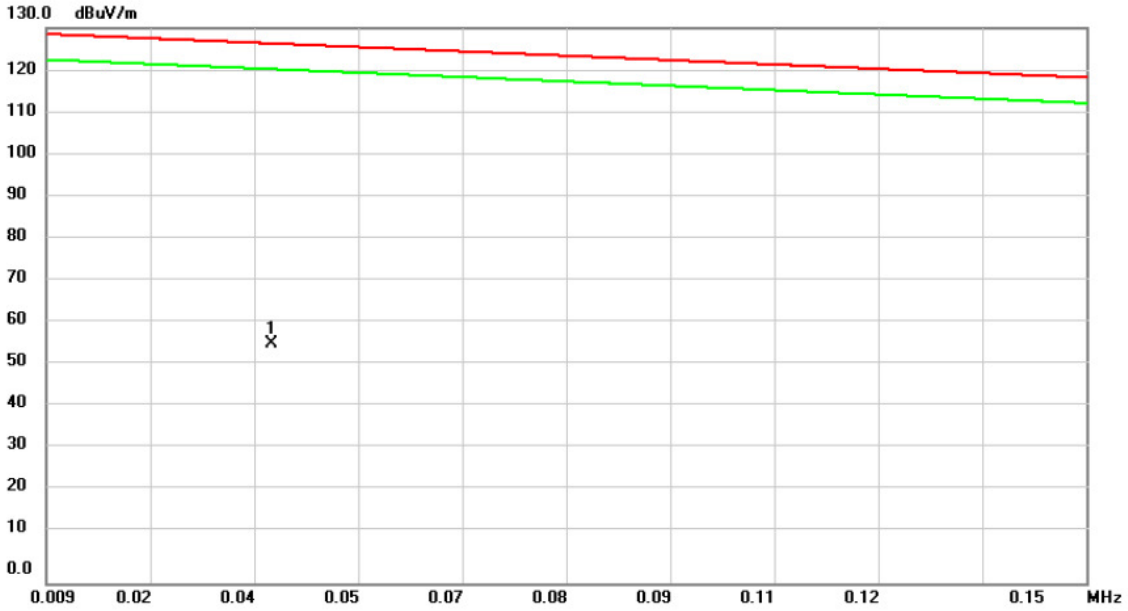


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1535	30.60	9.68	40.28	65.81	-25.53	QP	
2		0.1535	19.60	9.68	29.28	55.81	-26.53	AVG	
3		0.3530	25.10	9.68	34.78	58.89	-24.11	QP	
4	*	0.3530	17.10	9.68	26.78	48.89	-22.11	AVG	
5		0.4965	21.20	9.69	30.89	56.06	-25.17	QP	
6		0.4965	13.20	9.69	22.89	46.06	-23.17	AVG	
7		0.7520	19.50	9.70	29.20	56.00	-26.80	QP	
8		0.7520	10.10	9.70	19.80	46.00	-26.20	AVG	
9		2.3000	17.60	9.77	27.37	56.00	-28.63	QP	
10		2.3000	8.00	9.77	17.77	46.00	-28.23	AVG	
11		2.6780	16.30	9.78	26.08	56.00	-29.92	QP	
12		2.6780	5.70	9.78	15.48	46.00	-30.52	AVG	

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

Test Mode:	TX Mode_ NORMAL OPERATION

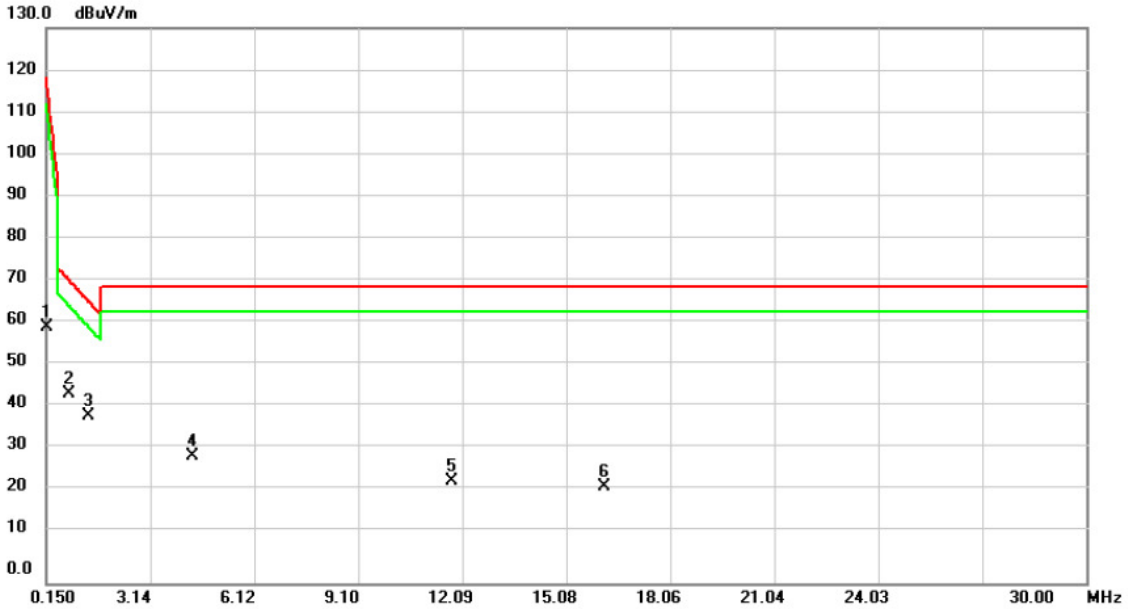
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0395	42.02	14.05	56.07	126.32	-70.25	peak	

Test Mode:	TX Mode_ NORMAL OPERATION

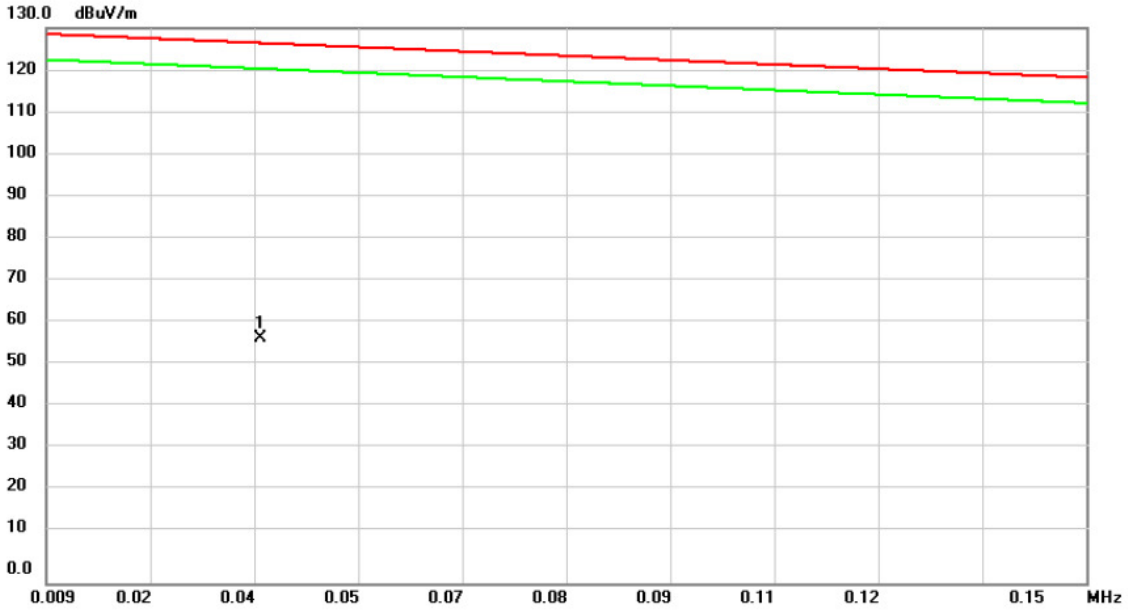
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1500	47.93	12.03	59.96	118.34	-58.38	peak	
2	*	0.8064	32.31	11.92	44.23	70.98	-26.75	peak	
3		1.3440	27.36	11.85	39.21	66.19	-26.98	peak	
4		4.3290	18.38	11.30	29.68	69.54	-39.86	peak	
5		11.7911	12.65	11.25	23.90	69.54	-45.64	peak	
6		16.1794	11.63	11.11	22.74	69.54	-46.80	peak	

Test Mode:	TX Mode_ NORMAL OPERATION

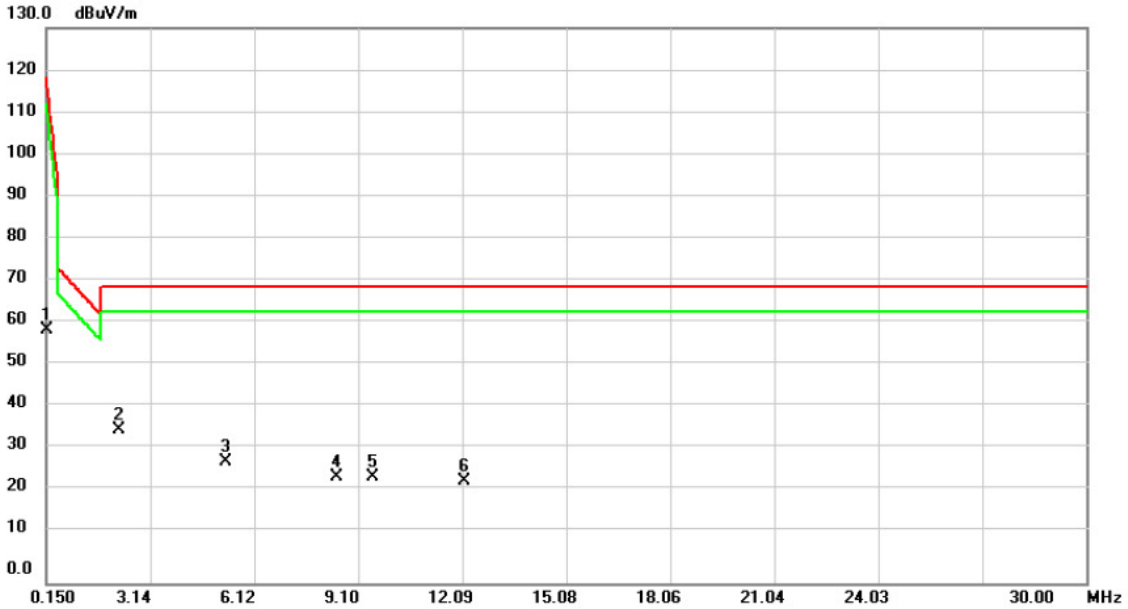
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0380	43.20	14.20	57.40	126.43	-69.03	peak	

Test Mode:	TX Mode_ NORMAL OPERATION

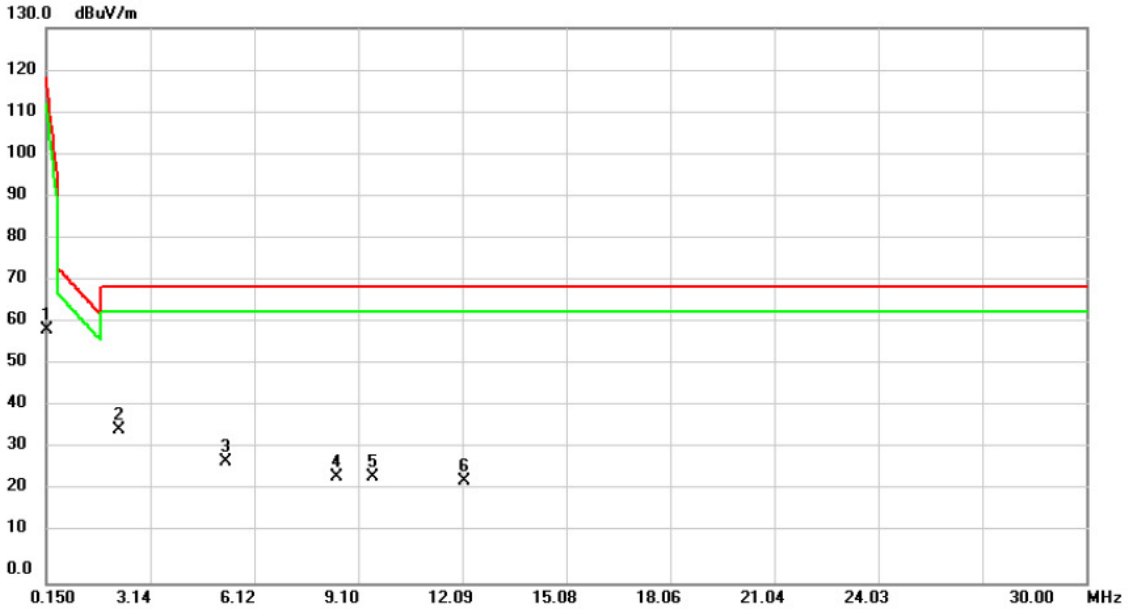
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1500	47.16	12.03	59.19	118.34	-59.15	peak	
2	*	2.2395	24.62	11.44	36.06	69.54	-33.48	peak	
3		5.2842	16.97	11.39	28.36	69.54	-41.18	peak	
4		8.4780	13.54	11.33	24.87	69.54	-44.67	peak	
5		9.5228	13.44	11.31	24.75	69.54	-44.79	peak	
6		12.1493	12.61	11.24	23.85	69.54	-45.69	peak	

Test Mode:	TX Mode_ NORMAL OPERATION

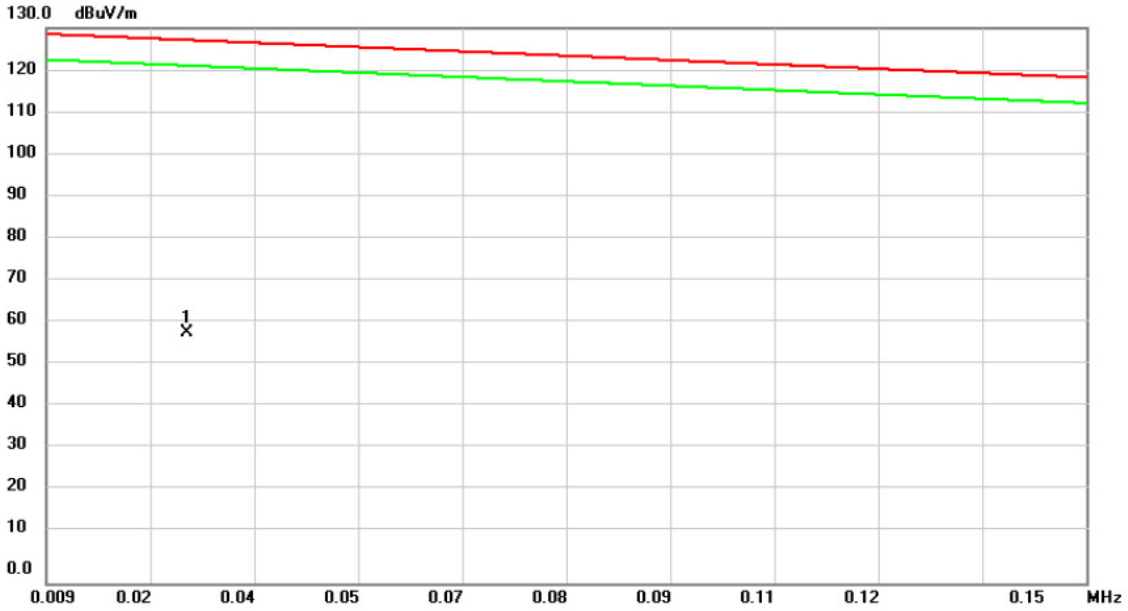
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1500	47.16	12.03	59.19	118.34	-59.15	peak	
2	*	2.2395	24.62	11.44	36.06	69.54	-33.48	peak	
3		5.2842	16.97	11.39	28.36	69.54	-41.18	peak	
4		8.4780	13.54	11.33	24.87	69.54	-44.67	peak	
5		9.5228	13.44	11.31	24.75	69.54	-44.79	peak	
6		12.1493	12.61	11.24	23.85	69.54	-45.69	peak	

Test Mode:	TX Mode_ CHARGE

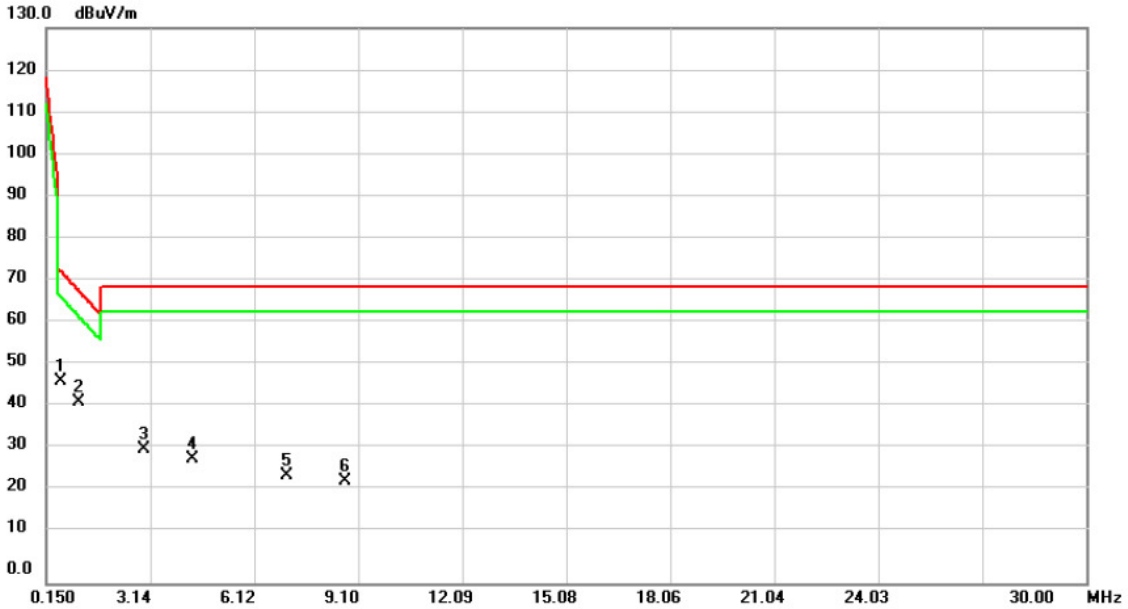
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0280	43.17	15.55	58.72	127.15	-68.43	peak	

Test Mode:	TX Mode_ CHARGE

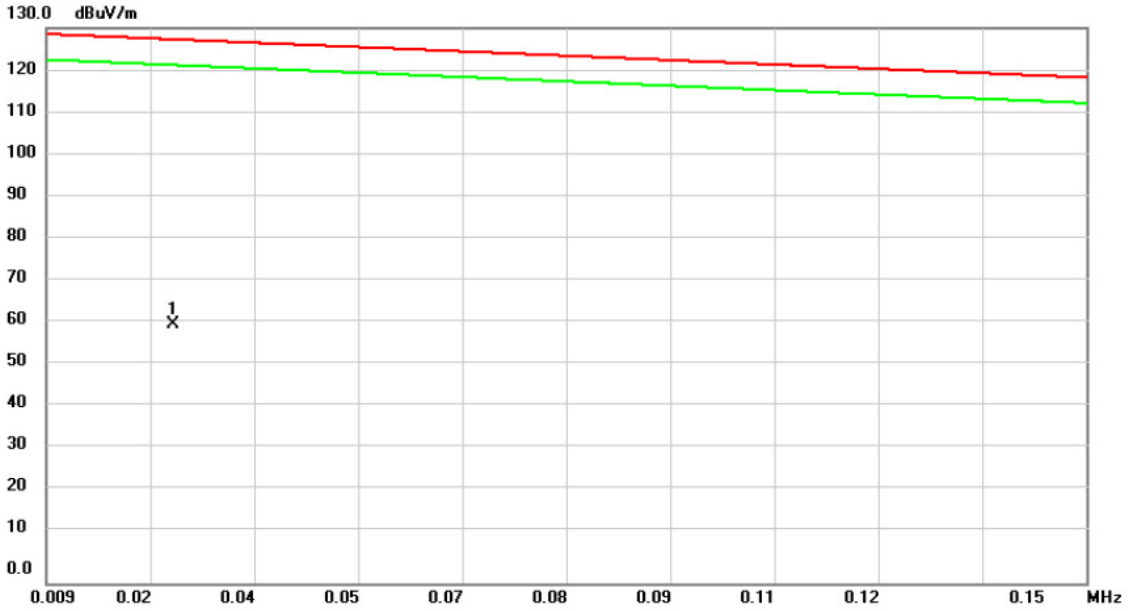
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.5675	35.40	11.83	47.23	73.11	-25.88	peak	
2		1.0750	30.36	11.97	42.33	68.59	-26.26	peak	
3		2.9560	20.15	11.12	31.27	69.54	-38.27	peak	
4		4.3590	17.85	11.30	29.15	69.54	-40.39	peak	
5		7.0453	13.75	11.36	25.11	69.54	-44.43	peak	
6		8.7170	12.70	11.33	24.03	69.54	-45.51	peak	

Test Mode:	TX Mode_ CHARGE

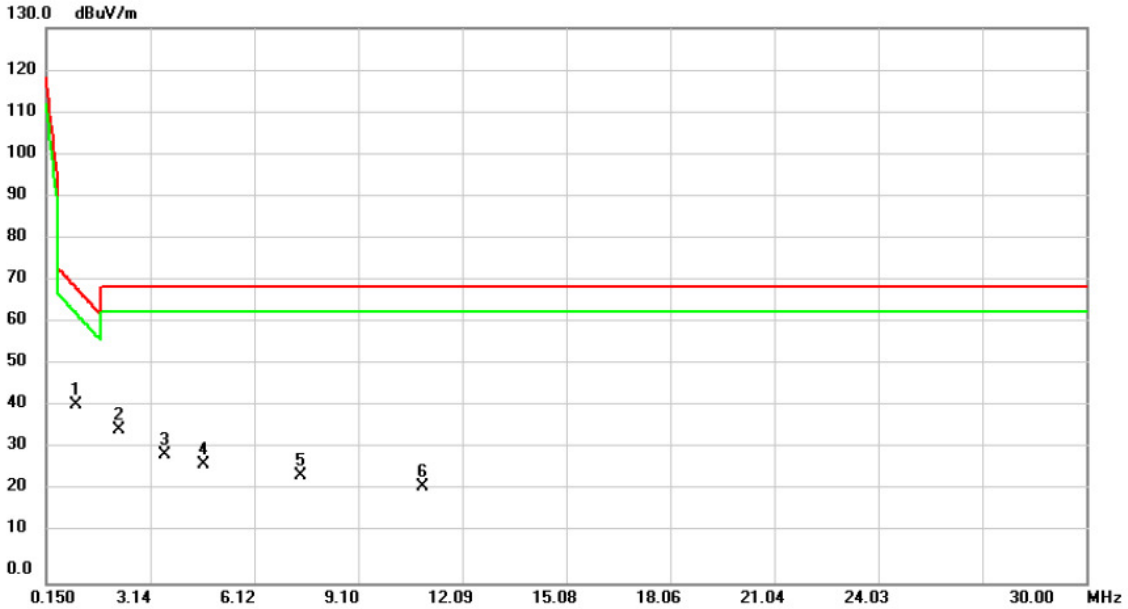
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0262	44.44	16.04	60.48	127.28	-66.80	peak	

Test Mode:	TX Mode_ CHARGE

Ant 90°

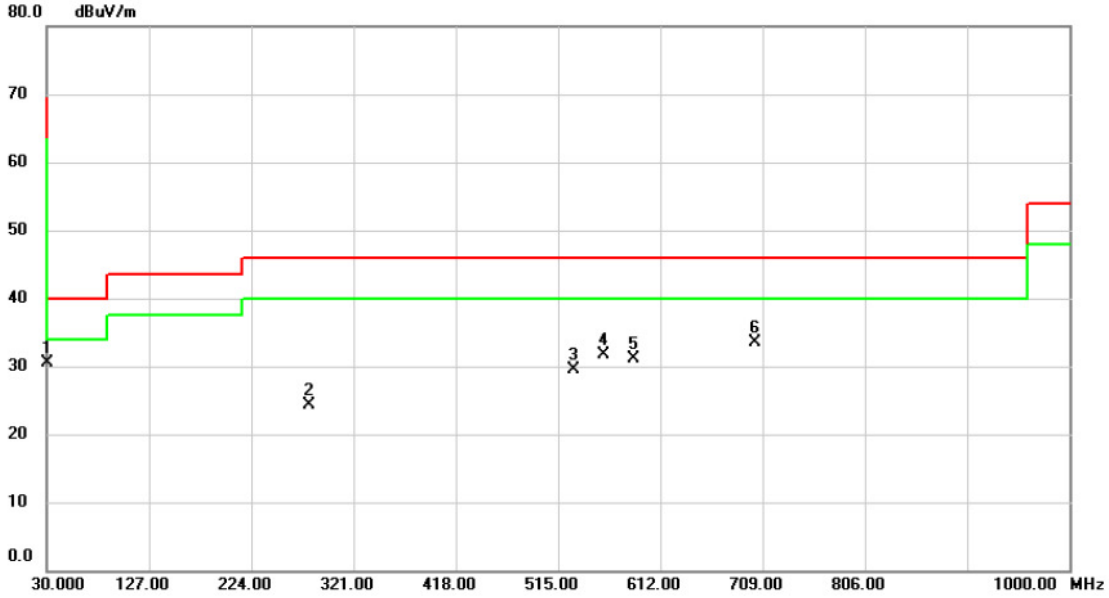


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.9858	29.83	11.99	41.82	69.38	-27.56	peak	
2		2.2395	24.62	11.44	36.06	69.54	-33.48	peak	
3		3.5530	18.85	11.18	30.03	69.54	-39.51	peak	
4		4.6573	16.56	11.35	27.91	69.54	-41.63	peak	
5		7.4633	13.78	11.35	25.13	69.54	-44.41	peak	
6		10.9557	11.31	11.27	22.58	69.54	-46.96	peak	

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

Test Mode:	TX Mode_ NORMAL OPERATION

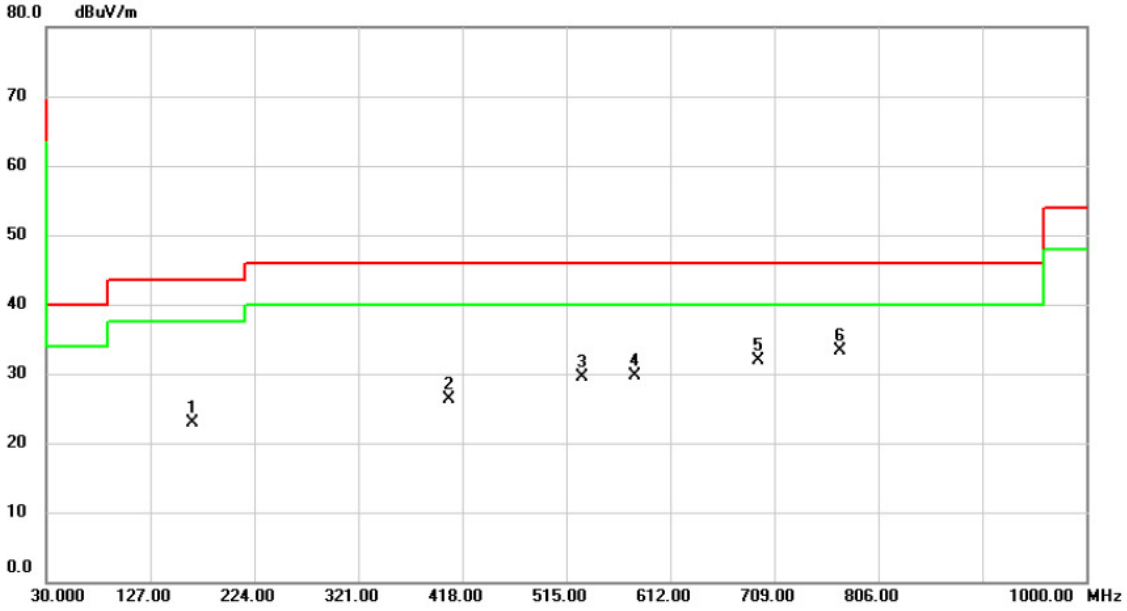
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	30.9700	39.63	-9.03	30.60	40.00	-9.40	peak	
2		279.2900	32.55	-8.26	24.29	46.00	-21.71	peak	
3		529.5500	31.82	-2.38	29.44	46.00	-16.56	peak	
4		558.6500	33.48	-1.69	31.79	46.00	-14.21	peak	
5		586.7800	32.17	-0.97	31.20	46.00	-14.80	peak	
6		701.2400	32.69	0.88	33.57	46.00	-12.43	peak	

