



Neutron Engineering Inc.

FCC&IC Radio Test Report

FCC ID: UZZSFQ10

IC: 7633A-SFQ10

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

Issued Date : Mar. 24, 2014
Project No. : 1403C077
Equipment : Pocket Kick
Model Name : SFQ-10
Applicant : Beautiful Enterprise Co., Ltd.
Address : 27th Floor, Beautiful Group Tower, 77
Connaught Road Central, Hong Kong

Tested by: Neutron Engineering Inc. EMC Laboratory

Date of Receipt: Mar. 12, 2014

Date of Test: Mar. 12, 2014 ~ Mar. 19, 2014

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Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (NML) of **CHINA**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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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
NEI-FICP-1-1403C077	Original Issue.	Mar. 24, 2014



1. CERTIFICATION

Equipment : Pocket Kick
Brand Name : **SOUNDFREQ®**
Model Name : SFQ-10
Applicant : Beautiful Enterprise Co., Ltd.
Manufacture : Beautiful Enterprise Co., Ltd.
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, China
Date of Test : Mar. 12, 2014 ~ Mar. 19, 2014
Test Item : ENGINEERING SAMPLE
Standard(s) : FCC Part15, Subpart C(15.247) / ANSI C63.4 : 2009
: FCC Public Notice DA 00-705, March 30, 2000.
: Canada RSS-210:2010
RSS-GEN Issue 3, Dec 2010

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FICP-1-1403C077) 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: 2012; Canada RSS-210:2010; RSS-GEN Issue 3, Dec 2010				
Standard(s) Section		Test Item	Judgment	Remark
FCC	IC			
15.207	RSS-GEN Issue 3, Dec 2010 7.2.4	Conducted Emission	PASS	
15.247(d)	RSS-210, Issue 8, Annex 8, A8.5	Antenna conducted Spurious Emission	PASS	
15.247 (a)(1)	RSS-210, Issue 8, Annex 8, A8.1(b)	Hopping Channel Separation	PASS	
15.247 (b)(1)	RSS-210, Issue 8, Annex 8, A8.1(b)	Peak Output Power	PASS	
15.247(d) 15.209	RSS-210, Issue 8, Annex 8, Section 8.5	Radiated Spurious Emission	PASS	
15.247 (a)(1)(iii)	RSS-210, Issue 8, Annex 8, A8.1(d)	Number of Hopping Frequency	PASS	
15.247 (a)(1)(iii)	RSS-210, Issue 8, Annex 8, A8.1(d)	Dwell Time	PASS	
15.205	RSS-GEN Issue 3, Dec 2010 7.2.2	Restricted Bands	PASS	
15.203	-	Antenna Requirement	PASS	

Note:

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



2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **DG-C02/DG-CB03** at the location of No.3,Jinshagang 1st Road, Shixia, Dalang Town, Dong Guan, China.523792

Neutron's test firm number for FCC: 319330

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

2.2 MEASUREMENT UNCERTAINTY

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

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

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	Note
DG-C02	CISPR	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U , (dB)	Note
DG-CB03	CISPR	9KHz~30MHz	V	3.79	
		9KHz~30MHz	H	3.57	
		30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	H	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	H	3.94	
		1GHz~18GHz	V	3.12	
		1GHz~18GHz	H	3.68	
		18GHz~40GHz	V	4.15	
		18GHz~40GHz	H	4.14	



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	Pocket Kick	
Brand Name	SOUNDFREQ®	
Model Name	SFQ-10	
Model Difference	N/A	
Output Power (Max.)	Operation Frequency	2402~2480 MHz
	Modulation Technology	GFSK(1Mbps) π /4-DQPSK(2Mbps)
	Bit Rate of Transmitter	8-DPSK(3Mbps)
	Output Power Max.	4.11 dBm (1Mbps) 4.04 dBm (3Mbps)
	More details of EUT technical specification, please refer to the User's Manual.	
Power Source	DC voltage supplied from USB	
Power Rating	DC5V 1A	
Connecting I/O Port(s)	Please refer to the User's Manual	

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

Ant.	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Printed Antenna	N/A	-1.72



3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX Mode Note (1)
Mode 2	Bluetooth

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

For Conducted Emission	
Final Test Mode	Description
Mode 2	Bluetooth

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 TEST SOFTWARE SETTING

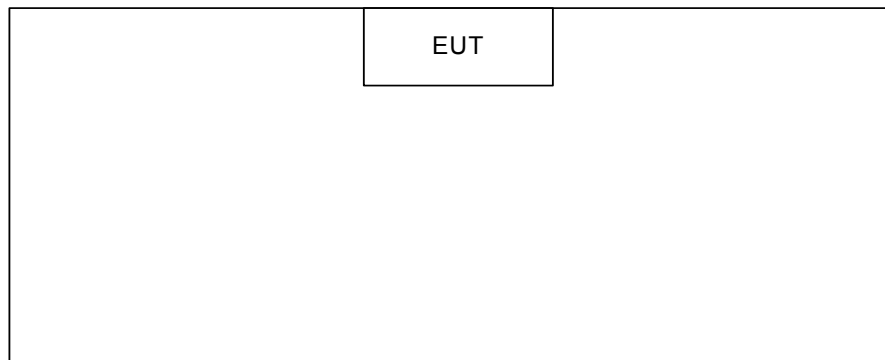
During testing, channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final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

Test software version	Bluetest		
Frequency	2402 MHz	2441 MHz	2480 MHz
Parameters-1Mbps	61	50	48
Parameters-3Mbps	60	51	54



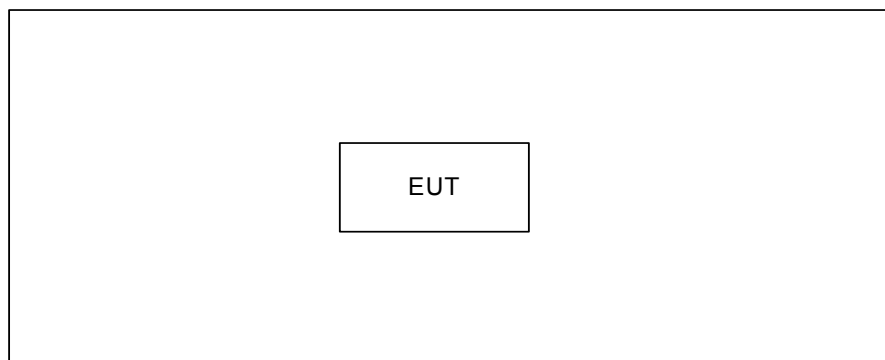
3.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted TX Mode:



Control Room

Radiated TX Mode:



Control Room



3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID/IC	Series No.	Note
-	-	-	-	-	-	

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	



4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

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

Frequency (MHz)	Class A (dBUV)		Class B (dBUV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

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

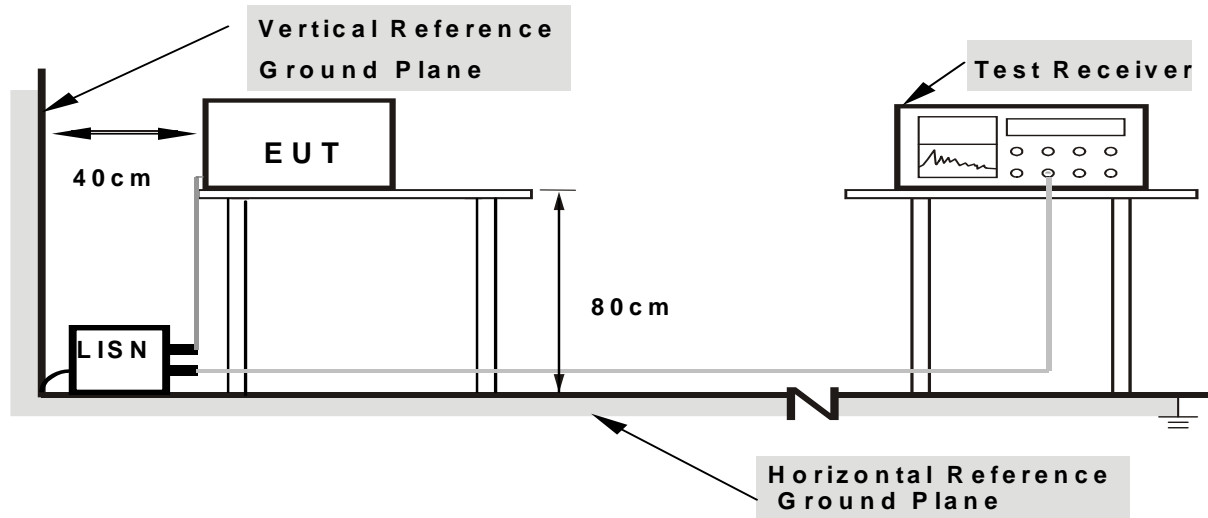
4.1.2 TEST PROCEDURE

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

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

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 cm 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

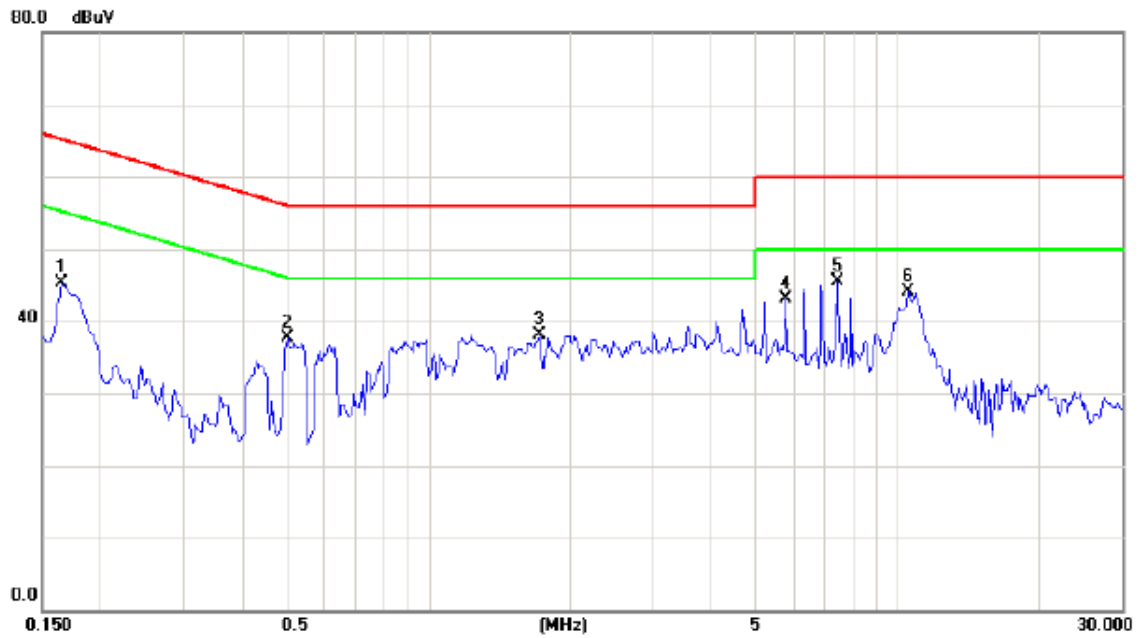
Remark:

- (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.



Test Mode: Bluetooth

Line

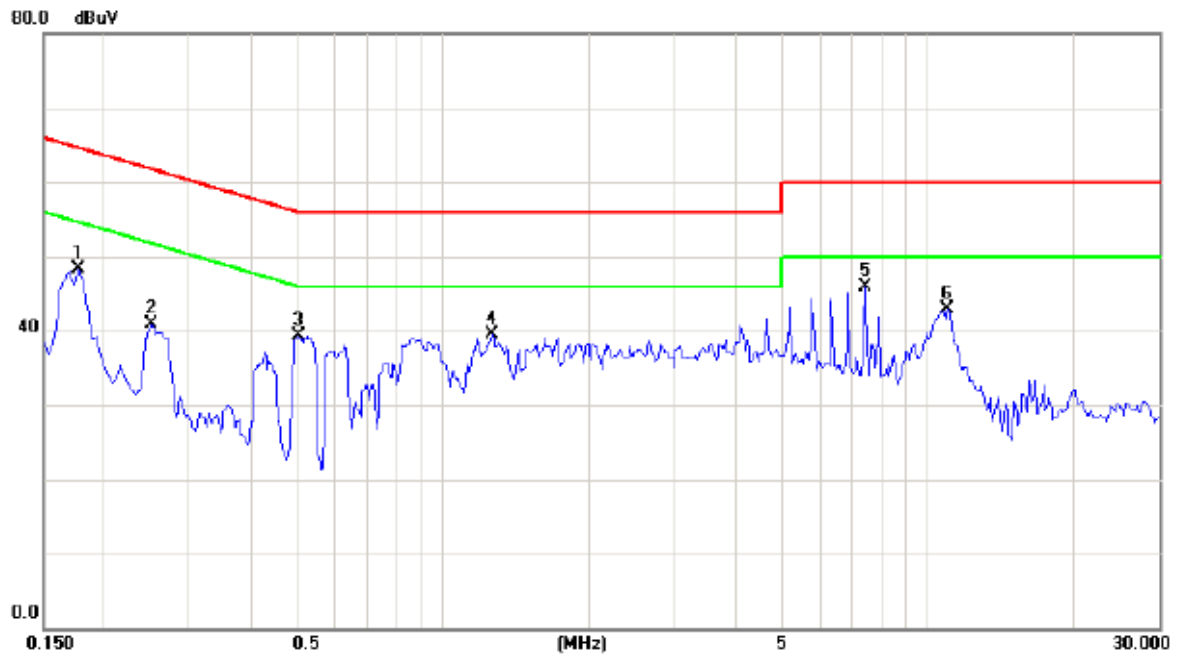


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1655	35.58	9.63	45.21	65.18	-19.97	peak	
2		0.5016	28.09	9.70	37.79	56.00	-18.21	peak	
3		1.7164	28.38	9.81	38.19	56.00	-17.81	peak	
4		5.7656	33.25	9.94	43.19	60.00	-16.81	peak	
5	*	7.4102	35.55	9.99	45.54	60.00	-14.46	peak	
6		10.5470	33.98	10.10	44.08	60.00	-15.92	peak	



Test Mode:	Bluetooth
------------	-----------

Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1773	38.59	9.71	48.30	64.61	-16.31	peak	
2		0.2516	31.27	9.72	40.99	61.70	-20.71	peak	
3		0.5055	29.60	9.74	39.34	56.00	-16.66	peak	
4		1.2672	29.76	9.79	39.55	56.00	-16.45	peak	
5	*	7.4102	35.88	10.03	45.91	60.00	-14.09	peak	
6		10.9961	32.70	10.24	42.94	60.00	-17.06	peak	



4.2 RADIATED EMISSION MEASUREMENT

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

20dB in any 100 KHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a) & RSS-210 section 2.2& Annex 8 (A8.5), 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)	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).

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

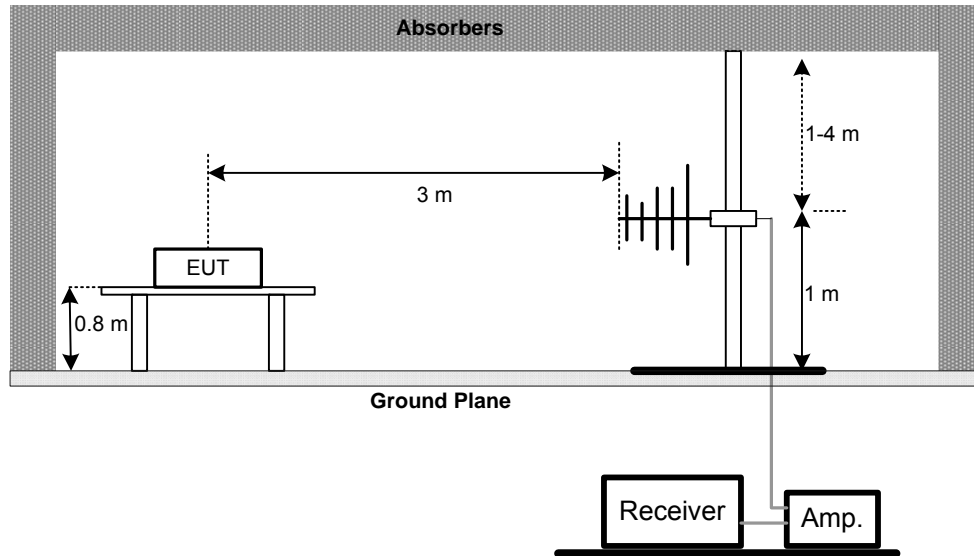
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter 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; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.2.3 DEVIATION FROM TEST STANDARD

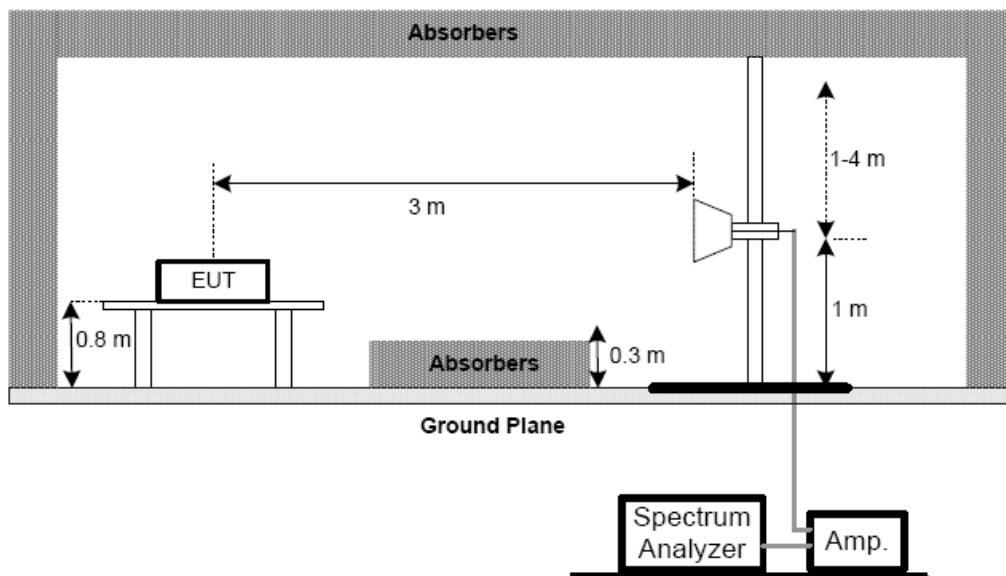
No deviation

4.2.4 TEST SETUP

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

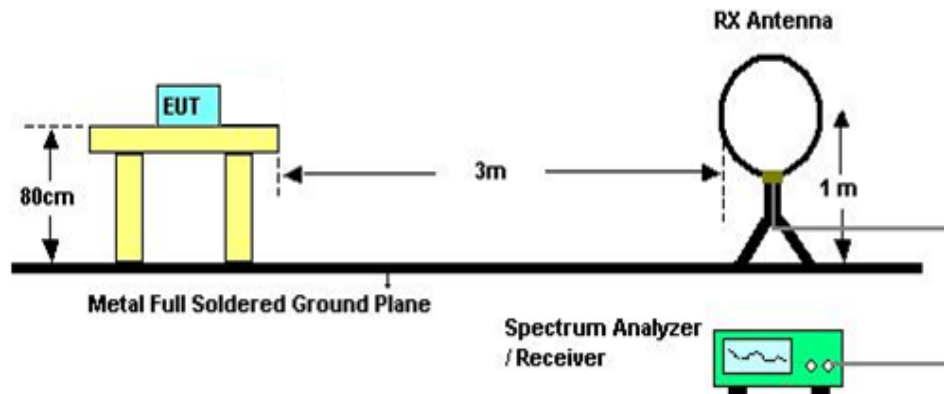


(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



Note: The antenna can be moved between 1 to 4 meters above the ground.

(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 (BELOW 30MHZ)

Test Mode:	TX Mode
------------	---------

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.00954	0°	68.35	24.30	92.65	128.01	-35.36	AVG
0.00954	0°	72.35	24.30	96.65	148.01	-51.36	PEAK
0.0186	0°	70.35	24.30	94.65	122.21	-27.56	AVG
0.0186	0°	79.35	24.30	103.65	142.21	-38.56	PEAK
0.0261	0°	56.36	23.91	80.27	119.27	-39.00	AVG
0.0261	0°	60.12	23.91	84.03	139.27	-55.24	PEAK
0.0366	0°	61.36	23.25	84.61	116.33	-31.72	AVG
0.0366	0°	65.38	23.25	88.63	136.33	-47.70	PEAK
0.595	0°	18.72	20.10	38.82	72.11	-33.29	AVG
1.8235	0°	18.95	19.52	38.47	69.54	-31.07	QP

Freq. (MHz)	Ant. 0°/90°	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
0.00948	90°	76.35	24.30	100.65	128.07	-27.42	AVG
0.00948	90°	82.36	24.30	106.66	148.07	-41.41	PEAK
0.0235	90°	56.38	24.30	80.68	120.18	-39.50	AVG
0.0235	90°	59.35	24.30	83.65	140.18	-56.53	PEAK
0.0324	90°	57.35	23.51	80.86	117.39	-36.53	AVG
0.0324	90°	58.35	23.51	81.86	137.39	-55.53	PEAK
0.0433	90°	59.35	22.82	82.17	114.87	-32.70	AVG
0.0433	90°	63.35	22.82	86.17	134.87	-48.70	PEAK
0.4917	90°	17.45	19.82	37.27	73.77	-36.50	AVG
1.7278	90°	18.63	18.63	37.26	69.54	-32.28	QP

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 = $40 \log (\text{specific distance} / \text{test distance})$ (dB).
- (3) Limit line = specific limits (dBuV) + distance extrapolation factor.



4.2.8 TEST RESULTS: 30MHZ - 1000MHZ

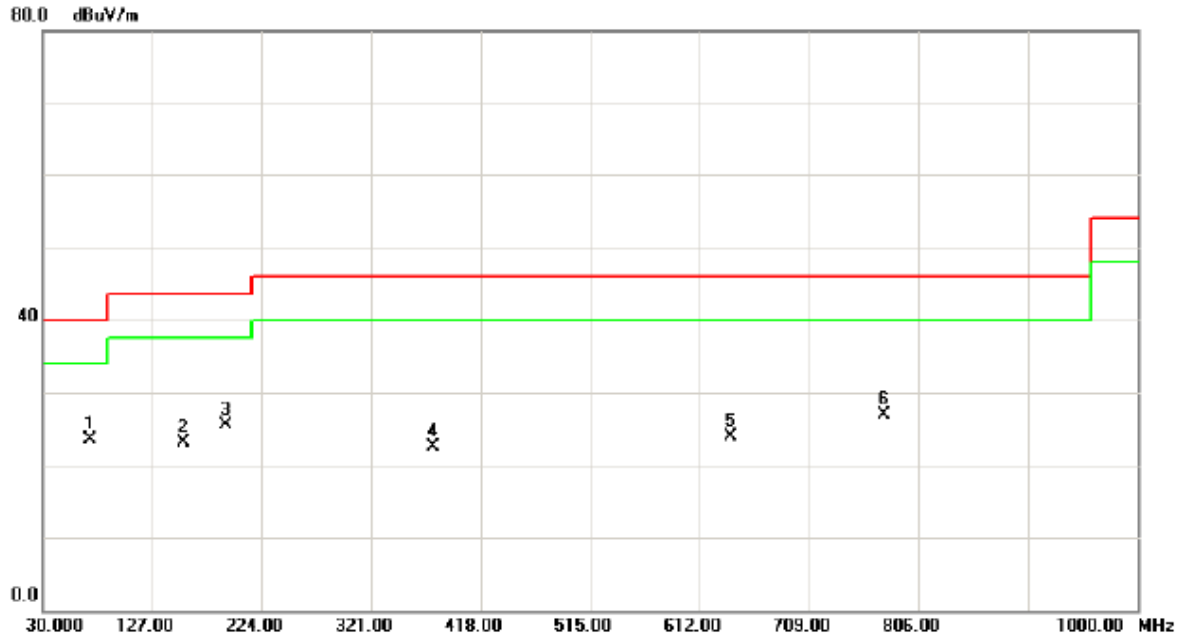
Remark:

- (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.



Test Mode: TX 2402MHz _CH00_1Mbps

Vertical

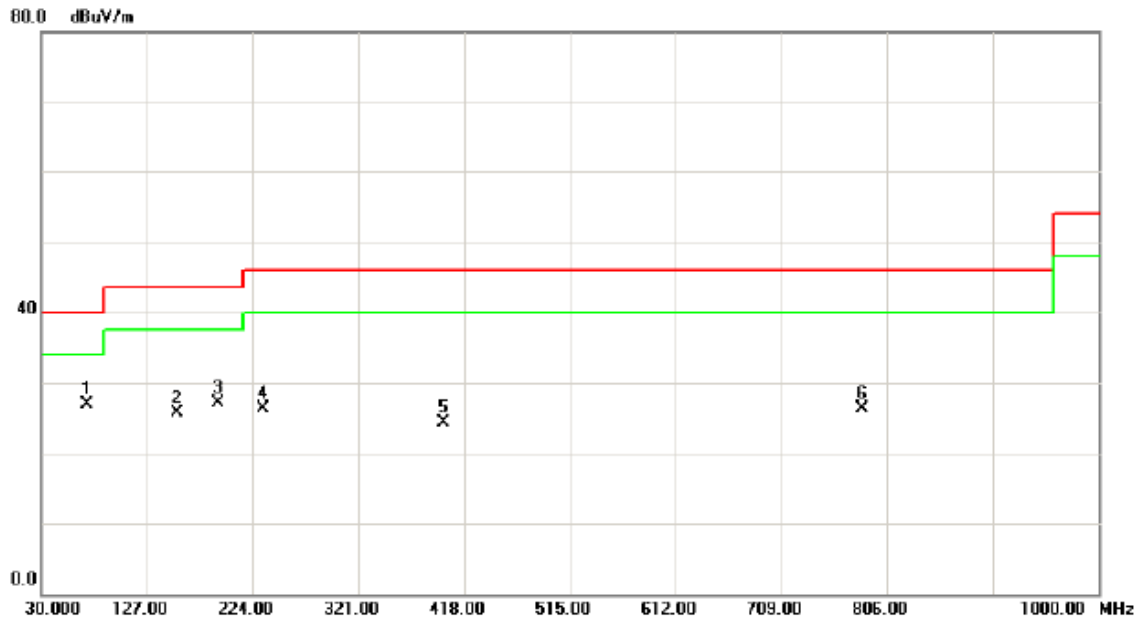


No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB		
1	*	71.7100	40.02	-16.46	23.56	40.00	-16.44	peak	
2		154.1600	36.77	-13.70	23.07	43.50	-20.43	peak	
3		191.9900	39.92	-14.49	25.43	43.50	-18.07	peak	
4		375.3200	33.07	-10.66	22.41	46.00	-23.59	peak	
5		640.1300	29.98	-6.06	23.92	46.00	-22.08	peak	
6		774.9600	30.99	-4.01	26.98	46.00	-19.02	peak	



Test Mode: TX 2402MHz _CH00_1Mbps

Horizontal

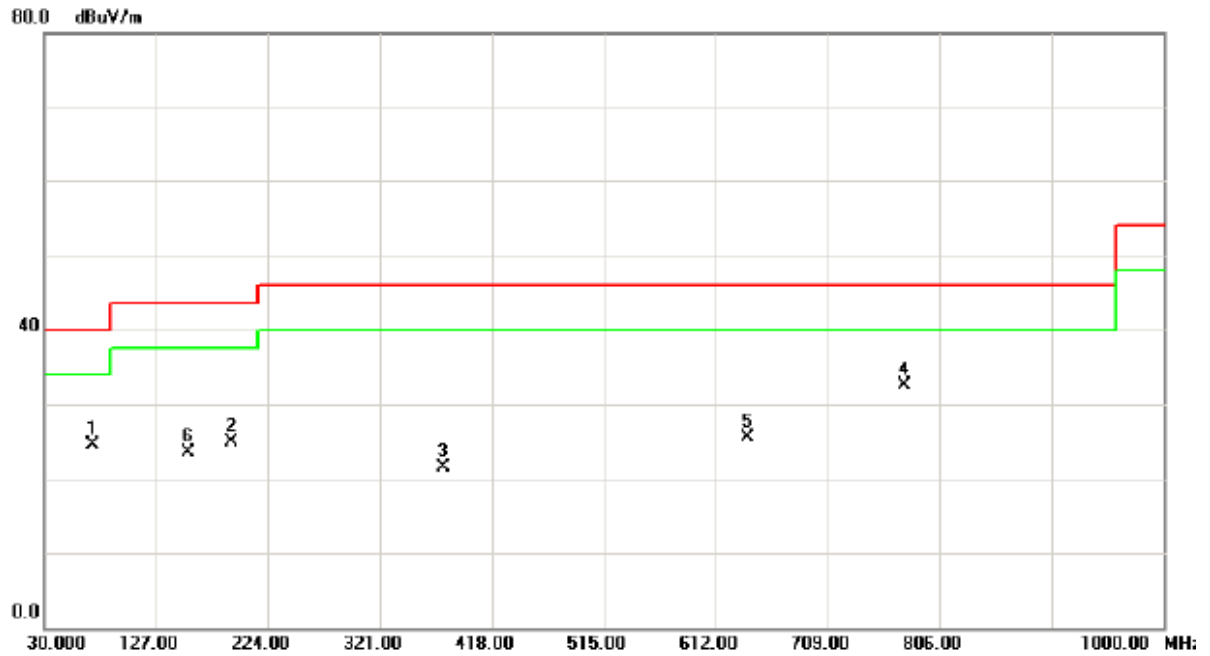


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	71.7100	43.38	-16.46	26.92	40.00	-13.08	peak	
2		155.1300	39.36	-13.69	25.67	43.50	-17.83	peak	
3		191.9900	41.65	-14.49	27.16	43.50	-16.34	peak	
4		233.7000	40.84	-14.61	26.23	46.00	-19.77	peak	
5		399.5700	34.25	-9.89	24.36	46.00	-21.64	peak	
6		783.6900	29.95	-3.69	26.26	46.00	-19.74	peak	