Test Mode:	TX Mode_ NORMAL OPERATION

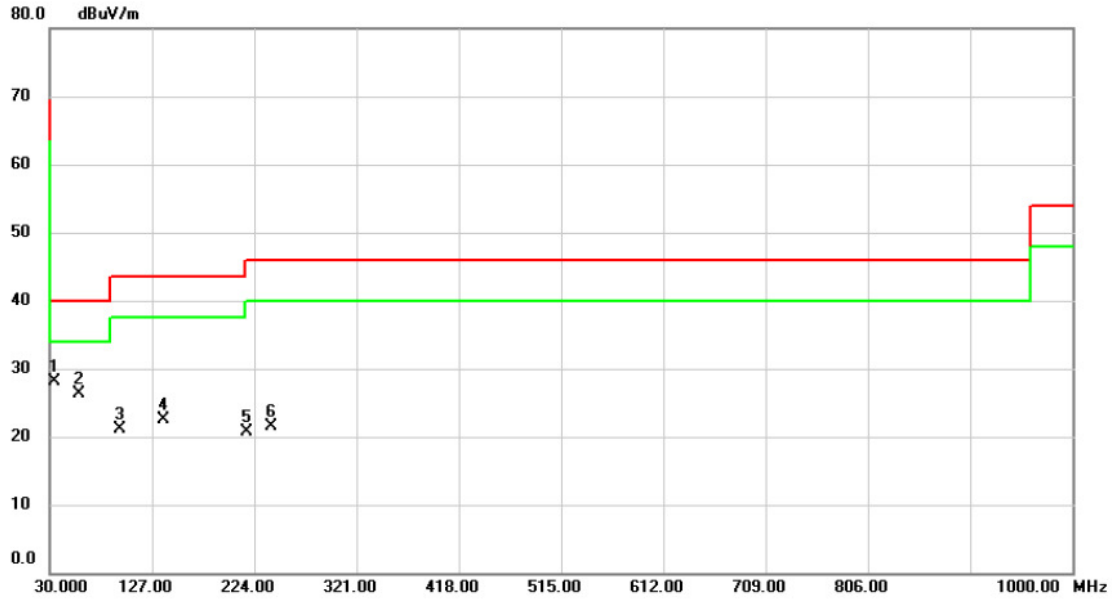
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		165.8000	31.80	-8.96	22.84	43.50	-20.66	peak	
2		405.3900	31.42	-5.09	26.33	46.00	-19.67	peak	
3		529.5500	31.95	-2.38	29.57	46.00	-16.43	peak	
4		579.0200	30.94	-1.16	29.78	46.00	-16.22	peak	
5		694.4500	31.09	0.74	31.83	46.00	-14.17	peak	
6	*	770.1100	31.13	2.10	33.23	46.00	-12.77	peak	

Test Mode:	TX Mode_ CHARGE

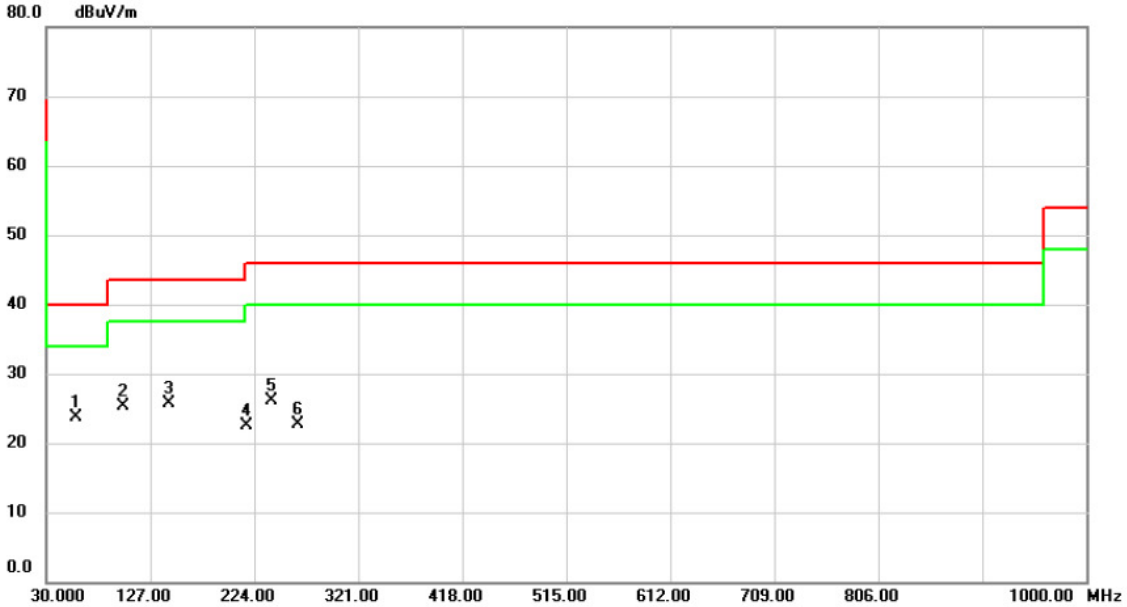
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	33.8800	37.23	-9.08	28.15	40.00	-11.85	peak	
2		57.1600	35.20	-8.83	26.37	40.00	-13.63	peak	
3		96.9300	34.27	-13.14	21.13	43.50	-22.37	peak	
4		138.6400	31.39	-8.98	22.41	43.50	-21.09	peak	
5		216.2400	31.84	-11.13	20.71	46.00	-25.29	peak	
6		240.4900	31.09	-9.68	21.41	46.00	-24.59	peak	

Test Mode:	TX Mode_ CHARGE

Horizontal

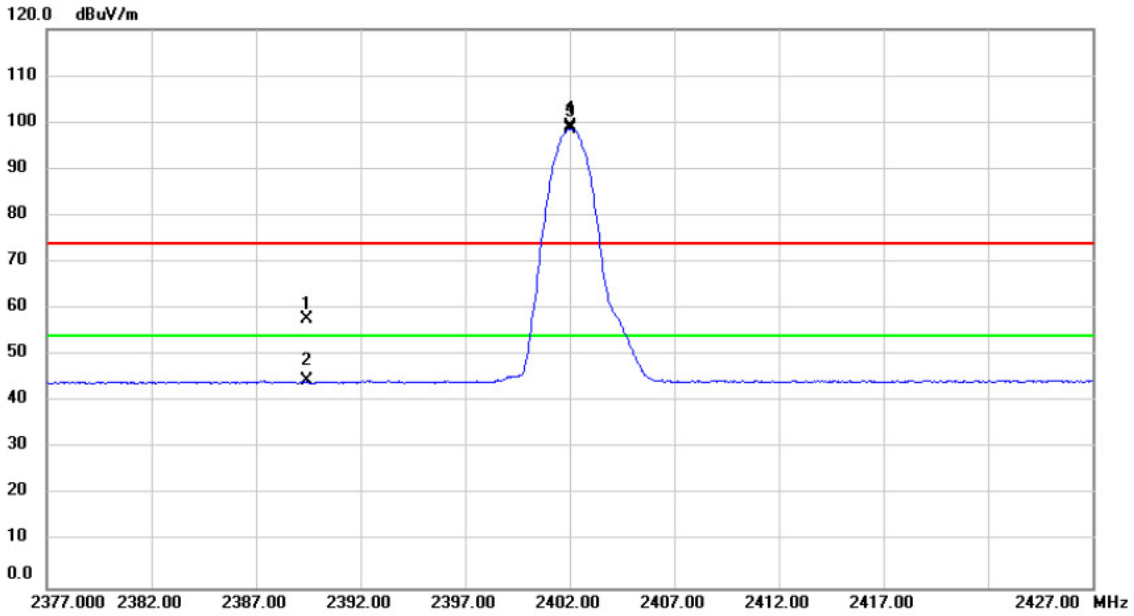


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	57.1600	32.46	-8.83	23.63	40.00	-16.37	peak	
2		101.7800	37.83	-12.60	25.23	43.50	-18.27	peak	
3		144.4600	34.60	-8.90	25.70	43.50	-17.80	peak	
4		216.2400	33.68	-11.13	22.55	46.00	-23.45	peak	
5		240.4900	35.80	-9.68	26.12	46.00	-19.88	peak	
6		264.7400	31.57	-8.86	22.71	46.00	-23.29	peak	

ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHZ)

Test Mode :	TX 2402MHz _CH00_1Mbps

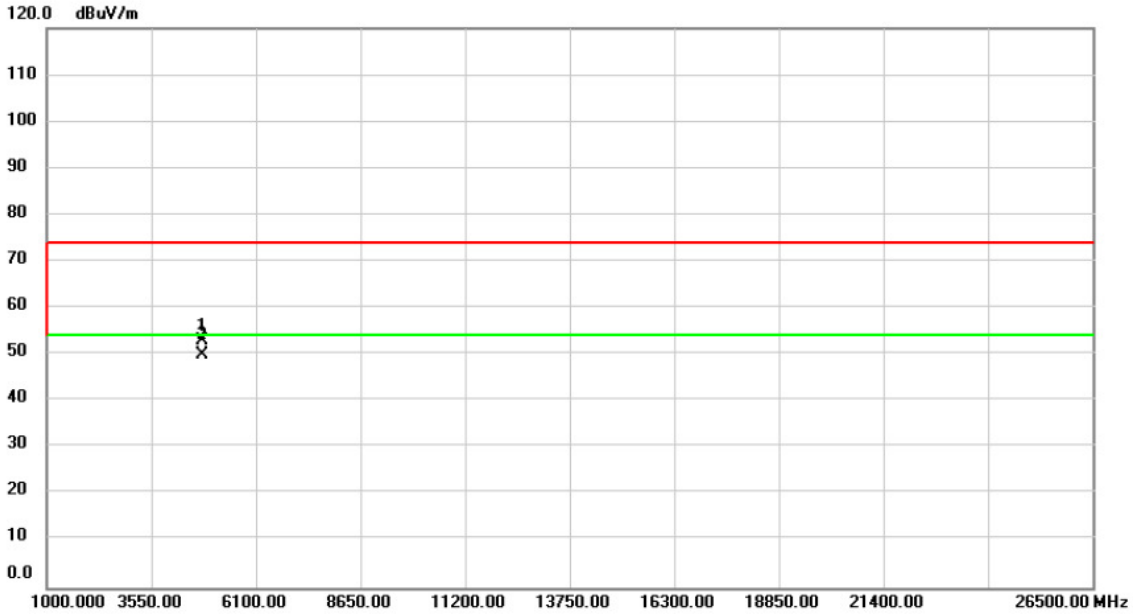
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2389.454	26.78	30.96	57.74	74.00	-16.26	peak	
2		2389.454	13.65	30.96	44.61	54.00	-9.39	AVG	
3	X	2402.000	68.02	31.01	99.03	74.00	25.03	peak	No Limit
4	*	2402.000	67.67	31.01	98.68	54.00	44.68	AVG	No Limit

Test Mode :	TX 2402MHz _CH00_1Mbps

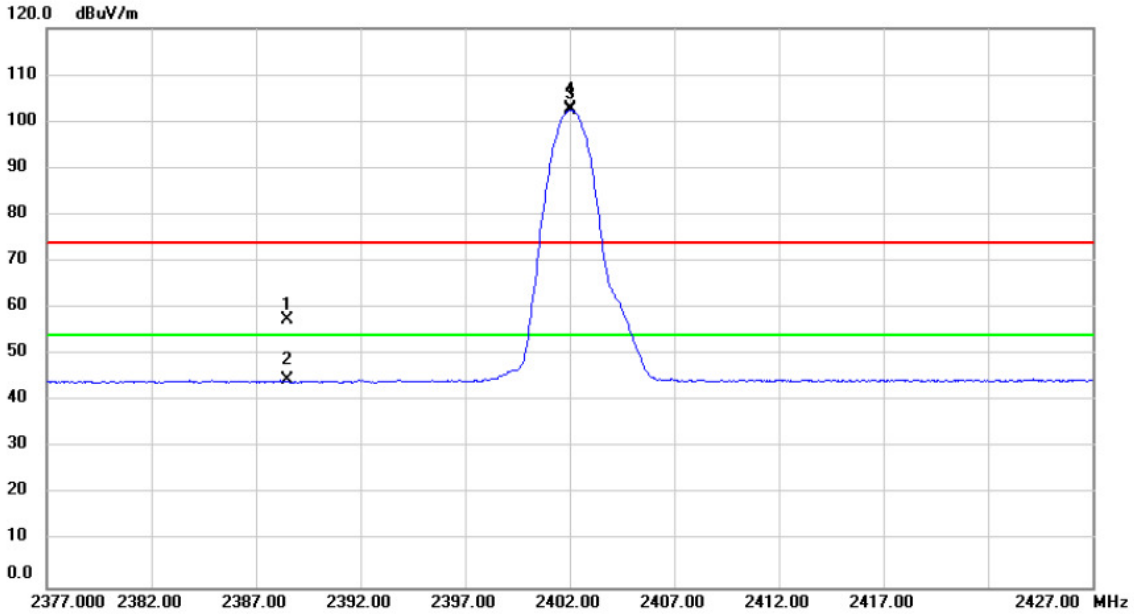
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.000	64.54	-11.50	53.04	74.00	-20.96	peak	
2	*	4804.000	61.52	-11.50	50.02	54.00	-3.98	AVG	

Test Mode :	TX 2402MHz _CH00_1Mbps

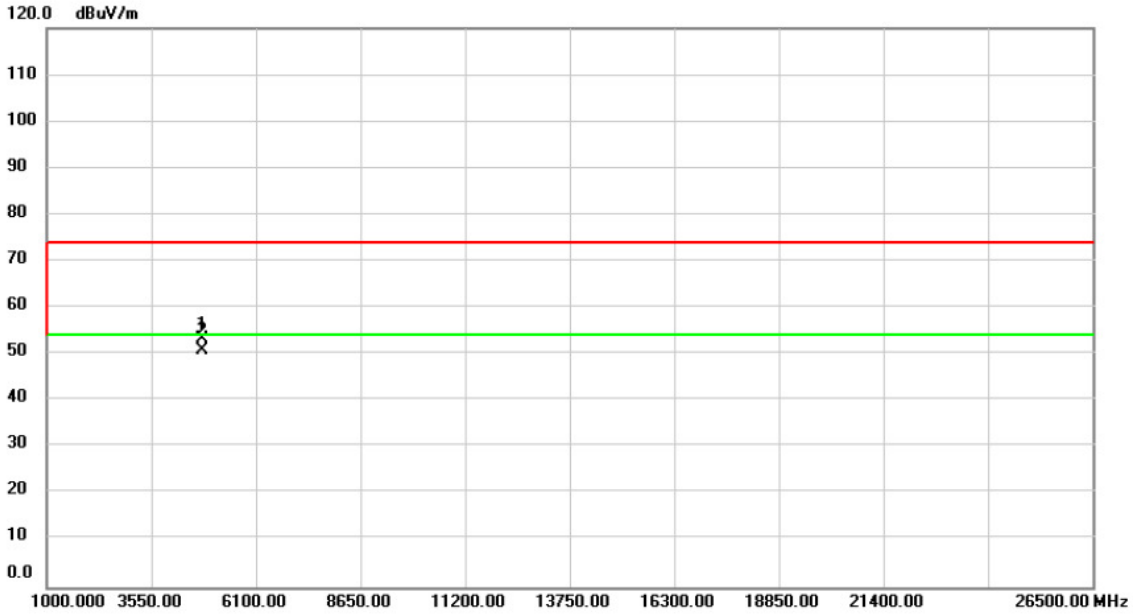
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2388.518	26.57	30.96	57.53	74.00	-16.47	peak	
2		2388.518	13.49	30.96	44.45	54.00	-9.55	AVG	
3	X	2402.000	71.75	31.01	102.76	74.00	28.76	peak	No Limit
4	*	2402.050	71.42	31.01	102.43	54.00	48.43	AVG	No Limit

Test Mode :	TX 2402MHz _CH00_1Mbps

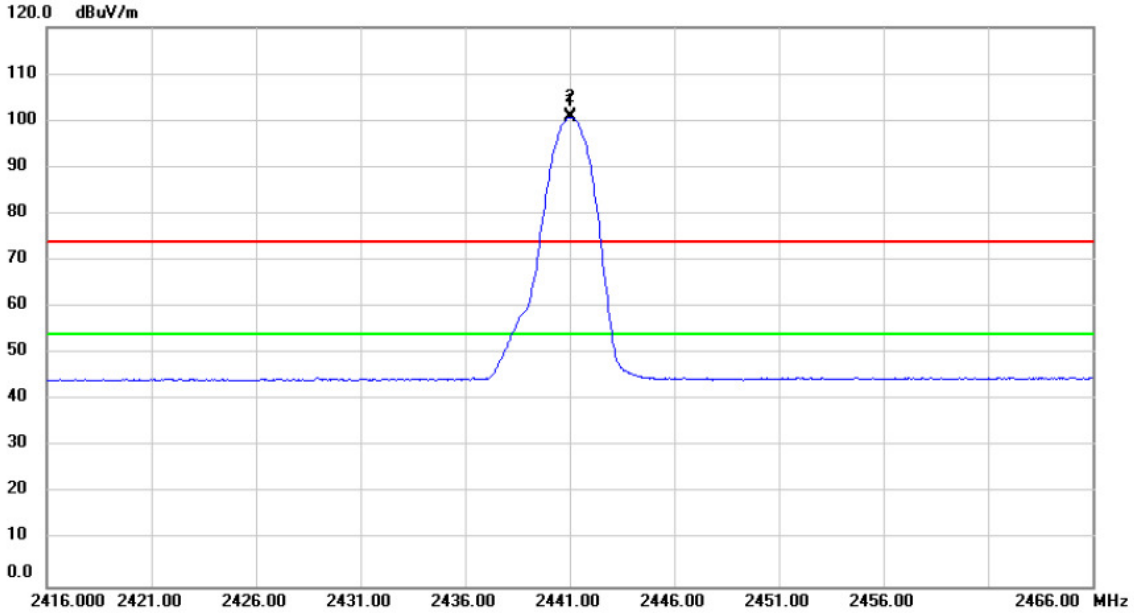
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.000	64.88	-11.50	53.38	74.00	-20.62	peak	
2	*	4804.000	62.37	-11.50	50.87	54.00	-3.13	AVG	

Test Mode :	TX 2441MHz _CH39_1Mbps

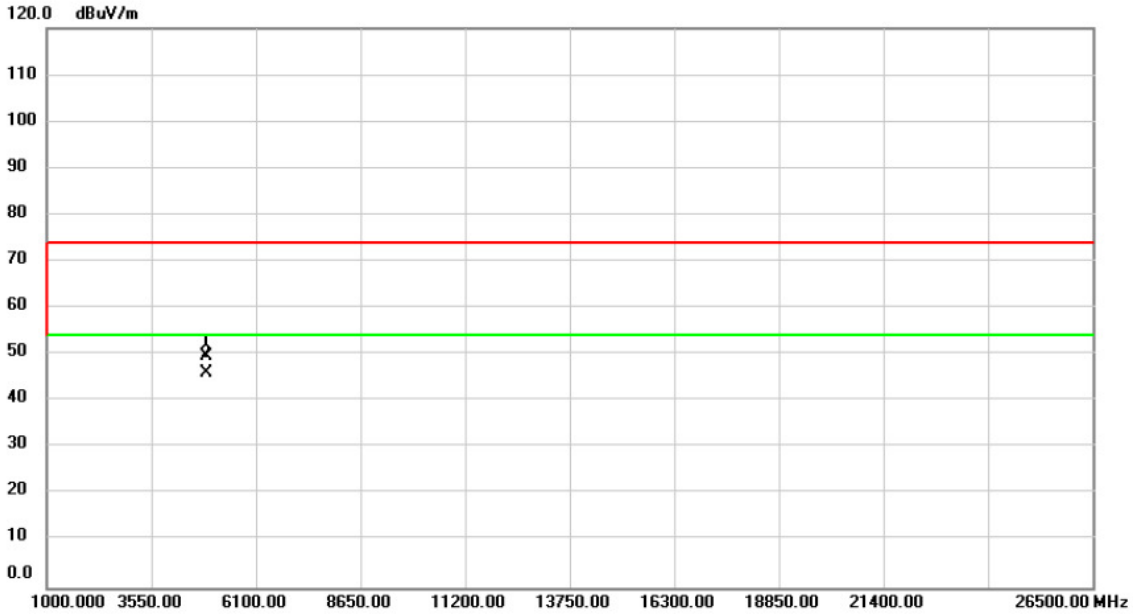
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2441.000	69.93	31.15	101.08	74.00	27.08	peak	No Limit
2	*	2441.000	69.59	31.15	100.74	54.00	46.74	AVG	No Limit

Test Mode :	TX 2441MHz _CH39_1Mbps

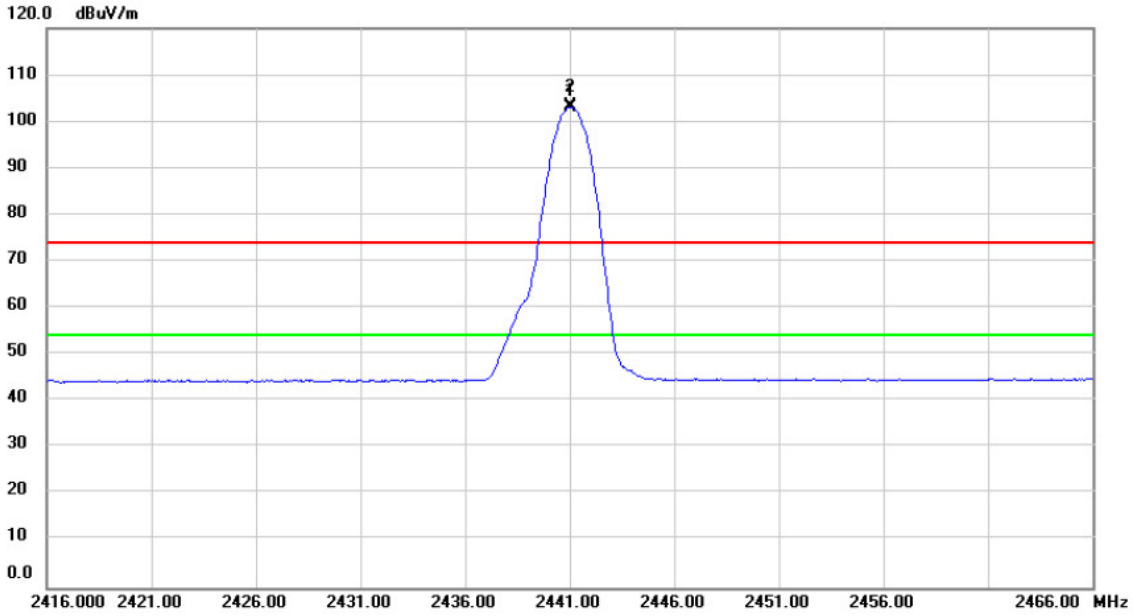
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4882.000	61.06	-11.38	49.68	74.00	-24.32	peak	
2	*	4882.000	57.39	-11.38	46.01	54.00	-7.99	AVG	

Test Mode :	TX 2441MHz _CH39_1Mbps

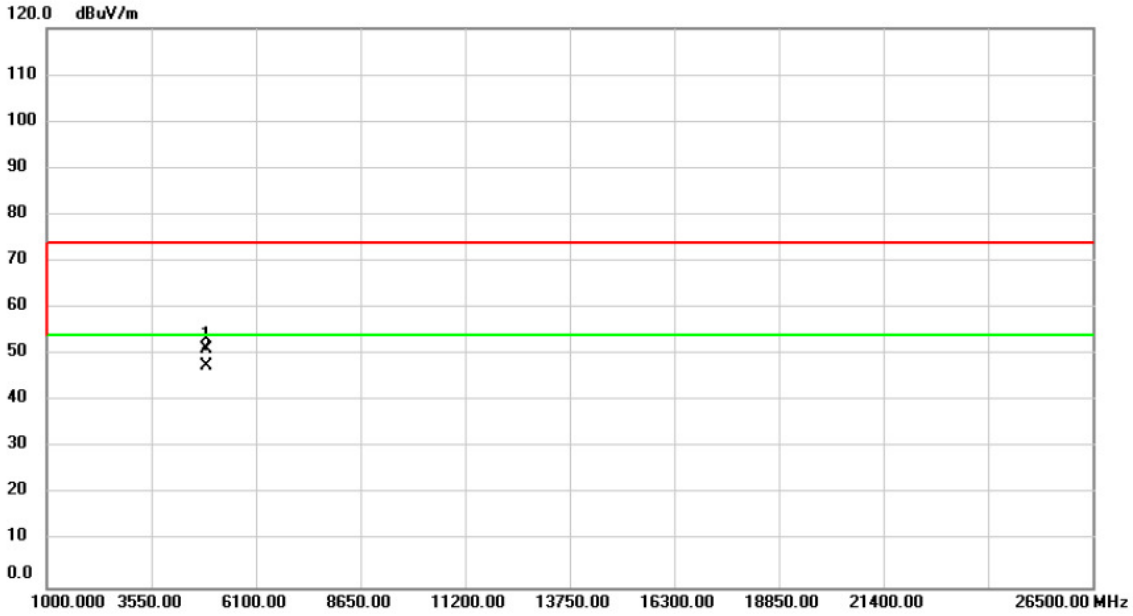
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2441.000	72.34	31.15	103.49	74.00	29.49	peak	No Limit
2	*	2441.000	72.02	31.15	103.17	54.00	49.17	AVG	No Limit

Test Mode :	TX 2441MHz _CH39_1Mbps

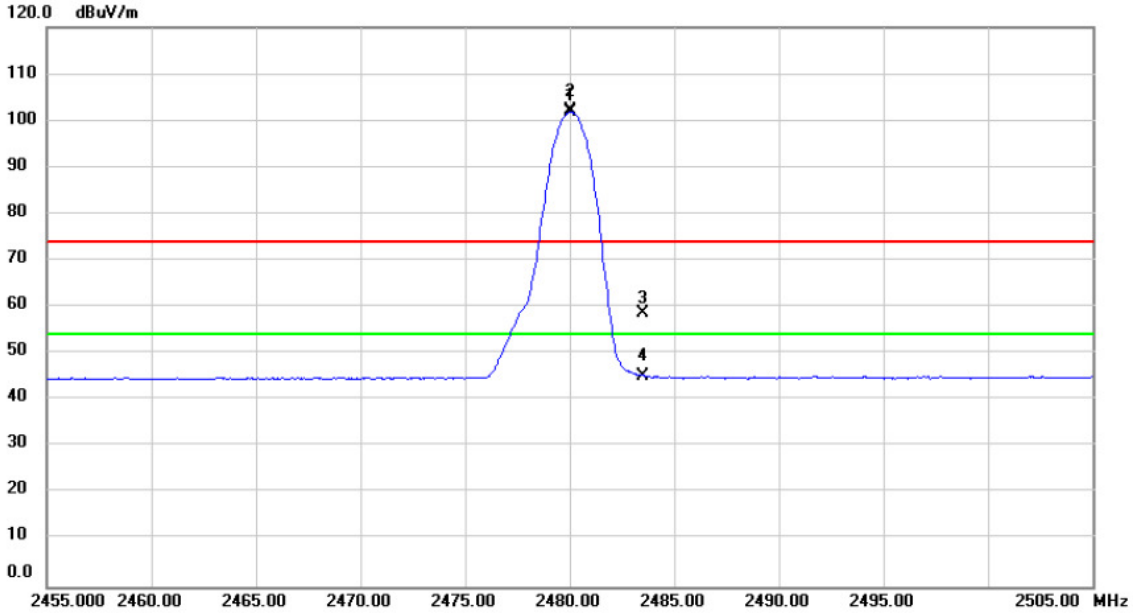
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4882.000	62.39	-11.38	51.01	74.00	-22.99	peak	
2	*	4882.000	58.82	-11.38	47.44	54.00	-6.56	AVG	