Test Mode: TX 2441MHz _CH39_1Mbps

Vertical

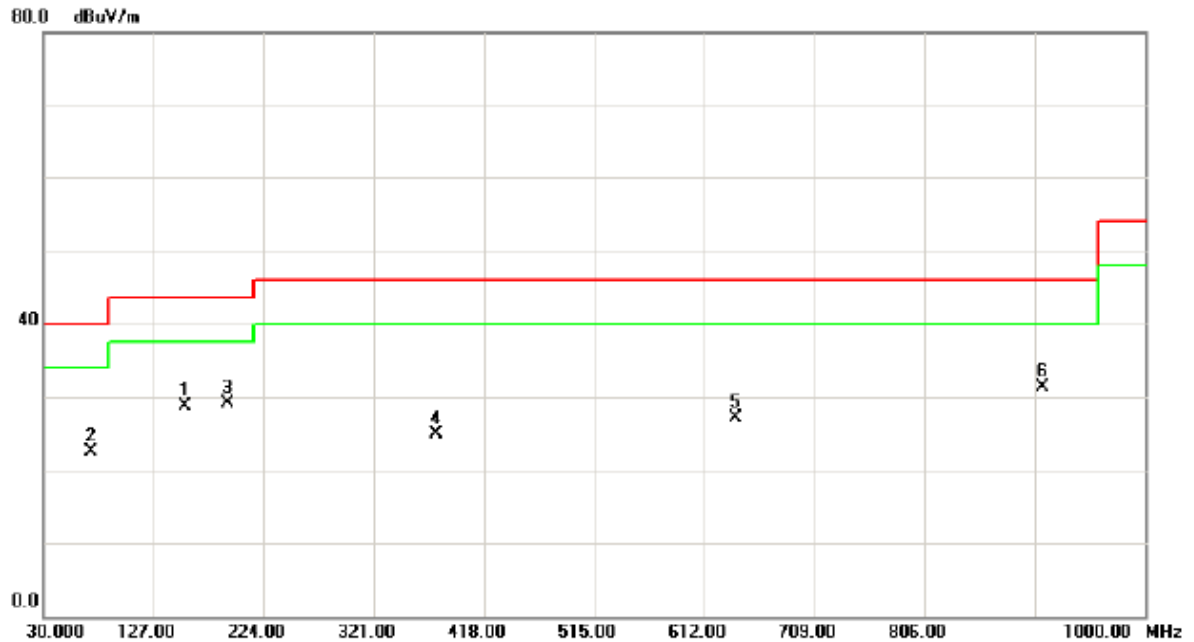


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		71.7100	41.02	-16.46	24.56	40.00	-15.44	peak	
2		191.9900	39.42	-14.49	24.93	43.50	-18.57	peak	
3		375.3200	32.07	-10.66	21.41	46.00	-24.59	peak	
4	*	774.9600	36.49	-4.01	32.48	46.00	-13.52	peak	
5		640.1300	31.48	-6.06	25.42	46.00	-20.58	peak	
6		154.1600	37.27	-13.70	23.57	43.50	-19.93	peak	



Test Mode: TX 2441MHz _CH39_1Mbps

Horizontal

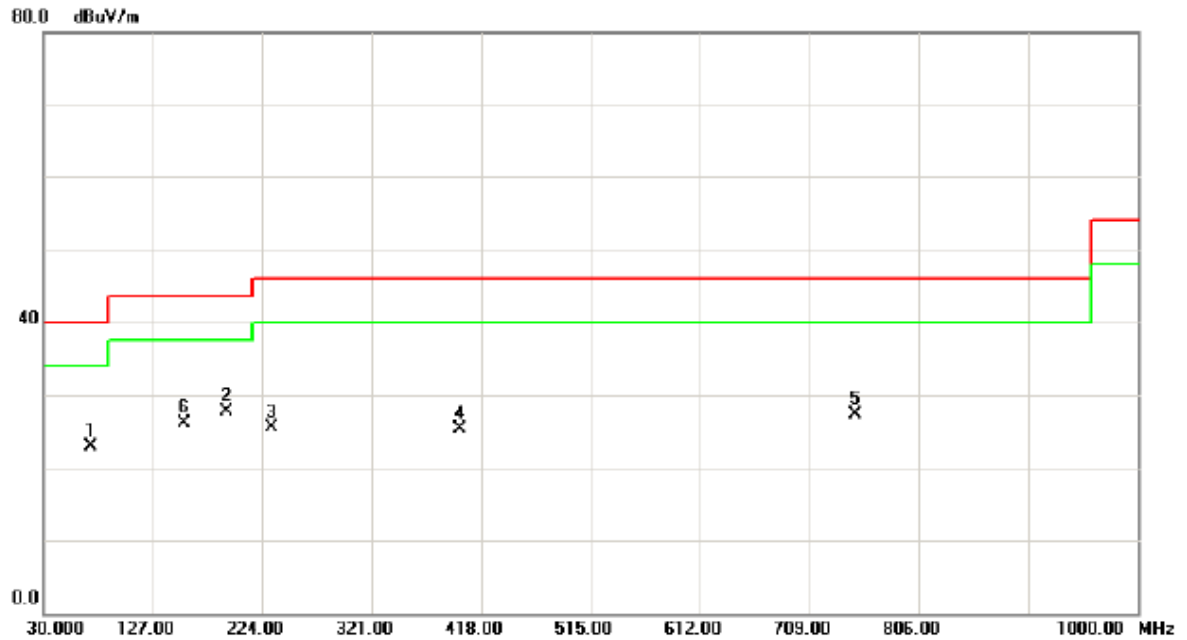


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		155.1300	42.36	-13.69	28.67	43.50	-14.83	peak	
2		71.7100	38.88	-16.46	22.42	40.00	-17.58	peak	
3	*	191.9900	43.65	-14.49	29.16	43.50	-14.34	peak	
4		375.3200	35.59	-10.66	24.93	46.00	-21.07	peak	
5		640.1300	33.10	-6.06	27.04	46.00	-18.96	peak	
6		909.7900	32.49	-1.13	31.36	46.00	-14.64	peak	



Test Mode: TX 2480MHz _CH78_1Mbps

Vertical

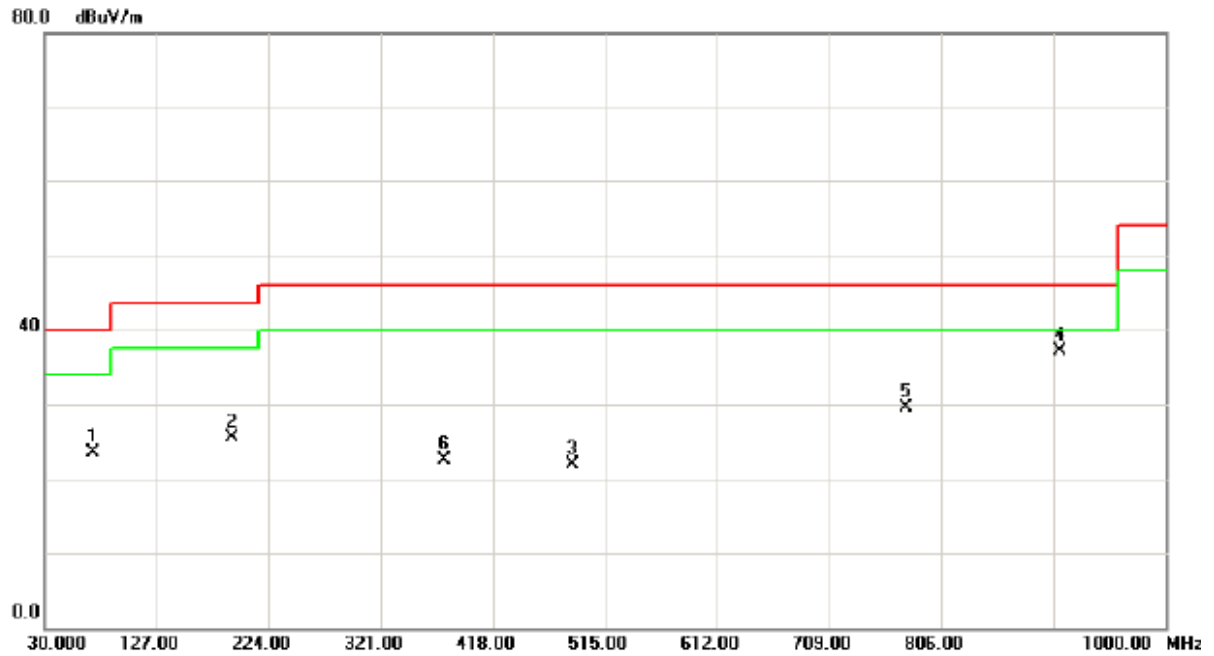


No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	71.7100	39.38	-16.46	22.92	40.00	-17.08	peak	
2 *	191.9900	42.15	-14.49	27.66	43.50	-15.84	peak	
3	232.7300	40.14	-14.57	25.57	46.00	-20.43	peak	
4	399.5700	35.25	-9.89	25.36	46.00	-20.64	peak	
5	749.7400	32.23	-4.91	27.32	46.00	-18.68	peak	
6	155.1300	39.86	-13.69	26.17	43.50	-17.33	peak	



Test Mode: TX 2480MHz _CH78_1Mbps

Horizontal

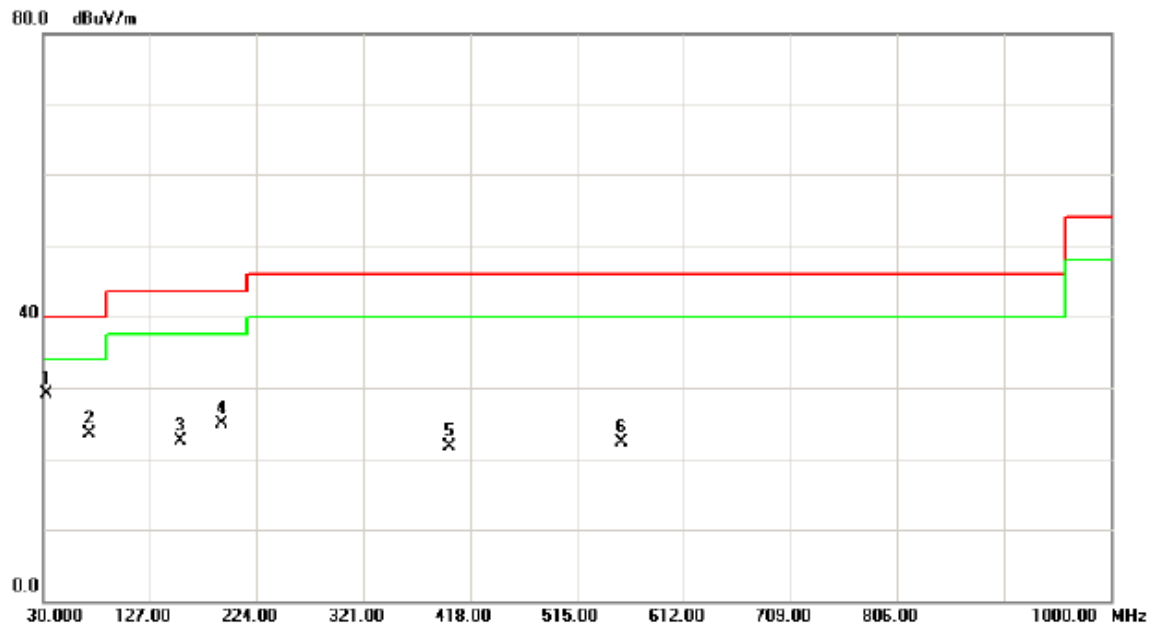


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		71.7100	40.02	-16.46	23.56	40.00	-16.44	peak	
2		191.9900	39.92	-14.49	25.43	43.50	-18.07	peak	
3		486.8700	31.77	-9.96	21.81	46.00	-24.19	peak	
4	*	908.8200	38.23	-1.14	37.09	46.00	-8.91	peak	
5		774.9600	33.49	-4.01	29.48	46.00	-16.52	peak	
6		375.3200	33.07	-10.66	22.41	46.00	-23.59	peak	



Test Mode: TX 2402MHz _CH00_3Mbps

Vertical

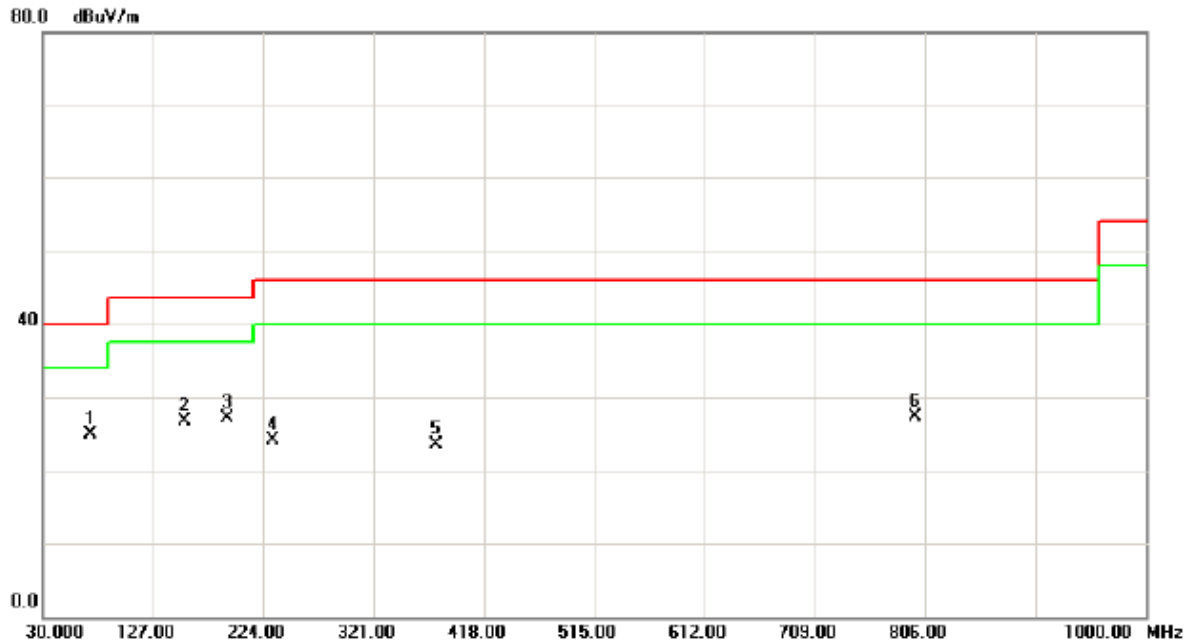


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	32.9100	44.77	-15.75	29.02	40.00	-10.98	peak	
2		71.7100	40.02	-16.46	23.56	40.00	-16.44	peak	
3		154.1600	36.27	-13.70	22.57	43.50	-20.93	peak	
4		191.9900	39.42	-14.49	24.93	43.50	-18.57	peak	
5		399.5700	31.65	-9.89	21.76	46.00	-24.24	peak	
6		555.7400	30.09	-7.70	22.39	46.00	-23.61	peak	



Test Mode: TX 2402MHz _CH00_3Mbps

Horizontal

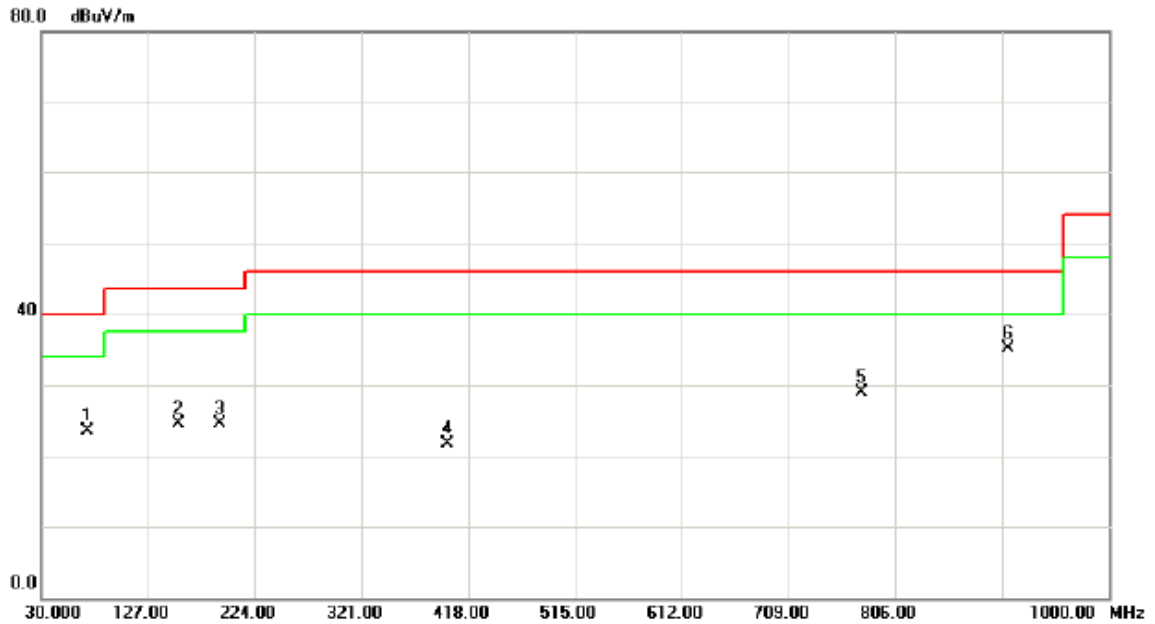


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	71.7100	41.38	-16.46	24.92	40.00	-15.08	peak	
2		155.1300	40.36	-13.69	26.67	43.50	-16.83	peak	
3		191.9900	41.65	-14.49	27.16	43.50	-16.34	peak	
4		232.7300	38.64	-14.57	24.07	46.00	-21.93	peak	
5		375.3200	34.09	-10.66	23.43	46.00	-22.57	peak	
6		797.2700	30.60	-3.21	27.39	46.00	-18.61	peak	



Test Mode: TX 2441MHz _CH39_3Mbps

Vertical

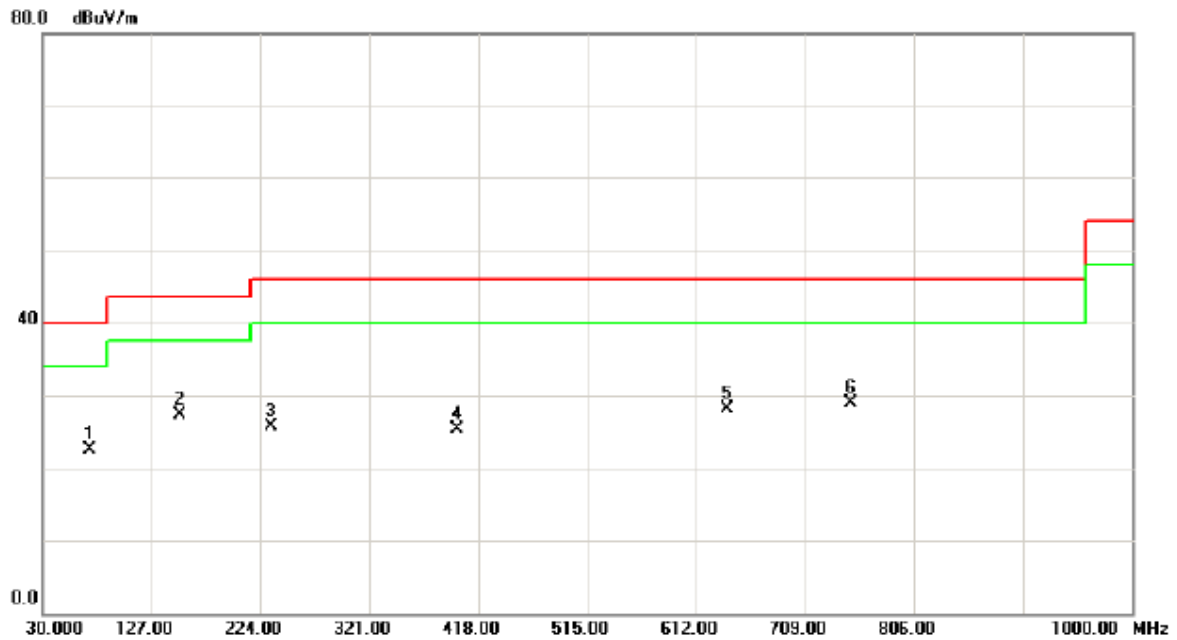


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		71.7100	40.02	-16.46	23.56	40.00	-16.44	peak	
2		154.1600	38.27	-13.70	24.57	43.50	-18.93	peak	
3		191.9900	38.92	-14.49	24.43	43.50	-19.07	peak	
4		399.5700	31.65	-9.89	21.76	46.00	-24.24	peak	
5		774.9600	32.99	-4.01	28.98	46.00	-17.02	peak	
6	*	908.8200	36.23	-1.14	35.09	46.00	-10.91	peak	



Test Mode: TX 2441MHz _CH39_3Mbps

Horizontal

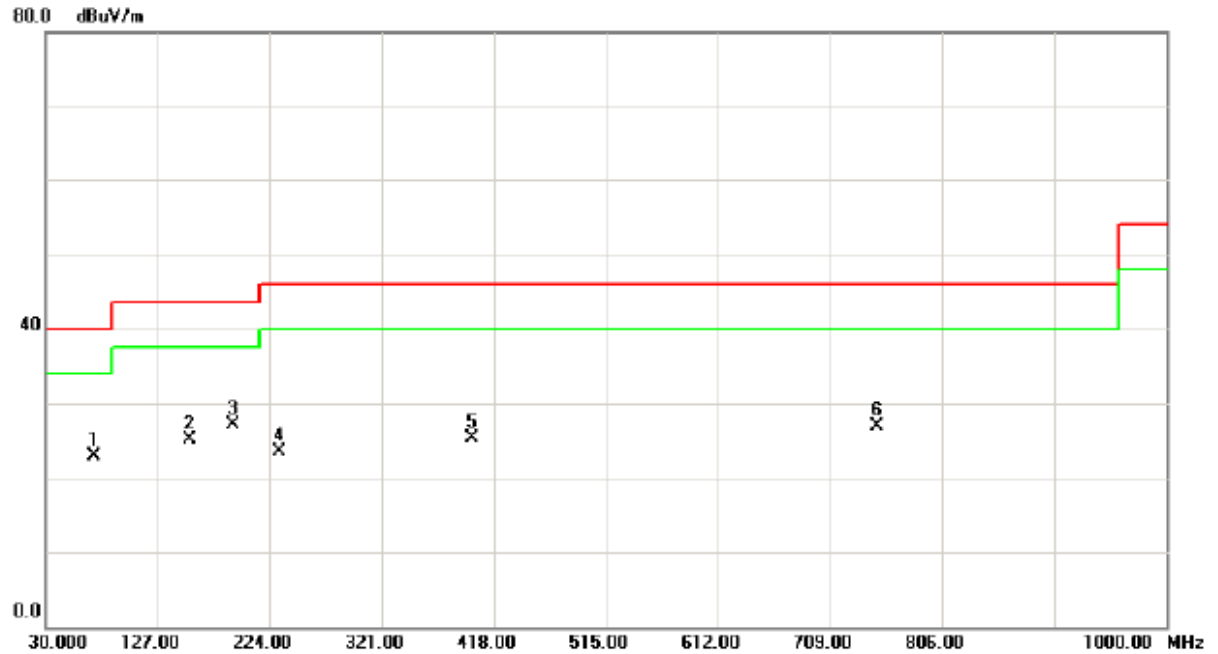


No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB		
1		71.7100	38.88	-16.46	22.42	40.00	-17.58	peak	
2	*	152.2200	41.00	-13.71	27.29	43.50	-16.21	peak	
3		233.7000	40.34	-14.61	25.73	46.00	-20.27	peak	
4		399.5700	35.25	-9.89	25.36	46.00	-20.64	peak	
5		640.1300	34.10	-6.06	28.04	46.00	-17.96	peak	
6		749.7400	33.73	-4.91	28.82	46.00	-17.18	peak	



Test Mode: TX 2480MHz _CH78 _3Mbps

Vertical

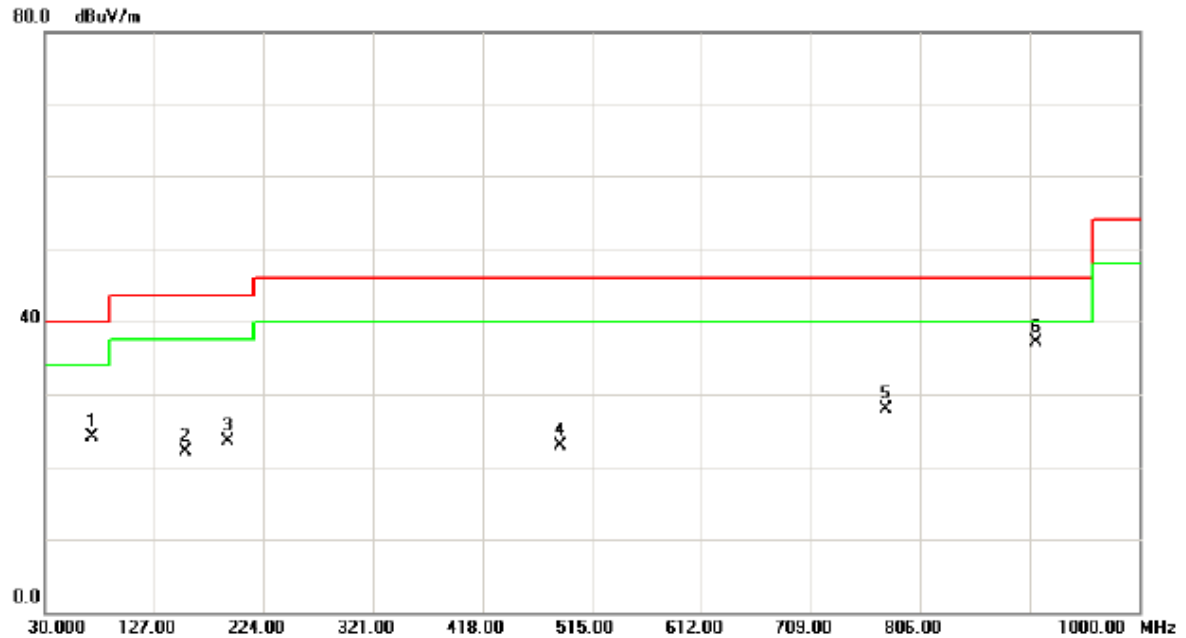


No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB		
1		71.7100	39.38	-16.46	22.92	40.00	-17.08	peak	
2		155.1300	38.86	-13.69	25.17	43.50	-18.33	peak	
3	*	191.9900	41.65	-14.49	27.16	43.50	-16.34	peak	
4		232.7300	38.14	-14.57	23.57	46.00	-22.43	peak	
5		399.5700	35.25	-9.89	25.36	46.00	-20.64	peak	
6		749.7400	31.73	-4.91	26.82	46.00	-19.18	peak	



Test Mode: TX 2480MHz _CH78_3Mbps

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		71.7100	40.52	-16.46	24.06	40.00	-15.94	peak	
2		154.1600	35.77	-13.70	22.07	43.50	-21.43	peak	
3		191.9900	37.92	-14.49	23.43	43.50	-20.07	peak	
4		486.8700	32.77	-9.96	22.81	46.00	-23.19	peak	
5		774.9600	31.99	-4.01	27.98	46.00	-18.02	peak	
6	*	908.8200	38.23	-1.14	37.09	46.00	-8.91	peak	



4.2.9 TEST RESULTS (ABOVE 1000 MHZ)

Remark:

- (1) 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.
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency;"H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (4) Data of measurement within this frequency range shown "*" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:
"X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (7) 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



Test Mode: TX 2402MHz _CH00_ 1Mbps

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	V	23.42	13.51	34.09	57.51	47.60	74.00	54.00	-16.49	-6.40	X/E
2402.50	V	59.54	49.36	34.12	93.66	83.48					X/F
4804.15	V	40.66	29.14	6.38	47.04	35.52	74.00	54.00	-26.96	-18.48	X/H

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	H	24.29	13.46	34.09	58.38	47.55	74.00	54.00	-15.62	-6.45	X/E
2402.05	H	54.84	44.81	34.12	88.96	78.93					X/F
4803.97	H	37.83	28.09	6.38	44.21	34.47	74.00	54.00	-29.79	-19.53	X/H

Test Mode: TX 2441MHz _CH39_ 1Mbps

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2440.90	V	61.97	52.00	34.25	96.22	86.25					X/F
4882.12	V	40.64	30.81	6.61	47.25	37.42	74.00	54.00	-26.75	-16.58	X/H

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2441.05	H	57.03	47.12	34.25	91.28	81.37					X/F
4882.14	H	40.64	28.91	6.61	47.25	35.52	74.00	54.00	-26.75	-18.48	X/H