Test Mode :	TX 2480MHz _CH78_1Mbps

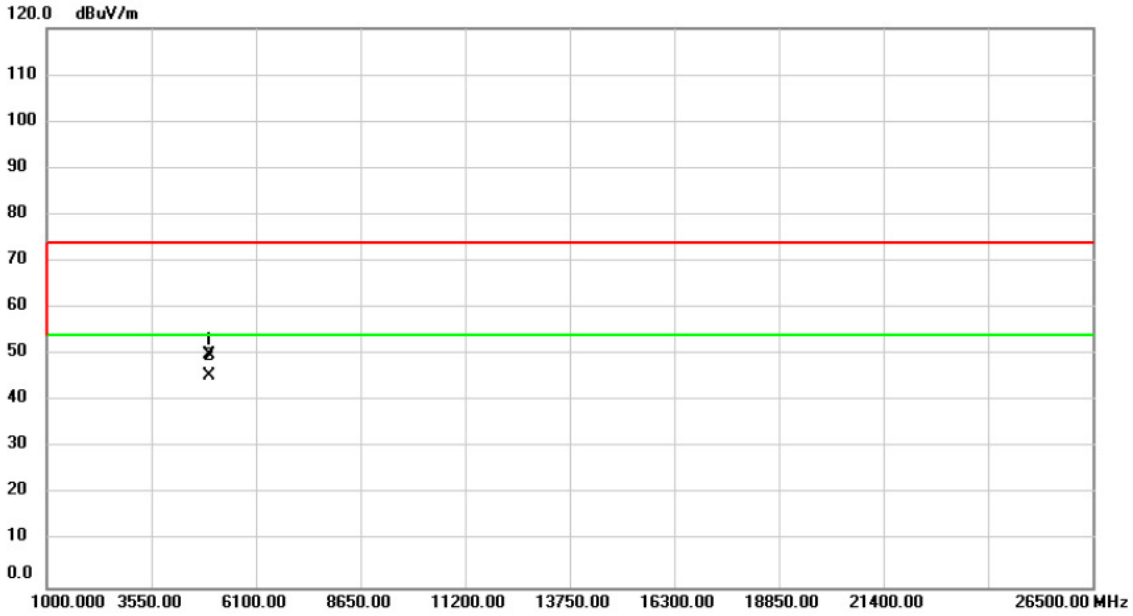
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2480.000	70.88	31.29	102.17	74.00	28.17	peak	No Limit
2	*	2480.000	70.57	31.29	101.86	54.00	47.86	AVG	No Limit
3		2483.500	27.21	31.31	58.52	74.00	-15.48	peak	
4		2483.500	13.99	31.31	45.30	54.00	-8.70	AVG	

Test Mode :	TX 2480MHz _CH78_1Mbps

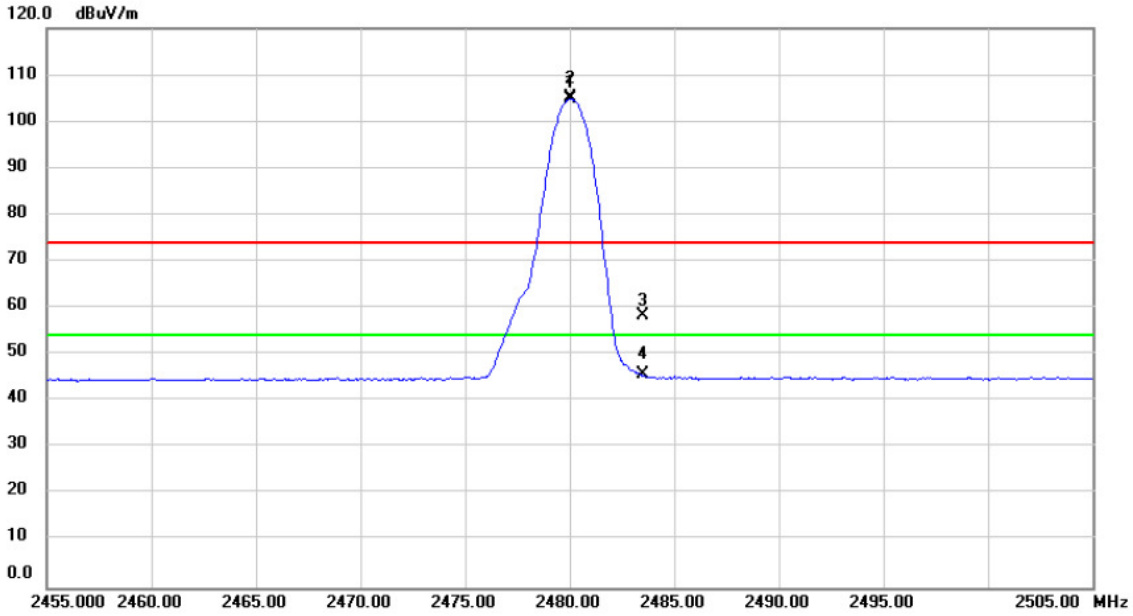
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.000	61.06	-11.25	49.81	74.00	-24.19	peak	
2	*	4960.000	56.65	-11.25	45.40	54.00	-8.60	AVG	

Test Mode :	TX 2480MHz _CH78_1Mbps

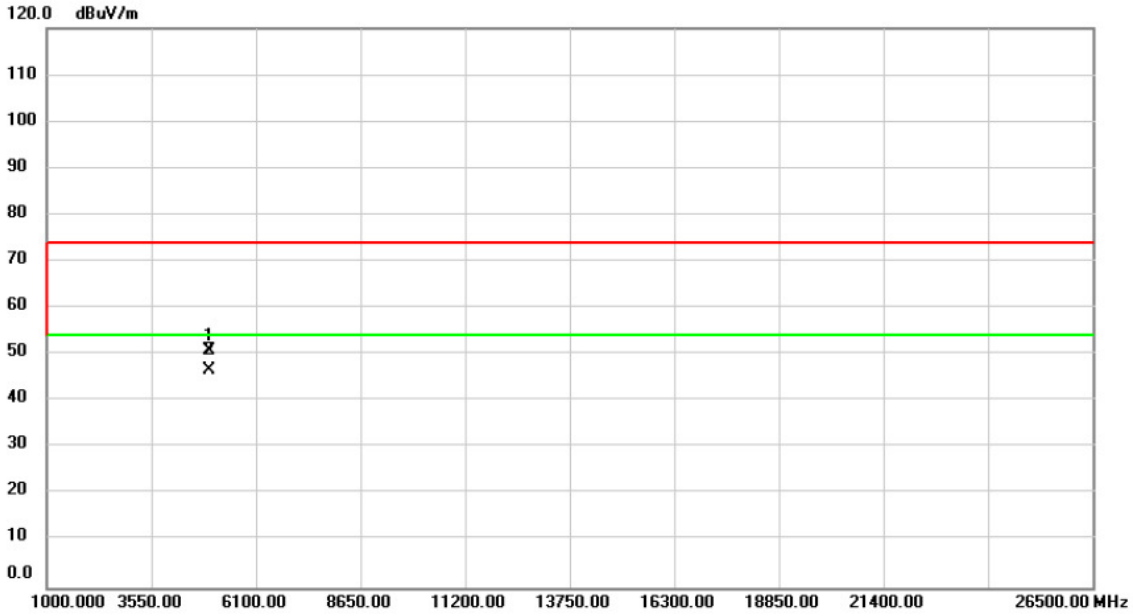
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2480.000	73.84	31.29	105.13	74.00	31.13	peak	No Limit
2	*	2480.000	73.51	31.29	104.80	54.00	50.80	AVG	No Limit
3		2483.500	27.00	31.31	58.31	74.00	-15.69	peak	
4		2483.500	14.35	31.31	45.66	54.00	-8.34	AVG	

Test Mode :	TX 2480MHz _CH78_1Mbps

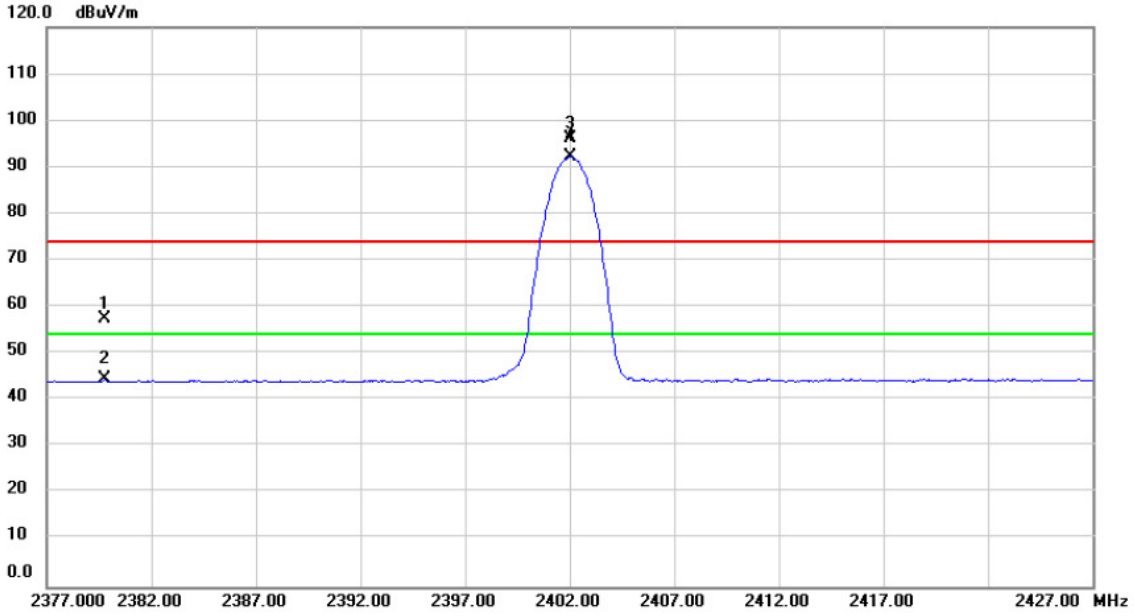
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.000	62.05	-11.25	50.80	74.00	-23.20	peak	
2	*	4960.000	57.78	-11.25	46.53	54.00	-7.47	AVG	

Test Mode :	TX 2402MHz _CH00_3Mbps

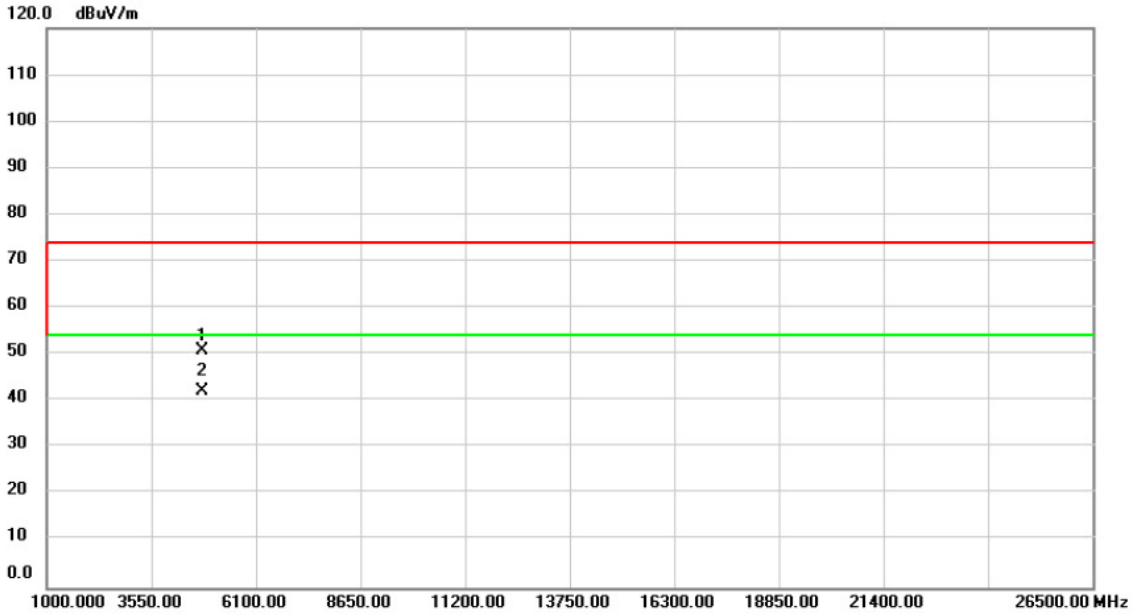
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2379.750	26.64	30.92	57.56	74.00	-16.44	peak	
2		2379.750	13.50	30.92	44.42	54.00	-9.58	AVG	
3	X	2402.000	65.15	31.01	96.16	74.00	22.16	peak	No Limit
4	*	2402.000	61.17	31.01	92.18	54.00	38.18	AVG	No Limit

Test Mode :	TX 2402MHz _CH00_3Mbps

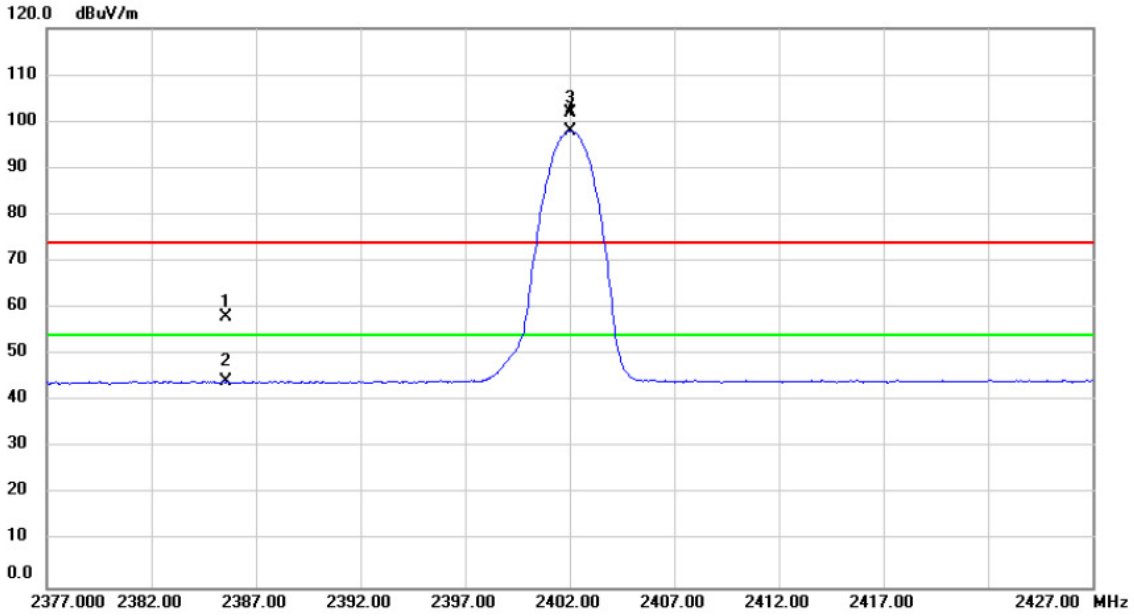
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.000	62.24	-11.50	50.74	74.00	-23.26	peak	
2	*	4804.000	53.77	-11.50	42.27	54.00	-11.73	AVG	

Test Mode :	TX 2402MHz _CH00_3Mbps

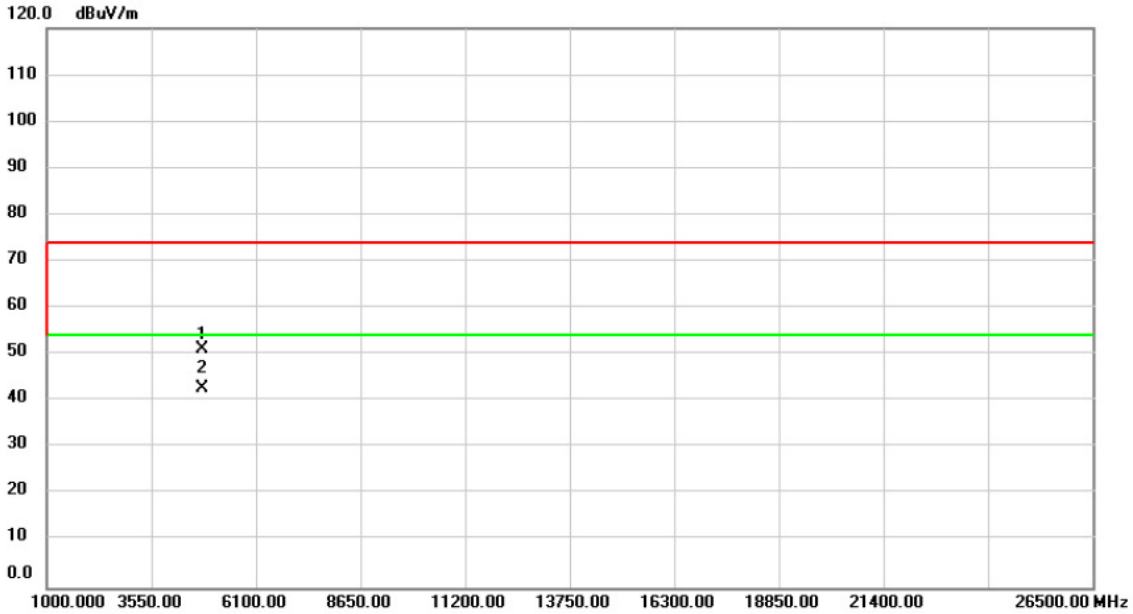
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2385.567	27.22	30.95	58.17	74.00	-15.83	peak	
2		2385.567	13.37	30.95	44.32	54.00	-9.68	AVG	
3	X	2402.000	70.96	31.01	101.97	74.00	27.97	peak	No Limit
4	*	2402.000	66.99	31.01	98.00	54.00	44.00	AVG	No Limit

Test Mode :	TX 2402MHz _CH00_3Mbps

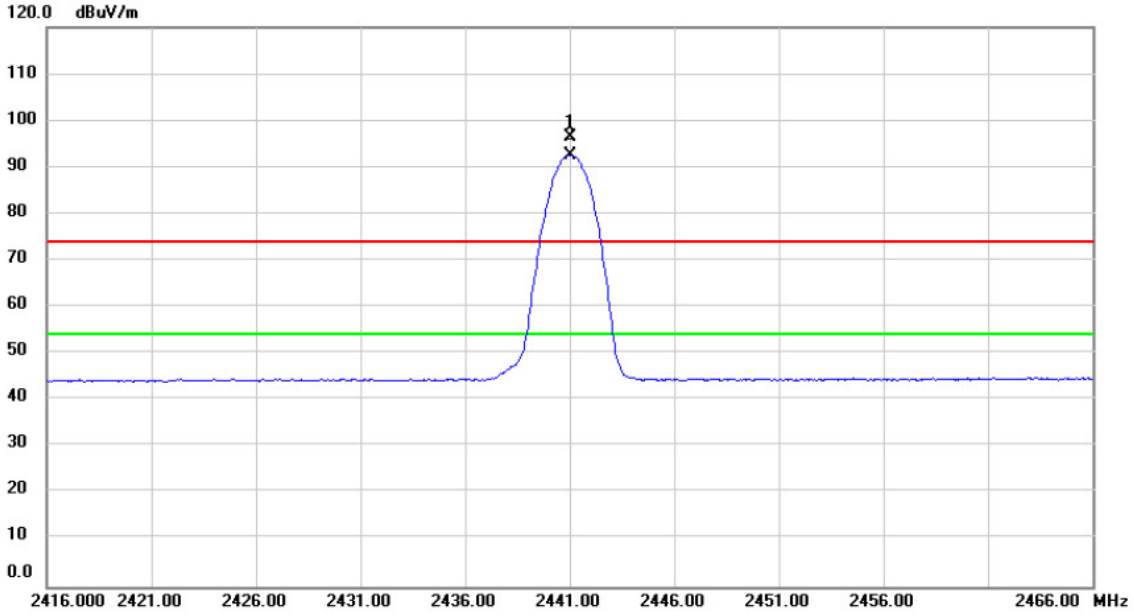
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4804.000	62.79	-11.50	51.29	74.00	-22.71	peak	
2	*	4804.000	54.21	-11.50	42.71	54.00	-11.29	AVG	

Test Mode :	TX 2441MHz _CH39_3Mbps

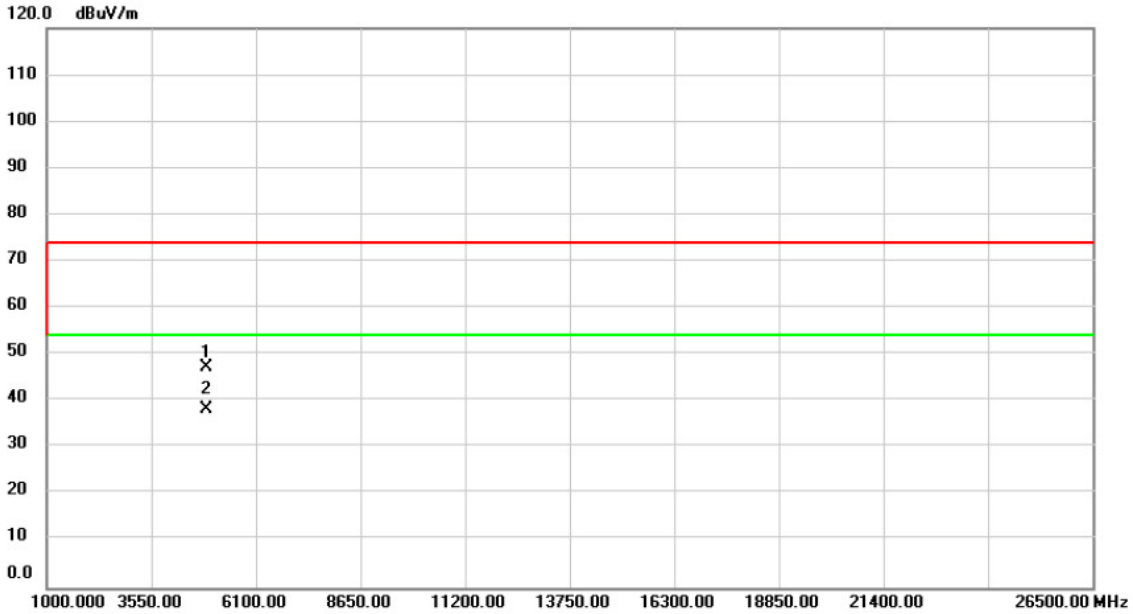
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2441.000	65.35	31.15	96.50	74.00	22.50	peak	No Limit
2	*	2441.000	61.45	31.15	92.60	54.00	38.60	AVG	No Limit

Test Mode :	TX 2441MHz _CH39_3Mbps

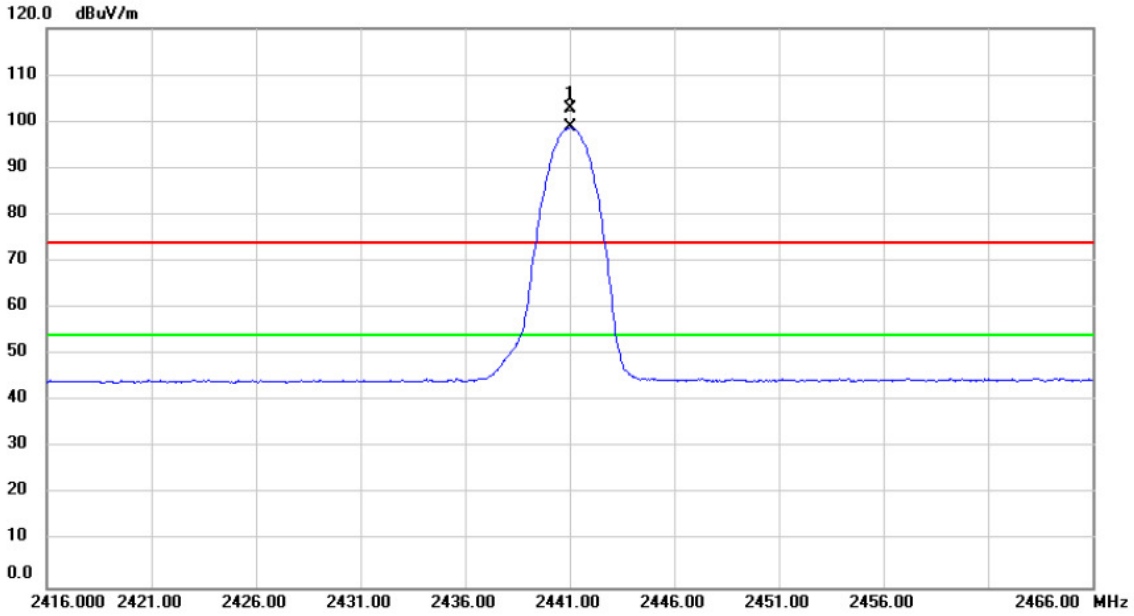
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4882.000	58.53	-11.38	47.15	74.00	-26.85	peak	
2	*	4882.000	49.52	-11.38	38.14	54.00	-15.86	AVG	

Test Mode :	TX 2441MHz _CH39_3Mbps

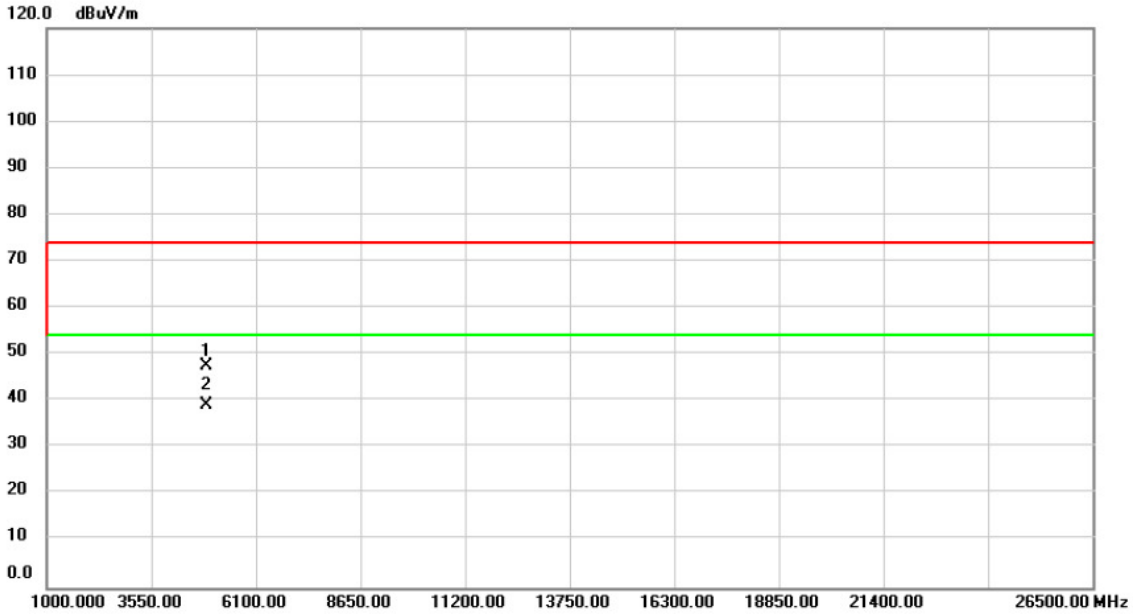
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2441.000	71.52	31.15	102.67	74.00	28.67	peak	No Limit
2	*	2441.000	67.57	31.15	98.72	54.00	44.72	AVG	No Limit

Test Mode :	TX 2441MHz _CH39_3Mbps

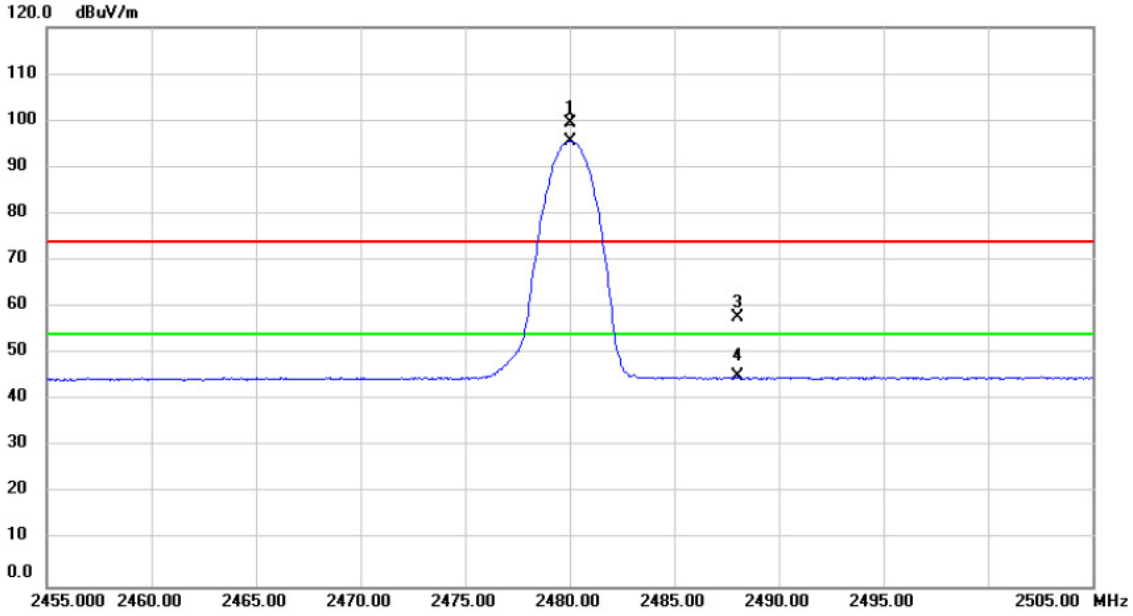
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4882.000	59.07	-11.38	47.69	74.00	-26.31	peak	
2	*	4882.000	50.51	-11.38	39.13	54.00	-14.87	AVG	