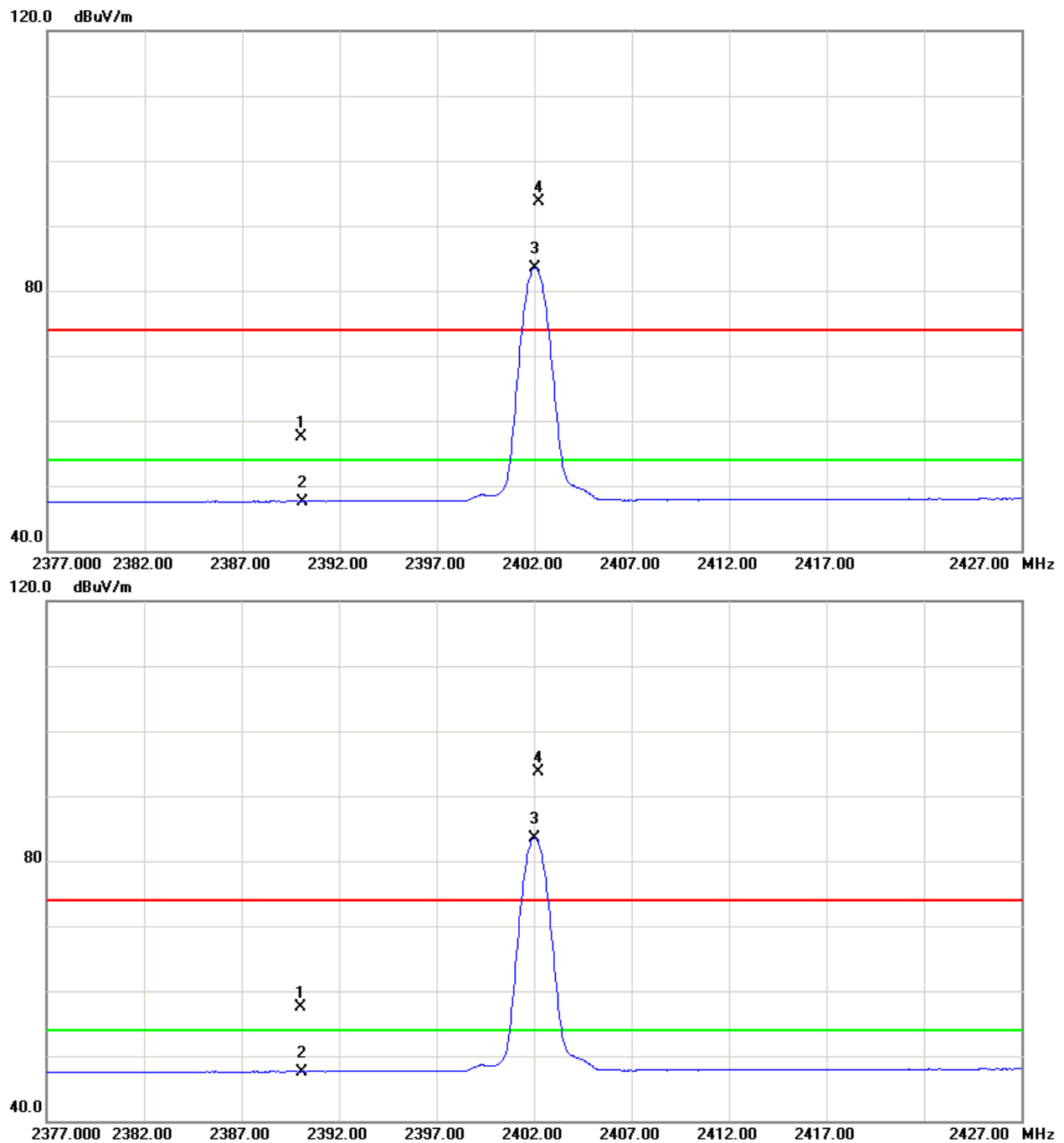
Test Mode: TX 2480MHz _CH78_ 1Mbps

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2480.05	V	63.61	53.61	34.36	97.97	87.97					X/F
2483.50	V	23.75	13.74	34.37	58.12	48.11	74.00	54.00	-15.88	-5.89	X/E
4960.05	V	41.42	30.13	6.83	48.25	36.96	74.00	54.00	-25.75	-17.04	X/H

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2479.90	H	56.55	46.59	34.36	90.91	80.95					X/F
2483.50	H	25.16	13.57	34.37	59.53	47.94	74.00	54.00	-14.47	-6.06	X/E
4960.12	H	41.75	32.55	6.83	48.58	39.38	74.00	54.00	-25.42	-14.62	X/H

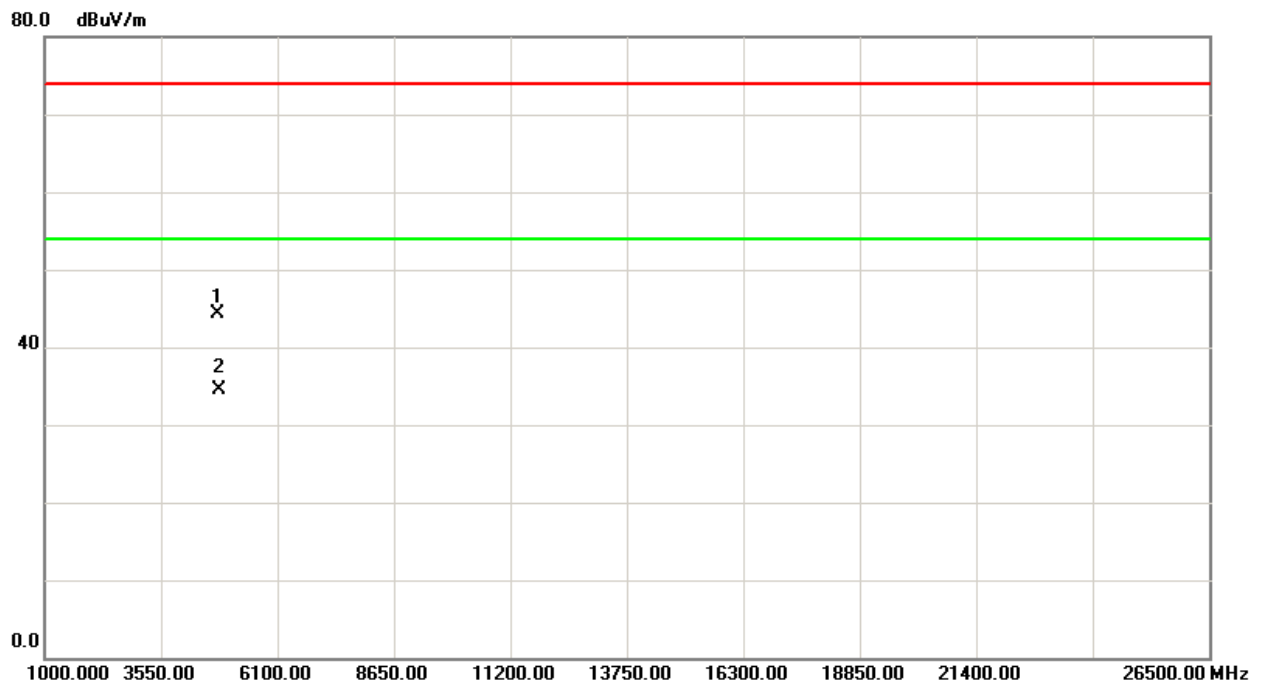
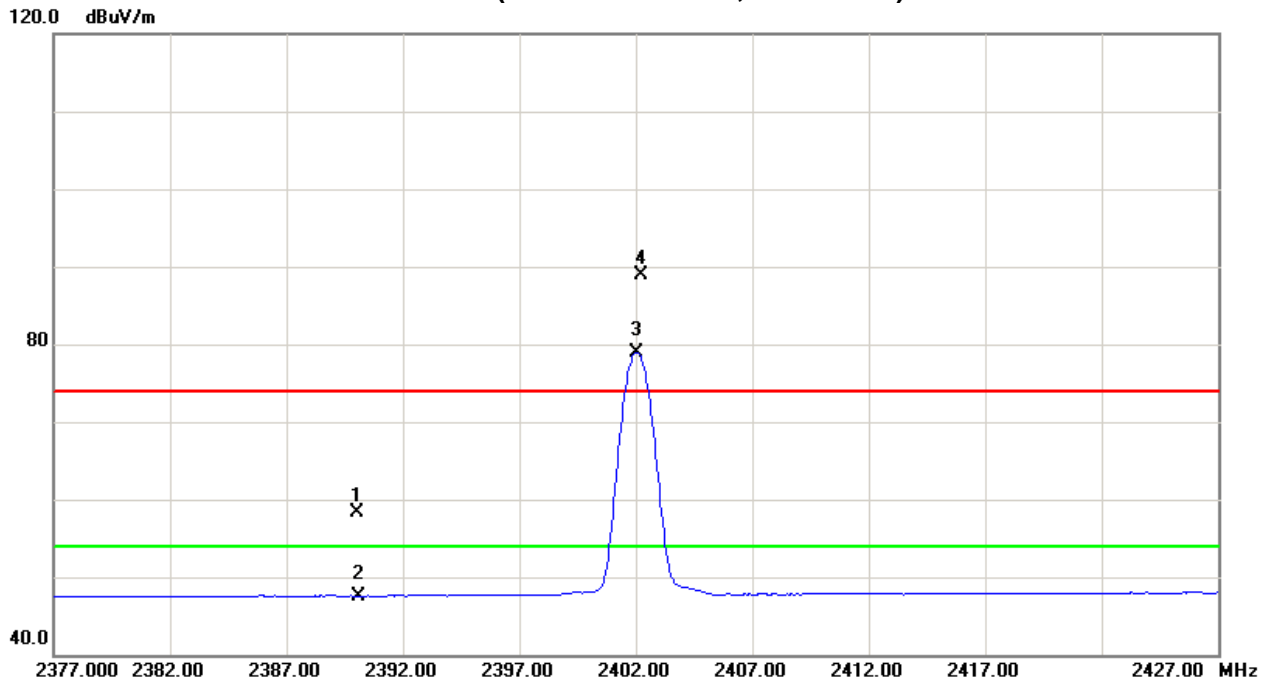


TX CH00(Above 1000 MHz, Vertical)



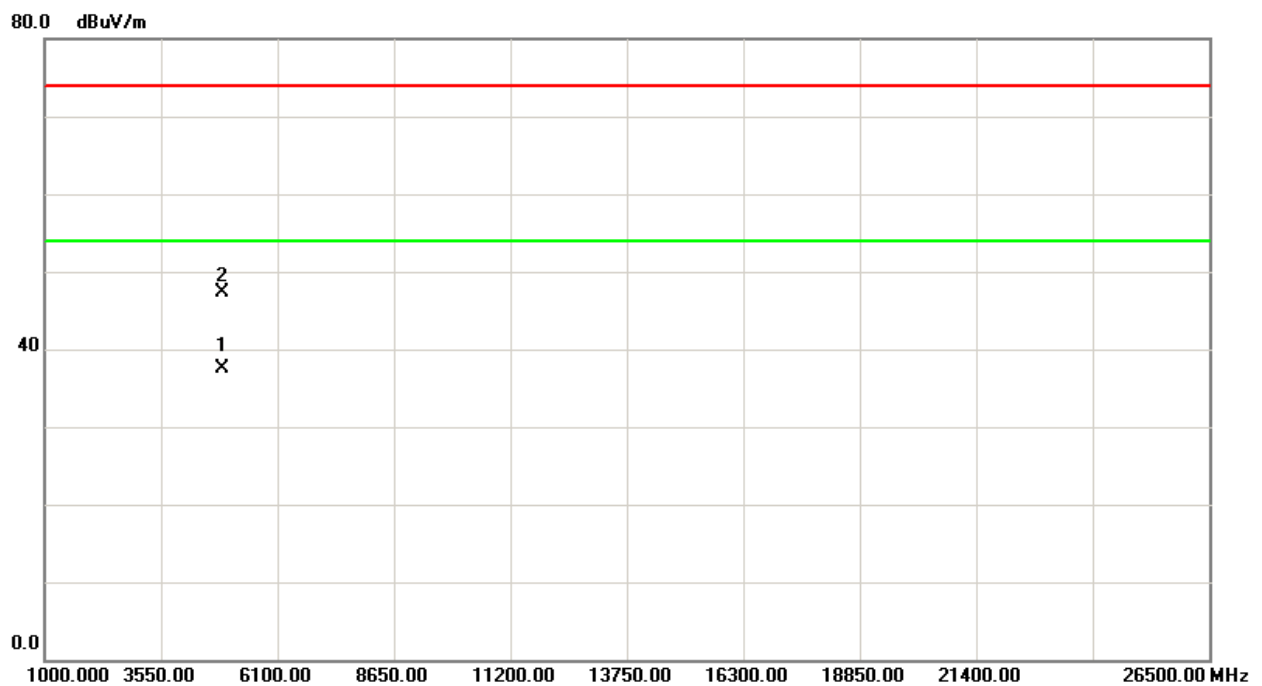
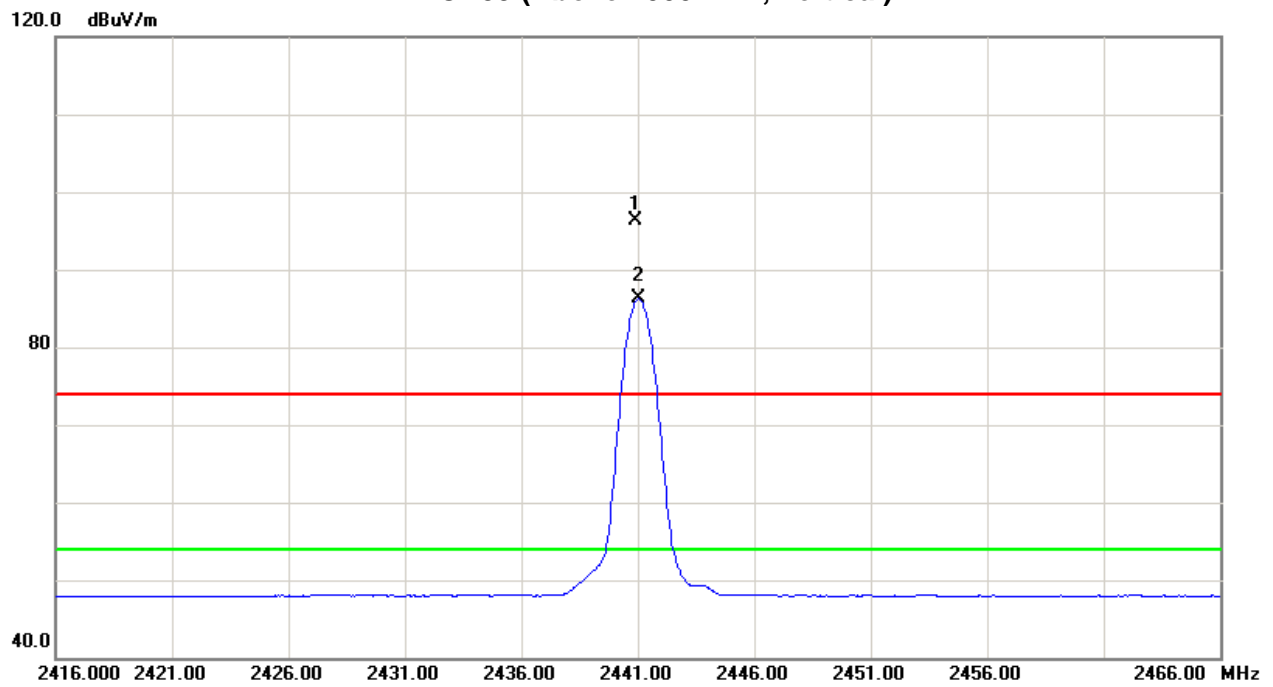


TX CH00(Above 1000 MHz, Horizontal)



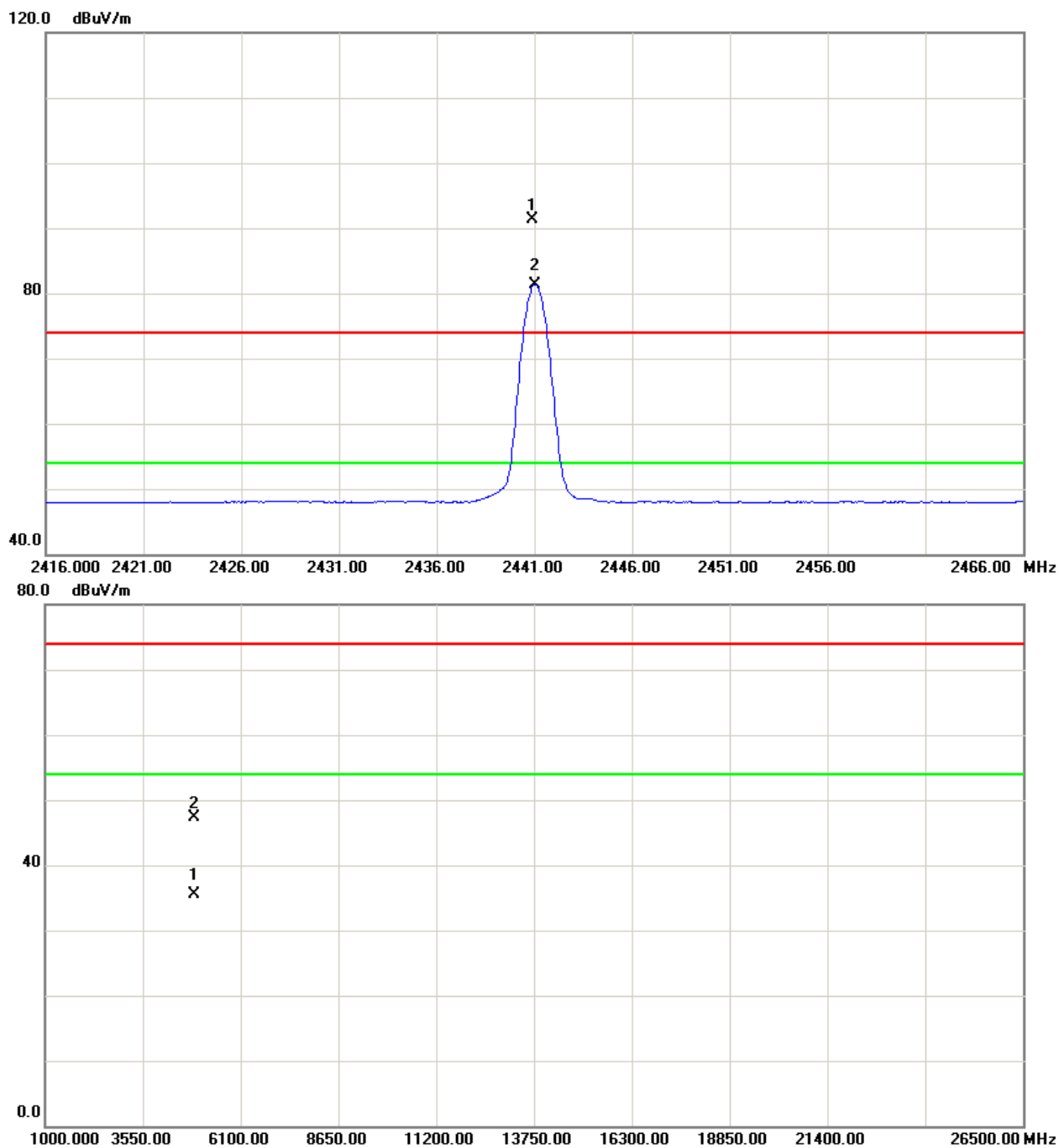


TX CH39 (Above 1000 MHz, Vertical)



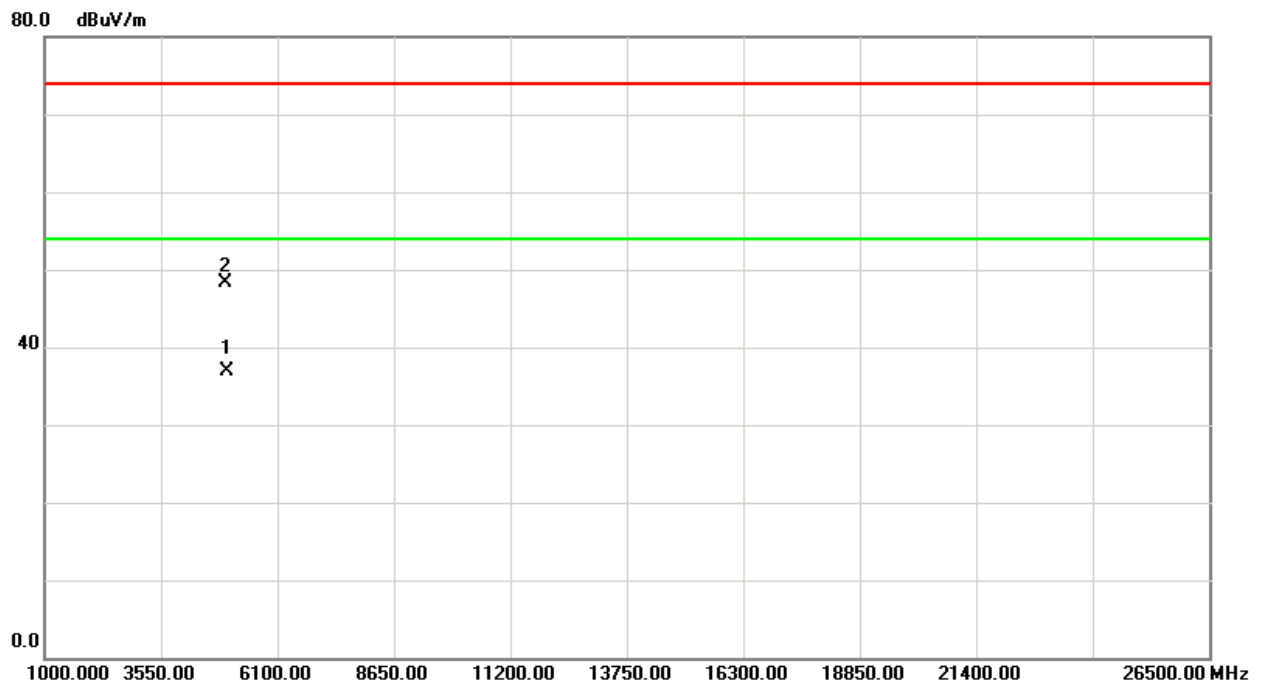
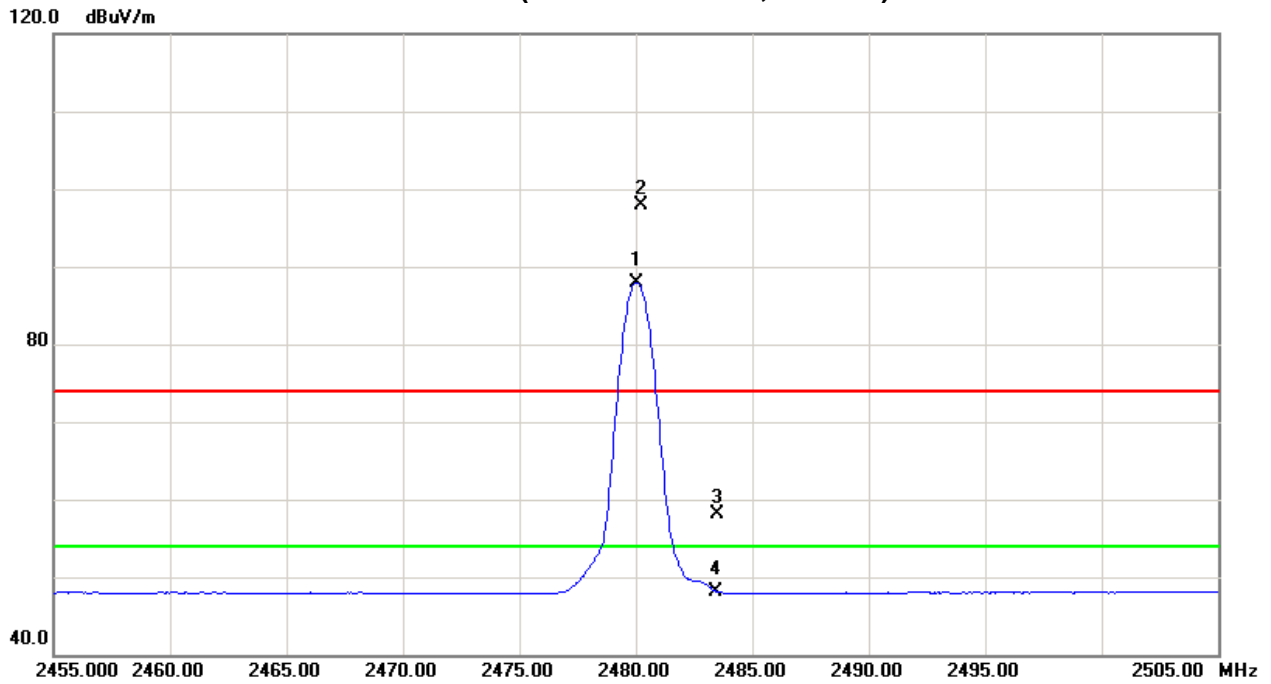


TX CH39 (Above 1000 MHz, Horizontal)



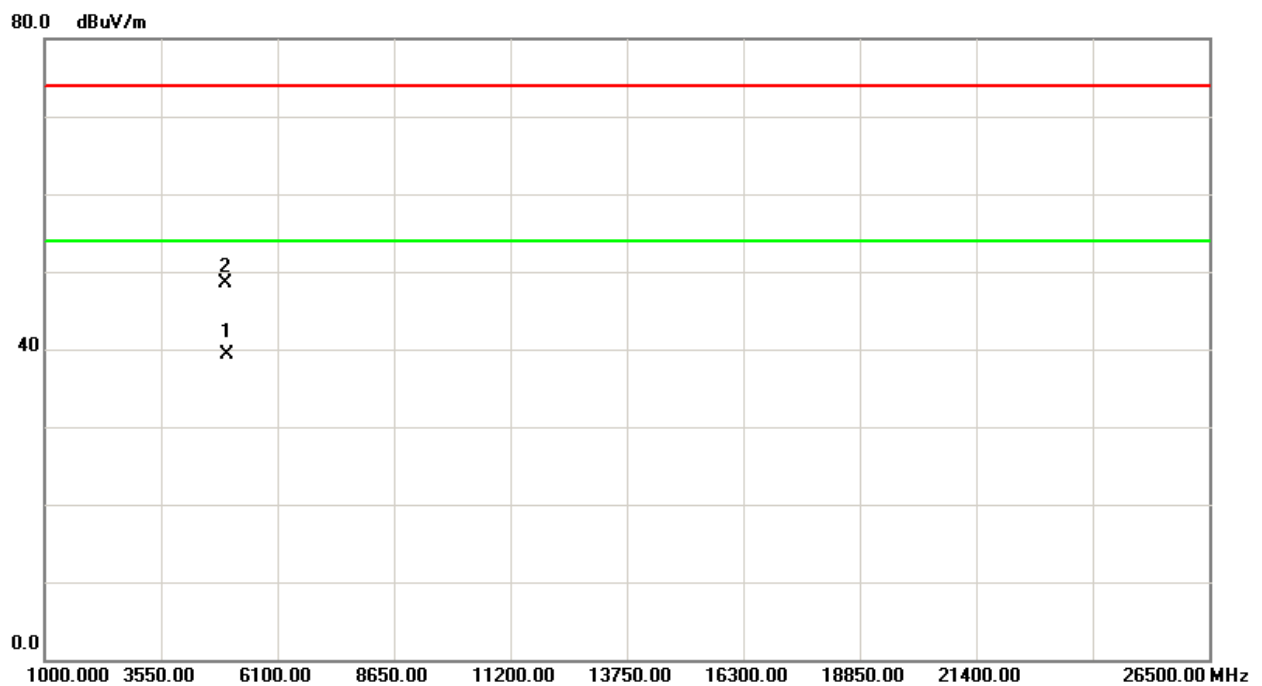
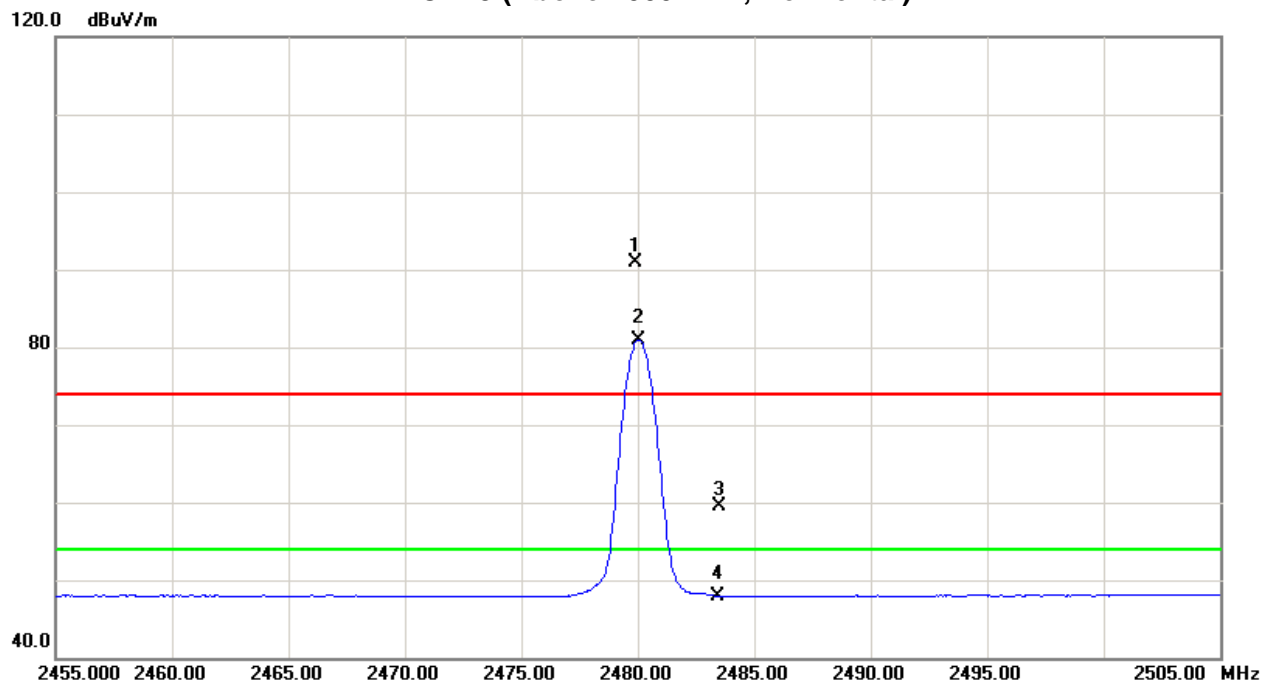


TX CH78 (Above 1000 MHz, Vertical)





TX CH78 (Above 1000 MHz, Horizontal)