Test Mode :	TX 2480MHz _CH78_3Mbps

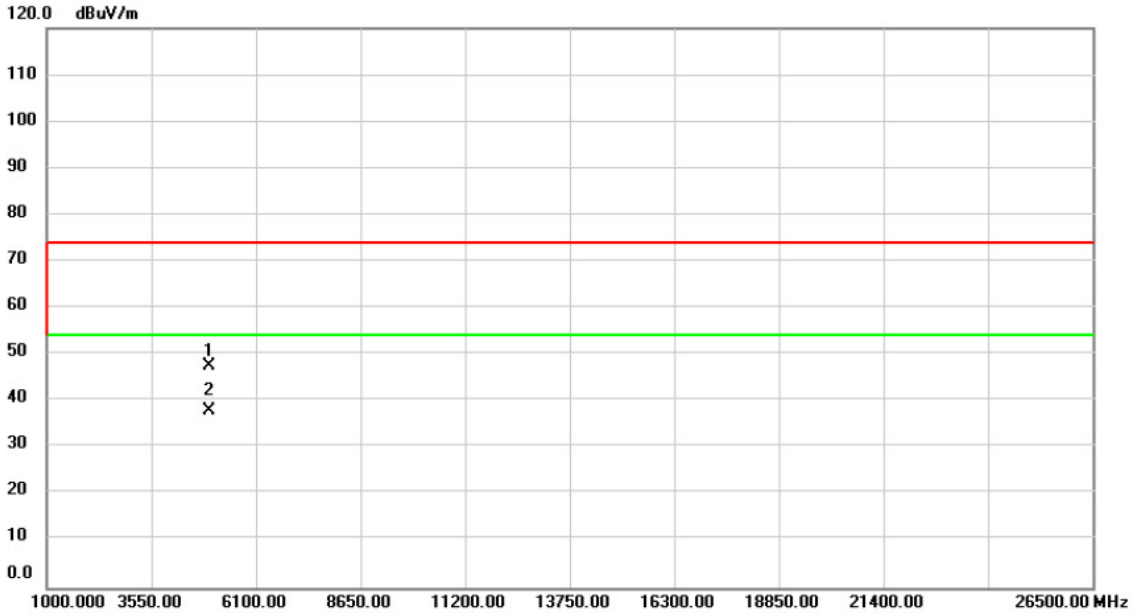
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2480.000	68.22	31.29	99.51	74.00	25.51	peak	No Limit
2	*	2480.000	64.34	31.29	95.63	54.00	41.63	AVG	No Limit
3		2488.050	26.55	31.33	57.88	74.00	-16.12	peak	
4		2488.050	13.71	31.33	45.04	54.00	-8.96	AVG	

Test Mode :	TX 2480MHz _CH78_3Mbps

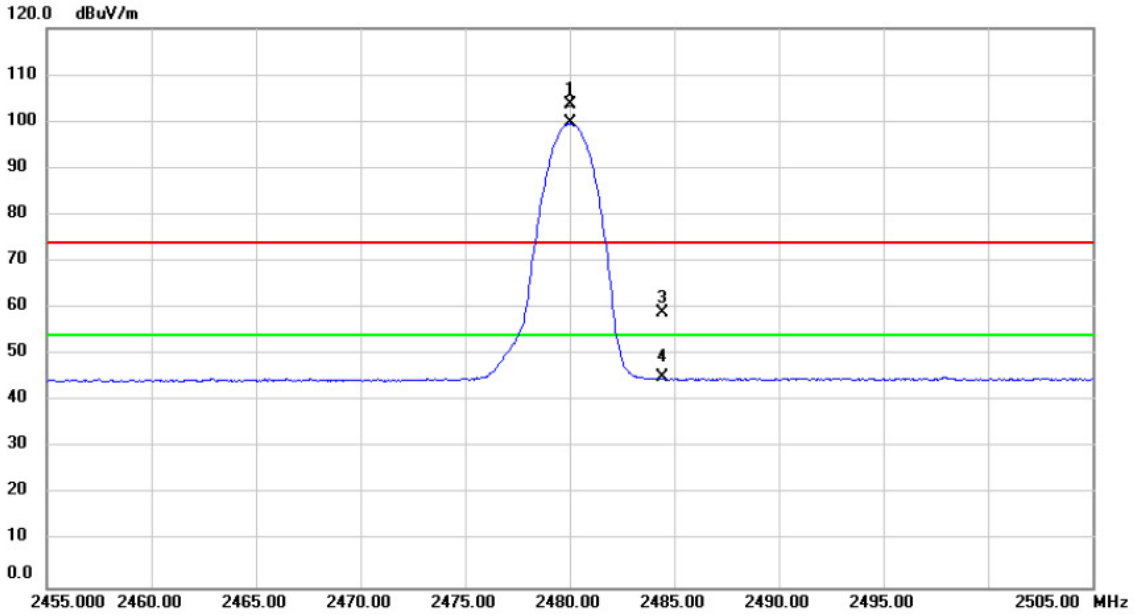
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.000	58.88	-11.25	47.63	74.00	-26.37	peak	
2	*	4960.000	49.13	-11.25	37.88	54.00	-16.12	AVG	

Test Mode :	TX 2480MHz _CH78_3Mbps

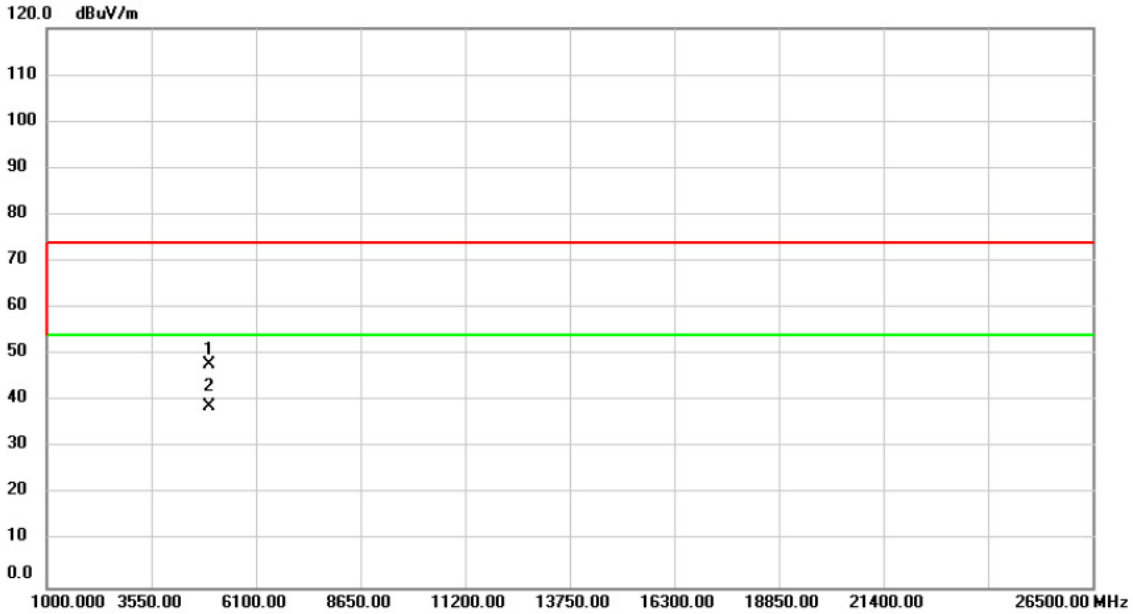
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	2480.000	72.24	31.29	103.53	74.00	29.53	peak	No Limit
2	*	2480.000	68.32	31.29	99.61	54.00	45.61	AVG	No Limit
3		2484.407	27.50	31.32	58.82	74.00	-15.18	peak	
4		2484.407	13.86	31.32	45.18	54.00	-8.82	AVG	

Test Mode :	TX 2480MHz _CH78_3Mbps

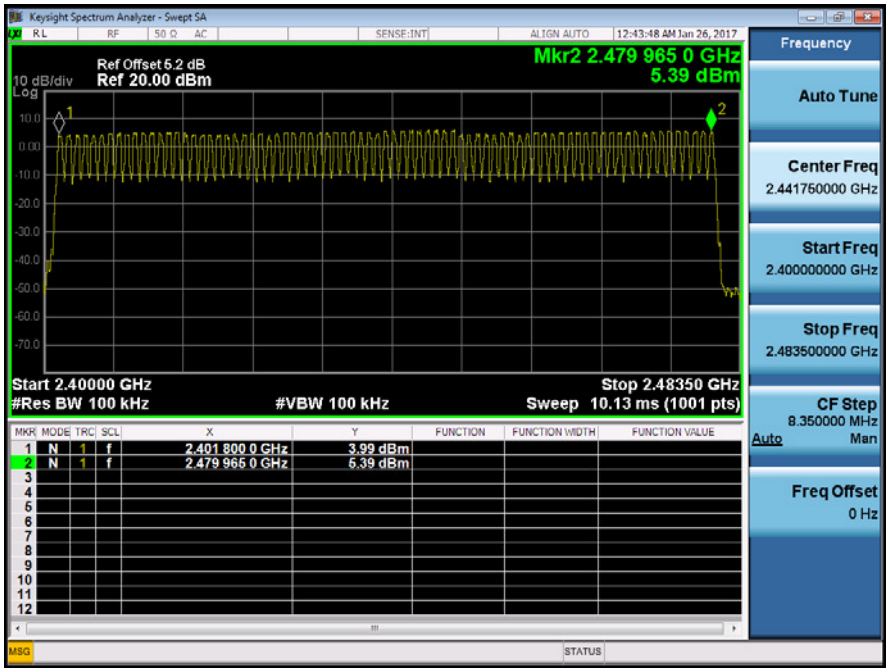
Horizontal



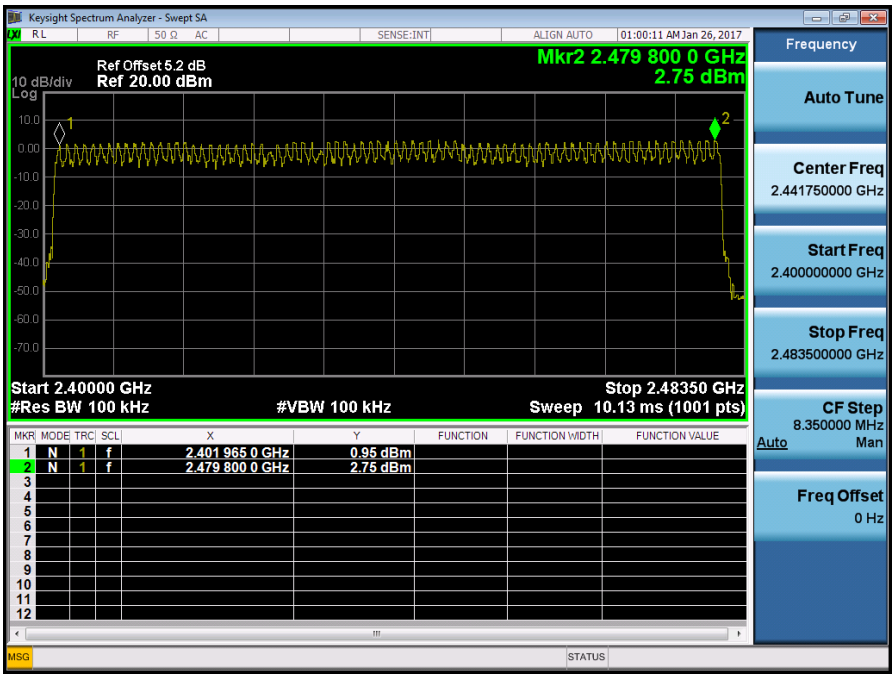
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4960.000	59.09	-11.25	47.84	74.00	-26.16	peak	
2	*	4960.000	50.09	-11.25	38.84	54.00	-15.16	AVG	

ATTACHMENT E - NUMBER OF HOPPING CHANNEL

Test Mode	Hopping Mode_1Mbps
Number of Hopping Channel	79



Test Mode	Hopping Mode_3Mbps
Number of Hopping Channel	79

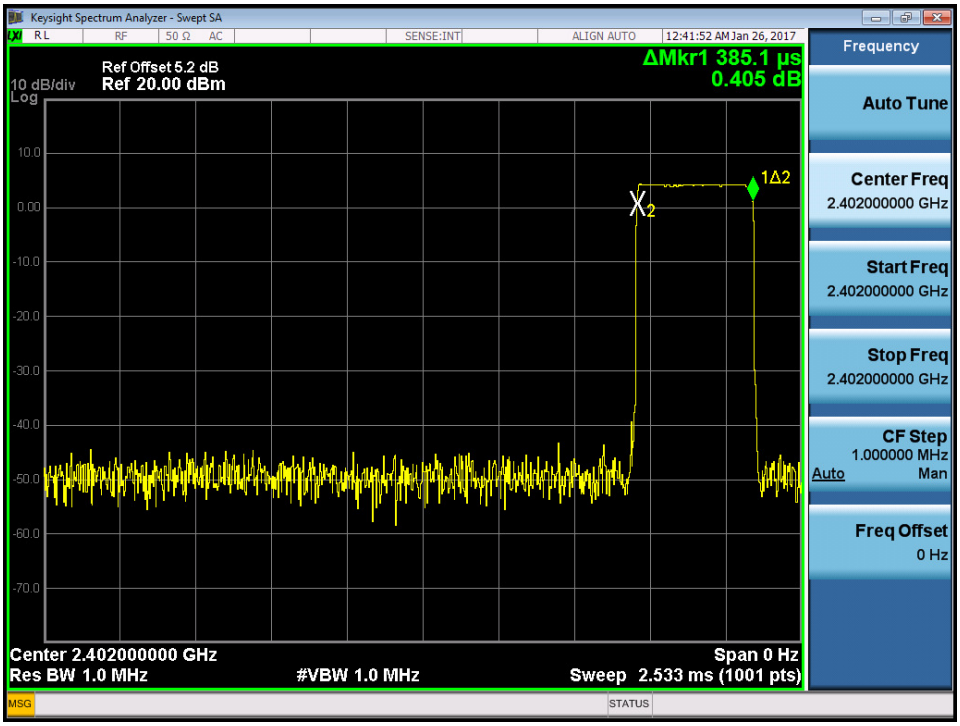


ATTACHMENT F - AVERAGE TIME OF OCCUPANCY

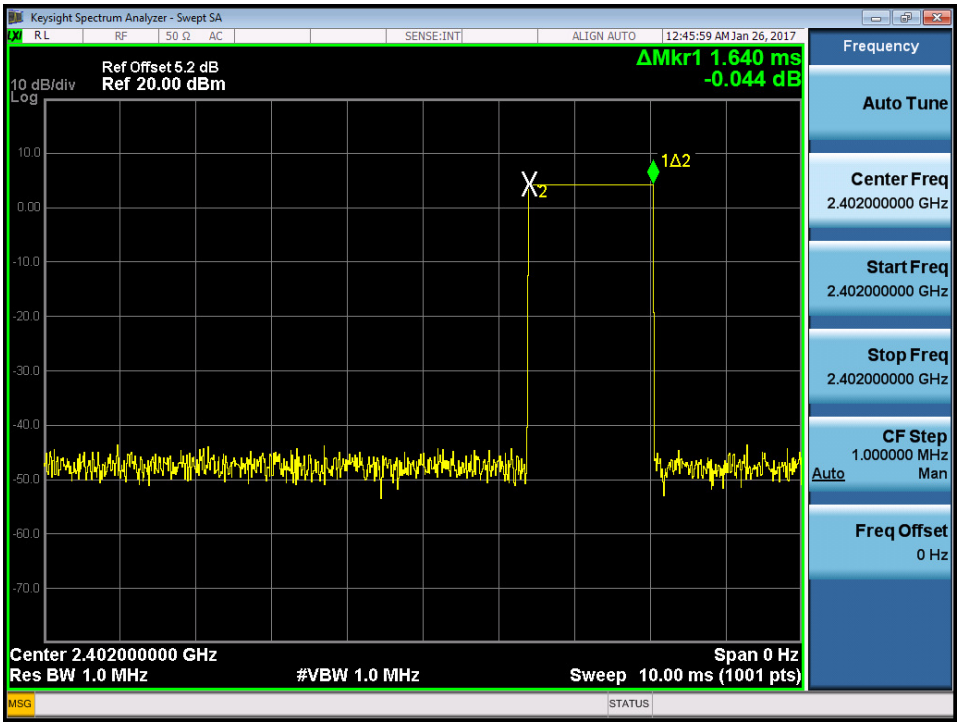
Test Mode :	TX Mode_1Mbps

Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)	Test Result
DH5	2402	2.9000	0.3093	0.4000	Pass
DH3	2402	1.6400	0.2624	0.4000	Pass
DH1	2402	0.3851	0.1232	0.4000	Pass
DH5	2441	2.9000	0.3093	0.4000	Pass
DH3	2441	1.6400	0.2624	0.4000	Pass
DH1	2441	0.3851	0.1232	0.4000	Pass
DH5	2480	2.9000	0.3093	0.4000	Pass
DH3	2480	1.6400	0.2624	0.4000	Pass
DH1	2480	0.3851	0.1232	0.4000	Pass

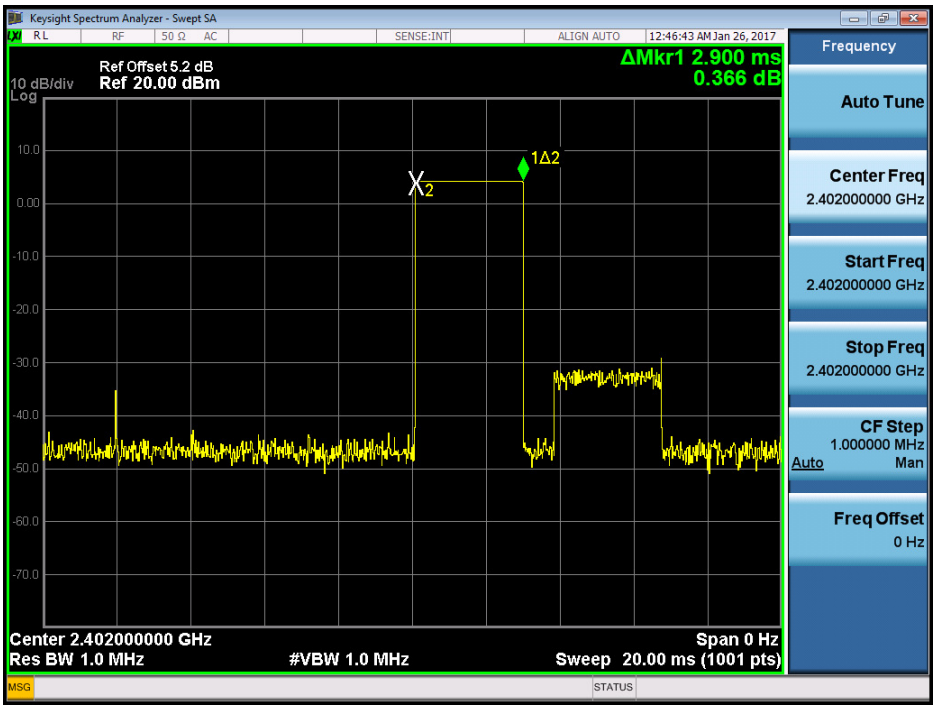
CH00-DH1



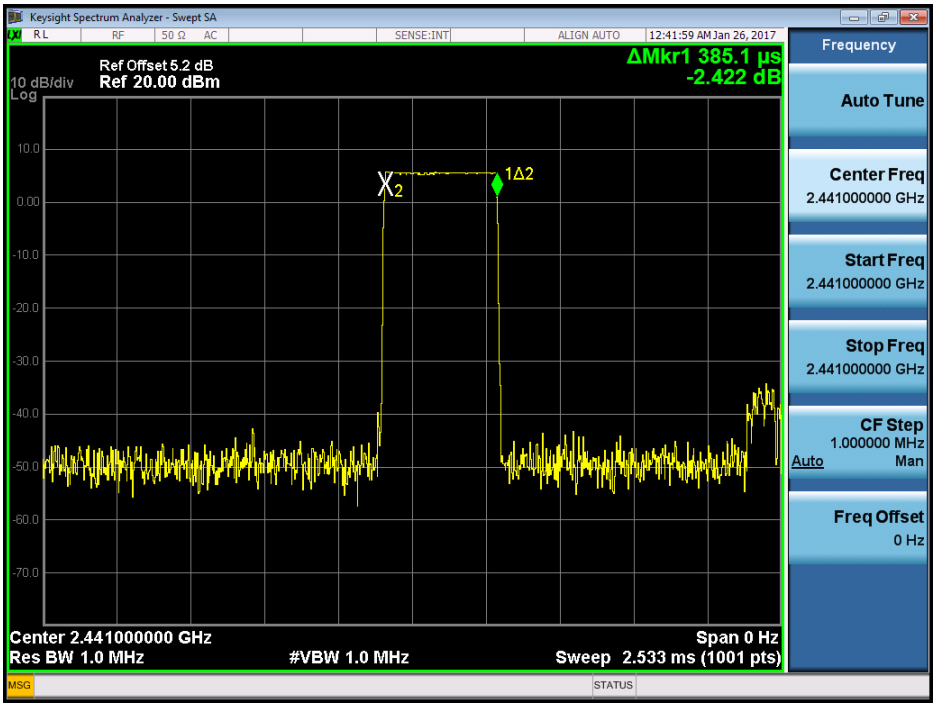
CH00-DH3



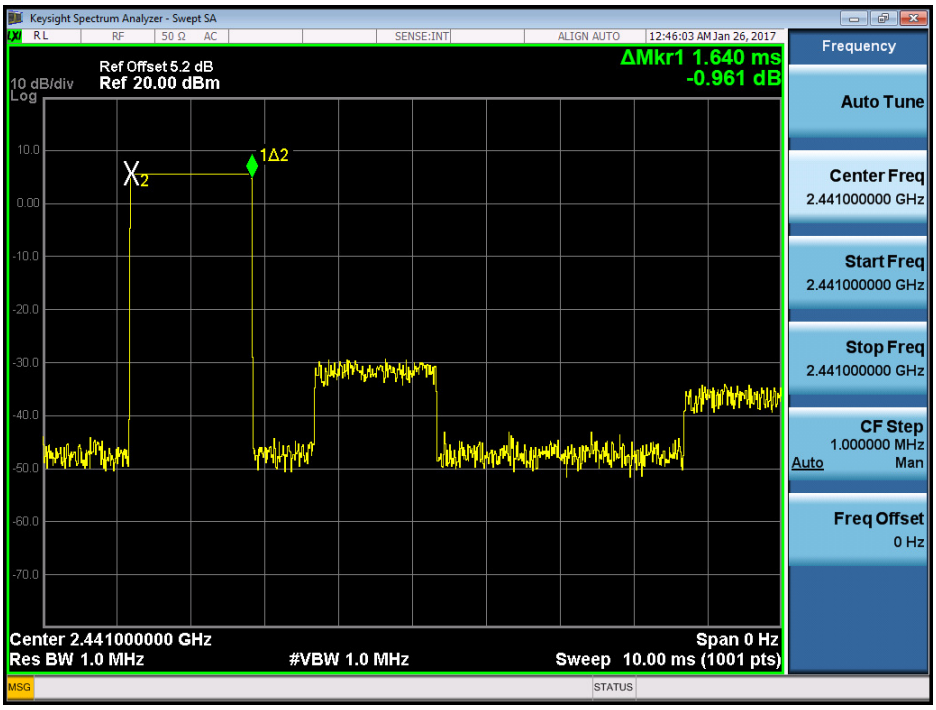
CH00-DH5



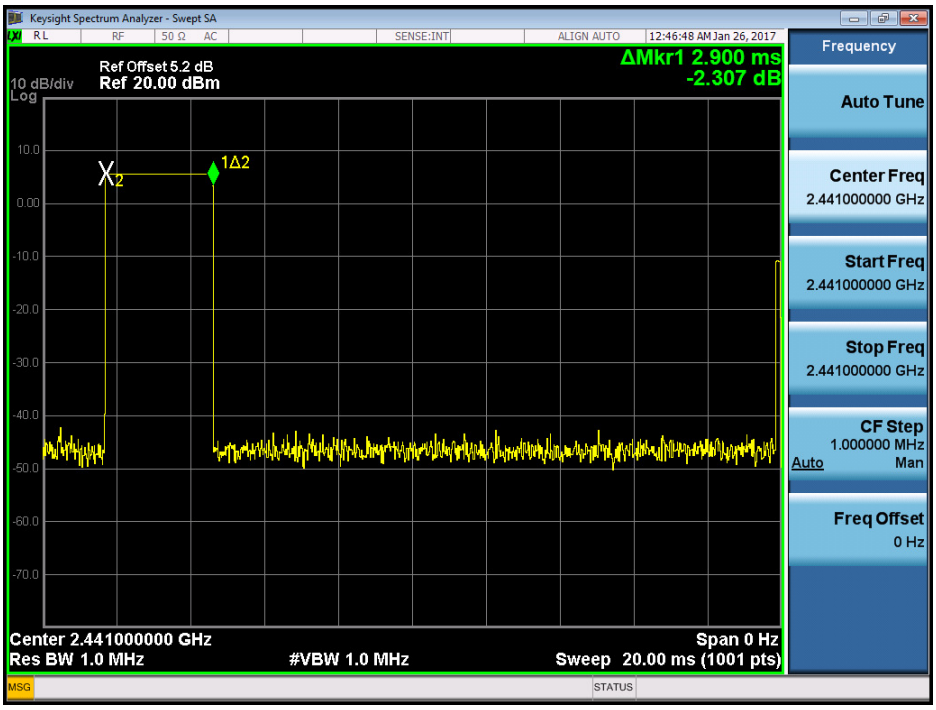
CH39-DH1



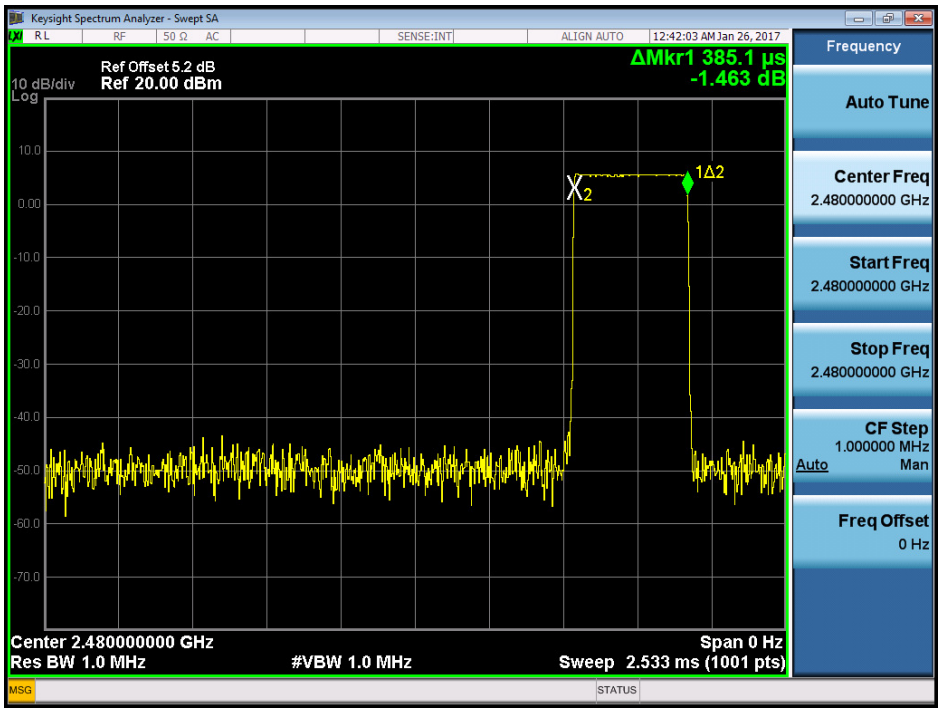
CH39-DH3



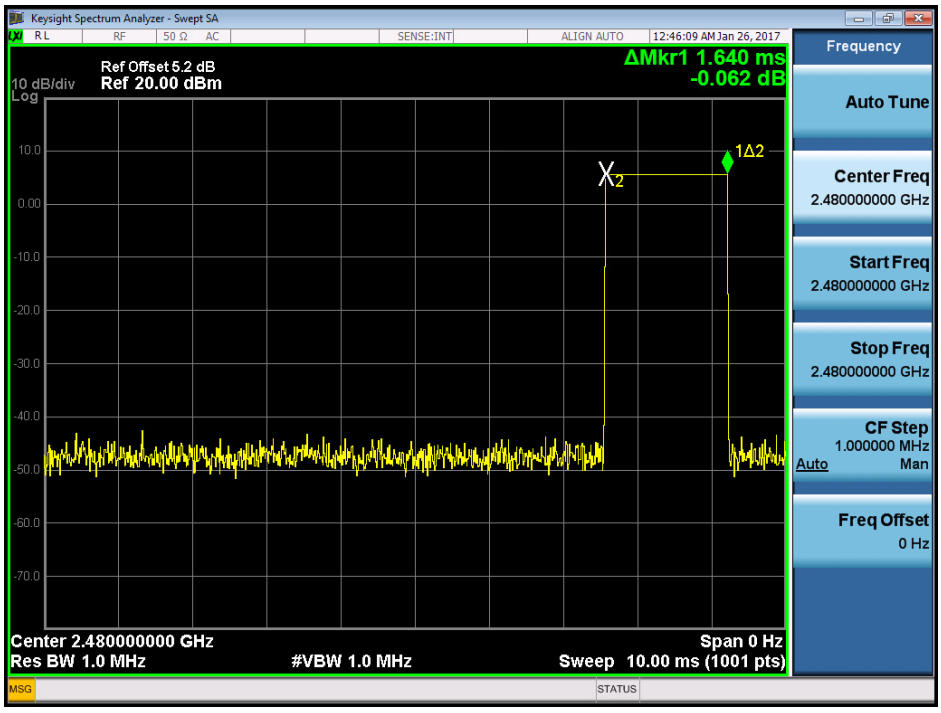
CH39-DH5



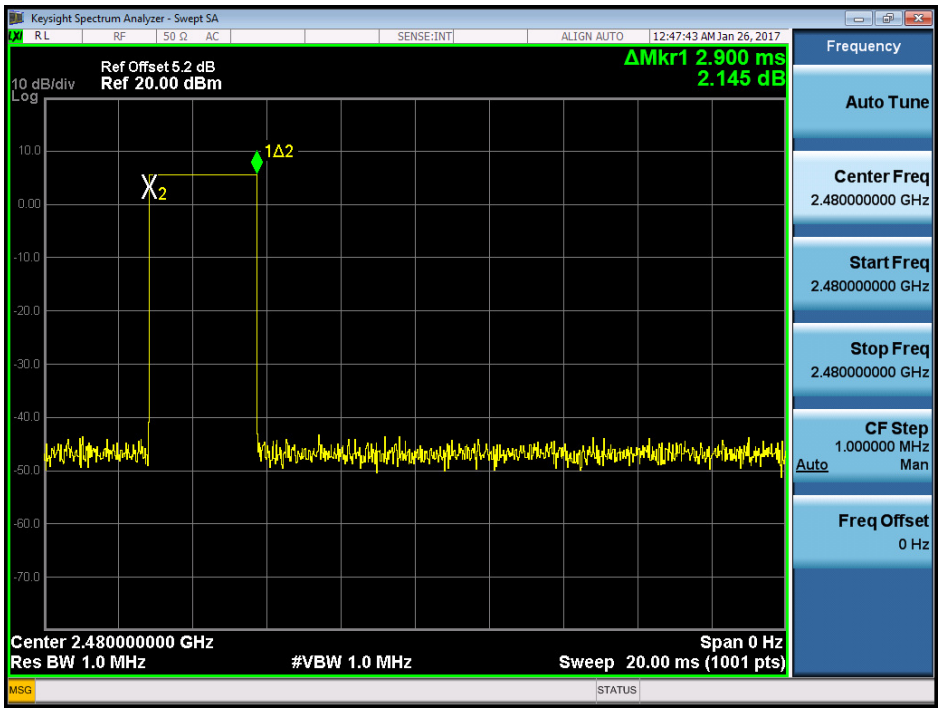
CH78-DH1



CH78-DH3



CH78-DH5

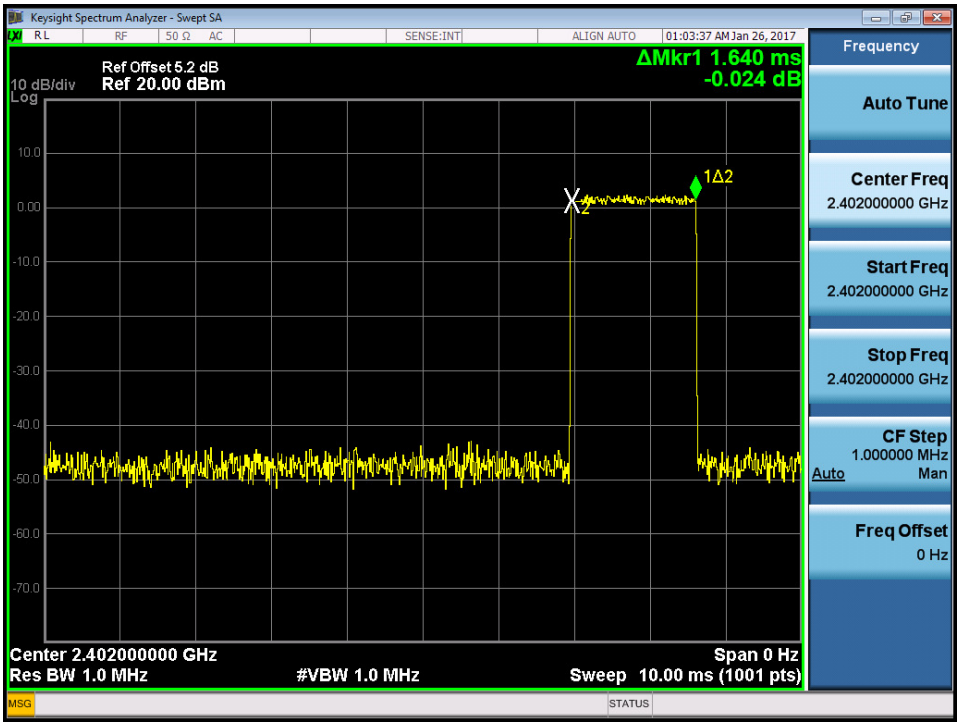

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:47:43 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div Ref 20.00 dBm
Log
ΔMkr1 2.900 ms
2.145 dB
1Δ2
X2
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.480000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 20.00 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.480000000 GHz
Stop Freq
2.480000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz

Test Mode :	TX Mode_3Mbps

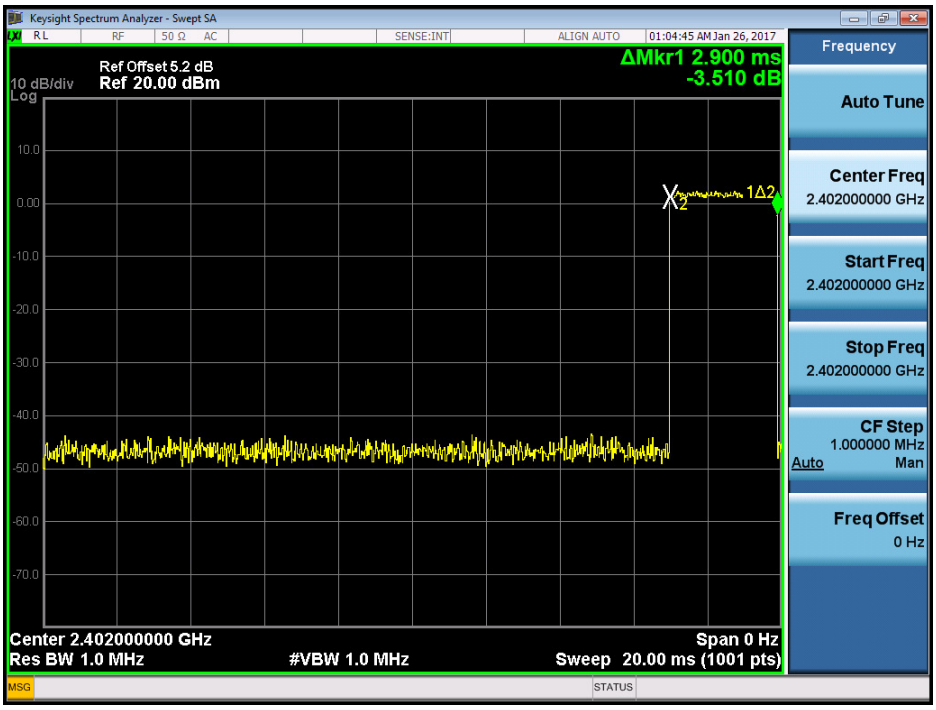
Data Packet	Frequency	Pulse Duration(ms)	Dwell Time(s)	Limits(s)	Test Result
DH5	2402	2.9000	0.3093	0.4000	Pass
DH3	2402	1.6400	0.2624	0.4000	Pass
DH1	2402	0.3699	0.1184	0.4000	Pass
DH5	2441	2.9000	0.3093	0.4000	Pass
DH3	2441	1.6500	0.2640	0.4000	Pass
DH1	2441	0.3724	0.1192	0.4000	Pass
DH5	2480	2.9000	0.3093	0.4000	Pass
DH3	2480	1.6500	0.2640	0.4000	Pass
DH1	2480	0.3977	0.1273	0.4000	Pass

CH00-DH1

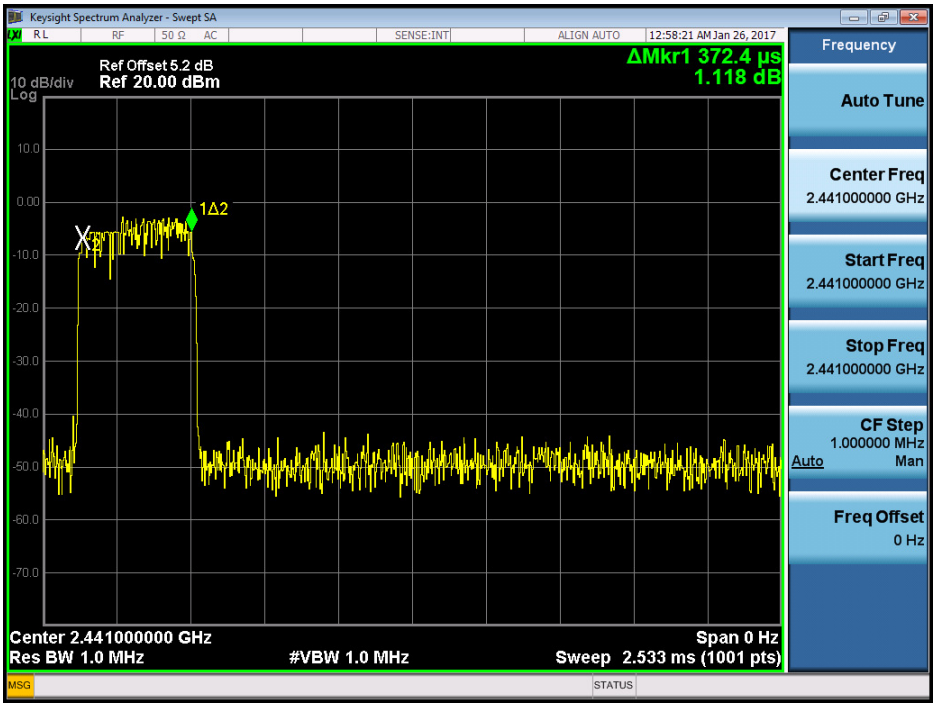
CH00-DH3



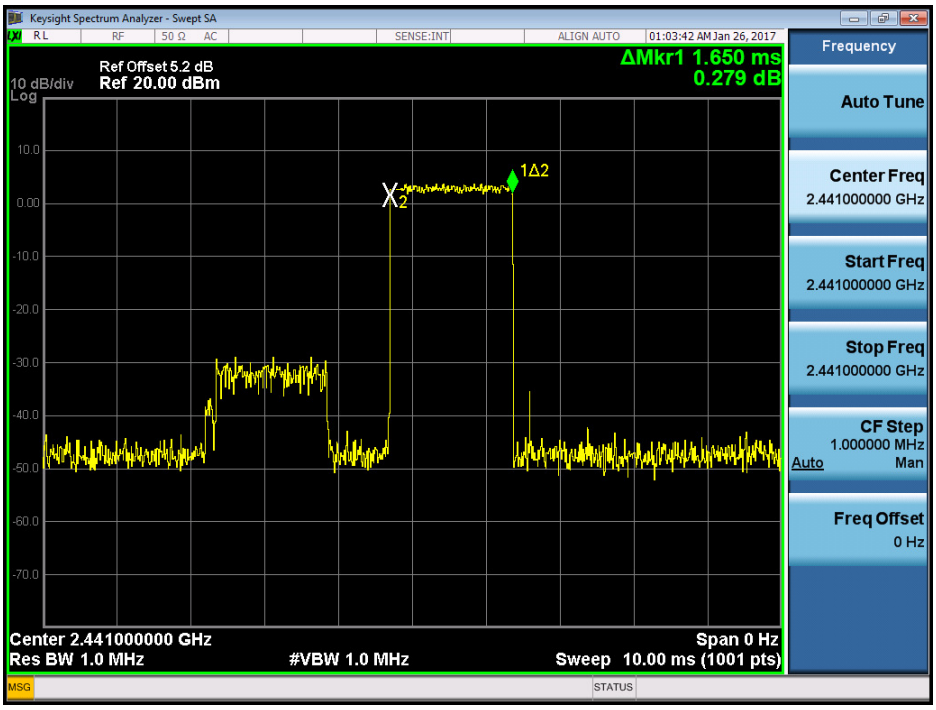
CH00-DH5



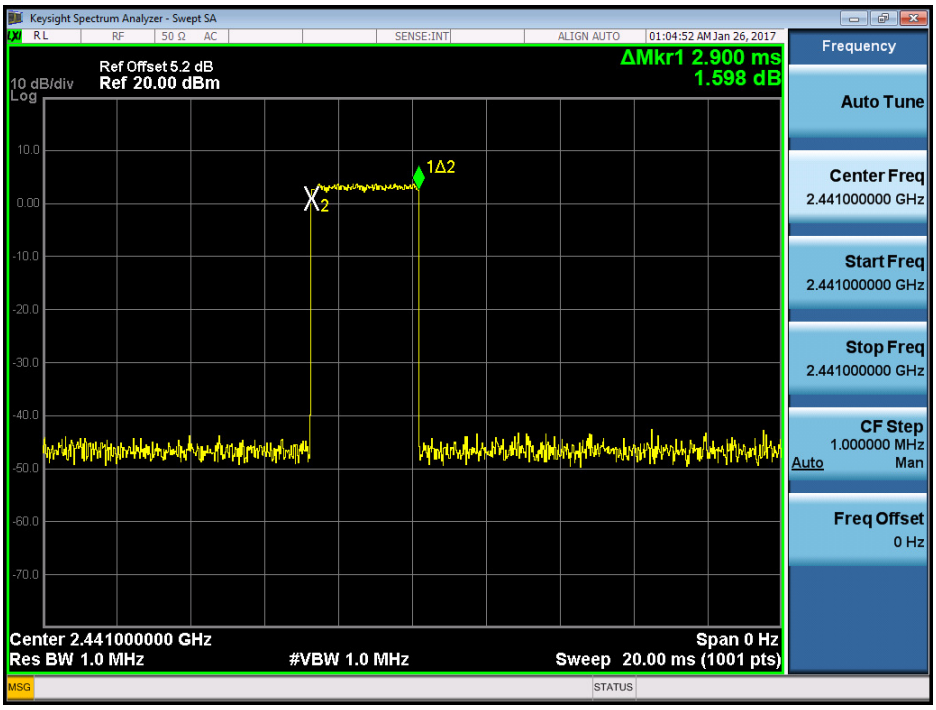
CH39-DH1



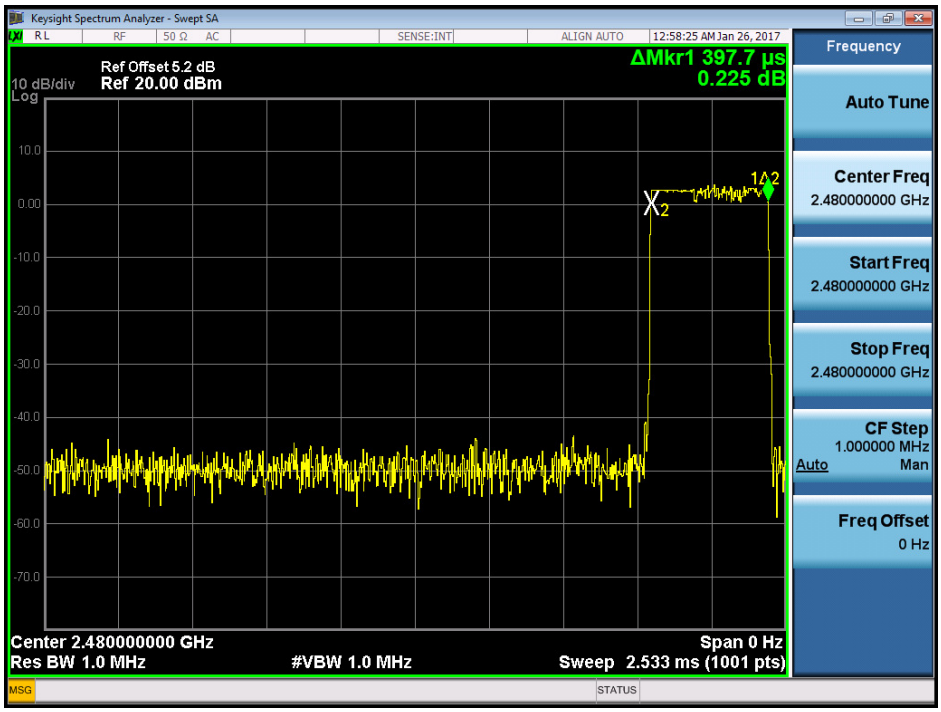
CH39-DH3



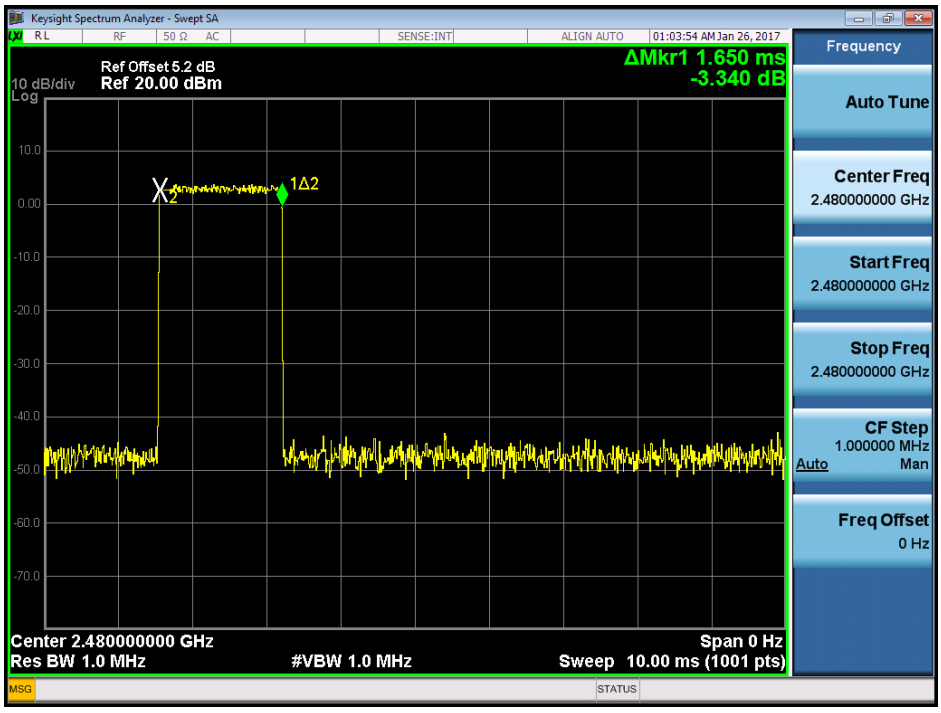
CH39-DH5



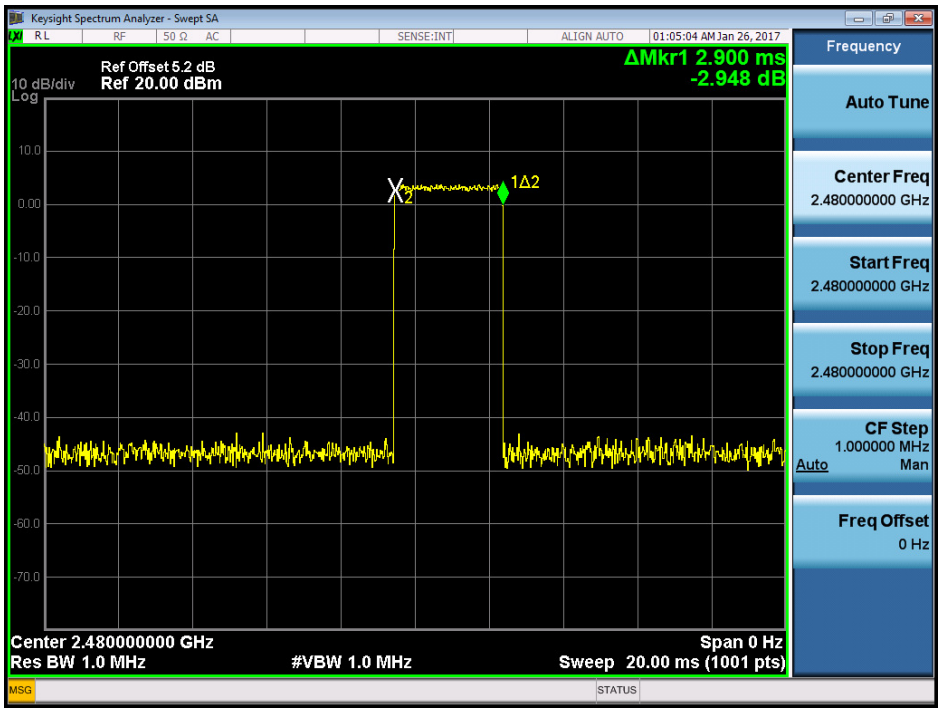
CH78-DH1



CH78-DH3



CH78-DH5

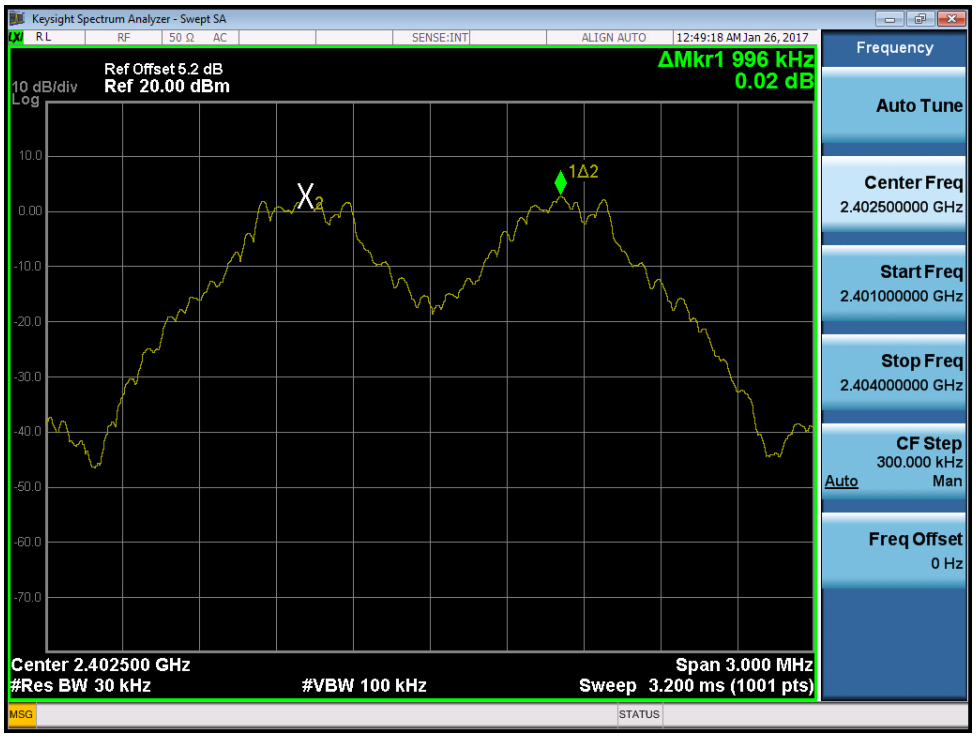

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
01:05:04 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div Ref 20.00 dBm
Log
ΔMkr1 2.900 ms
-2.948 dB
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
1Δ2
Center 2.480000000 GHz
Res BW 1.0 MHz
#VBW 1.0 MHz
Span 0 Hz
Sweep 20.00 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.480000000 GHz
Stop Freq
2.480000000 GHz
CF Step
1.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

ATTACHMENT G - HOPPING CHANNEL SEPARATION MEASUREMENT

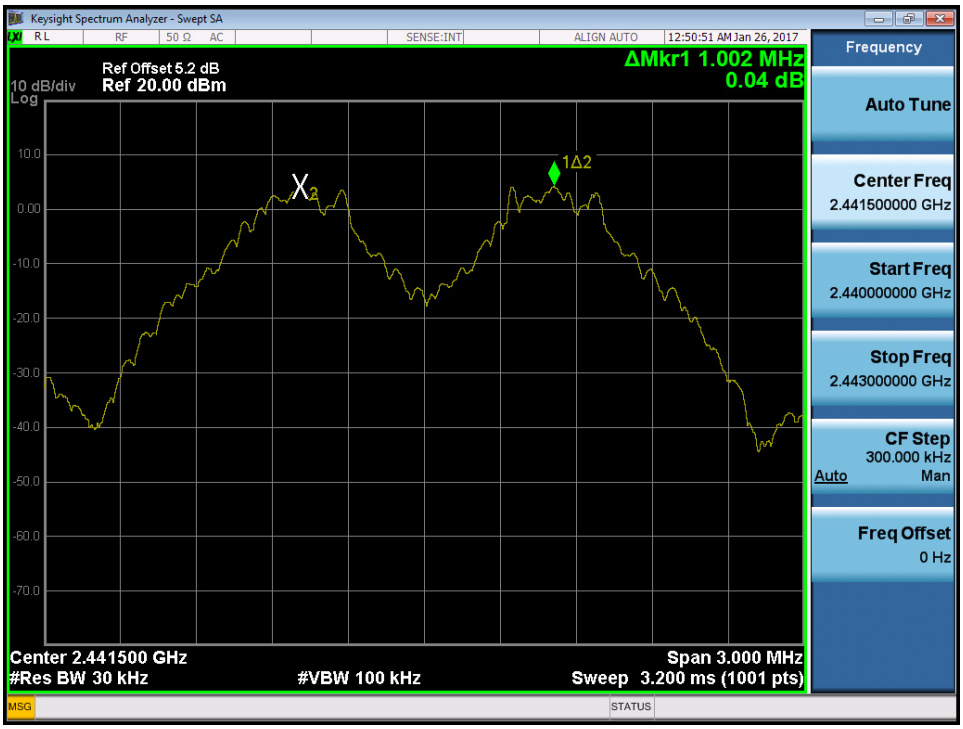
Test Mode :	Hopping on _1Mbps

Frequency (MHz)	Channel Separation (MHz)	2/3 of 20dB Bandwidth (MHz)	Test Result
2402	0.996	0.634	Pass
2441	1.002	0.648	Pass
2480	0.999	0.633	Pass