Test Mode: TX 2402MHz _CH00_3Mbps

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	V	22.61	13.47	34.09	56.70	47.56	74.00	54.00	-17.30	-6.44	X/E
2402.20	V	8.56	47.26	34.12	42.68	81.38					X/F
4804.03	V	41.67	30.14	6.38	48.05	36.52	74.00	54.00	-25.95	-17.48	X/H

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2390.00	H	23.28	13.47	34.09	57.37	47.56	74.00	54.00	-16.63	-6.44	X/E
2402.05	H	54.54	43.15	34.12	88.66	77.27					X/F
4804.11	H	41.25	31.16	6.38	47.63	37.54	74.00	54.00	-26.37	-16.46	X/H

Test Mode: TX 2441MHz _CH39_3Mbps

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2441.05	V	61.00	49.91	34.25	95.25	84.16					X/F
4882.12	V	40.64	28.91	6.61	47.25	35.52	74.00	54.00	-26.75	-18.48	X/H

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2441.05	H	57.17	46.22	34.25	91.42	80.47					X/F
4882.02	H	40.64	28.91	6.61	47.25	35.52	74.00	54.00	-26.75	-18.48	X/H

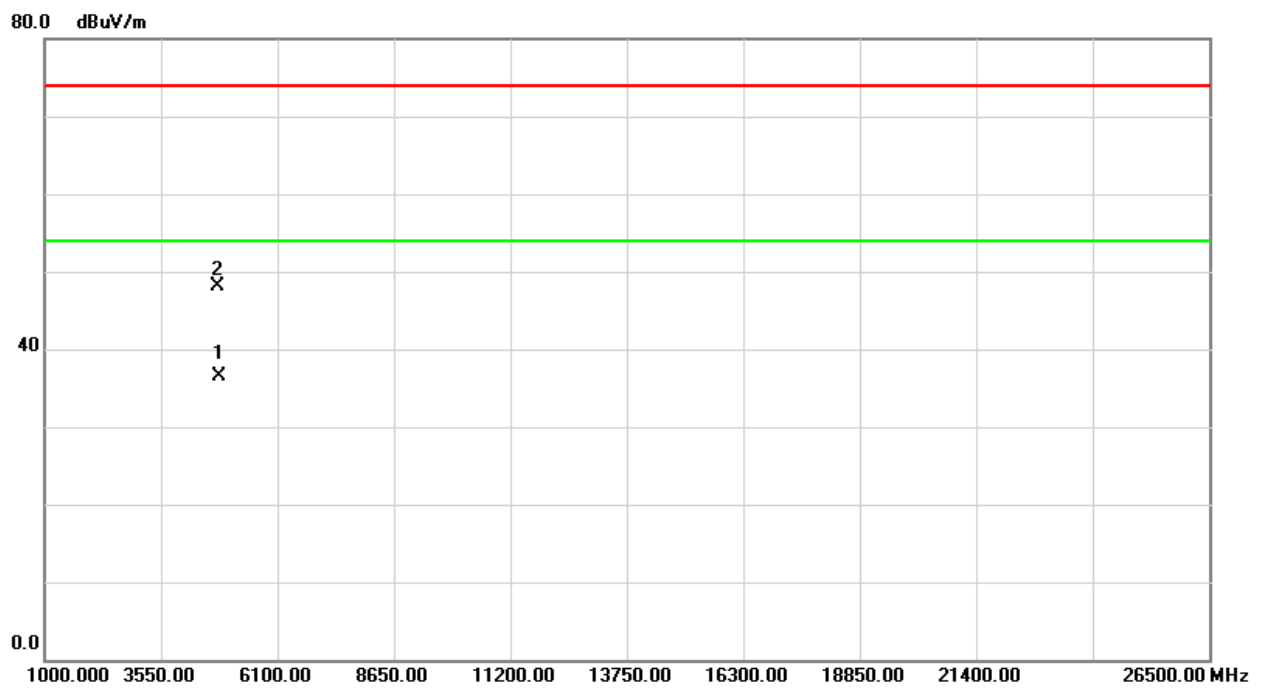
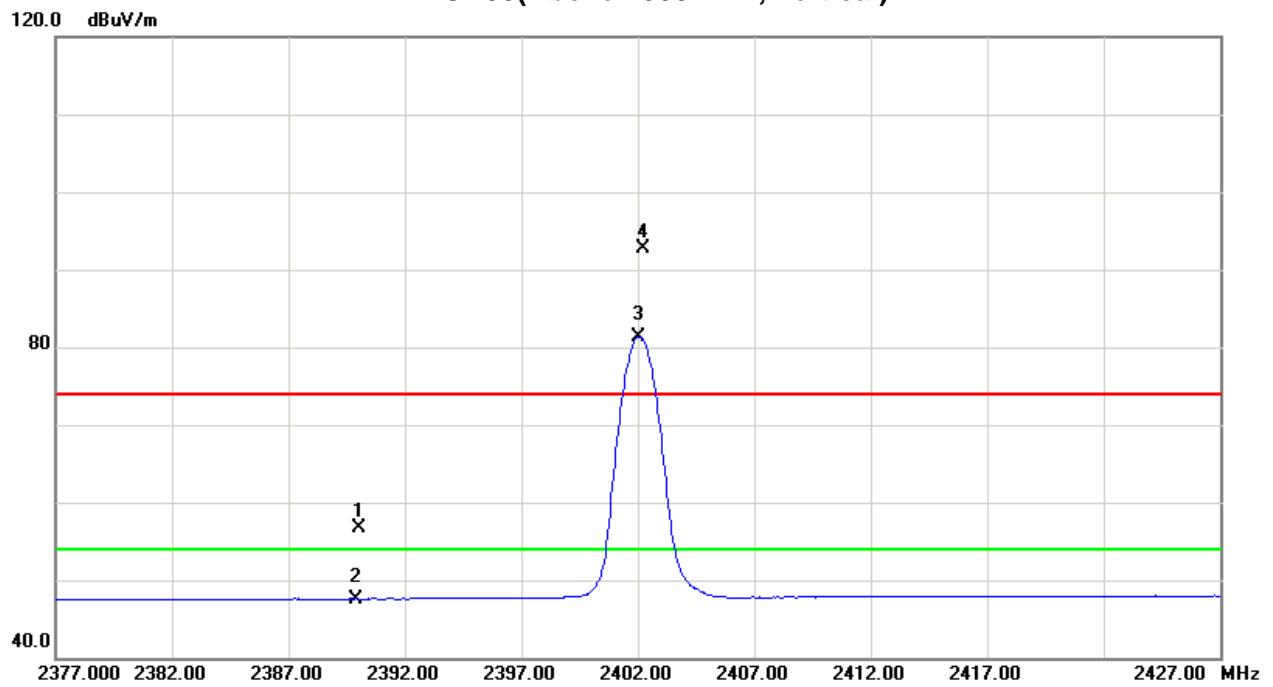
Test Mode: TX 2480MHz _CH78_3Mbps

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2479.90	V	62.79	51.71	34.36	97.15	86.07					X/F
2483.50	V	23.36	13.69	34.37	57.73	48.06	74.00	54.00	-16.27	-5.94	X/E
4960.04	V	44.02	35.14	6.83	50.85	41.97	74.00	54.00	-23.15	-12.03	X/H

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
2479.85	H	57.93	46.93	34.36	92.29	81.29					X/F
2483.50	H	23.21	13.56	34.37	57.58	47.93	74.00	54.00	-16.42	-6.07	X/E
4960.02	H	40.42	28.69	6.83	47.25	35.52	74.00	54.00	-26.75	-18.48	X/H

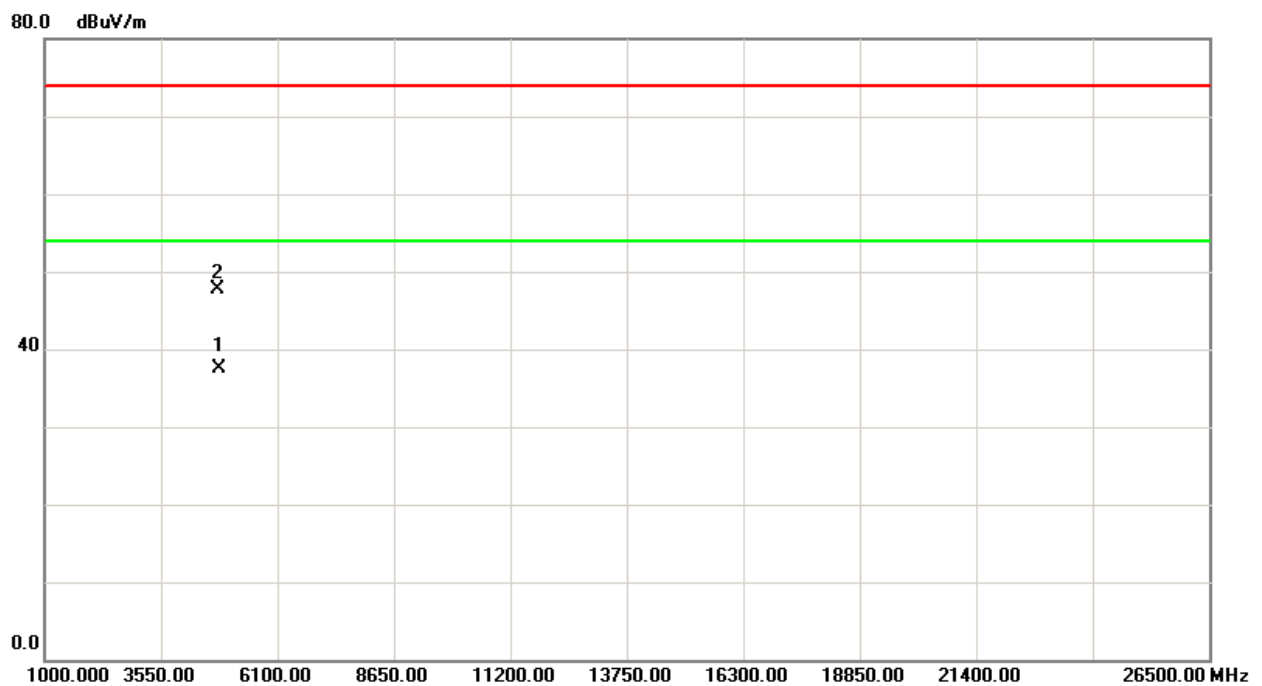
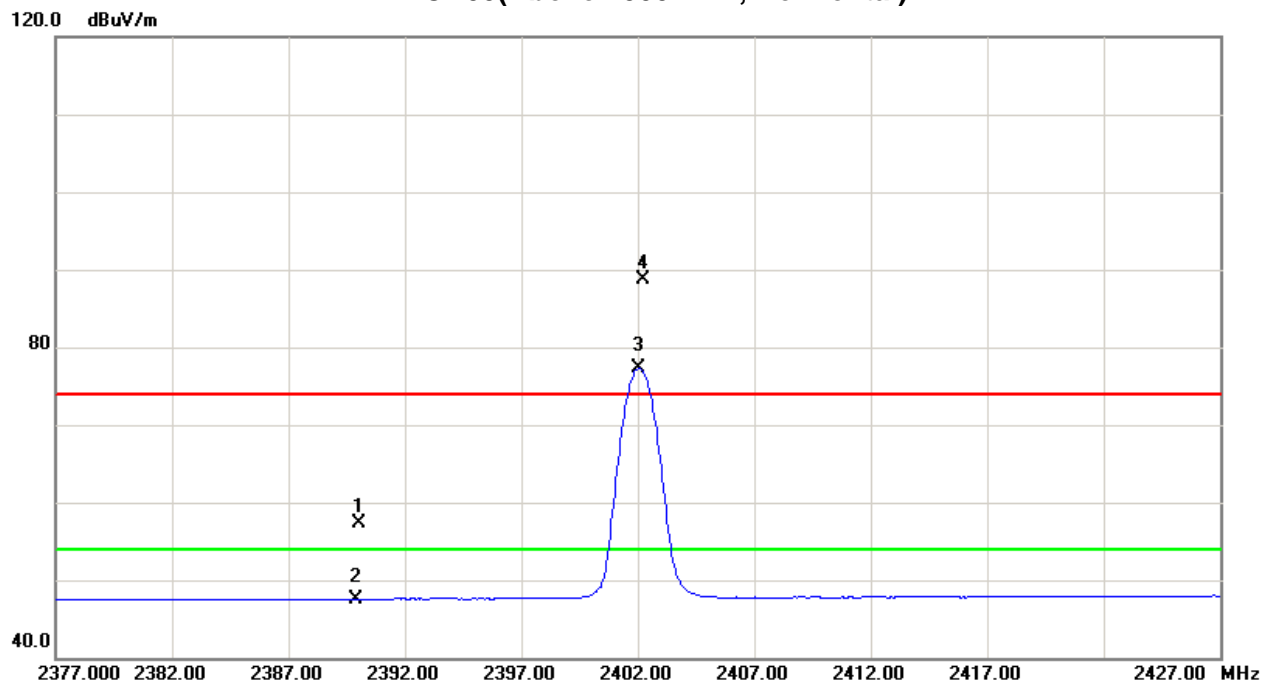


TX CH00(Above 1000 MHz, Vertical)



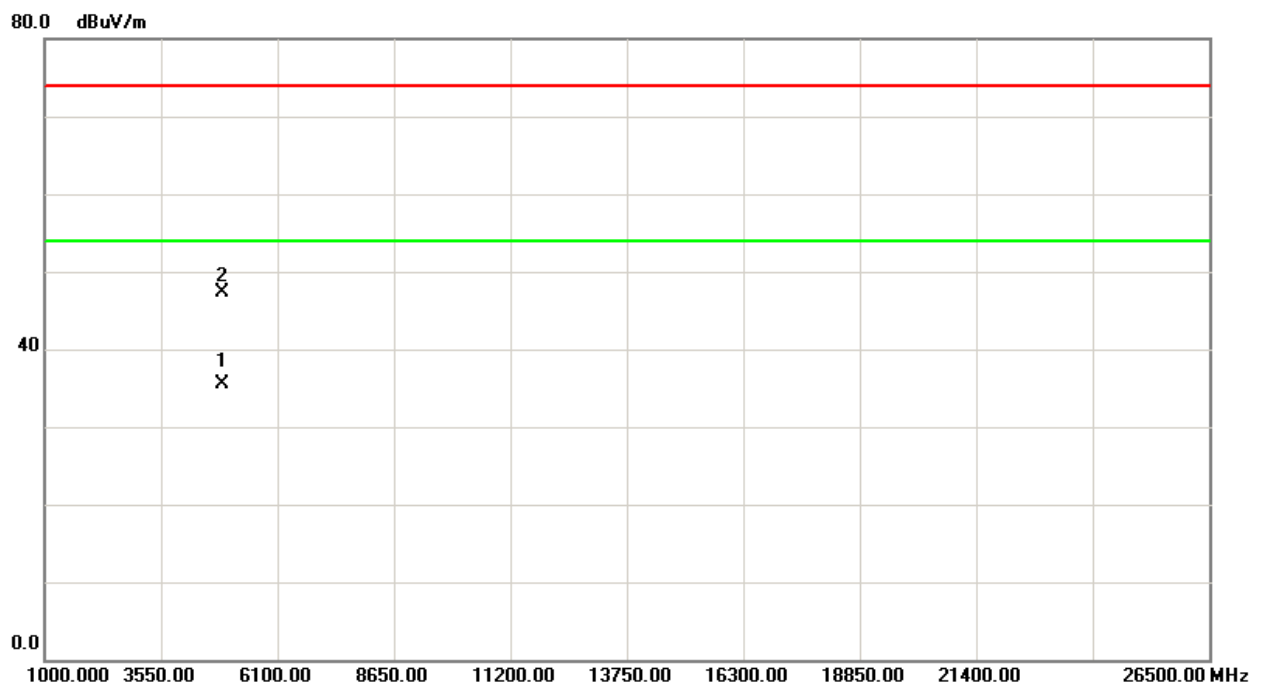
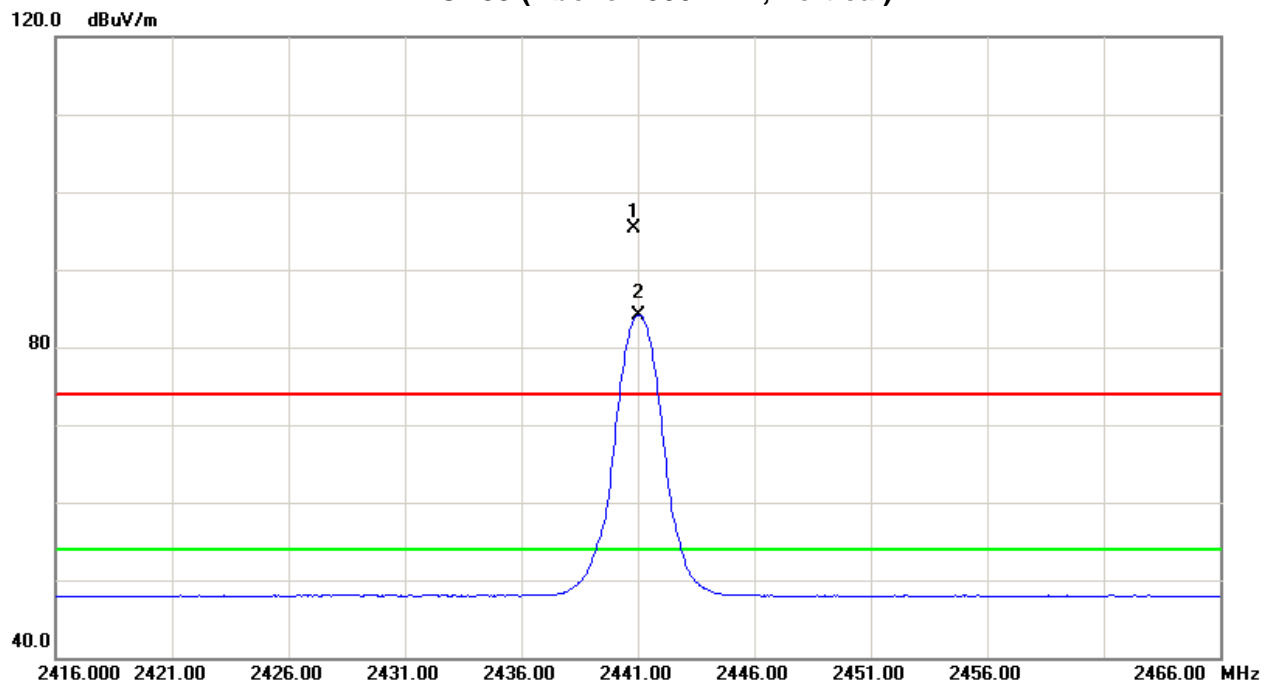


TX CH00(Above 1000 MHz, Horizontal)



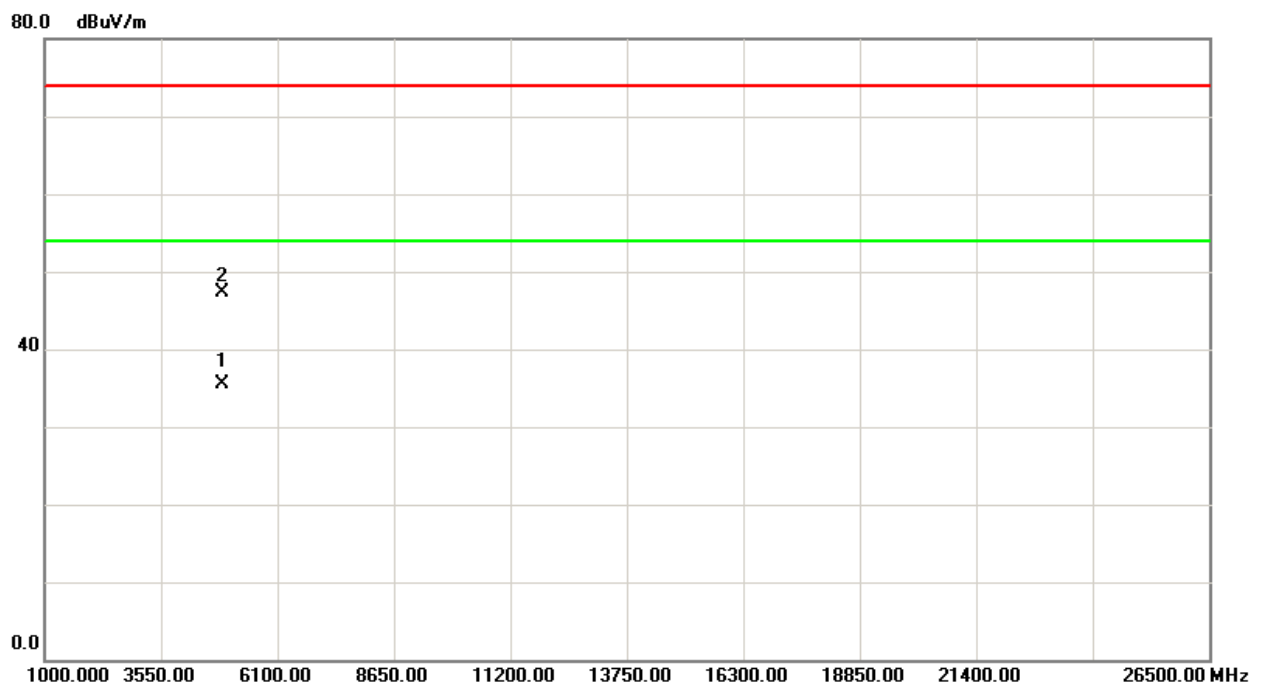
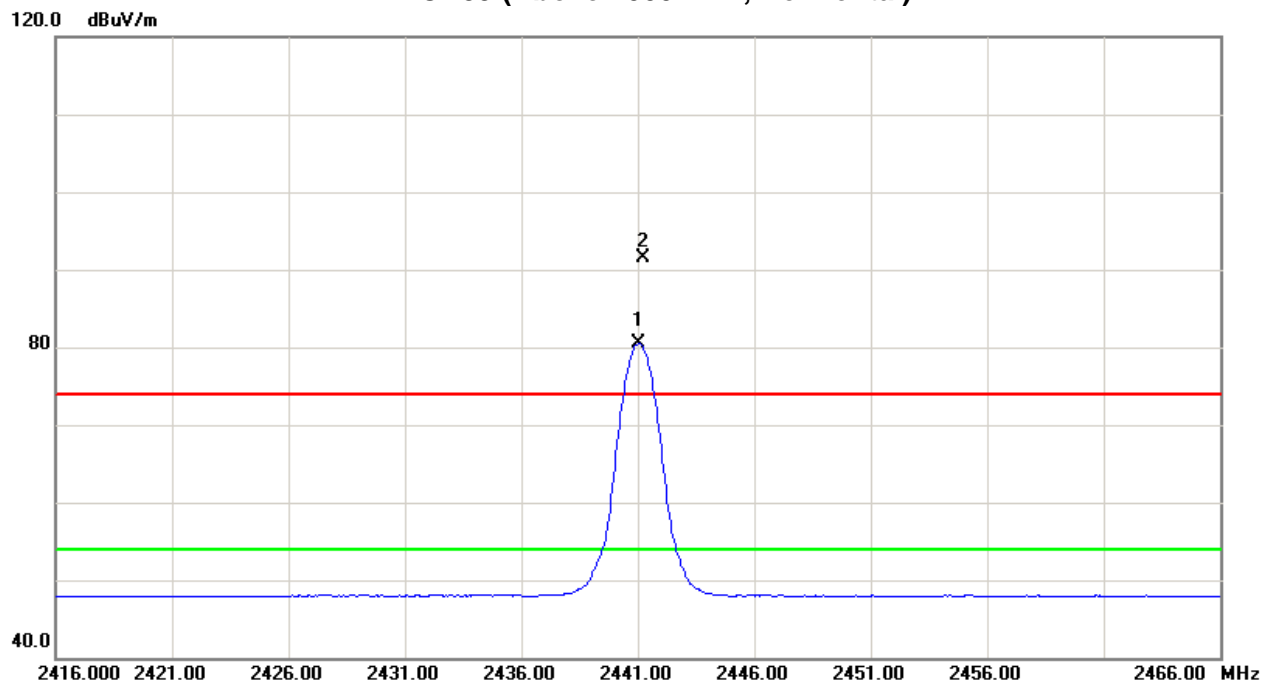


TX CH39 (Above 1000 MHz, Vertical)



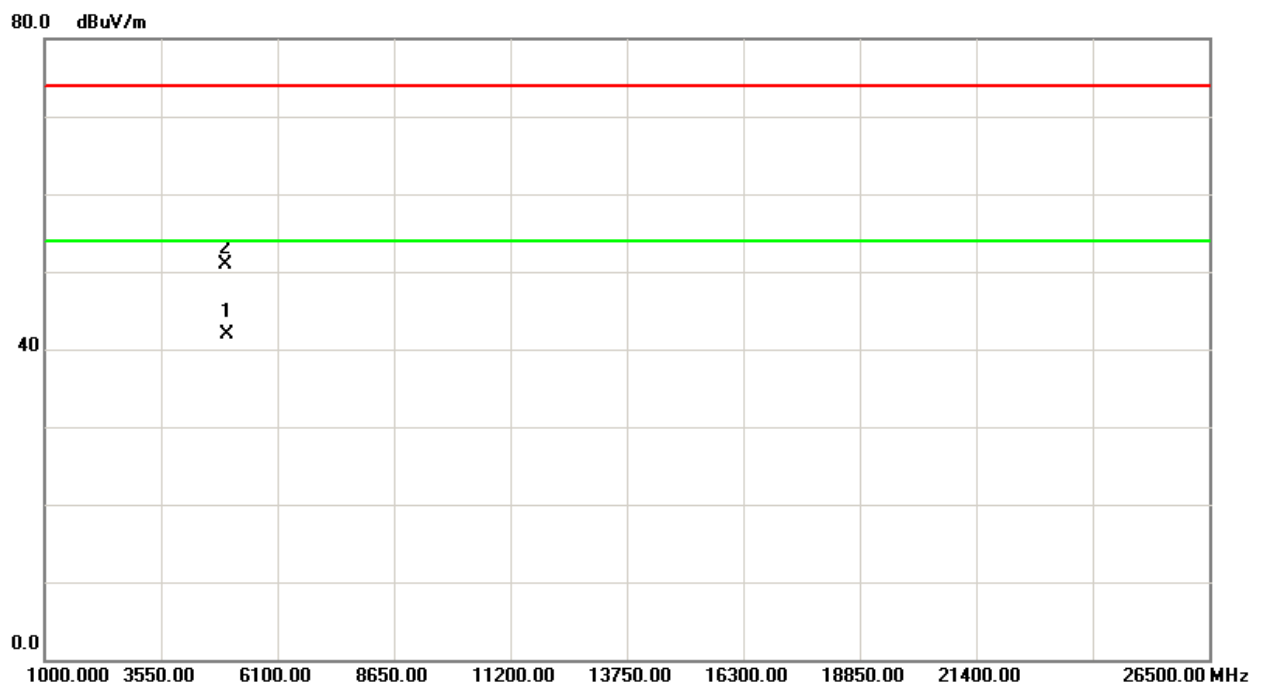
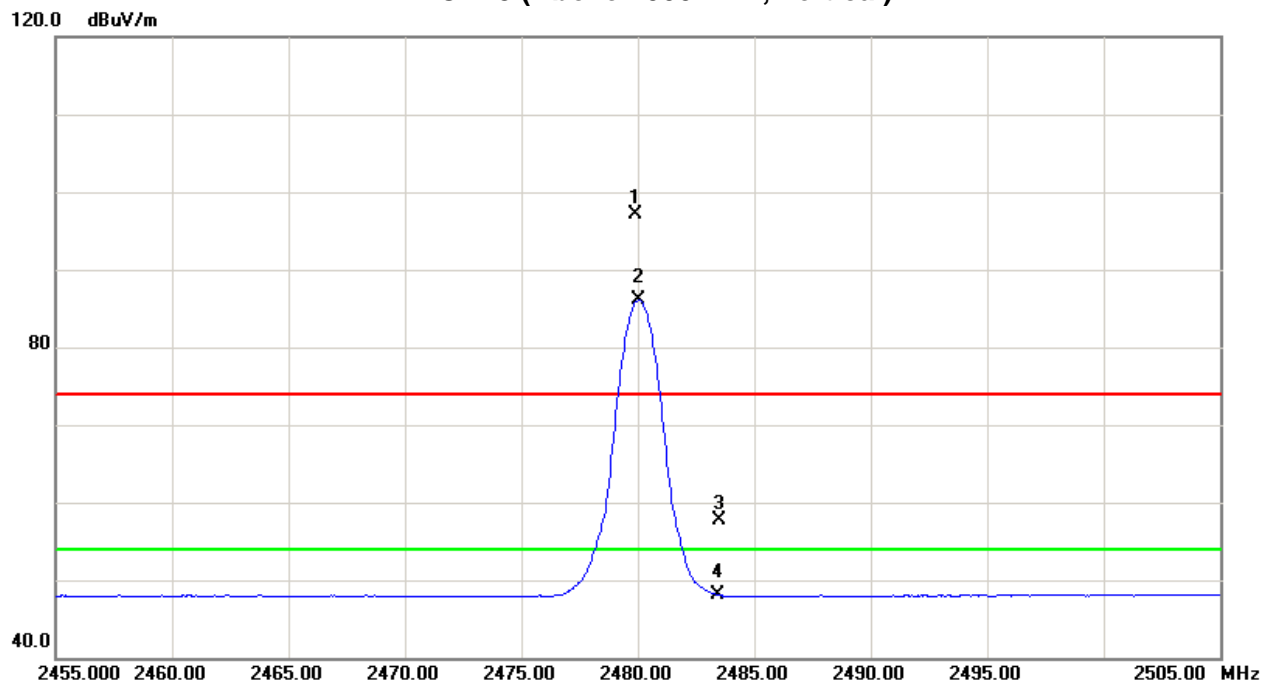


TX CH39 (Above 1000 MHz, Horizontal)



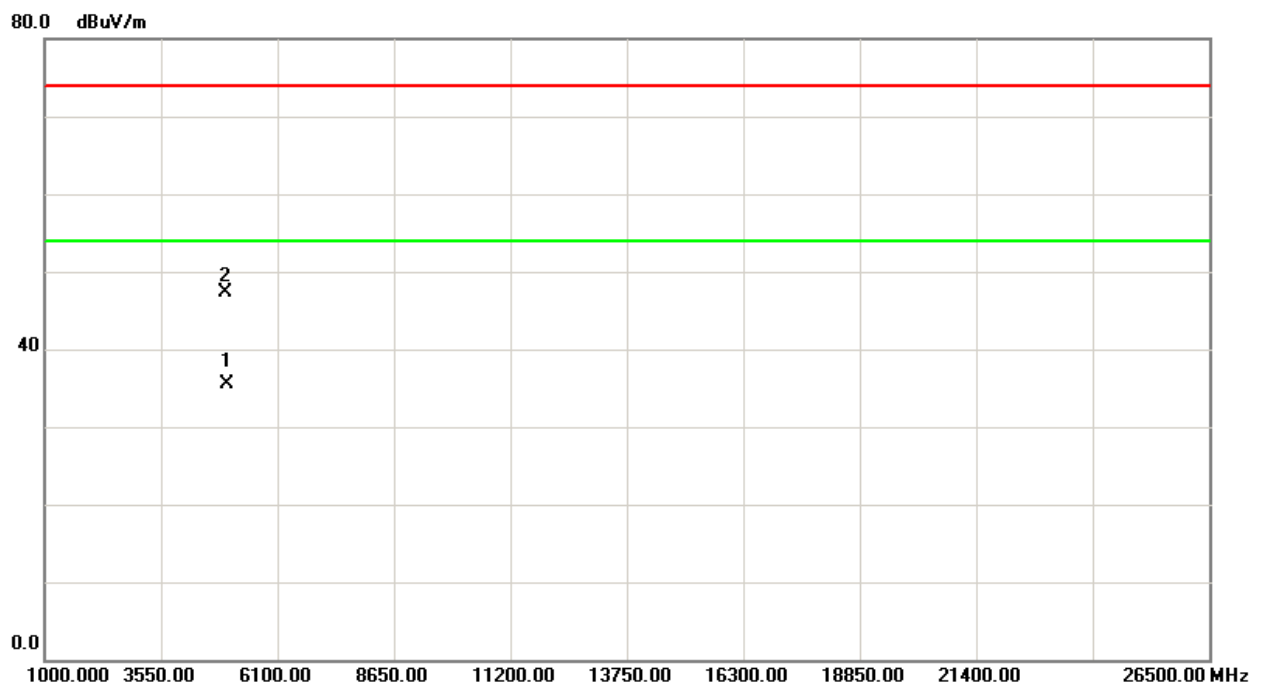
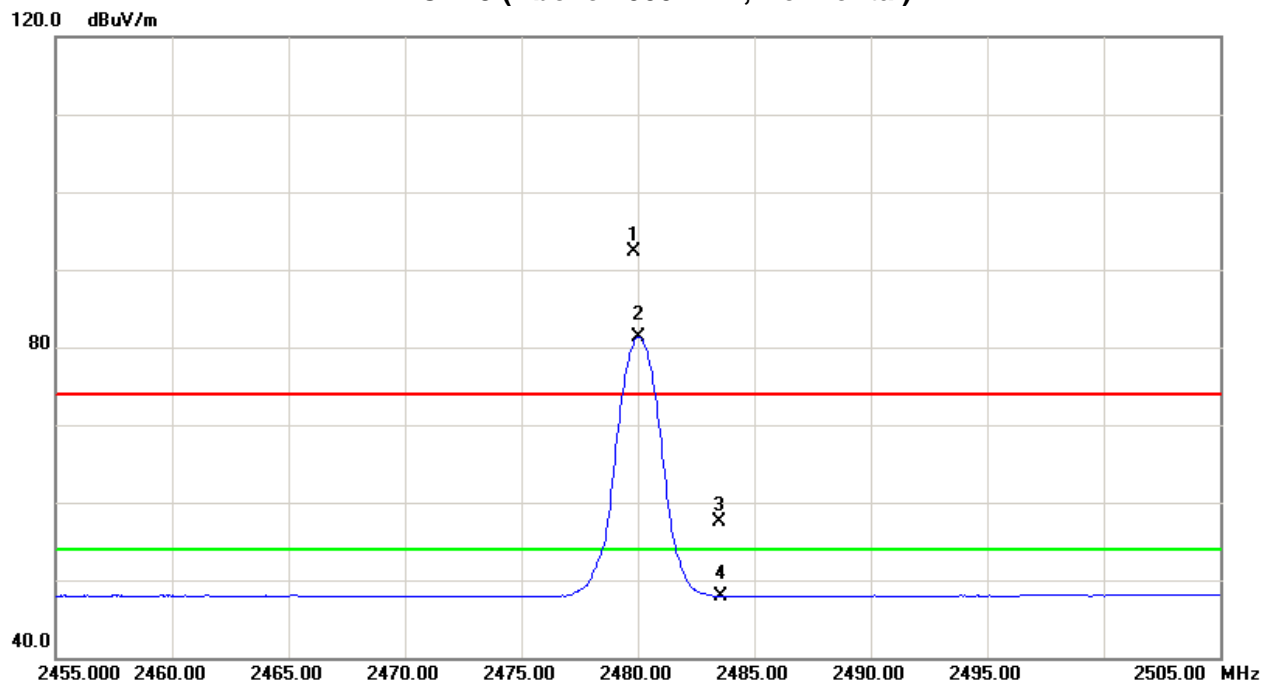


TX CH78 (Above 1000 MHz, Vertical)





TX CH78 (Above 1000 MHz, Horizontal)





5. NUMBER OF HOPPING CHANNEL

5.1 APPLIED PROCEDURES

FCC Part15 (15.247) , Subpart C/ RSS-GEN and RSS-210			
Section	Test Item	Frequency Range (MHz)	Result
15.247(a)(1)(iii) RSS-210, Issue 8, Annex 8, A8.1(d)	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

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- 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

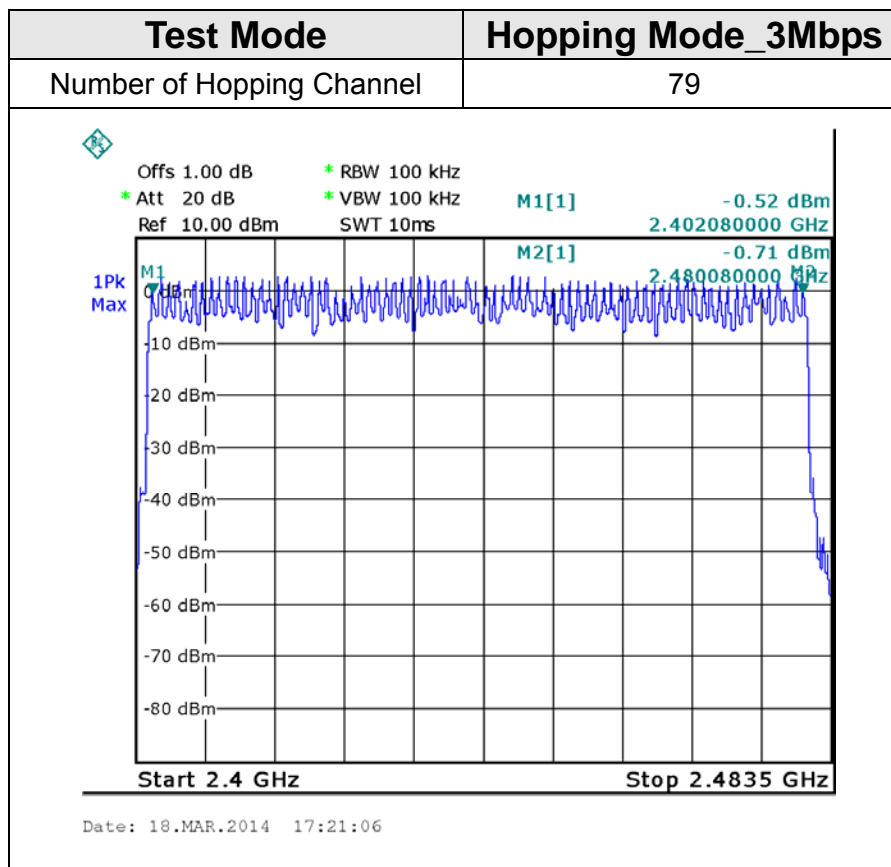
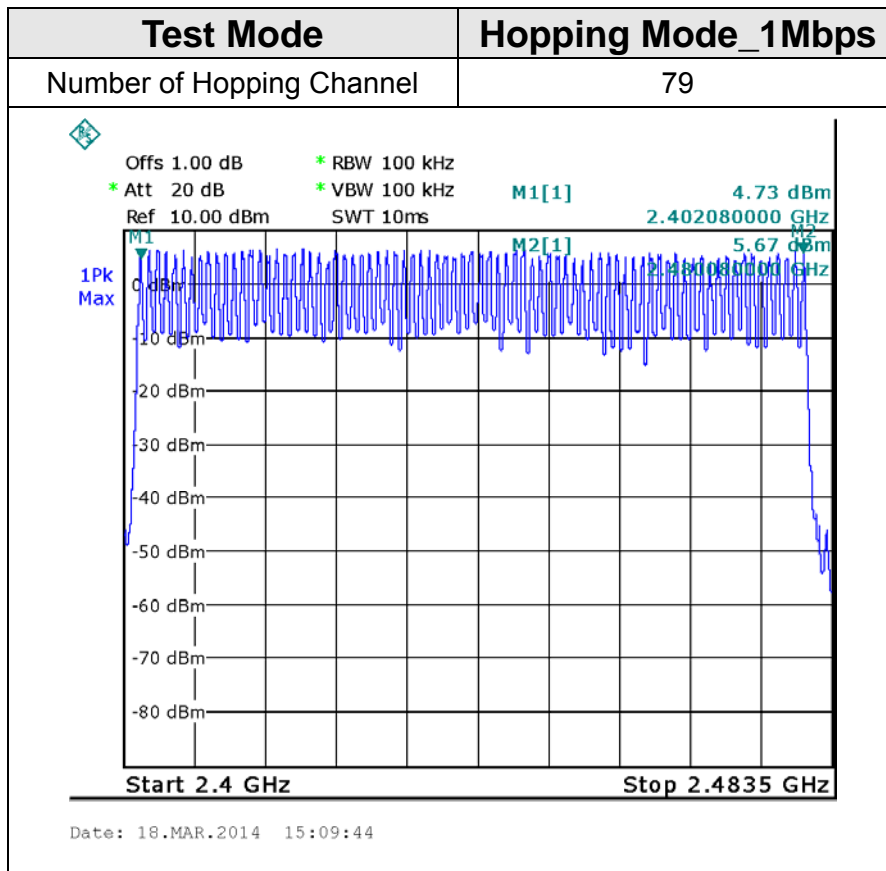
Temperature: 25°C

Relative Humidity: 55%

Test Voltage: AC 120V/60Hz



5.1.6 TEST RESULTS





6. AVERAGE TIME OF OCCUPANCY

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C/ RSS-GEN and RSS-210				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(1)(iii) RSS-210, Issue 8, Annex 8, A8.1(d)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS

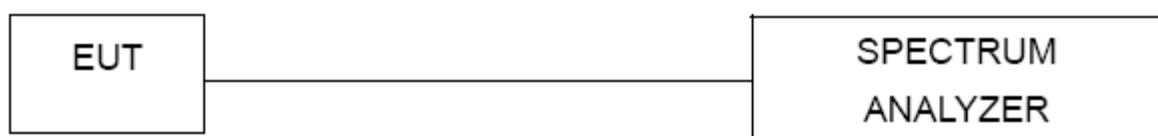
6.1.1 TEST PROCEDURE

- The transmitter output (antenna port) was connected to the spectrum analyzer
- Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
- Use a video trigger with the trigger level set to enable triggering only on full pulses.
- Sweep Time is more than once pulse time.
- Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- Measure the maximum time duration of one single pulse.
- Set the EUT for DH5, DH3 and DH1 packet transmitting.
- Measure the maximum time duration of one single pulse.
- 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 $3.37 \times 31.6 = 106.6$ within 31.6 seconds.
- 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 $5.06 \times 31.6 = 160$ within 31.6 seconds.
- 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 $10.12 \times 31.6 = 320$ 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

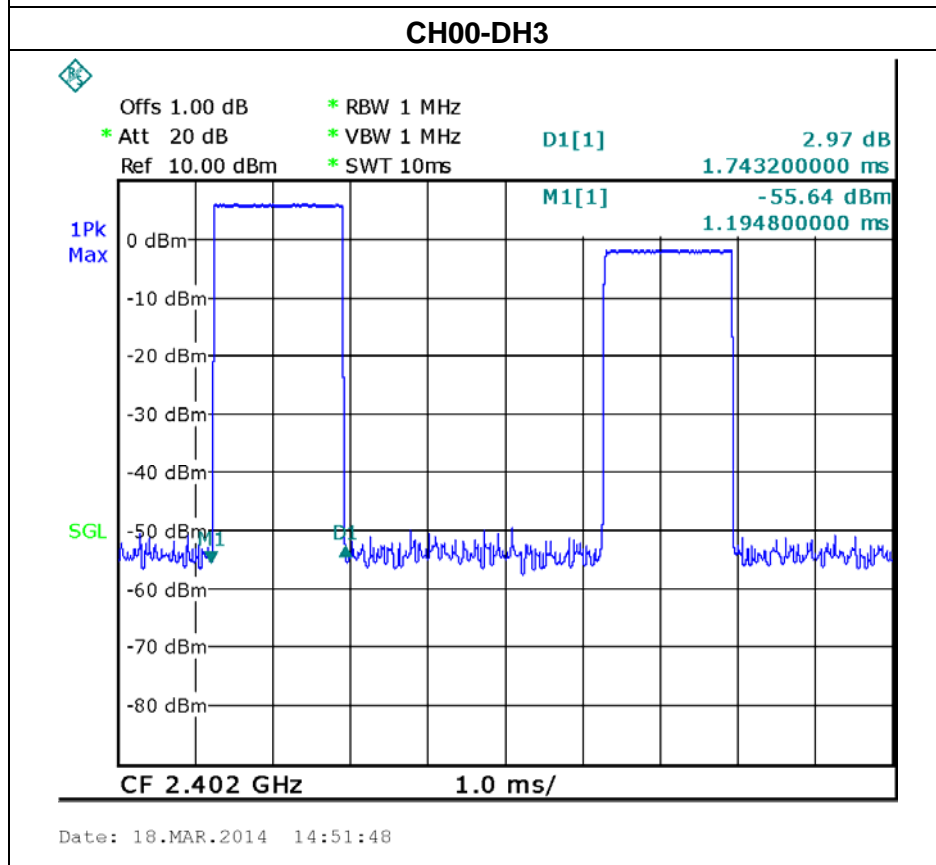
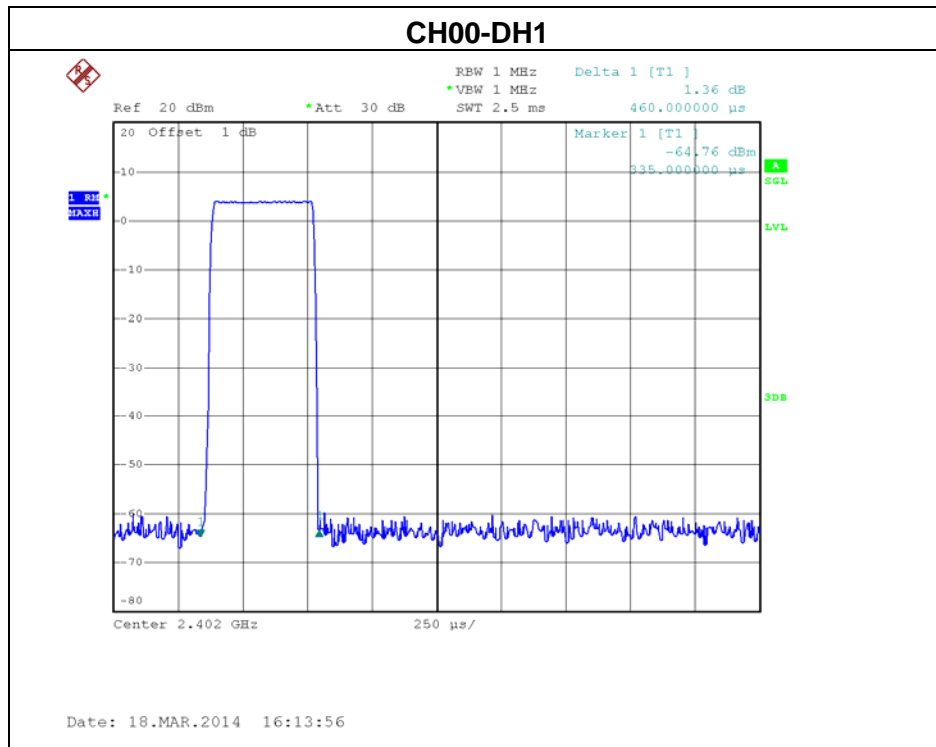


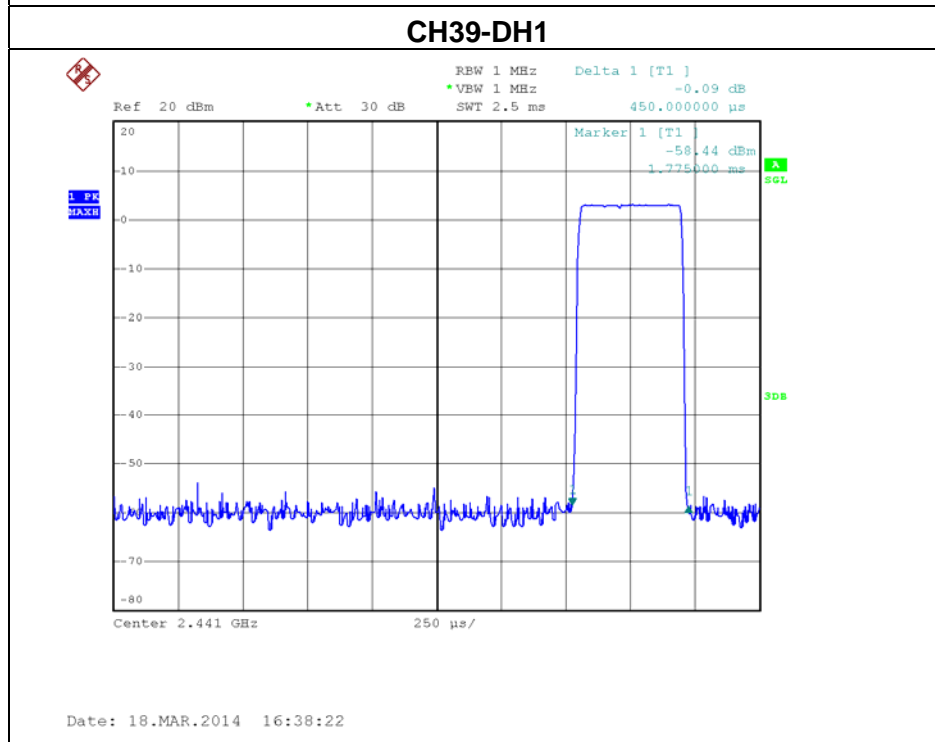
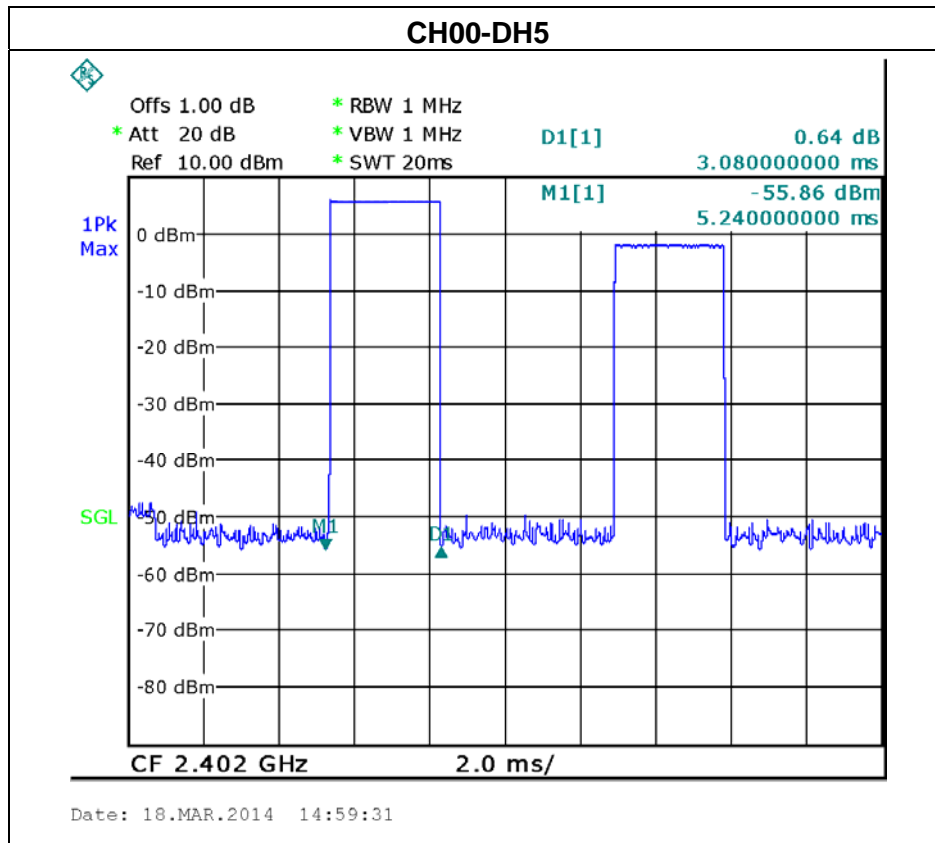
6.1.6 TEST RESULTS

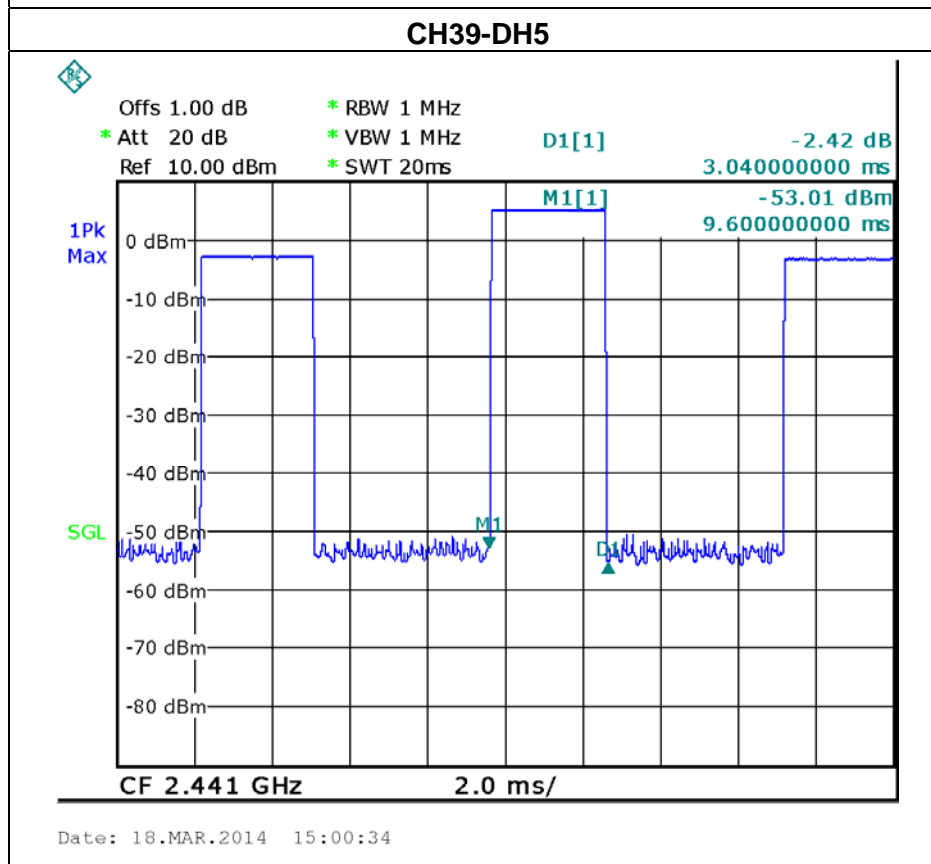
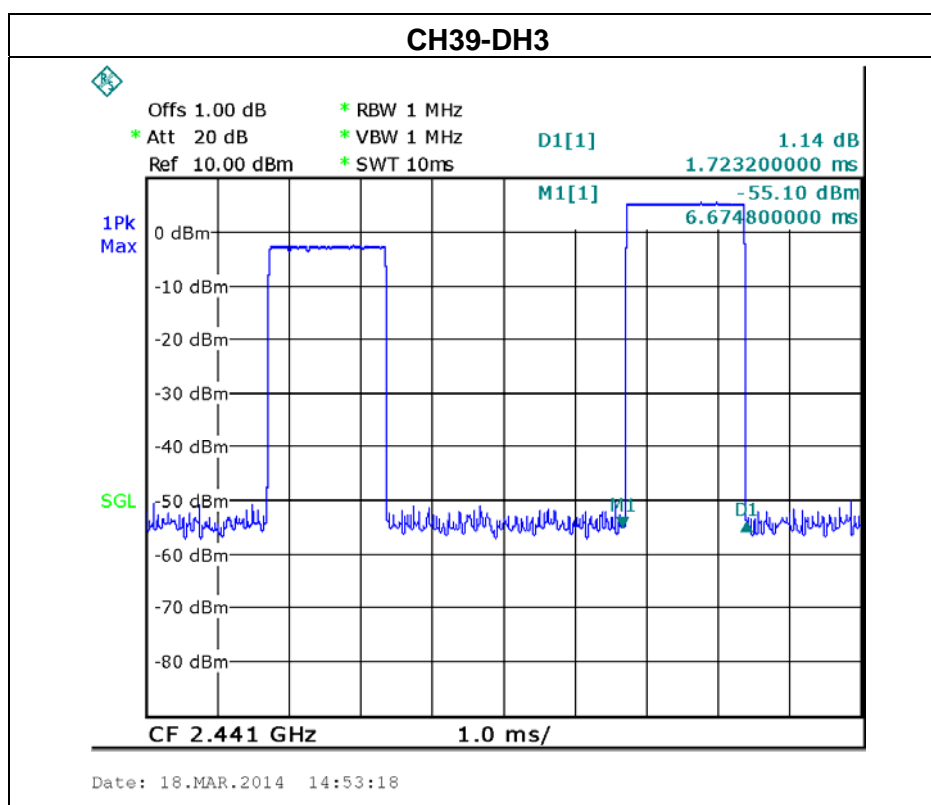
Test Mode: CH00_1Mbps				
Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH5	2402	3.0800	0.3285	0.4000
DH3	2402	1.7400	0.2784	0.4000
DH1	2402	0.4600	0.1472	0.4000

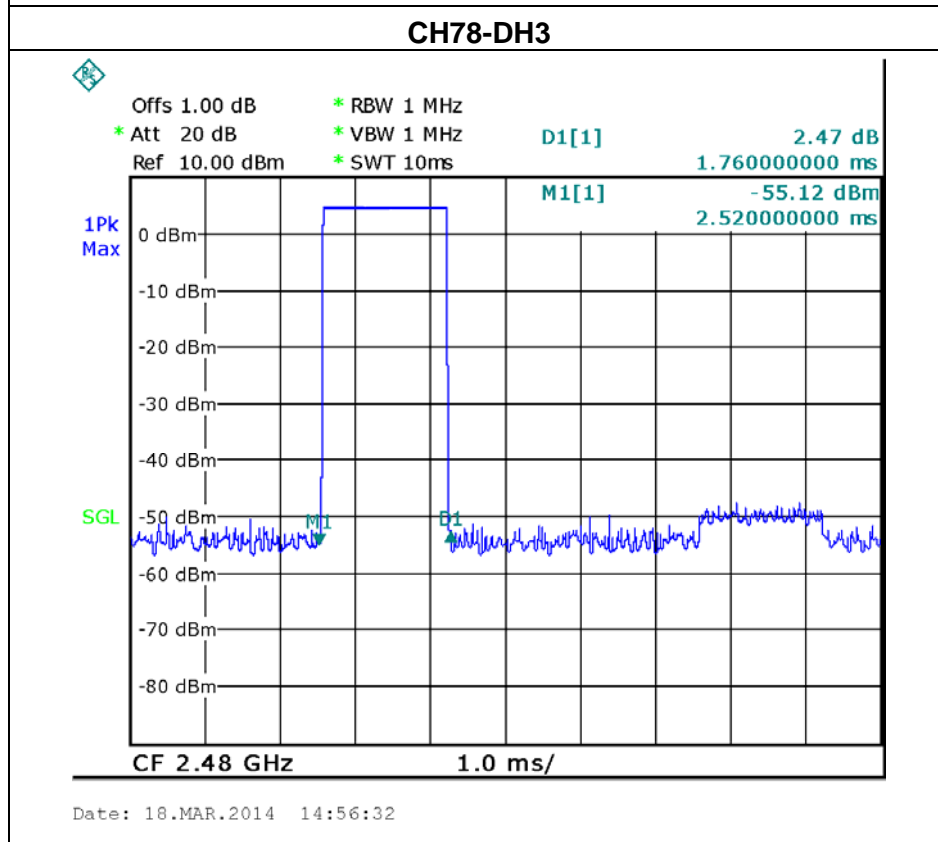
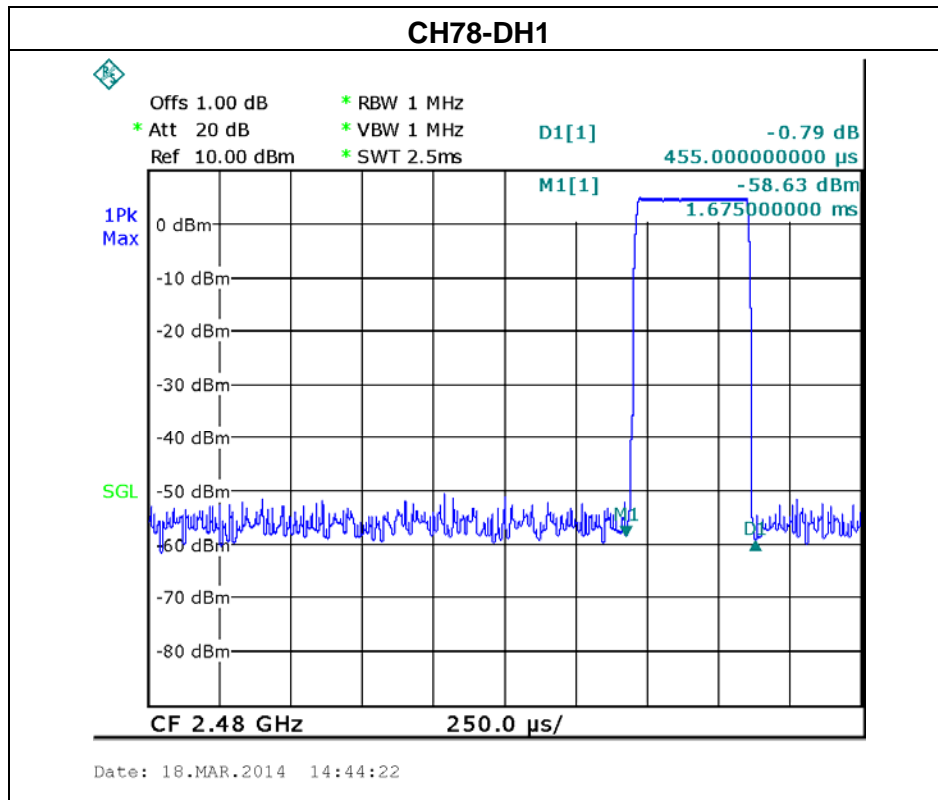
Test Mode: CH39_1Mbps				
Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH5	2441	3.0400	0.3243	0.4000
DH3	2441	1.7200	0.2752	0.4000
DH1	2441	0.4500	0.1440	0.4000