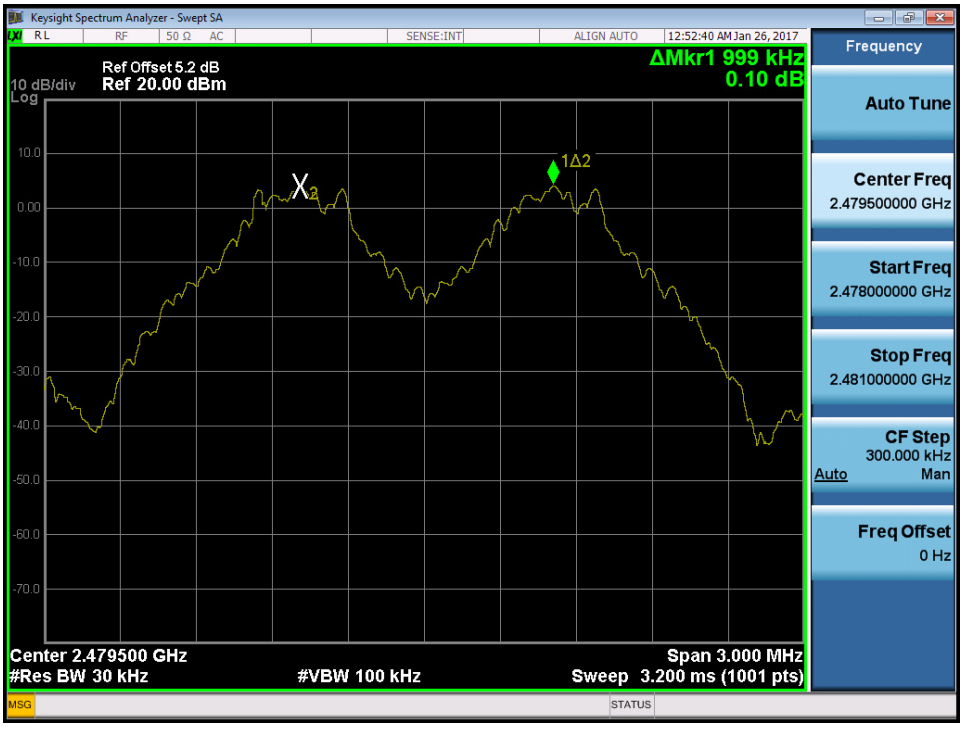
CH00



CH39


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:50:51 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Log
Ref 20.00 dBm
ΔMkr1 1.002 MHz
0.04 dB
1Δ2
X2
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.441500 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3.000 MHz
Sweep 3.200 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.441500000 GHz
Start Freq
2.440000000 GHz
Stop Freq
2.443000000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz

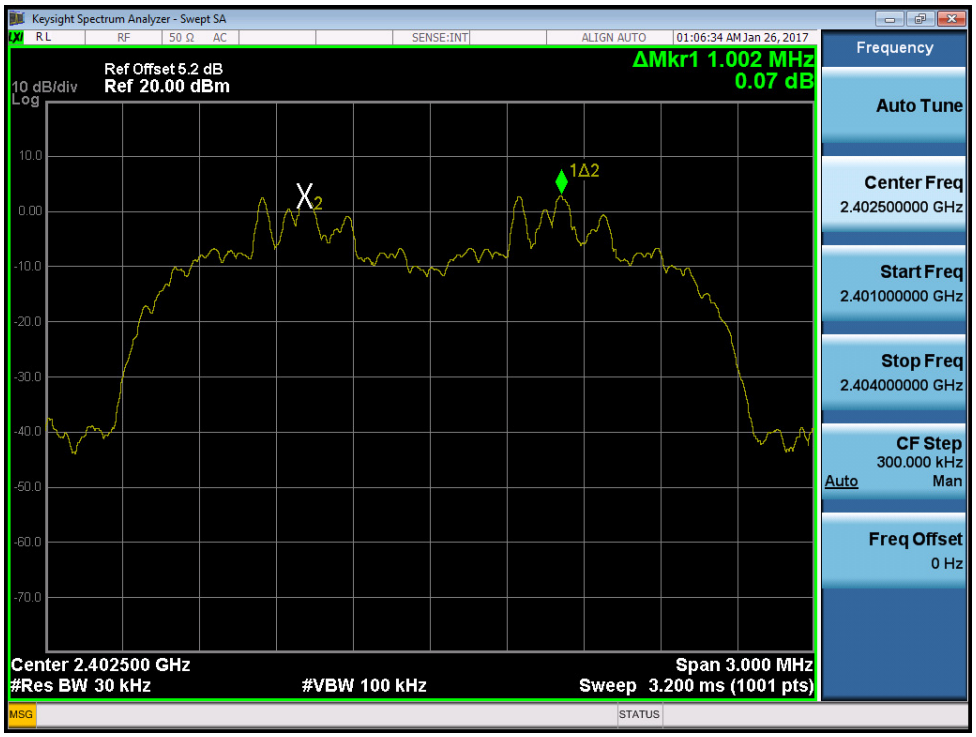
CH78


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:52:40 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Log
Ref 20.00 dBm
ΔMkr1 999 kHz
0.10 dB
1Δ2
X2
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.479500 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3.000 MHz
Sweep 3.200 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.479500000 GHz
Start Freq
2.478000000 GHz
Stop Freq
2.481000000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz

Test Mode :	Hopping on _3Mbps

Frequency (MHz)	Channel Separation (MHz)	2/3 of 20dB Bandwidth (MHz)	Test Result
2402	1.002	0.853	Pass
2441	1.002	0.851	Pass
2480	1.002	0.867	Pass

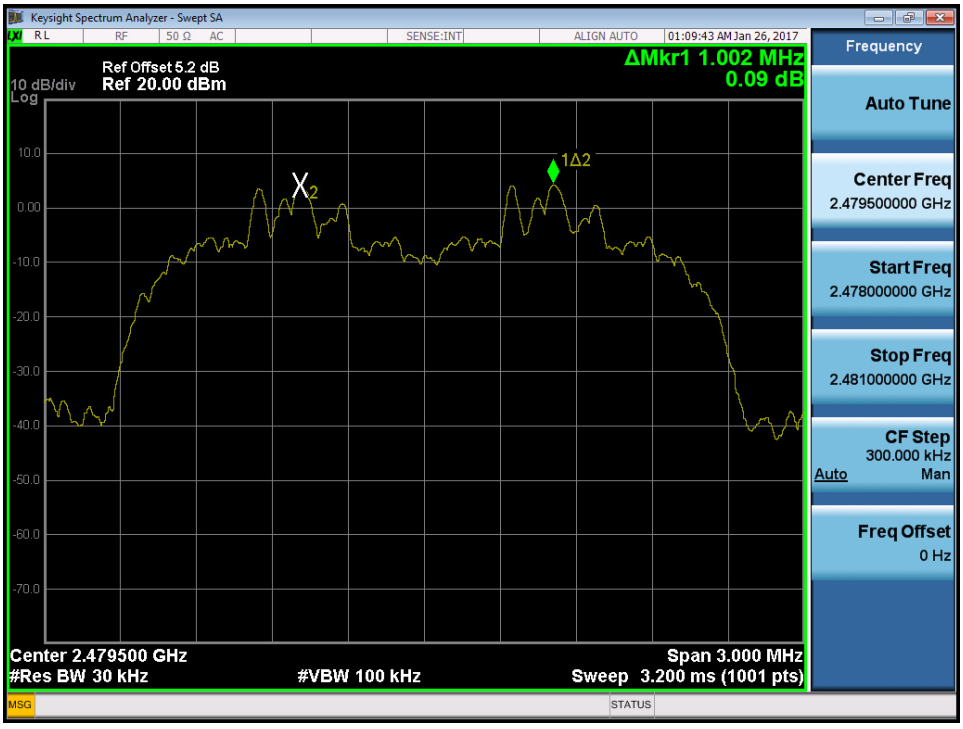
CH00



CH39


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
01:08:13 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Log
Ref 20.00 dBm
ΔMkr1 1.002 MHz
0.03 dB
1Δ2
X2
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.441500 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3.000 MHz
Sweep 3.200 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.441500000 GHz
Start Freq
2.440000000 GHz
Stop Freq
2.443000000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz

CH78

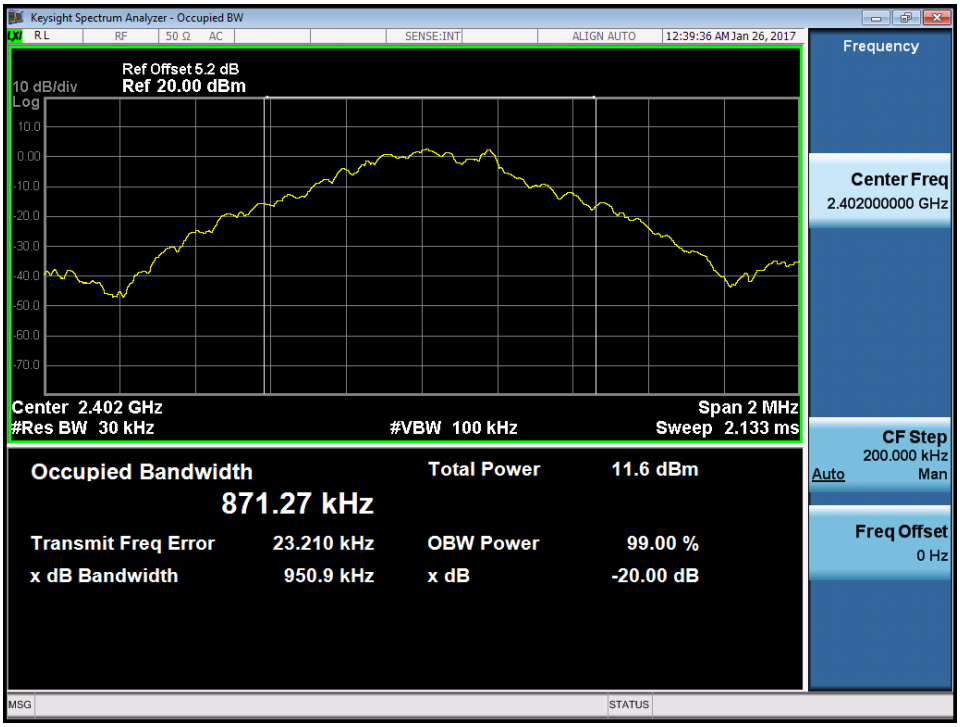

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
01:09:43 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Log
Ref 20.00 dBm
ΔMkr1 1.002 MHz
0.09 dB
1Δ2
X2
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.479500 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3.000 MHz
Sweep 3.200 ms (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
2.479500000 GHz
Start Freq
2.478000000 GHz
Stop Freq
2.481000000 GHz
CF Step
300.000 kHz
Auto
Man
Freq Offset
0 Hz

ATTACHMENT H - BANDWIDTH

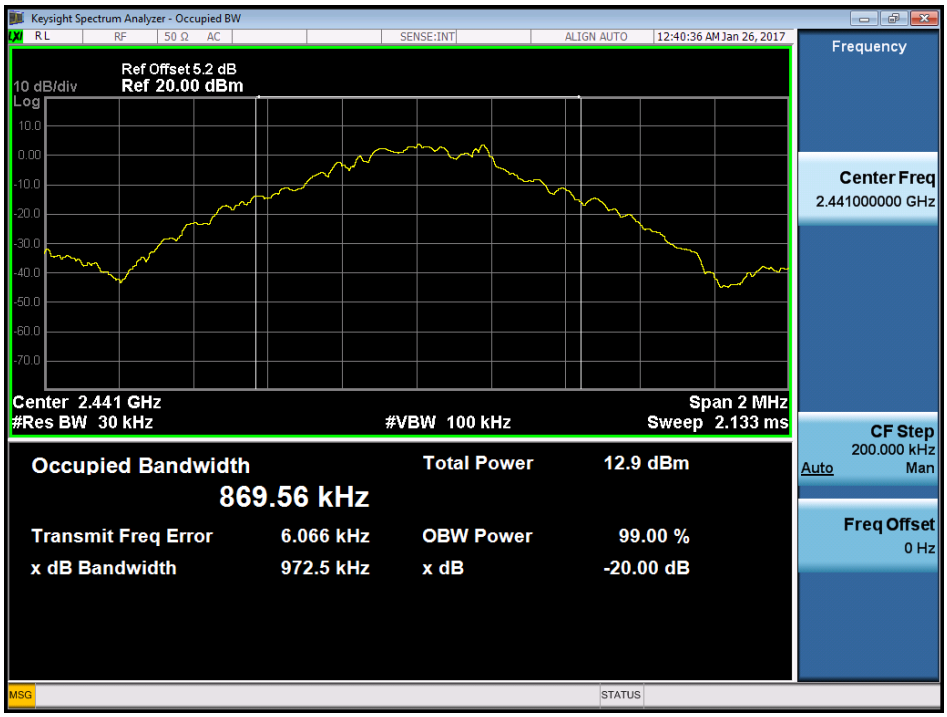
Test Mode :	TX Mode _1Mbps

Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Test Result
2402	0.951	0.871	Pass
2441	0.973	0.870	Pass
2480	0.949	0.863	Pass

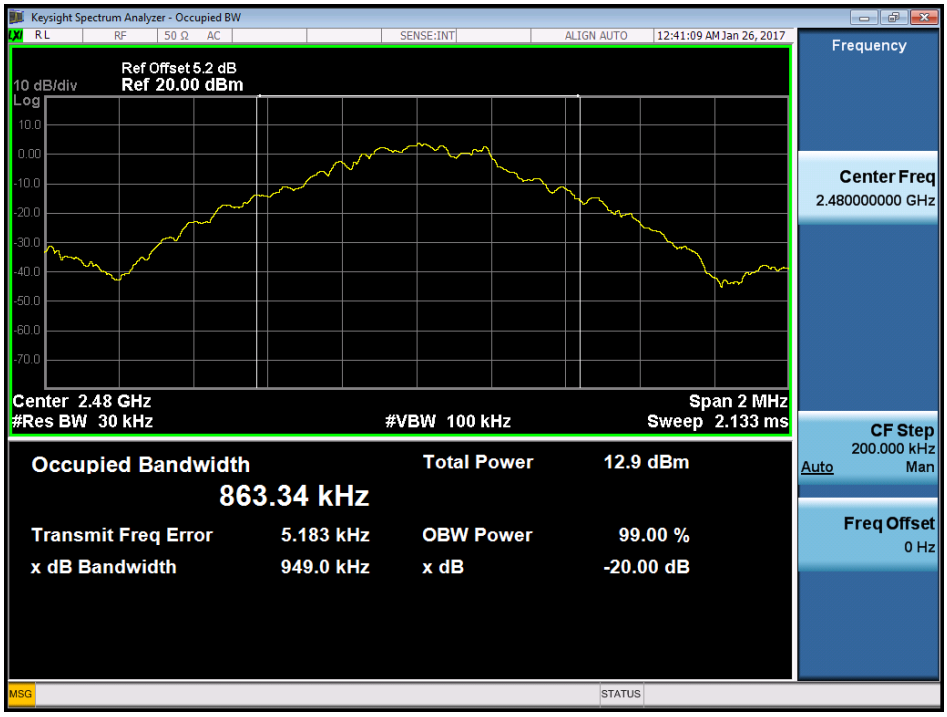
CH00



CH39


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:40:36 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.441 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 2 MHz
Sweep 2.133 ms
Occupied Bandwidth
869.56 kHz
Total Power
12.9 dBm
Transmit Freq Error
6.066 kHz
OBW Power
99.00 %
x dB Bandwidth
972.5 kHz
x dB
-20.00 dB
MSG
STATUS
Frequency
Center Freq
2.441000000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

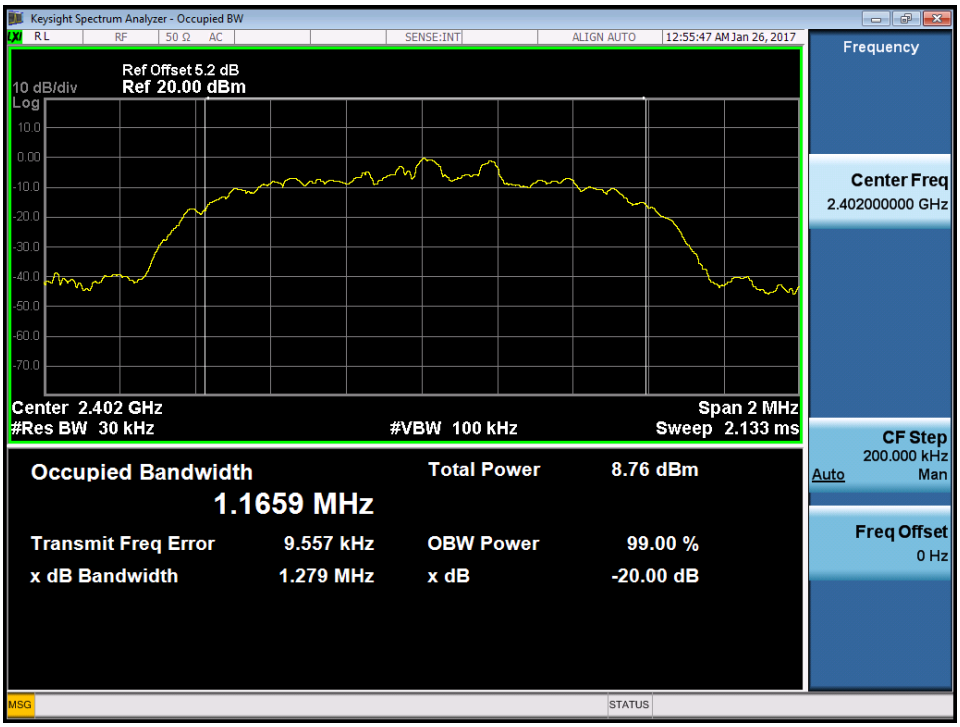
CH78


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:41:09 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 2 MHz
Sweep 2.133 ms
Occupied Bandwidth
863.34 kHz
Total Power
12.9 dBm
Transmit Freq Error
5.183 kHz
OBW Power
99.00 %
x dB Bandwidth
949.0 kHz
x dB
-20.00 dB
MSG
STATUS
Frequency
Center Freq
2.480000000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

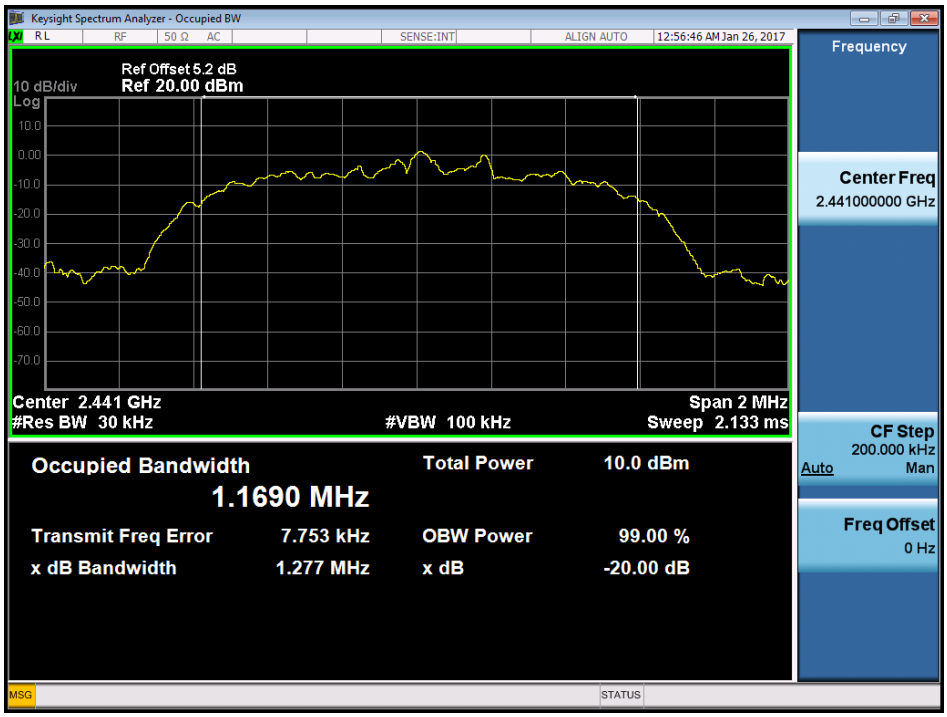
Test Mode :	TX Mode _3Mbps

Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	Test Result
2402	1.279	1.166	Pass
2441	1.277	1.169	Pass
2480	1.300	1.176	Pass

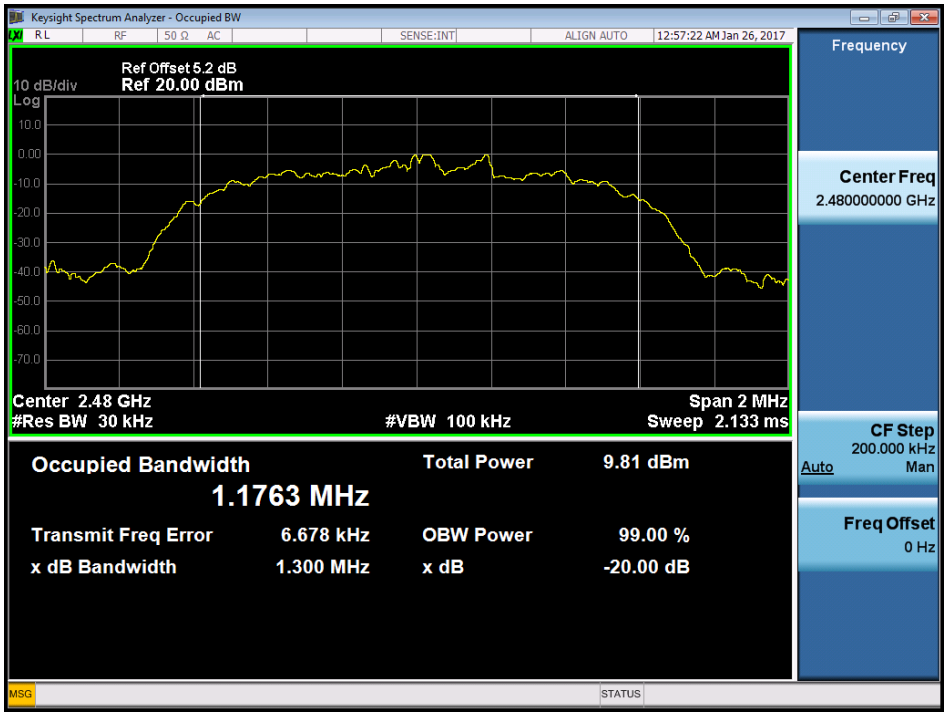
CH00



CH39


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:56:46 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.441 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 2 MHz
Sweep 2.133 ms
Occupied Bandwidth
1.1690 MHz
Total Power
10.0 dBm
Transmit Freq Error
7.753 kHz
OBW Power
99.00 %
x dB Bandwidth
1.277 MHz
x dB
-20.00 dB
MSG
STATUS
Frequency
Center Freq
2.441000000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

CH78

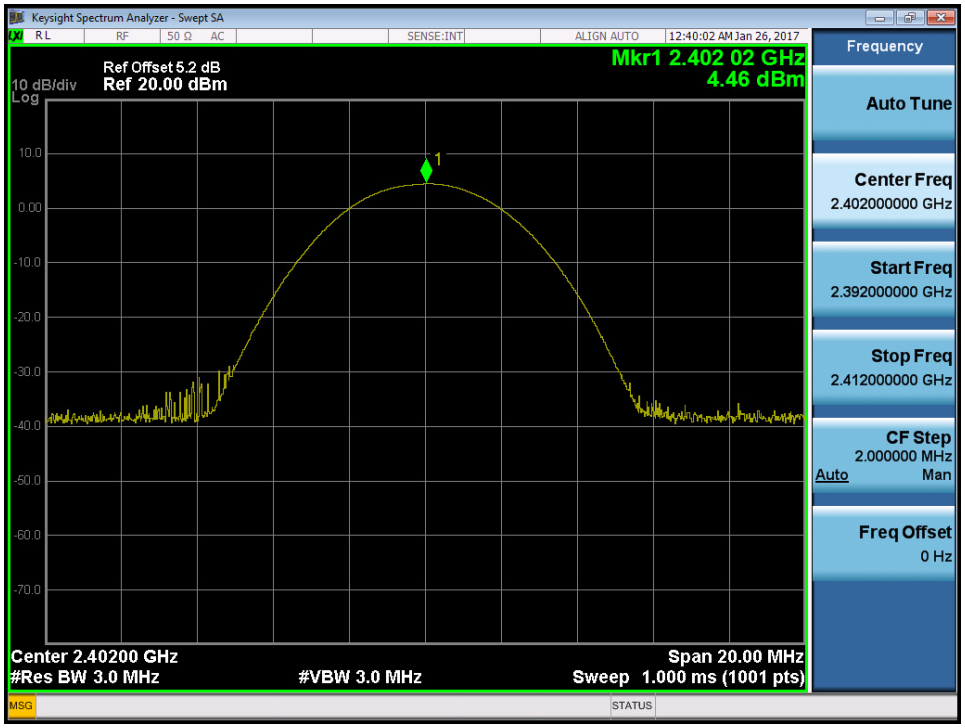

Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:57:22 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Ref 20.00 dBm
Log
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 2 MHz
Sweep 2.133 ms
Occupied Bandwidth
1.1763 MHz
Total Power
9.81 dBm
Transmit Freq Error
6.678 kHz
OBW Power
99.00 %
x dB Bandwidth
1.300 MHz
x dB
-20.00 dB
MSG
STATUS
Frequency
Center Freq
2.480000000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

ATTACHMENT I - PEAK OUTPUT POWER

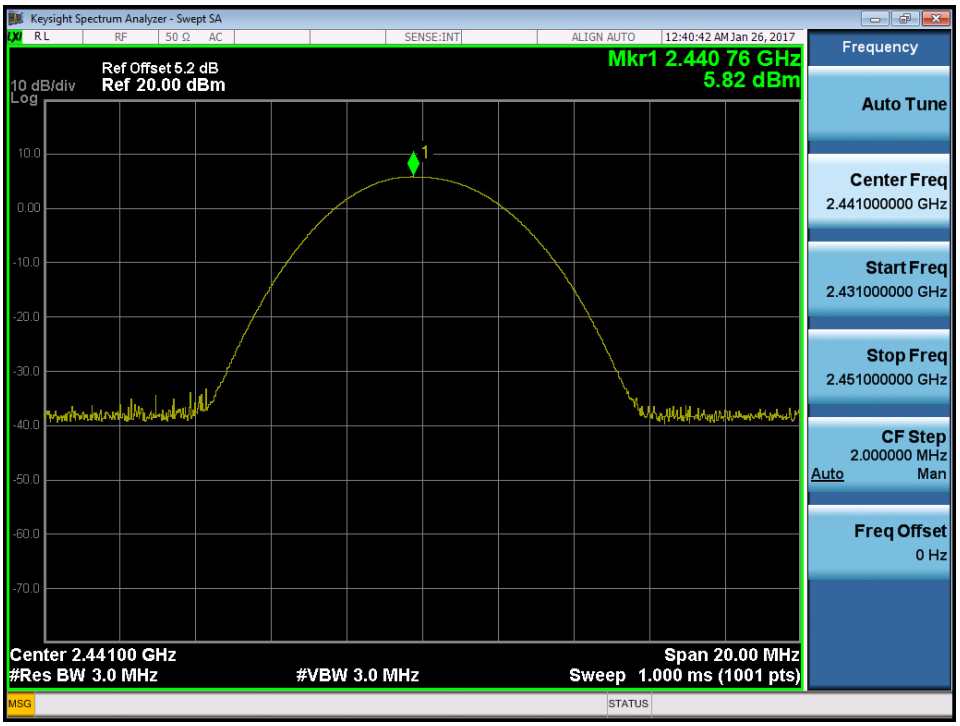
Test Mode :	TX Mode _1Mbps

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	4.46	0.0028	30.00	1.00	Pass
2441	5.82	0.0038	30.00	1.00	Pass
2480	5.80	0.0038	30.00	1.00	Pass