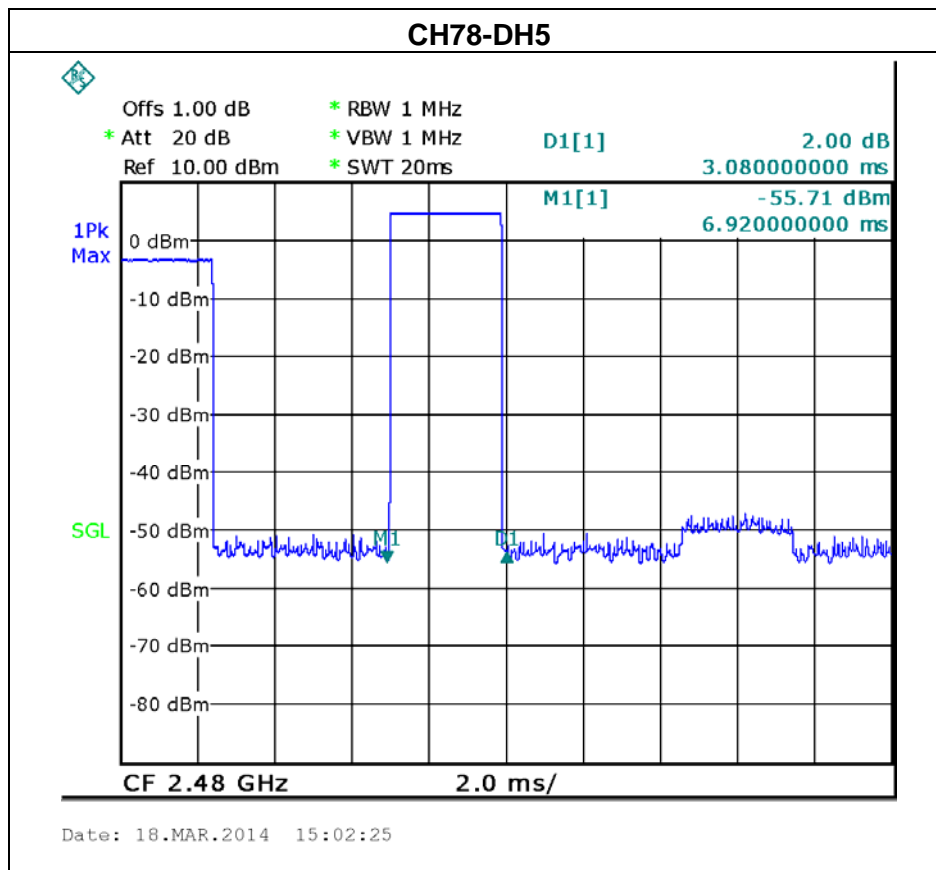
Test Mode: CH78_1Mbps				
Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH5	2480	3.0800	0.3285	0.4000
DH3	2480	1.7600	0.2816	0.4000
DH1	2480	0.4550	0.1456	0.4000













Test Mode: CH00_3Mbps

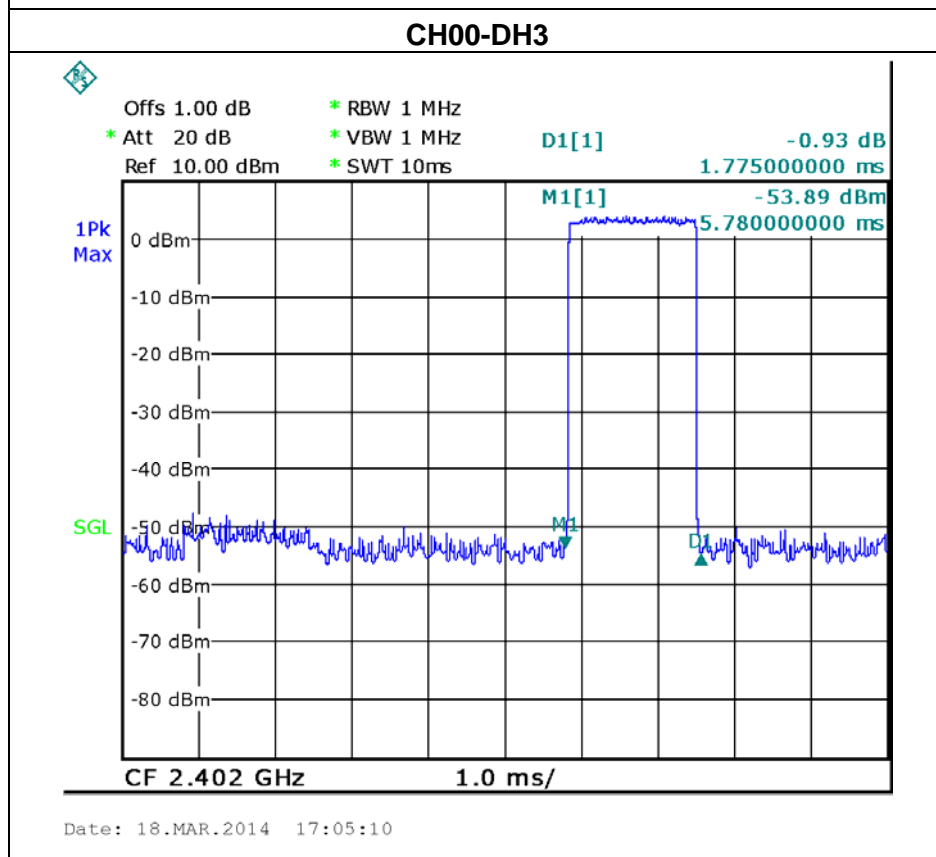
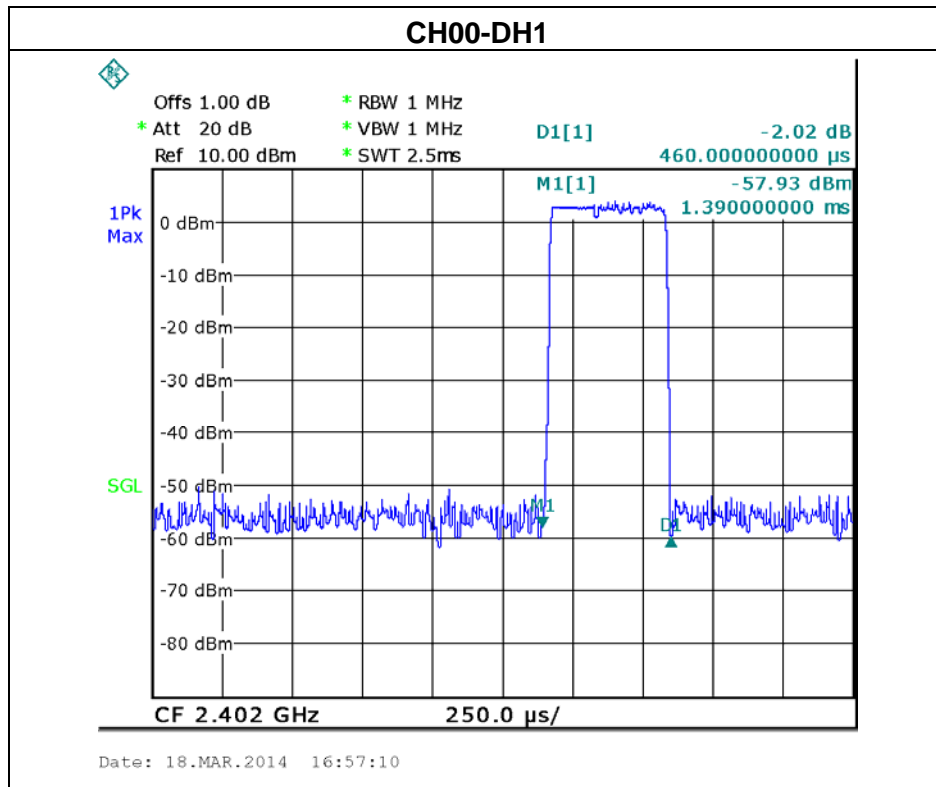
Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH5	2402	3.1400	0.3349	0.4000
DH3	2402	1.7800	0.2848	0.4000
DH1	2402	0.4600	0.1472	0.4000

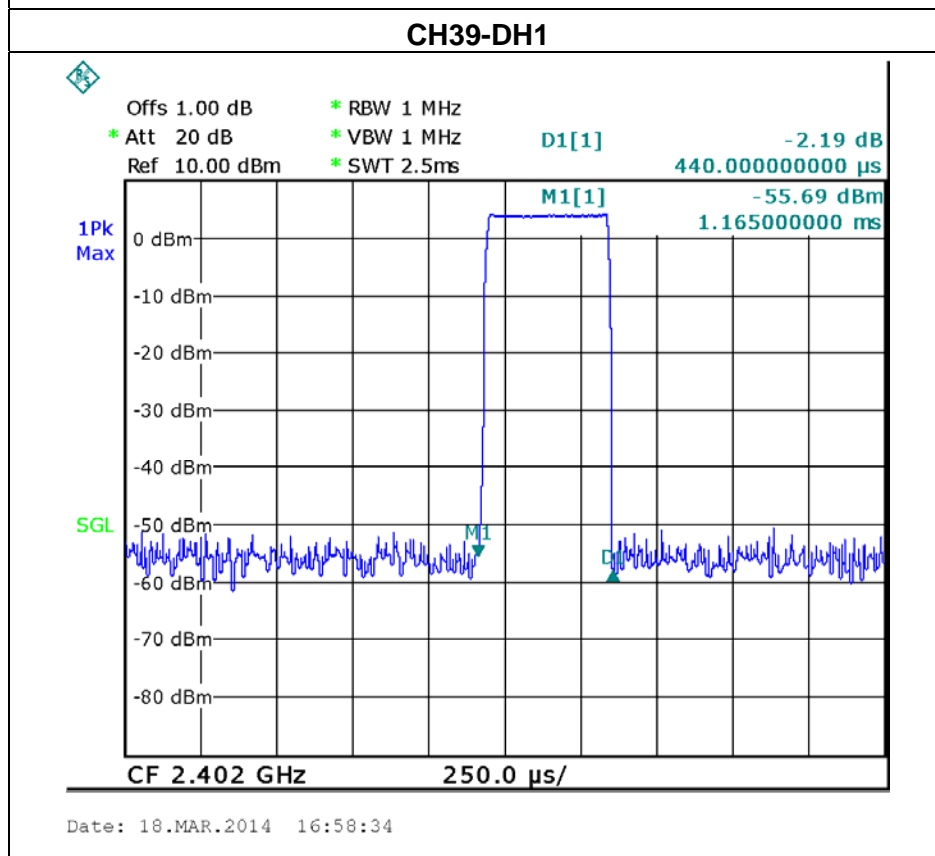
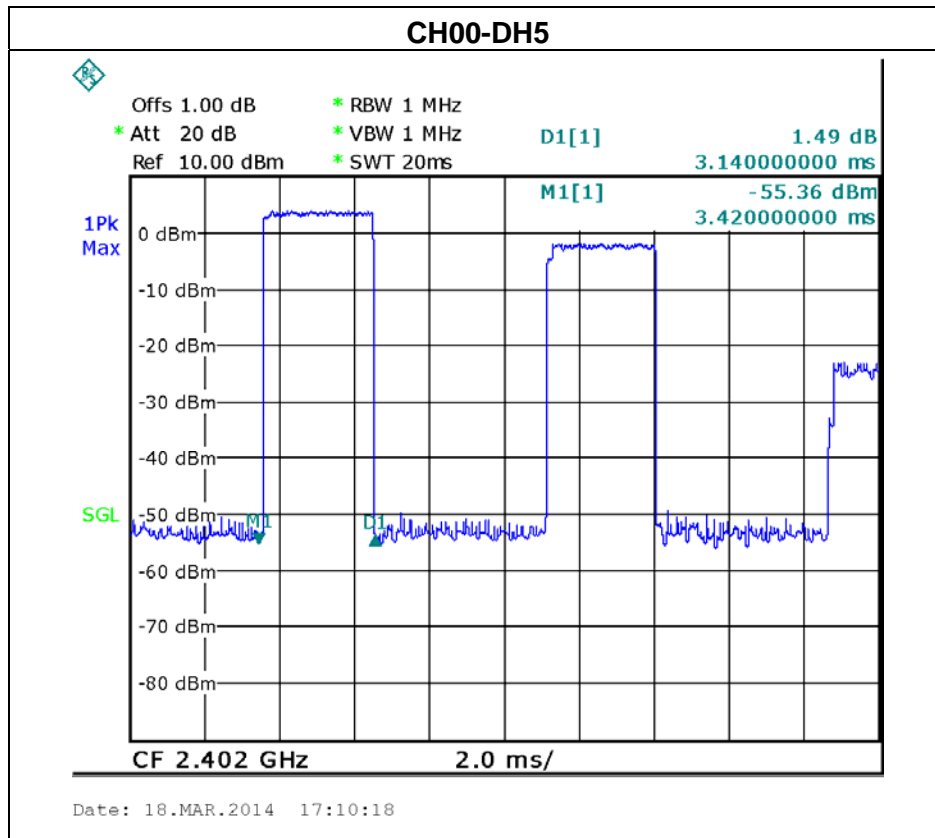
Test Mode: CH39_3Mbps

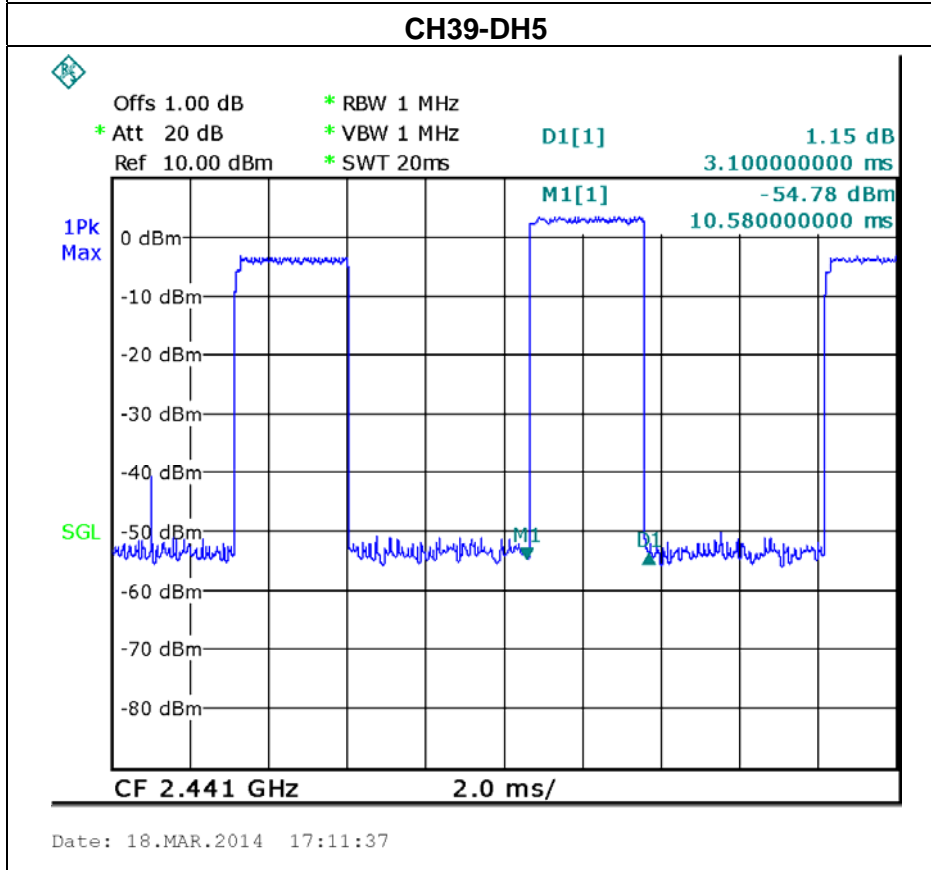
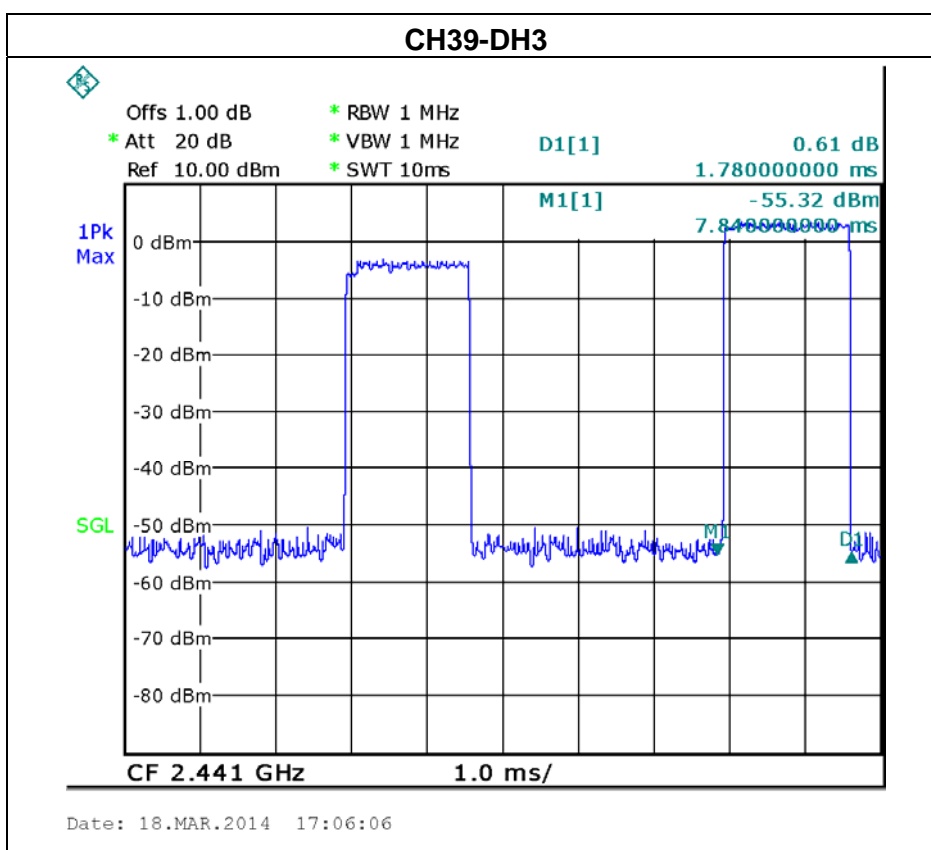
Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH5	2441	3.1000	0.3307	0.4000
DH3	2441	1.7800	0.2848	0.4000
DH1	2441	0.4400	0.1408	0.4000

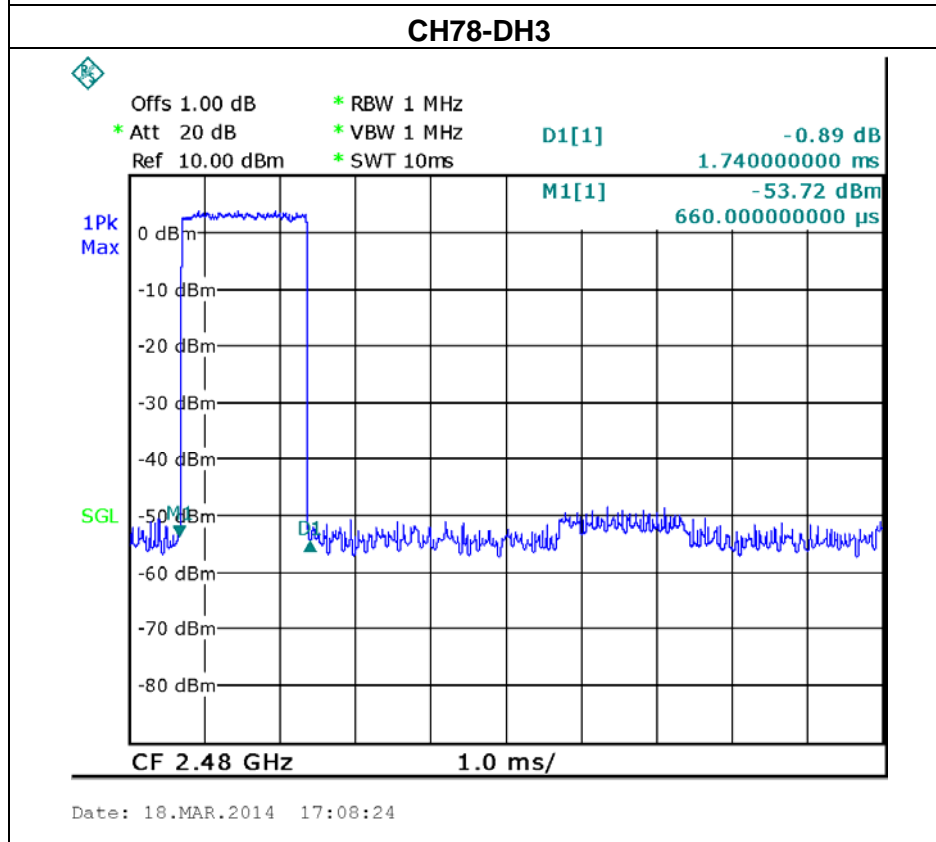
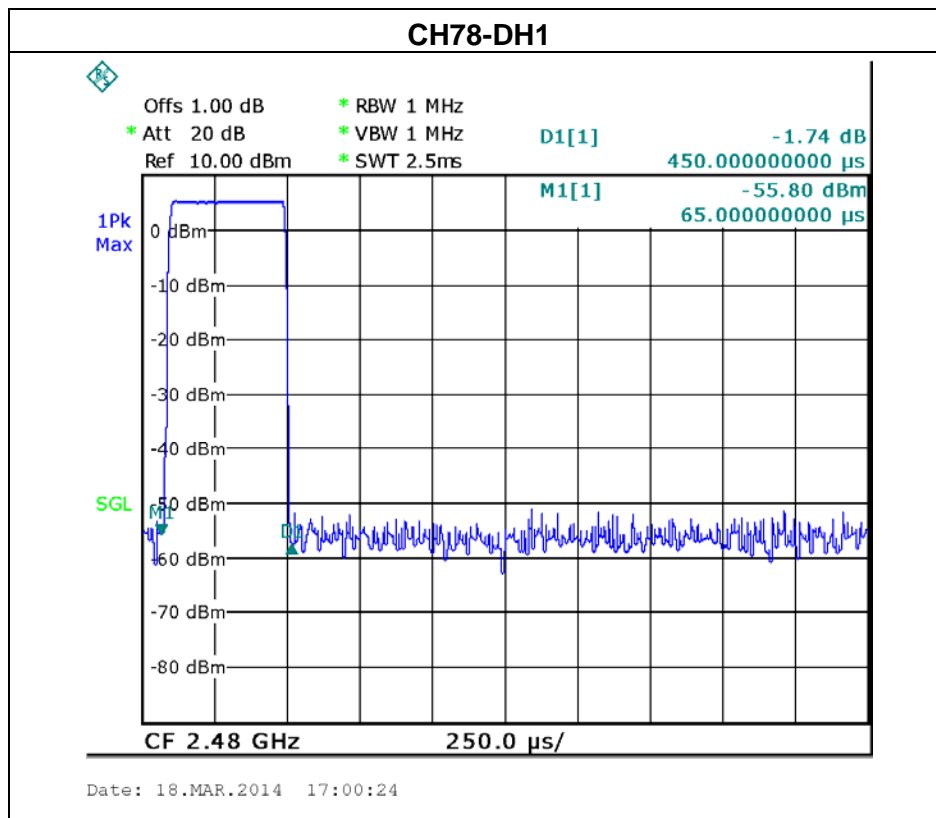
Test Mode: CH78_3Mbps

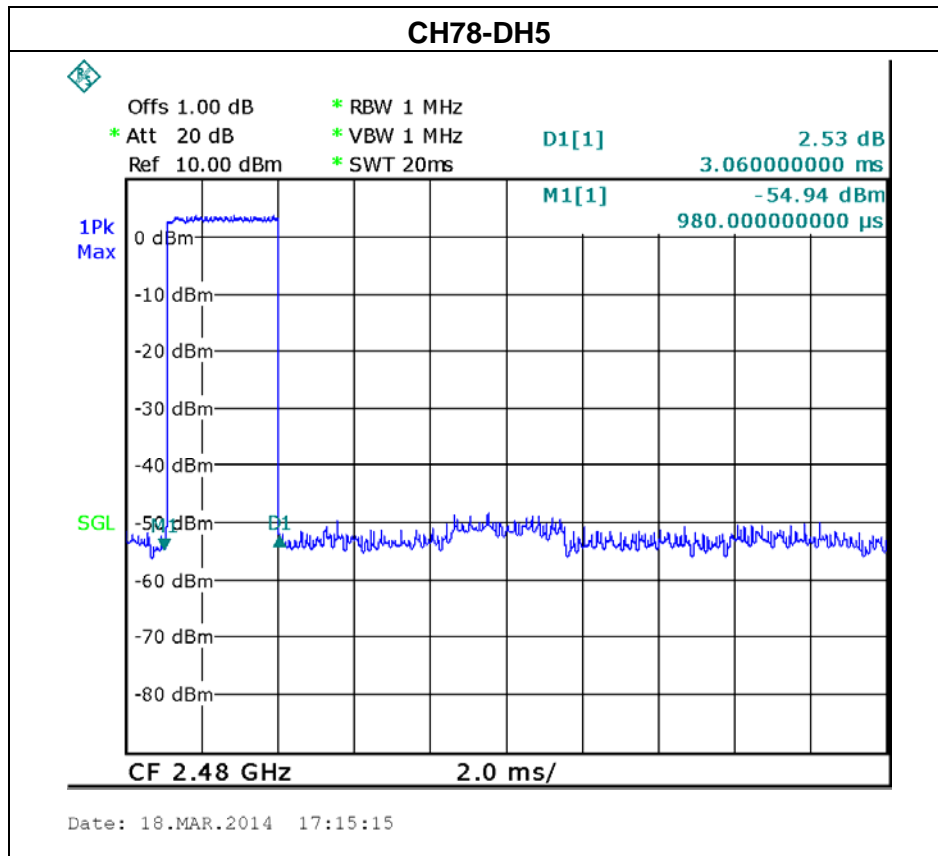
Data Packet	Frequency (MHz)	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH5	2480	3.0600	0.3264	0.4000
DH3	2480	1.7400	0.2784	0.4000
DH1	2480	0.4500	0.1440	0.4000











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

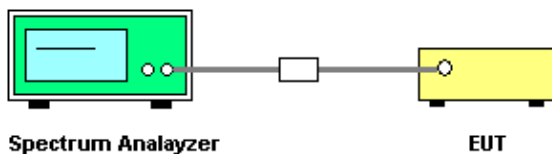
7.1.1 TEST PROCEDURE

- The EUT must have its hopping function enabled
- Span = wide enough to capture the peaks of two adjacent channels
 - Resolution (or IF) Bandwidth (RBW) \geq 1% of the span
 - Video (or Average) Bandwidth (VBW) \geq 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

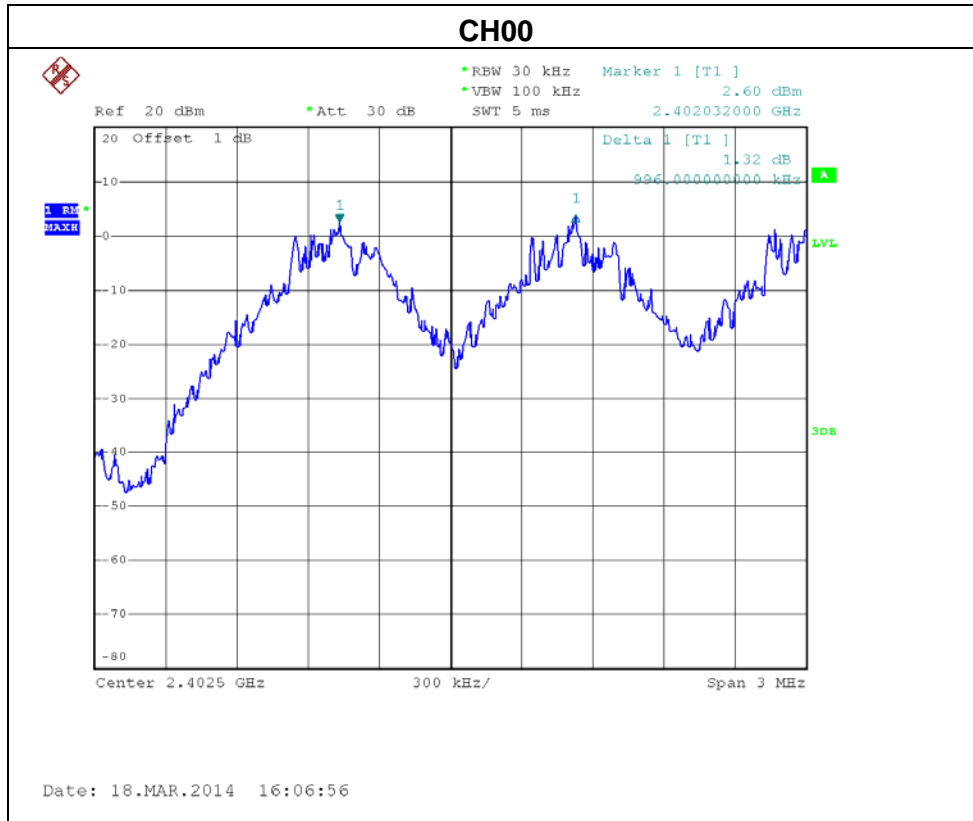
Relative Humidity: 55%

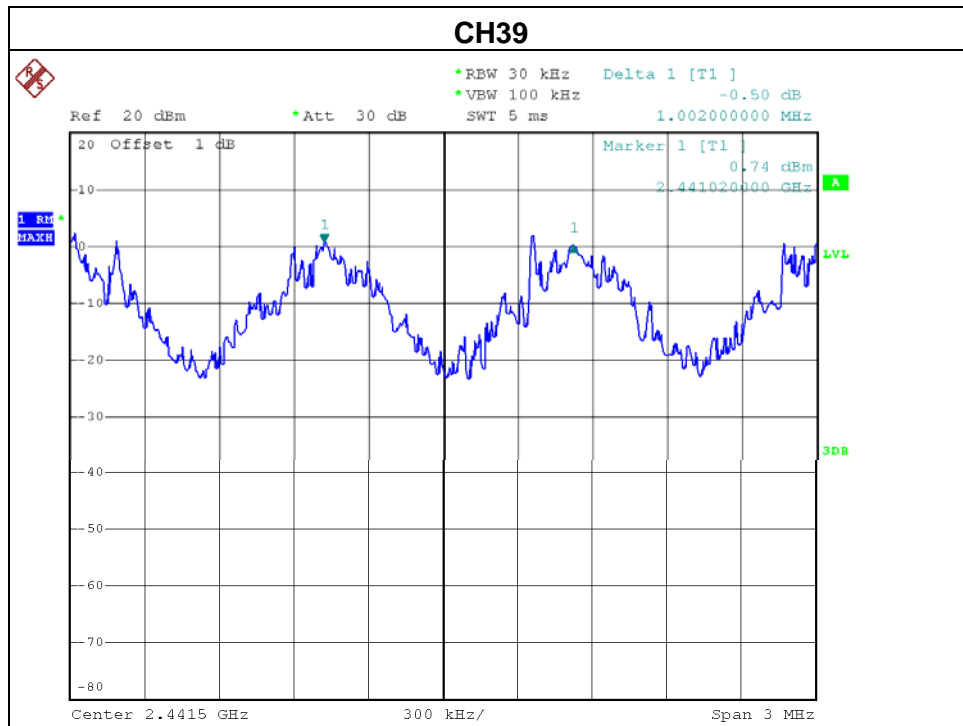
Test Voltage: AC 120V/60Hz



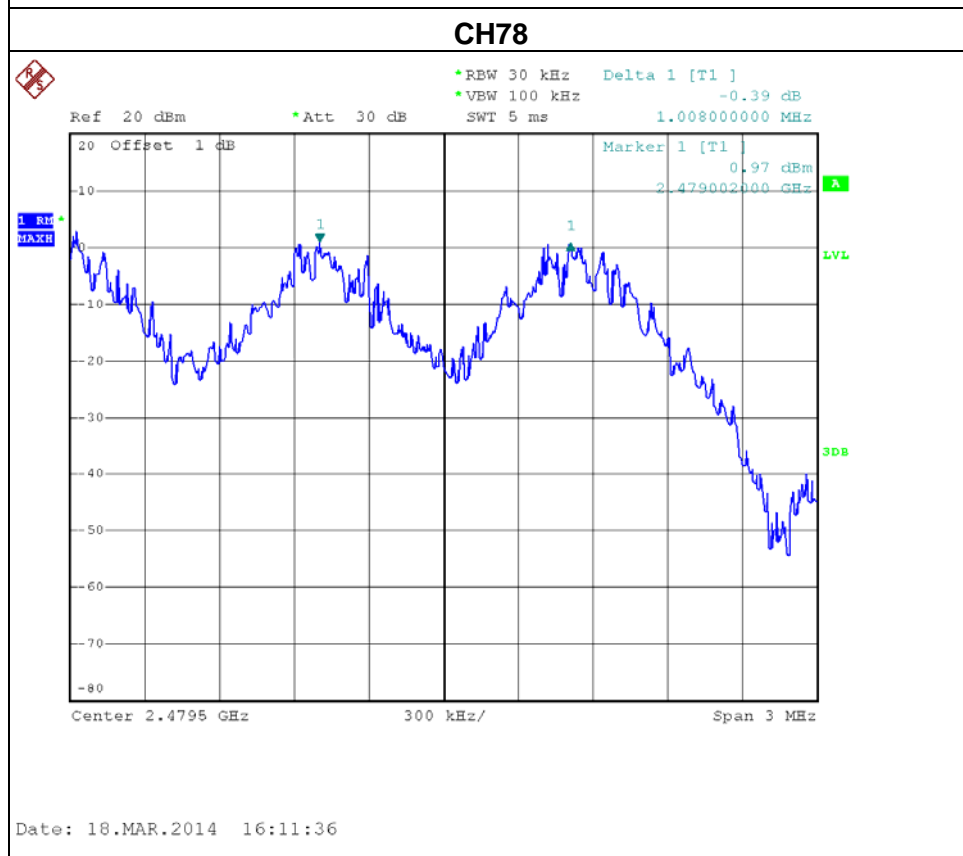
7.1.5 TEST RESULTS

Test Mode: Hopping on_1Mbps_CH00/39/78





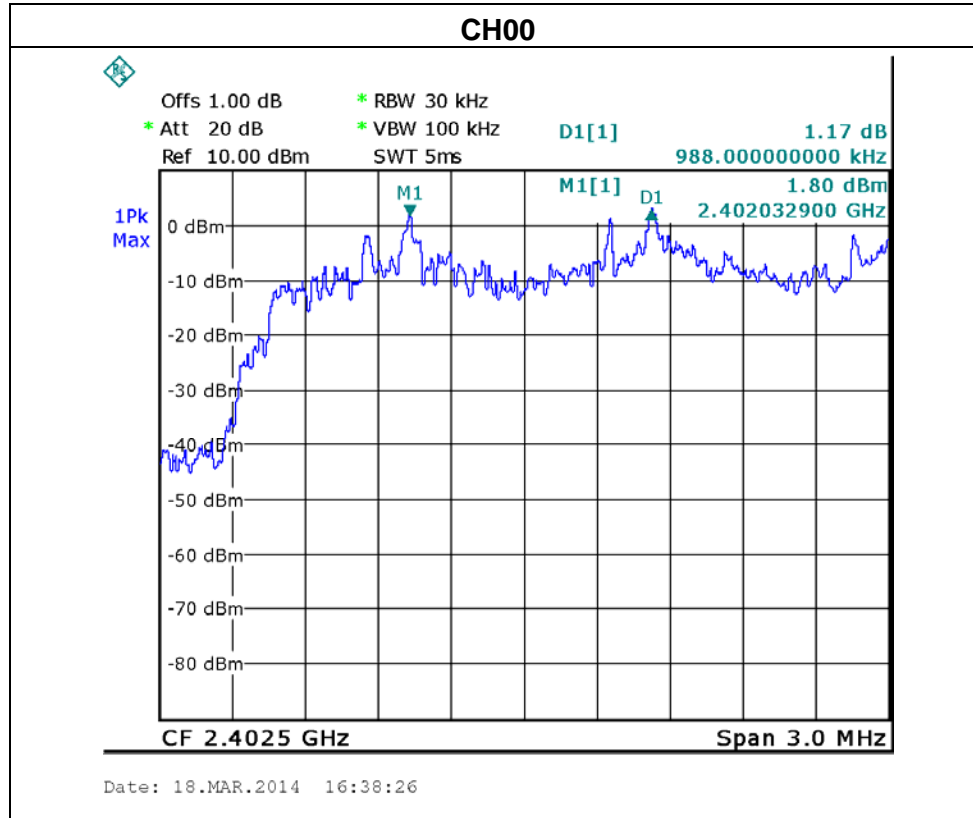
Date: 18.MAR.2014 16:10:17

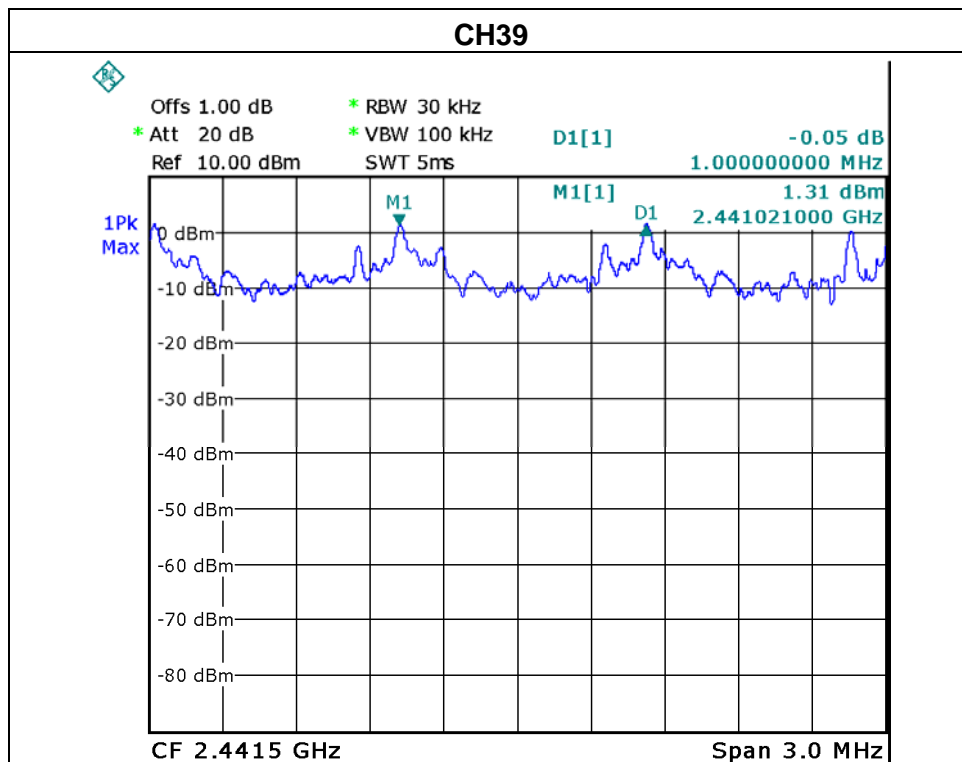


Date: 18.MAR.2014 16:11:36

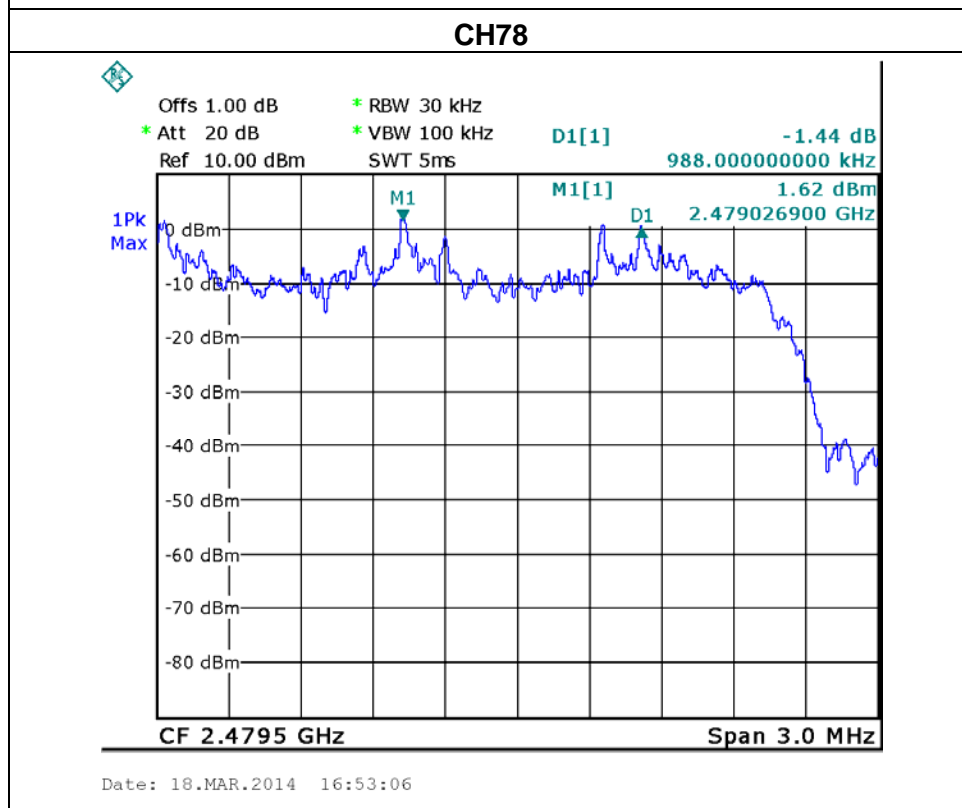


Test Mode: Hopping on_3Mbps_CH00/39/78





Date: 18.MAR.2014 16:47:42



Date: 18.MAR.2014 16:53:06



8. BANDWIDTH TEST

8.1 APPLIED PROCEDURES

FCC Part15 (15.247) , Subpart C/ RSS-GEN and RSS-210		
Section	Test Item	Frequency Range (MHz)
15.247(a)(2) RSS-GEN section 4.6.1 RSS-210, Issue 8, Annex 8, A8.1(b)	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

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- 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.

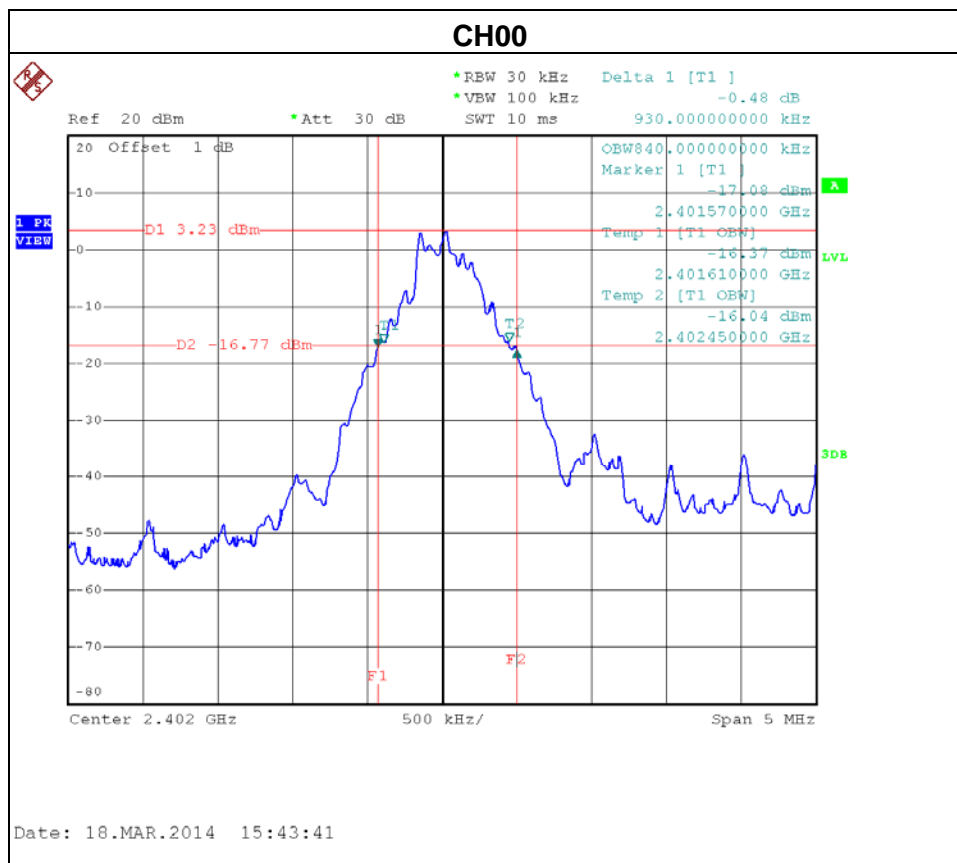
8.1.5 EUT TEST CONDITIONS

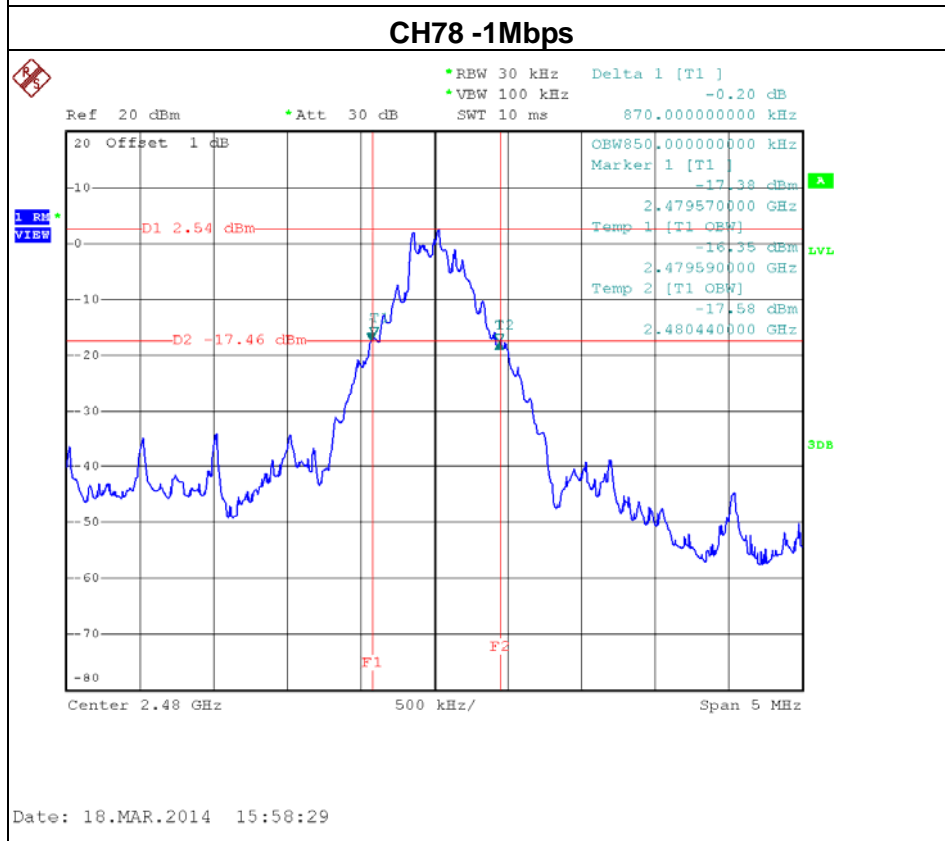
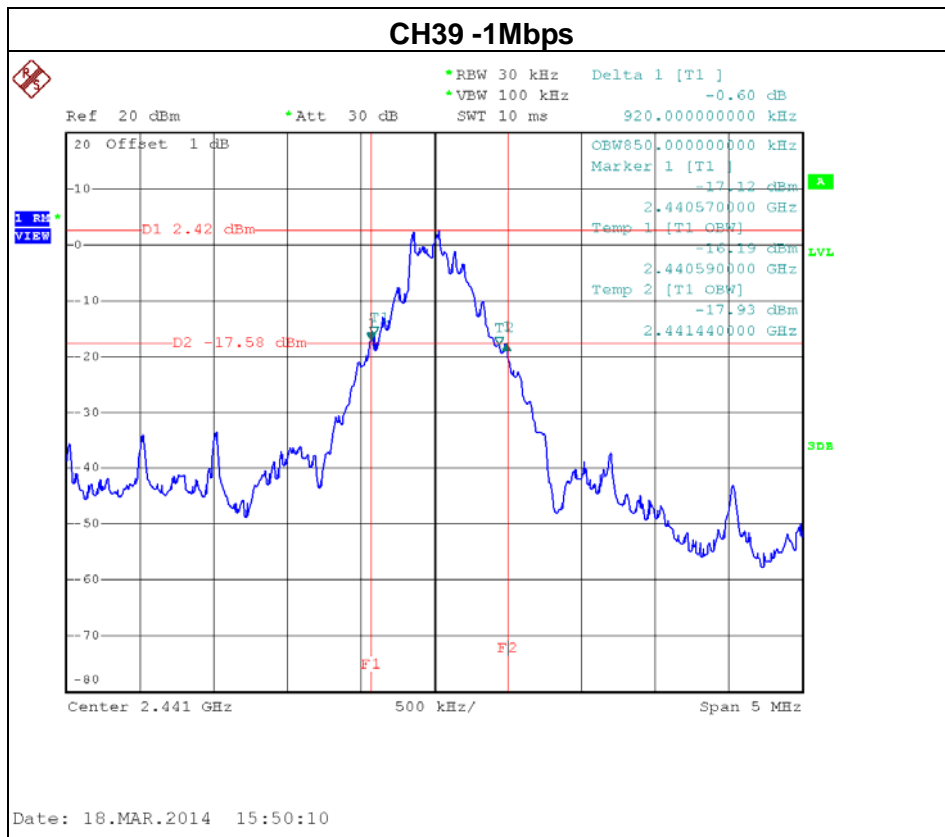
Temperature: 25°C
Relative Humidity: 55%
Test Voltage: AC 120V/60Hz



8.1.6 TEST RESULTS

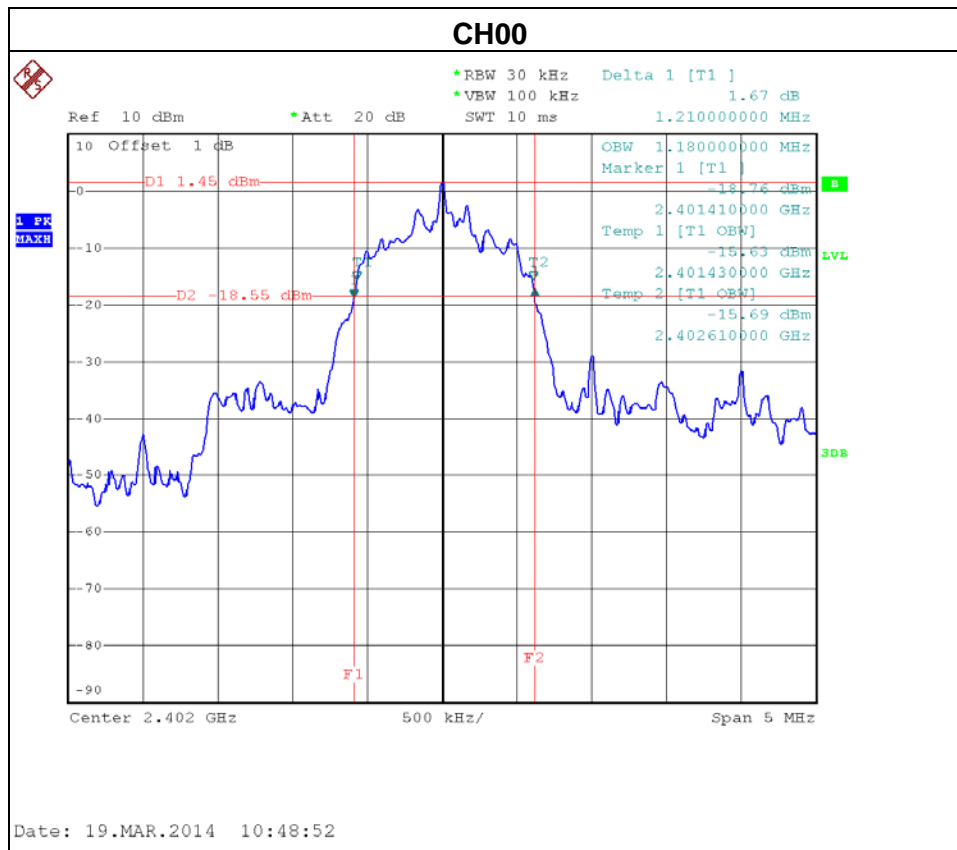
Test Mode: 1Mbps_CH00/39/78





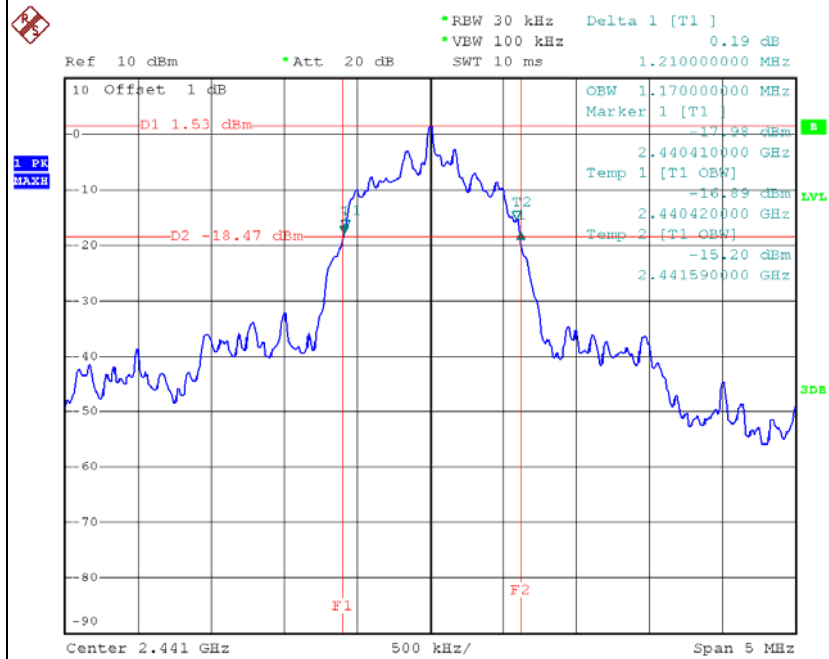


Test Mode: 3Mbps_CH00/39/78



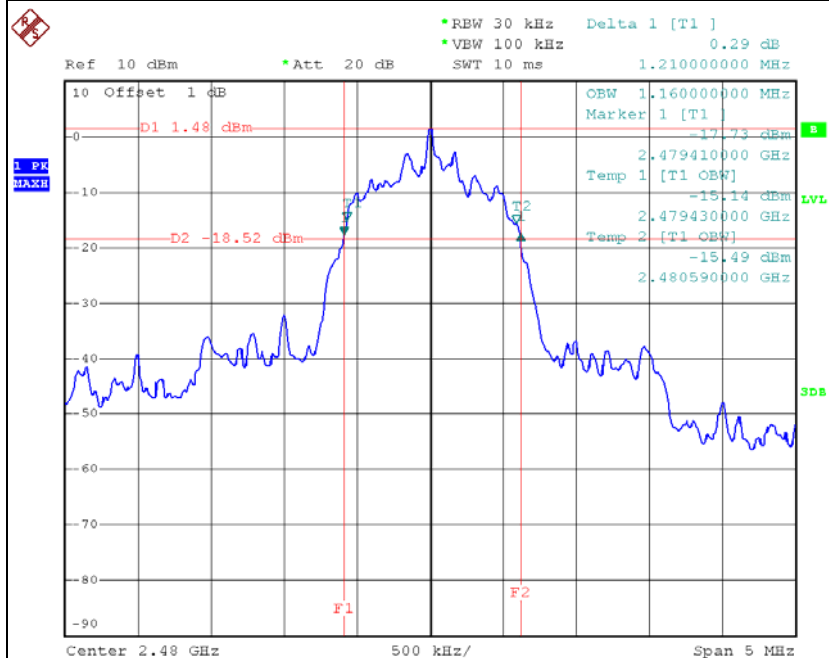


CH39 -3Mbps



Date: 19.MAR.2014 10:52:30

CH78 -3Mbps



Date: 19.MAR.2014 10:55:14



9. PEAK OUTPUT POWER TEST

9.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C/ RSS-GEN and RSS-210				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(1) RSS-GEN section 4.8 RSS-210, Issue 8, Annex 8, A8.1(b)	Peak Output Power	0.125 Watt or 21dBm	2400-2483.5	PASS

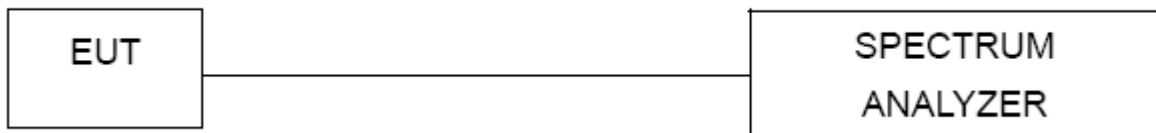
9.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- 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