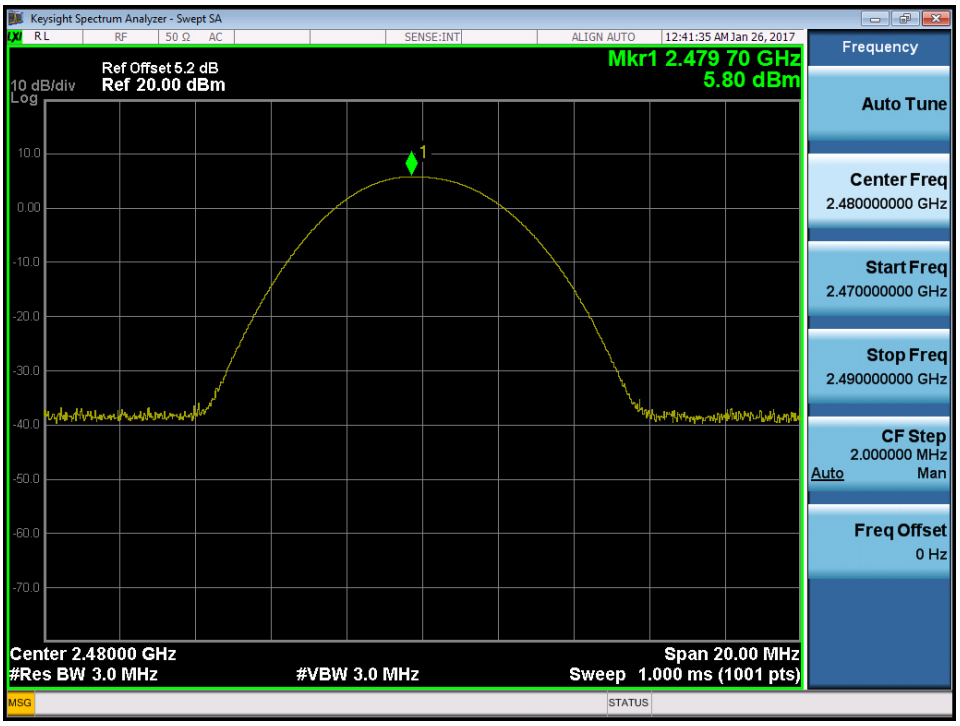
CH00



CH39


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:40:42 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.440 76 GHz
5.82 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.44100 GHz
#Res BW 3.0 MHz
#VBW 3.0 MHz
Span 20.00 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.441000000 GHz
Start Freq
2.431000000 GHz
Stop Freq
2.451000000 GHz
CF Step
2.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

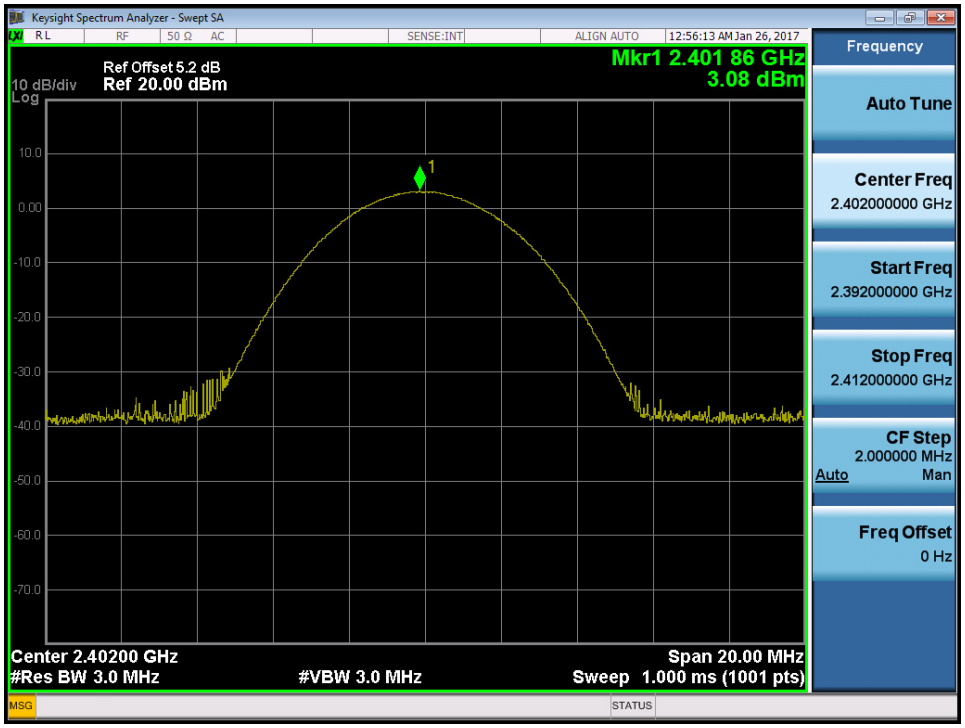
CH78


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:41:35 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479 70 GHz
5.80 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 2.48000 GHz
#Res BW 3.0 MHz
#VBW 3.0 MHz
Span 20.00 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.470000000 GHz
Stop Freq
2.490000000 GHz
CF Step
2.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

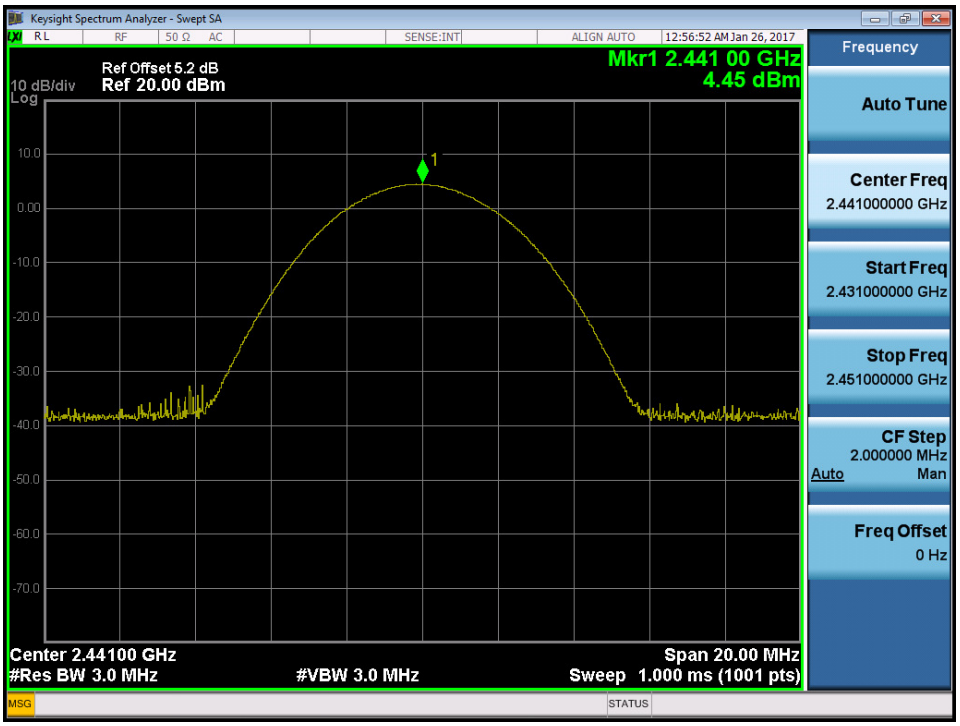
Test Mode :	TX Mode _3Mbps

Frequency (MHz)	Conducted Power (dBm)	Conducted Power (W)	Max. Limit (dBm)	Max. Limit (W)	Test Result
2402	3.08	0.0020	30.00	1.00	Pass
2441	4.45	0.0028	30.00	1.00	Pass
2480	4.43	0.0028	30.00	1.00	Pass

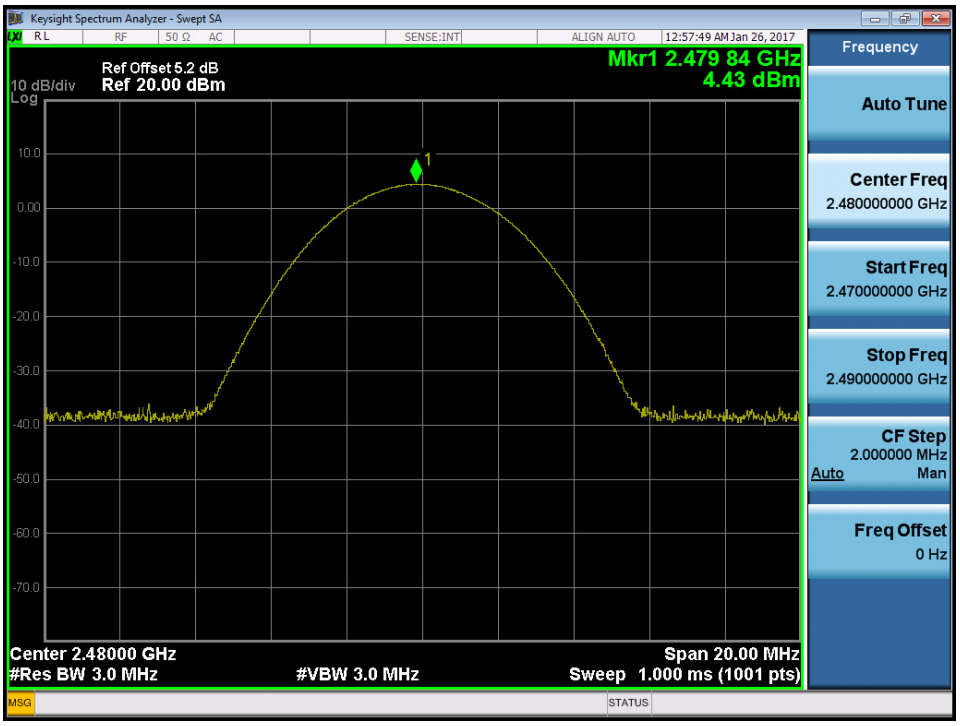
CH00



CH39

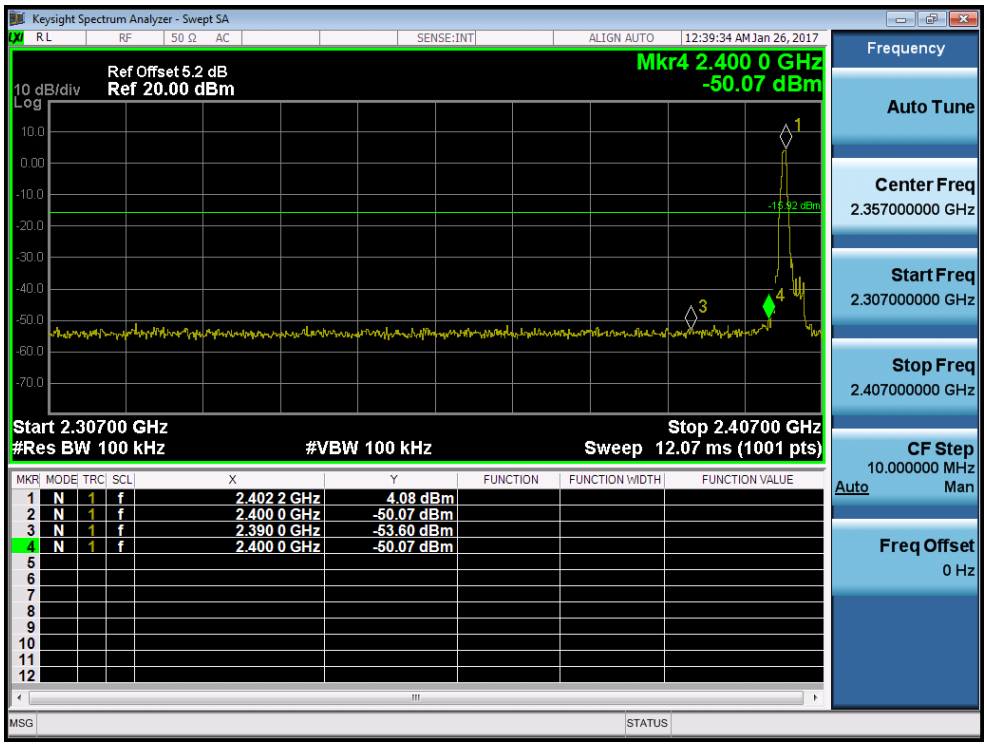

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:56:52 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.441 00 GHz
4.45 dBm
Center 2.44100 GHz
#Res BW 3.0 MHz
#VBW 3.0 MHz
Span 20.00 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.441000000 GHz
Start Freq
2.431000000 GHz
Stop Freq
2.451000000 GHz
CF Step
2.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

CH78

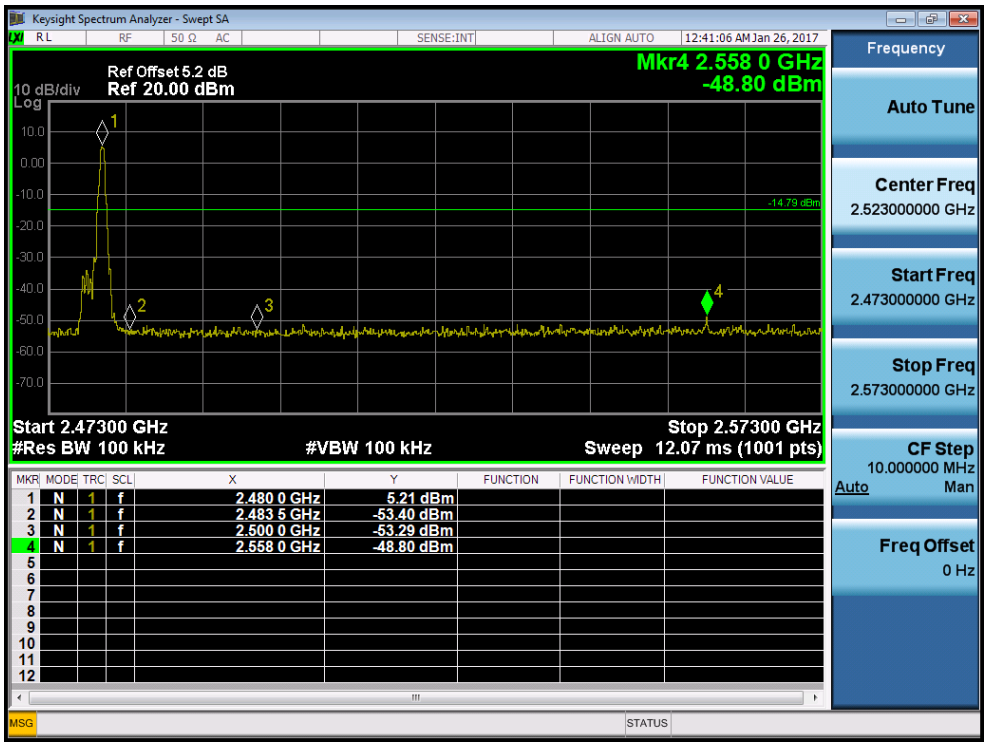

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:57:49 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.479 84 GHz
4.43 dBm
Center 2.48000 GHz
#Res BW 3.0 MHz
#VBW 3.0 MHz
Span 20.00 MHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.480000000 GHz
Start Freq
2.470000000 GHz
Stop Freq
2.490000000 GHz
CF Step
2.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

ATTACHMENT J - ANTENNA CONDUCTED SPURIOUS EMISSION

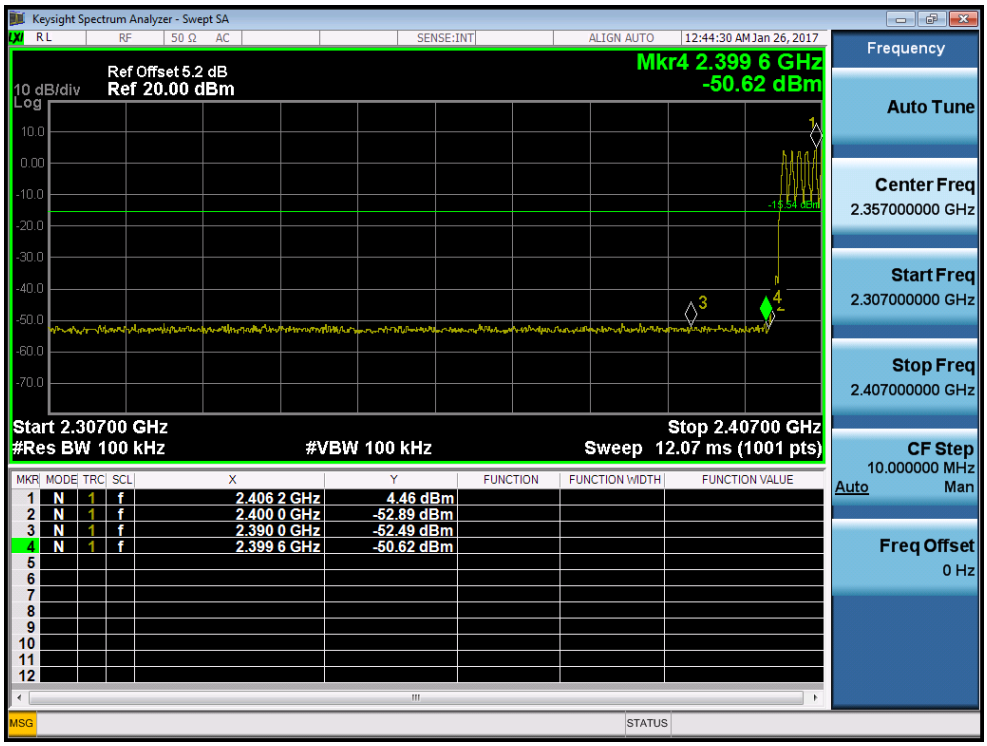
CH00 (Lower)_1Mbps



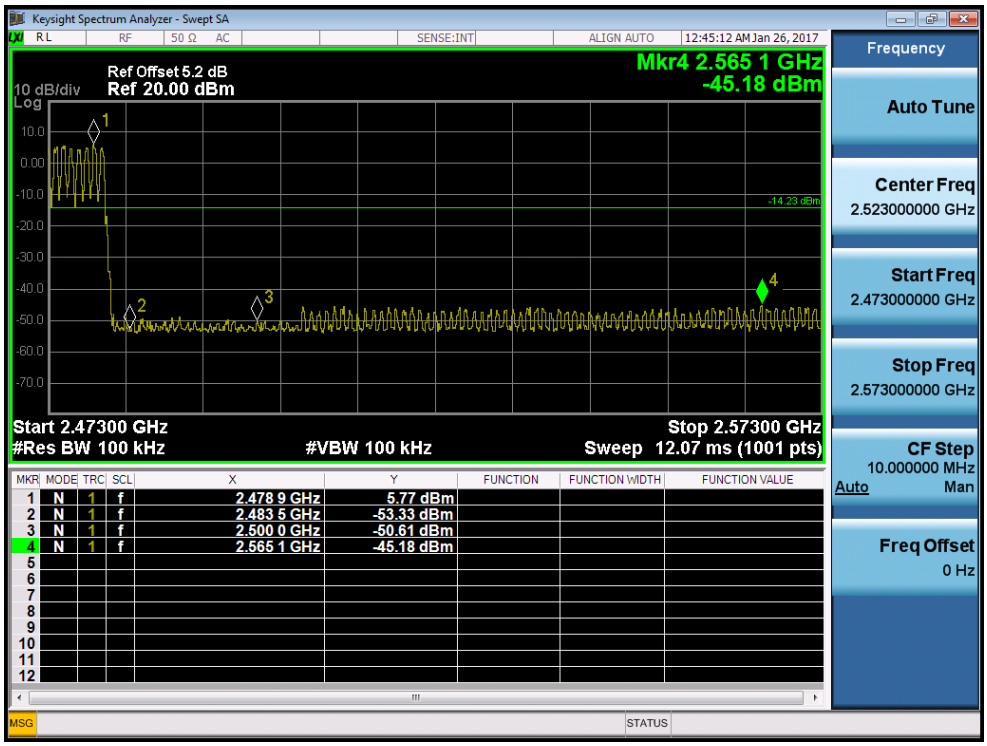
CH78 (Upper) _1Mbps



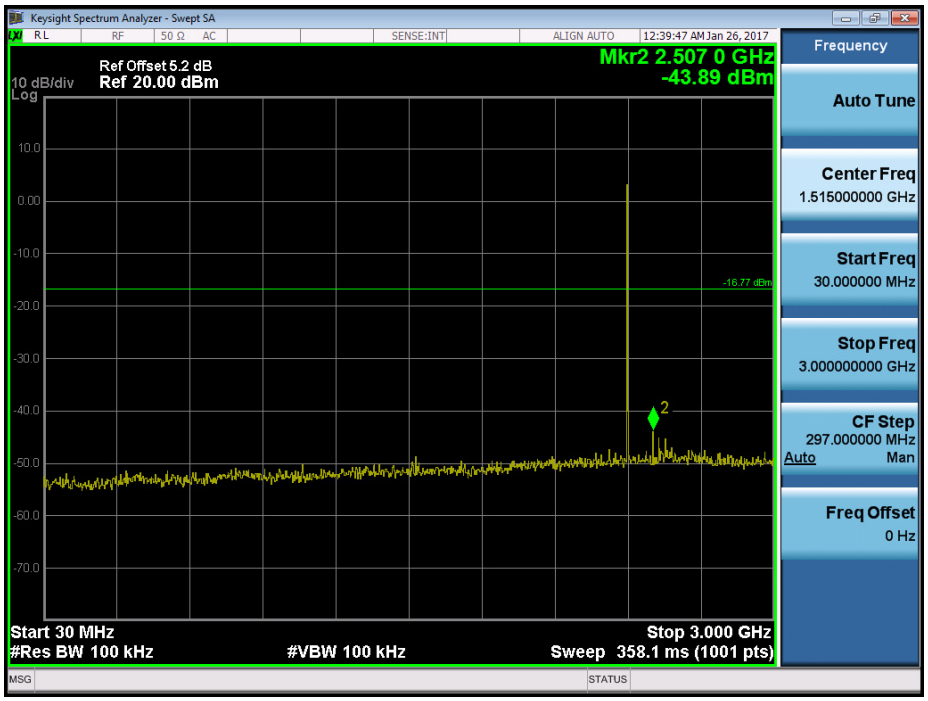
CH00 Hopping on mode (Lower)_1Mbps

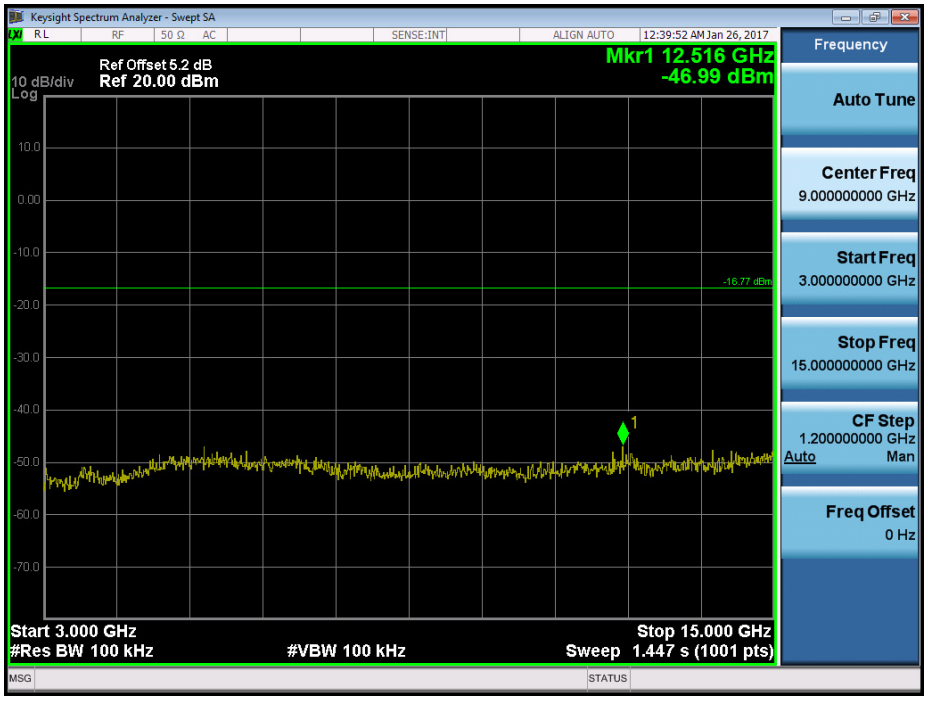


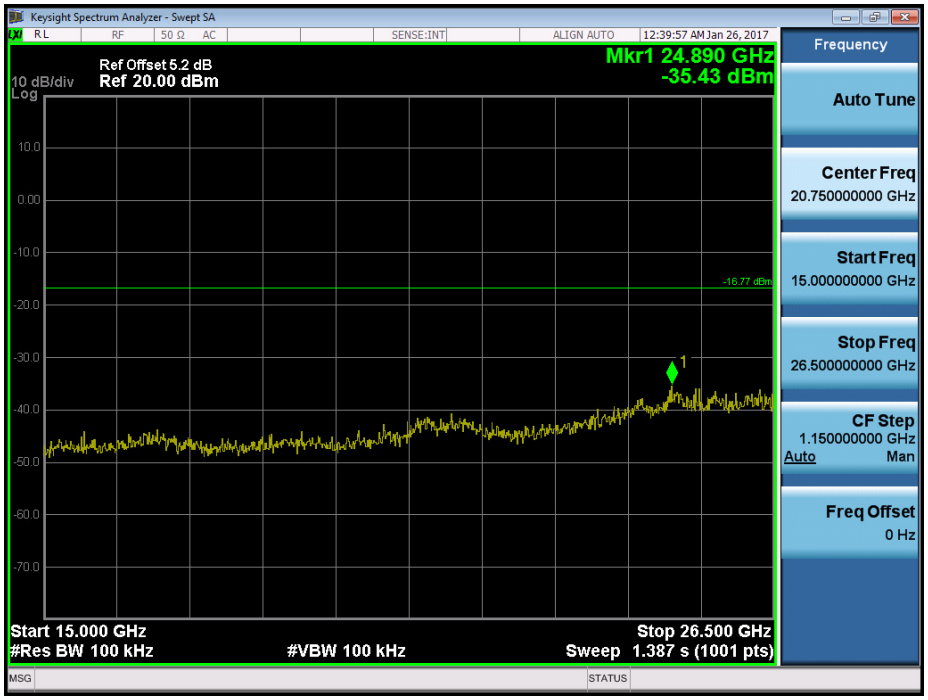
CH78 Hopping on mode (Upper) _1Mbps



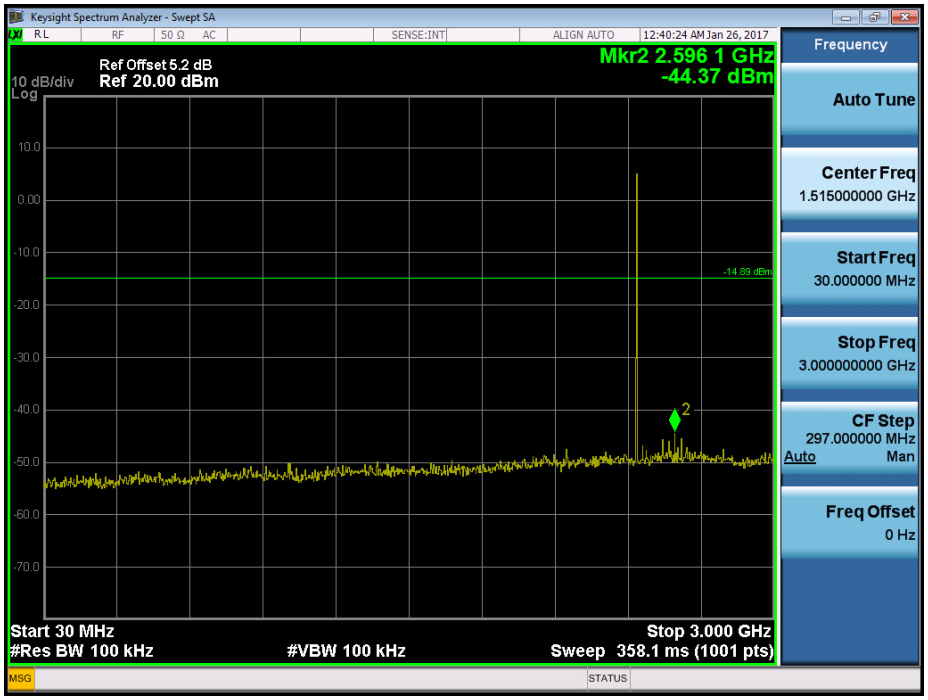
CH00 (10 Harmonic of the frequency) _1Mbps

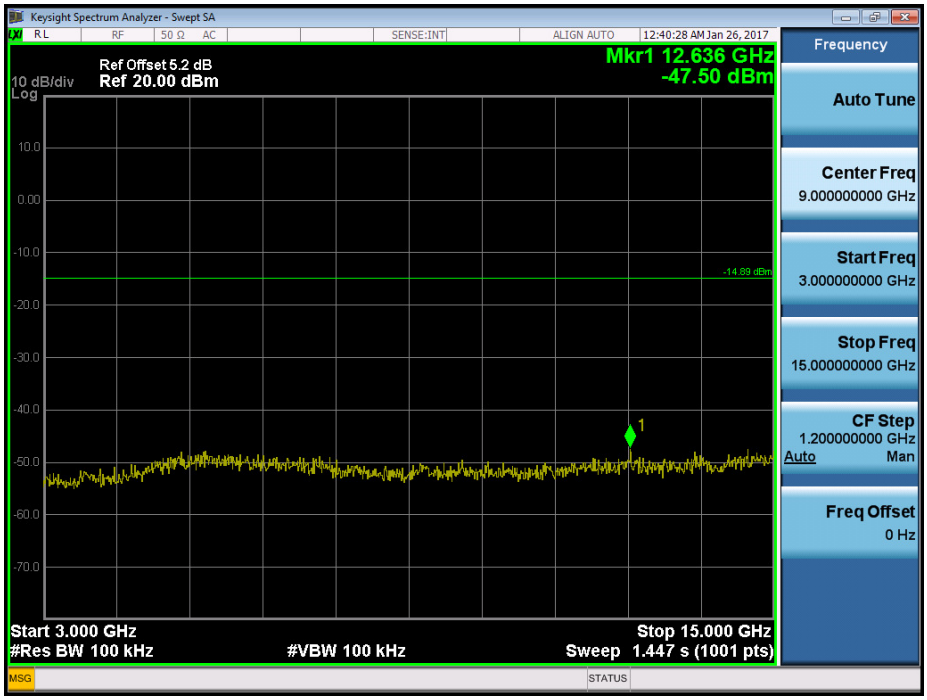






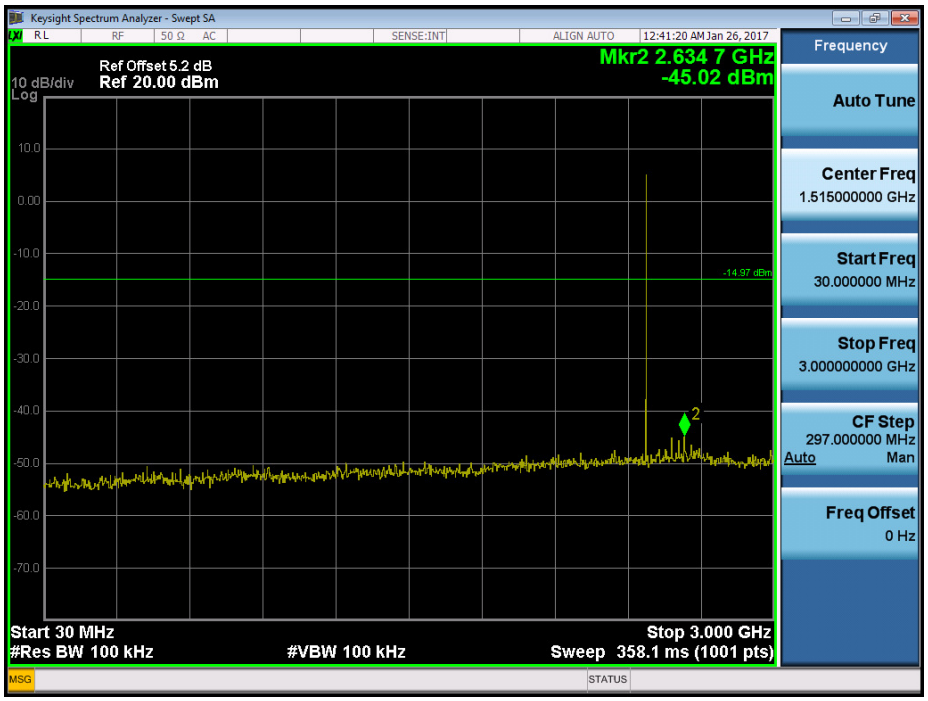
CH39 (10 Harmonic of the frequency) _1Mbps

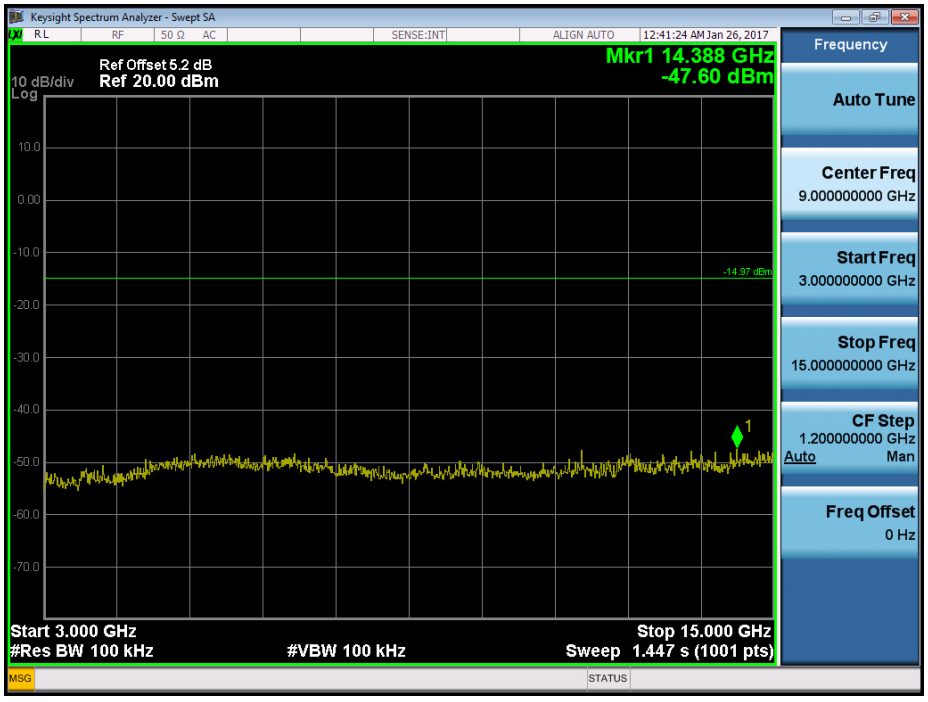



Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω
AC
SENSE:INT
ALIGN AUTO
12:40:28 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 12.636 GHz
-47.50 dBm
-14.89 dBm
Start 3.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 15.000 GHz
Sweep 1.447 s (1001 pts)
Frequency
Auto Tune
Center Freq
9.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
1.200000000 GHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω
AC
SENSE:INT
ALIGN AUTO
12:40:34 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 24.982 GHz
-35.87 dBm
-14.89 dBm
Start 15.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 26.500 GHz
Sweep 1.387 s (1001 pts)
Frequency
Auto Tune
Center Freq
20.750000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
26.500000000 GHz
CF Step
1.150000000 GHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

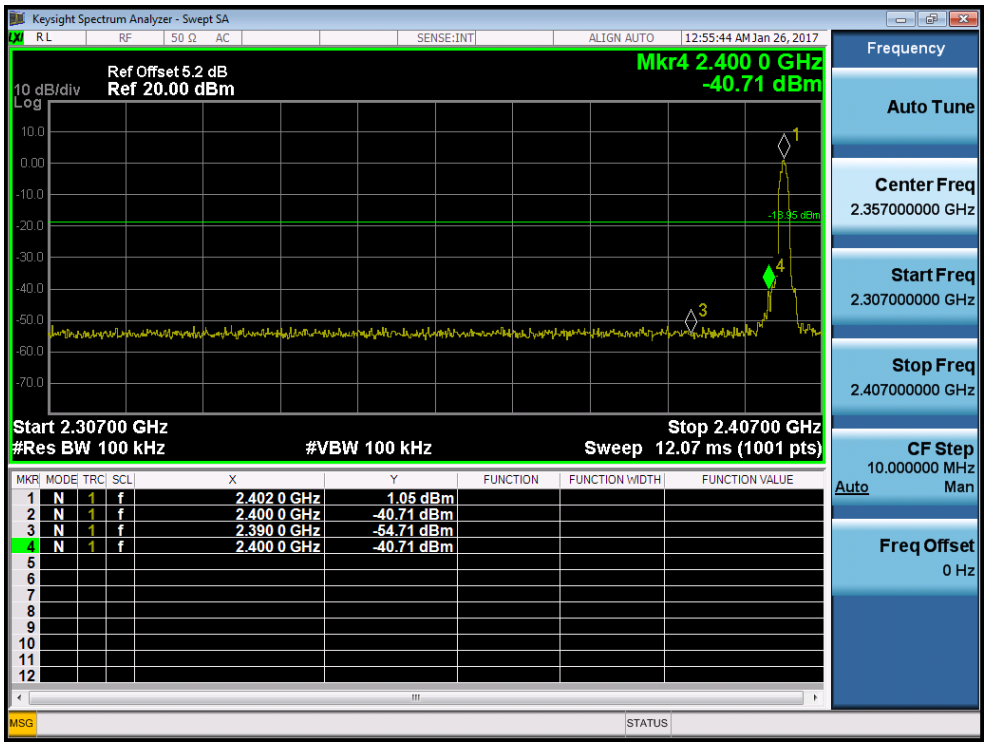
CH78 (10 Harmonic of the frequency) _1Mbps



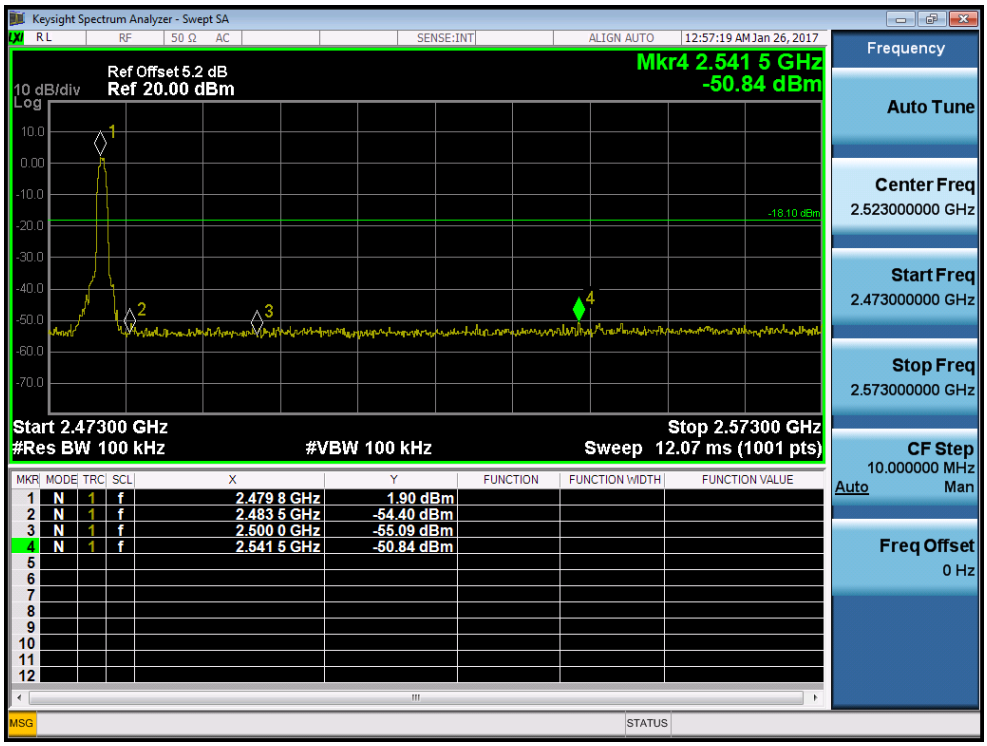



Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:41:29 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div Ref 20.00 dBm
Log
Mkr1 25.546 GHz
-36.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-14.97 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 26.500 GHz
Sweep 1.387 s (1001 pts)
Frequency
Auto Tune
Center Freq
20.750000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
26.500000000 GHz
CF Step
1.150000000 GHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

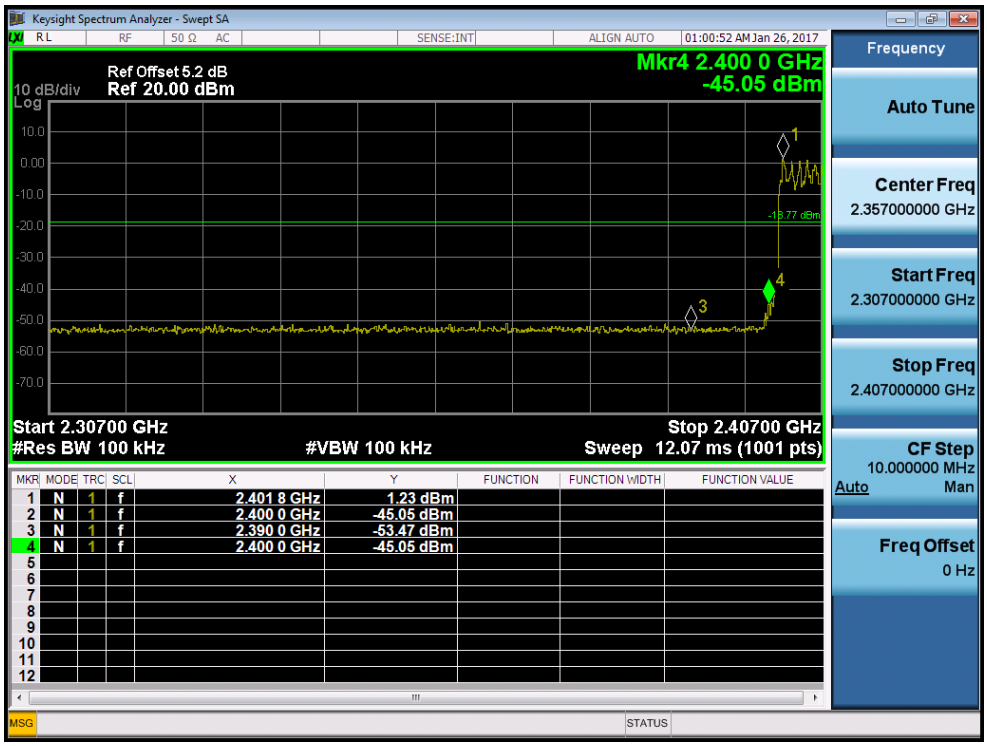
CH00 (Lower) _3Mbps



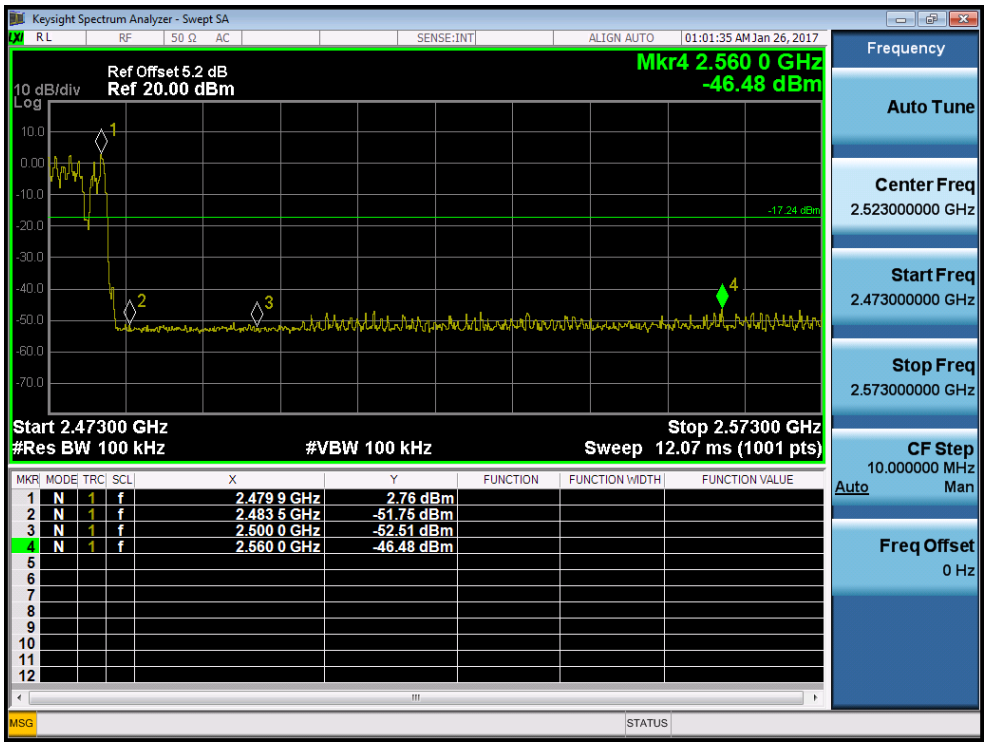
CH78 (Upper) _3Mbps



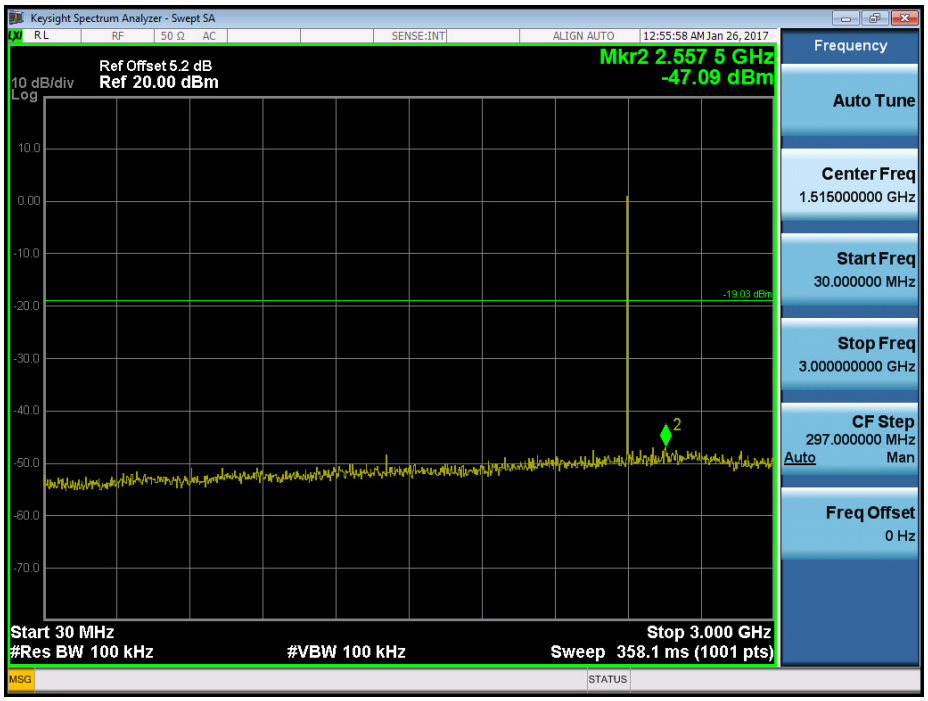
CH00 Hopping on mode (Lower)_3Mbps

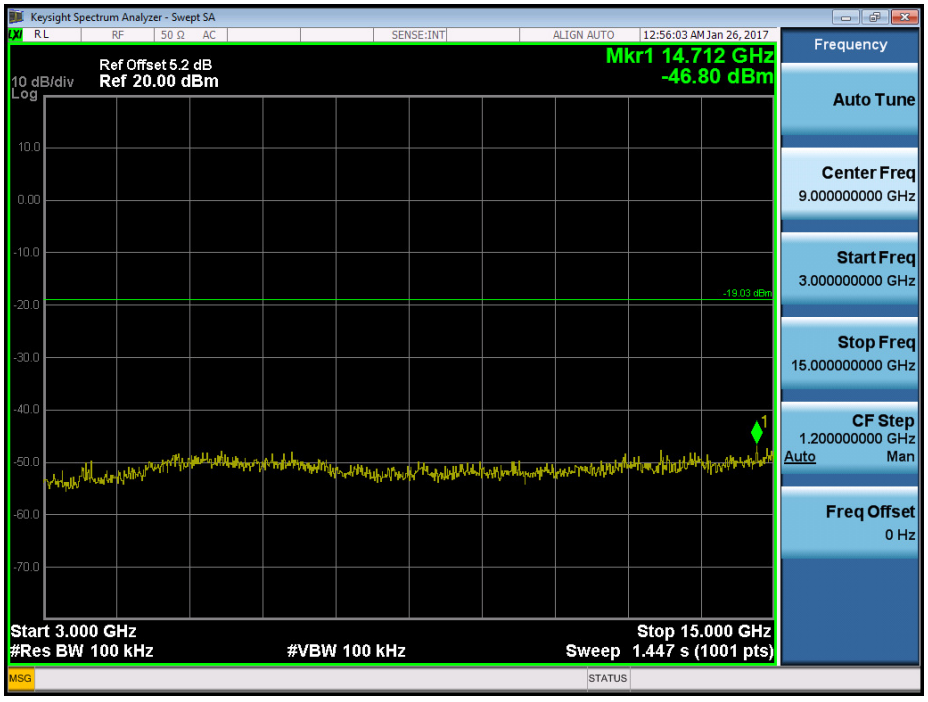


CH78 Hopping on mode (Upper) _3Mbps

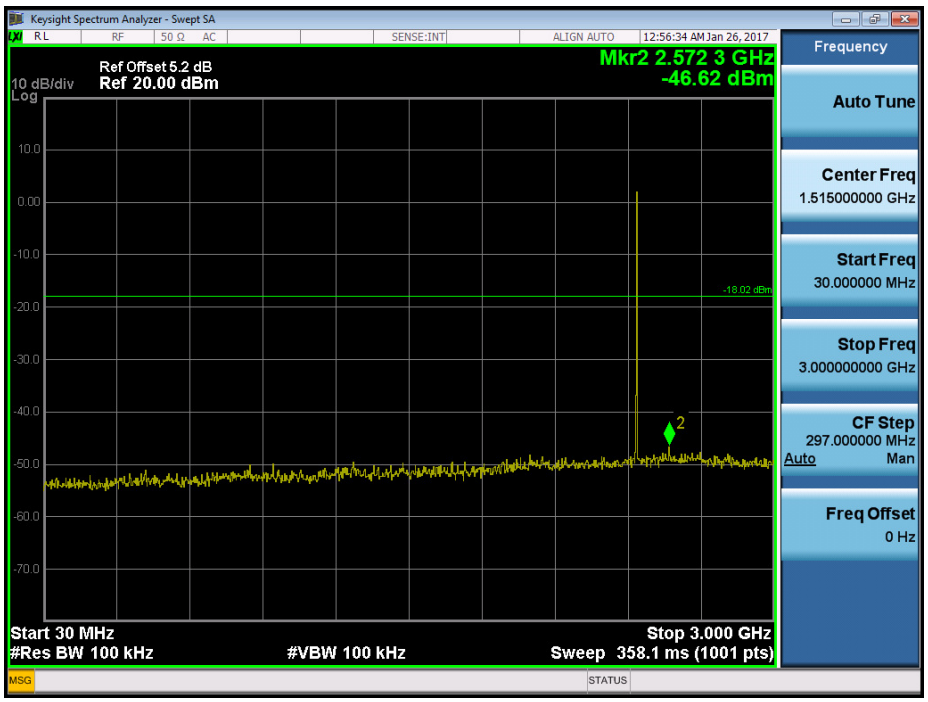


CH00 (10 Harmonic of the frequency) _3Mbps





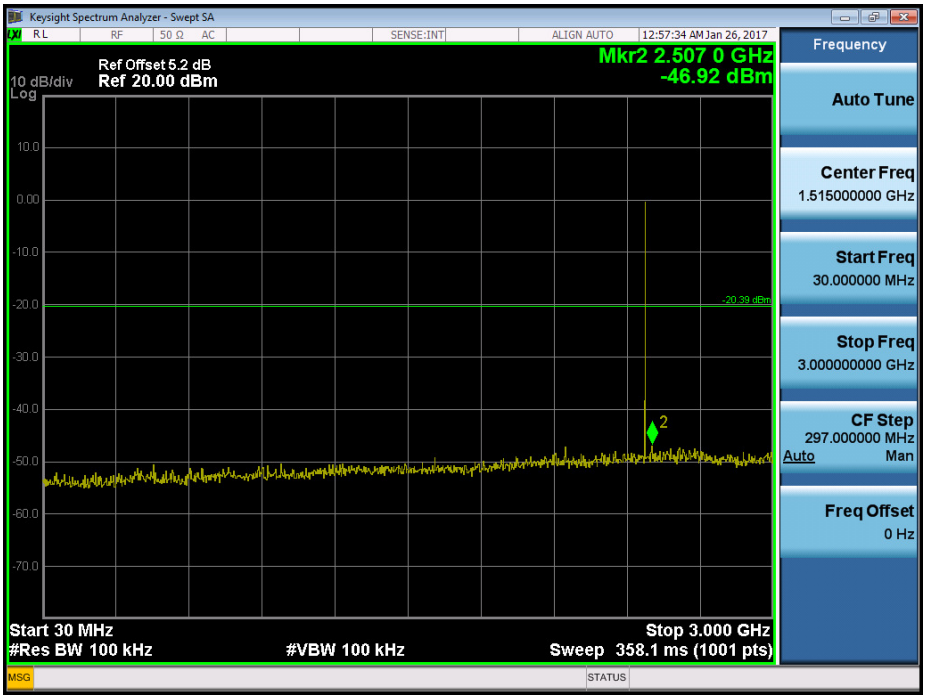
CH39 (10 Harmonic of the frequency) _3Mbps

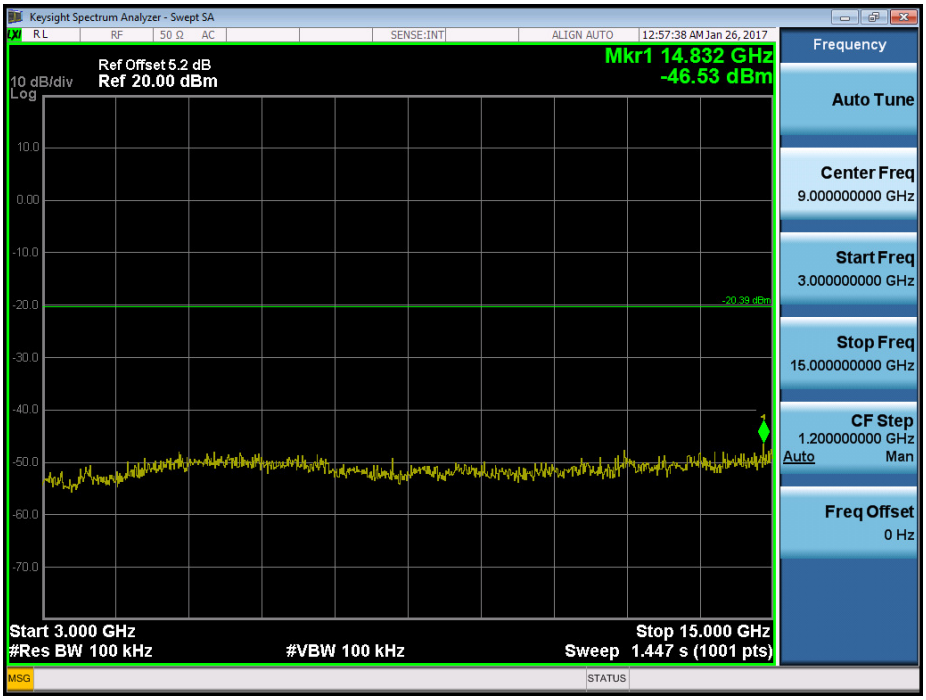



Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:56:39 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div Ref 20.00 dBm
Log
Mkr1 14.664 GHz
-47.15 dBm
-18.02 dBm
Start 3.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 15.000 GHz
Sweep 1.447 s (1001 pts)
Frequency
Auto Tune
Center Freq
9.000000000 GHz
Start Freq
3.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
1.200000000 GHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:56:44 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div Ref 20.00 dBm
Log
Mkr1 24.959 GHz
-35.18 dBm
-18.02 dBm
Start 15.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 26.500 GHz
Sweep 1.387 s (1001 pts)
Frequency
Auto Tune
Center Freq
20.750000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
26.500000000 GHz
CF Step
1.150000000 GHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

CH78 (10 Harmonic of the frequency) _3Mbps






Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
12:57:43 AM Jan 26, 2017
Ref Offset 5.2 dB
10 dB/div Ref 20.00 dBm
Log
Mkr1 26.109 GHz
-35.44 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-20.39 dBm
1
Start 15.000 GHz
#Res BW 100 kHz
#VBW 100 kHz
Stop 26.500 GHz
Sweep 1.387 s (1001 pts)
MSG
STATUS
Frequency
Auto Tune
Center Freq
20.750000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
26.500000000 GHz
CF Step
1.150000000 GHz
Auto
Man
Freq Offset
0 Hz