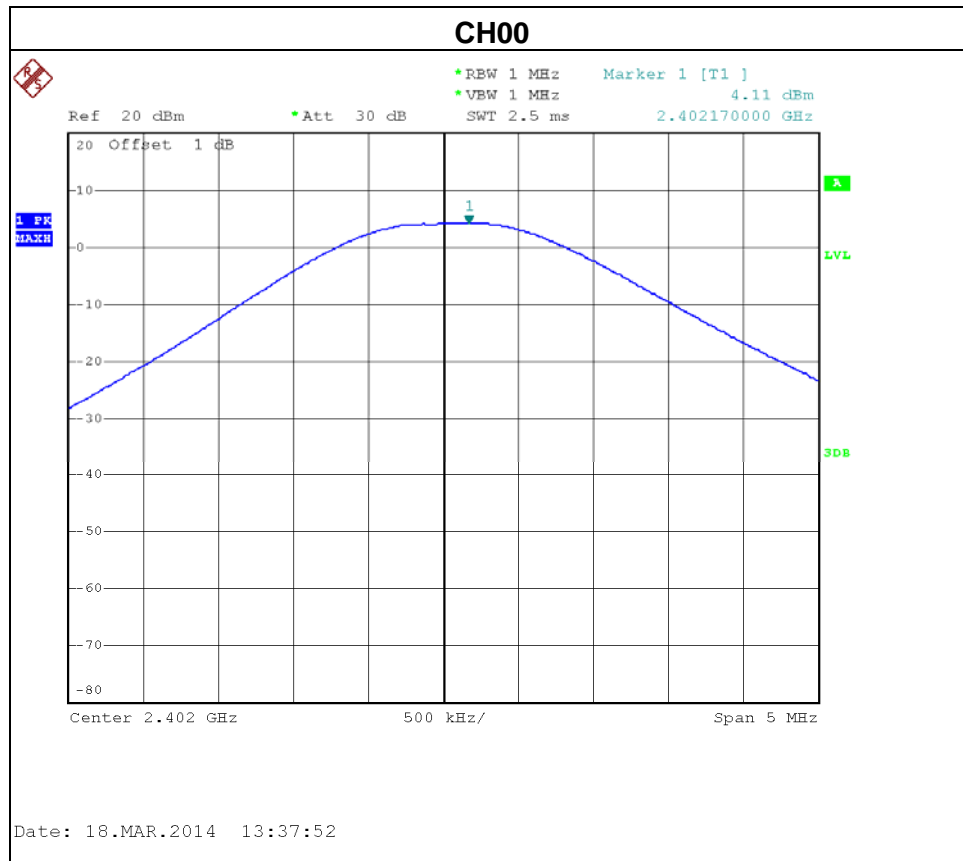
Relative Humidity: 55%

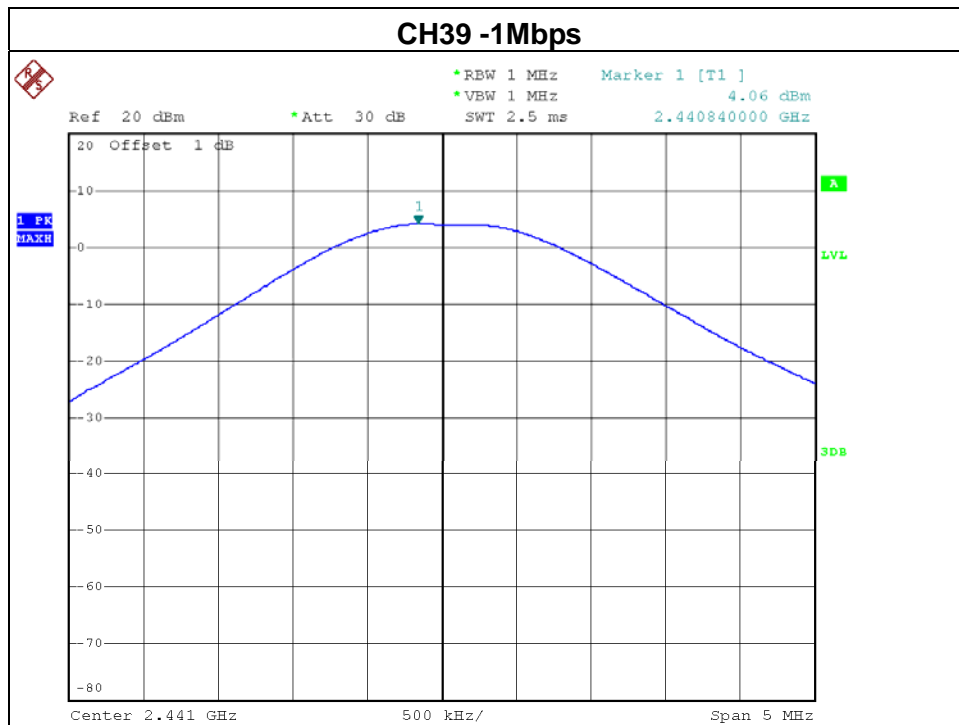
Test Voltage: AC 120V/60Hz



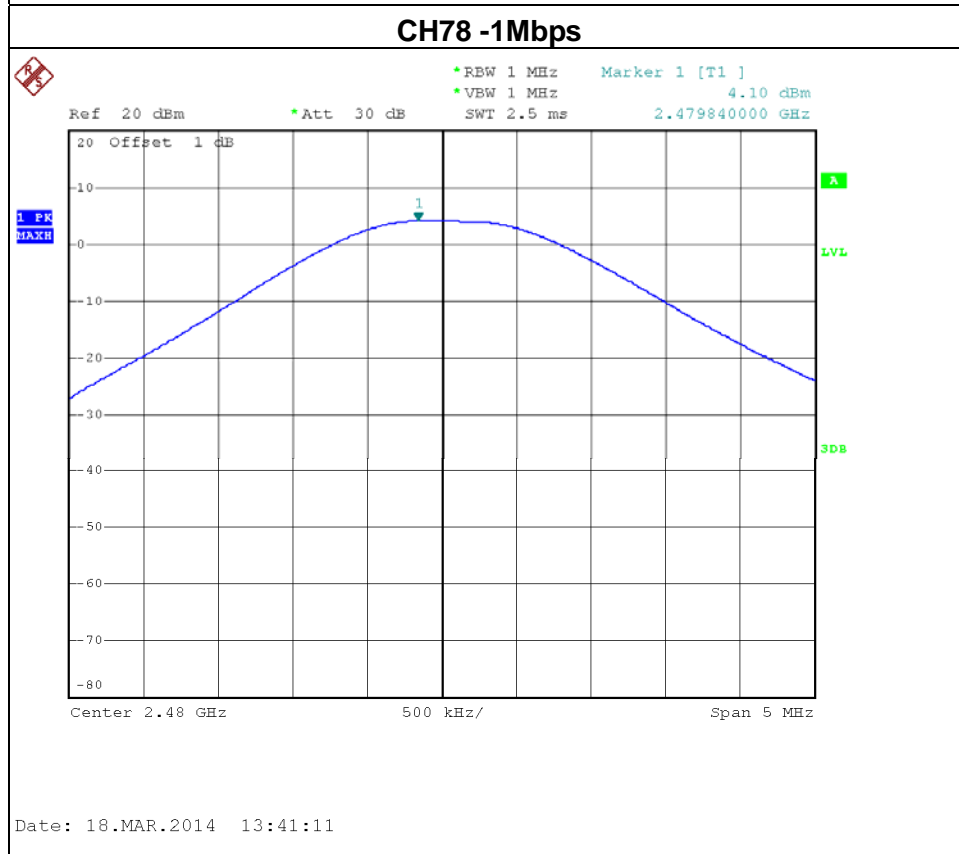
9.1.6 TEST RESULTS

Test Mode: 1Mbps_CH00/39/78





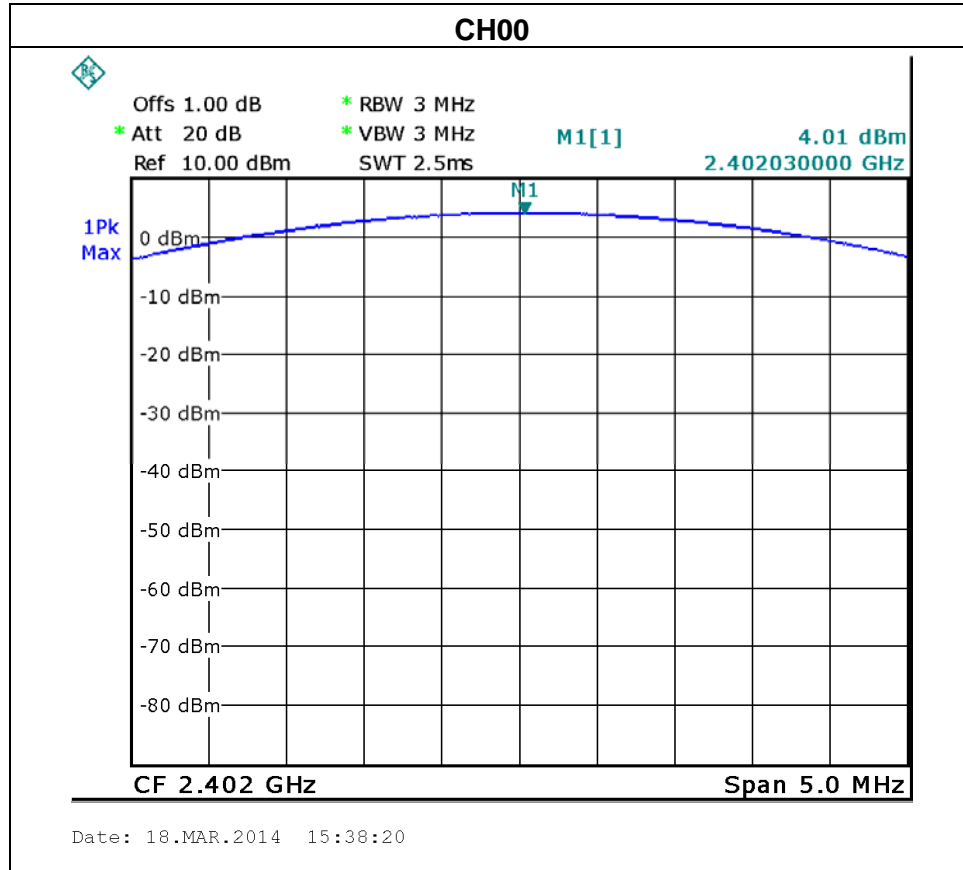
Date: 18.MAR.2014 13:39:00



Date: 18.MAR.2014 13:41:11

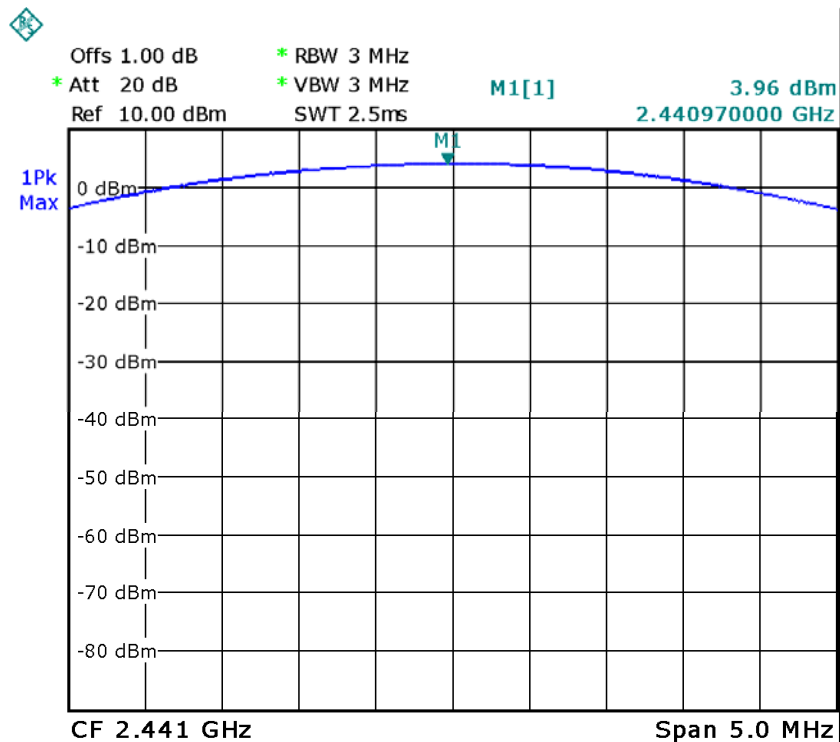


Test Mode: 3Mbps_CH00/39/78



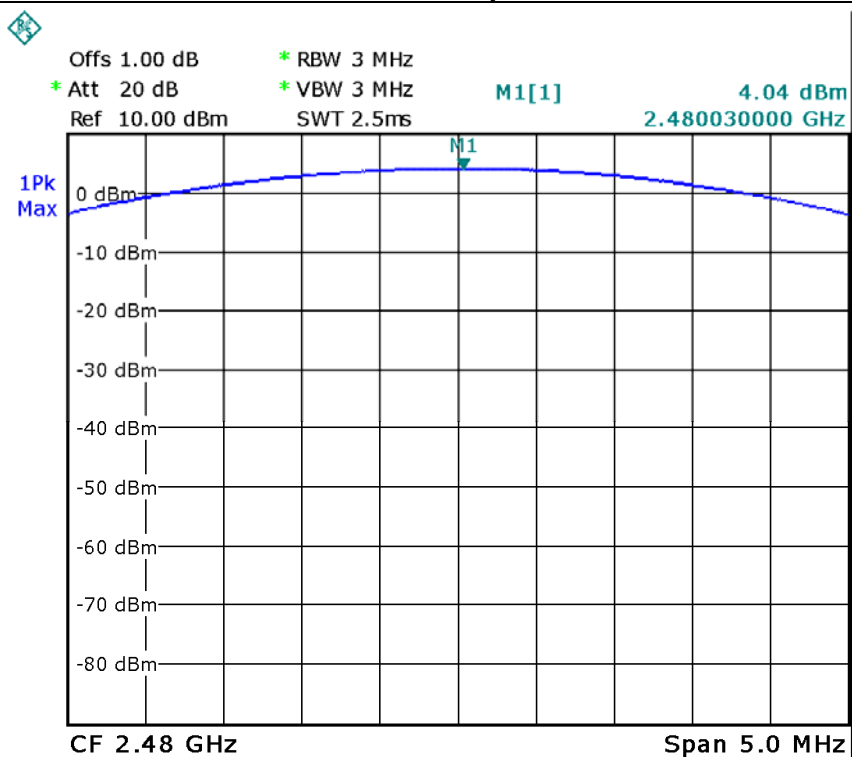


CH39 -3Mbps



Date: 18.MAR.2014 15:42:37

CH78 -3Mbps



Date: 18.MAR.2014 15:43:56



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 intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

10.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

10.1.2 DEVIATION FROM STANDARD

No deviation.

10.1.3 TEST SETUP



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%

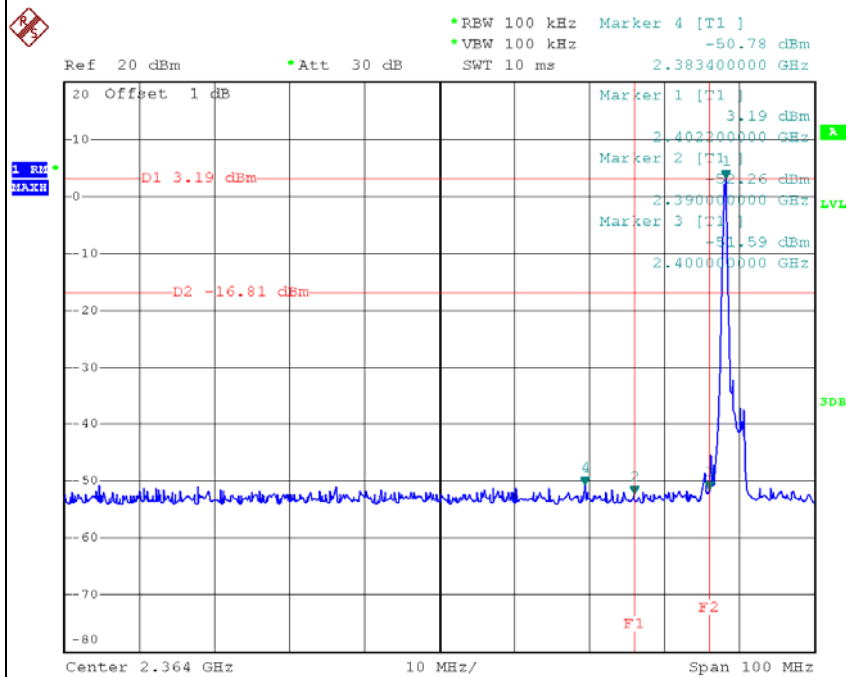
Test Voltage: AC 120V/60Hz



10.1.6 TEST RESULTS

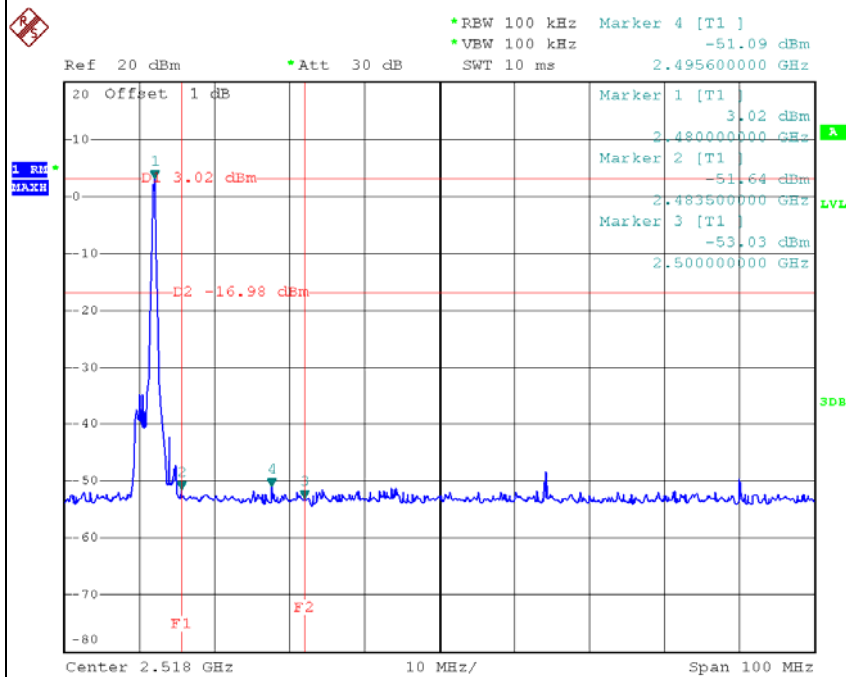


CH00 (Lower) -1Mbps



Date: 19.MAR.2014 10:07:49

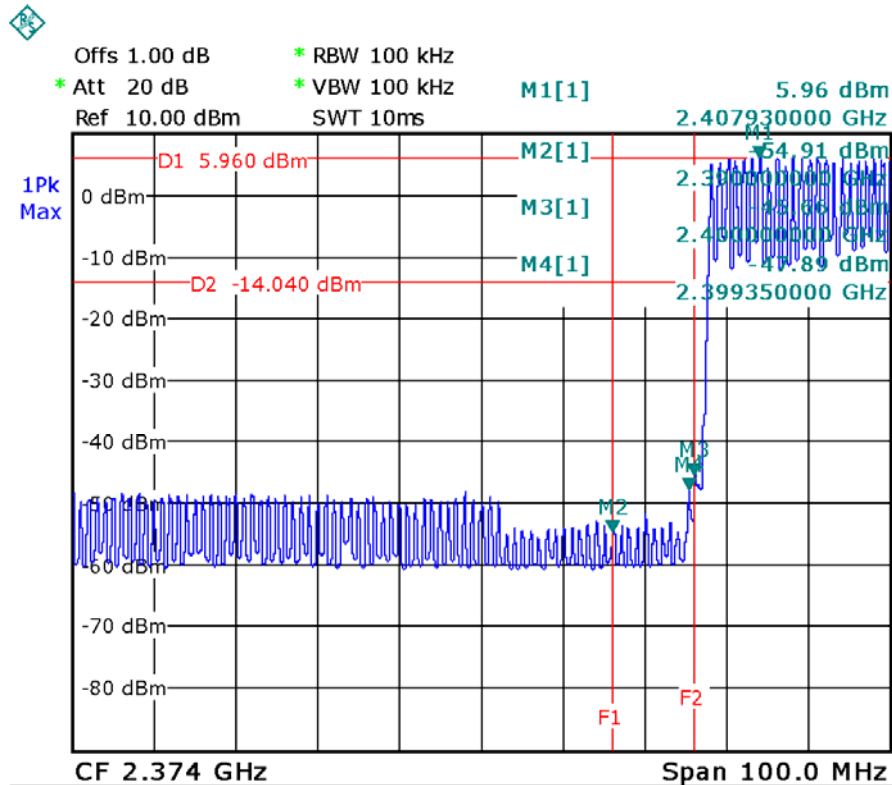
CH78 (upper) -1Mbps



Date: 19.MAR.2014 10:16:49

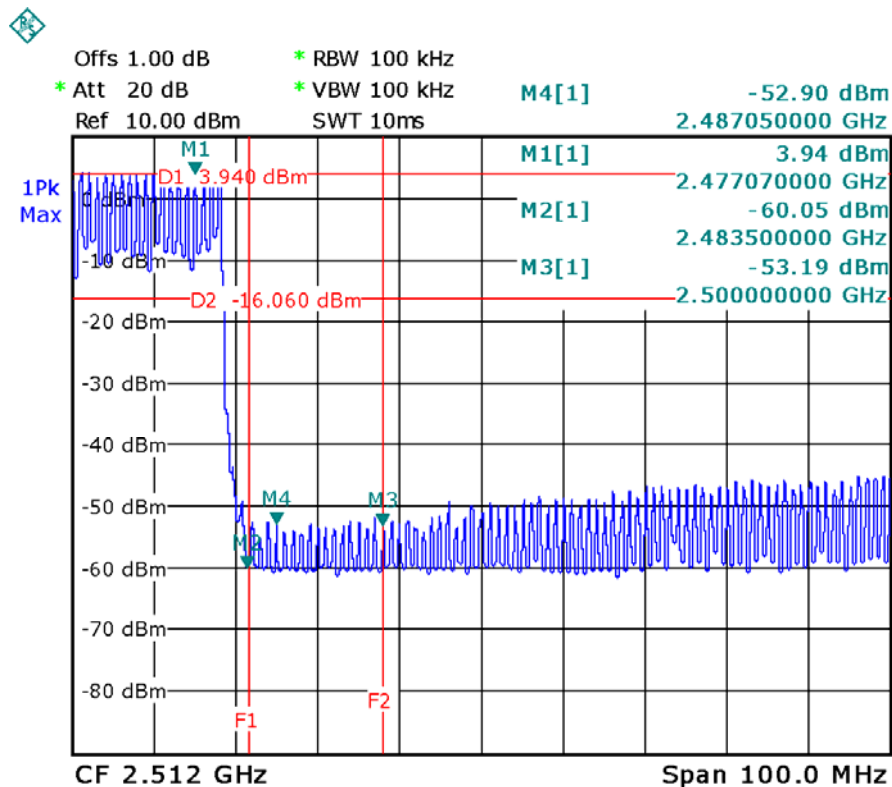


Hopping on mode (1Mbps- Lower)

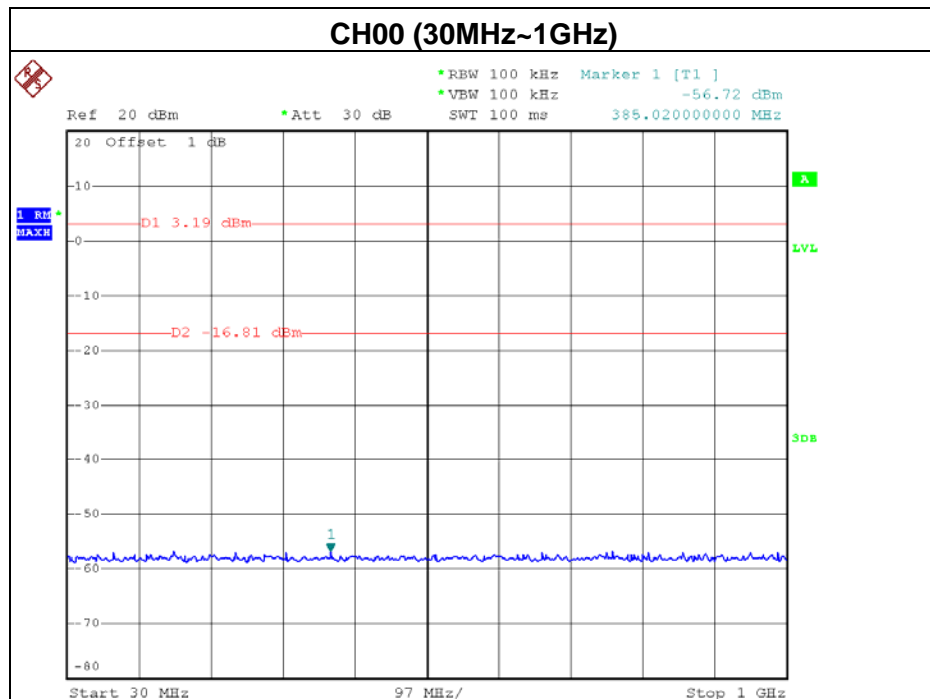


Date: 18.MAR.2014 19:09:38

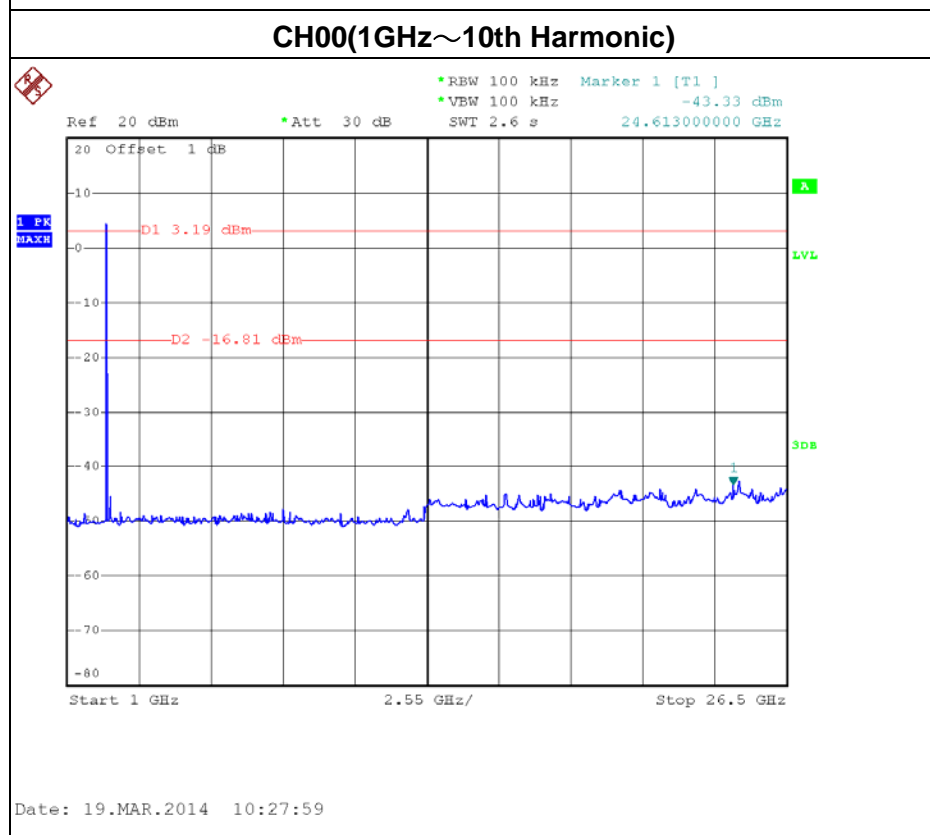
Hopping on mode (1Mbps- upper)



Date: 18.MAR.2014 19:17:46



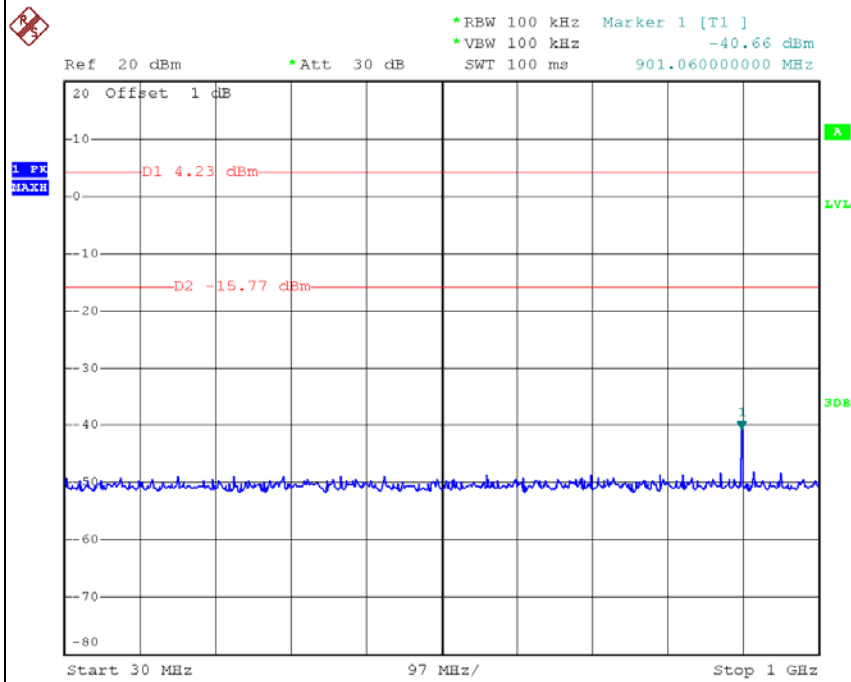
Date: 19.MAR.2014 10:09:24



Date: 19.MAR.2014 10:27:59

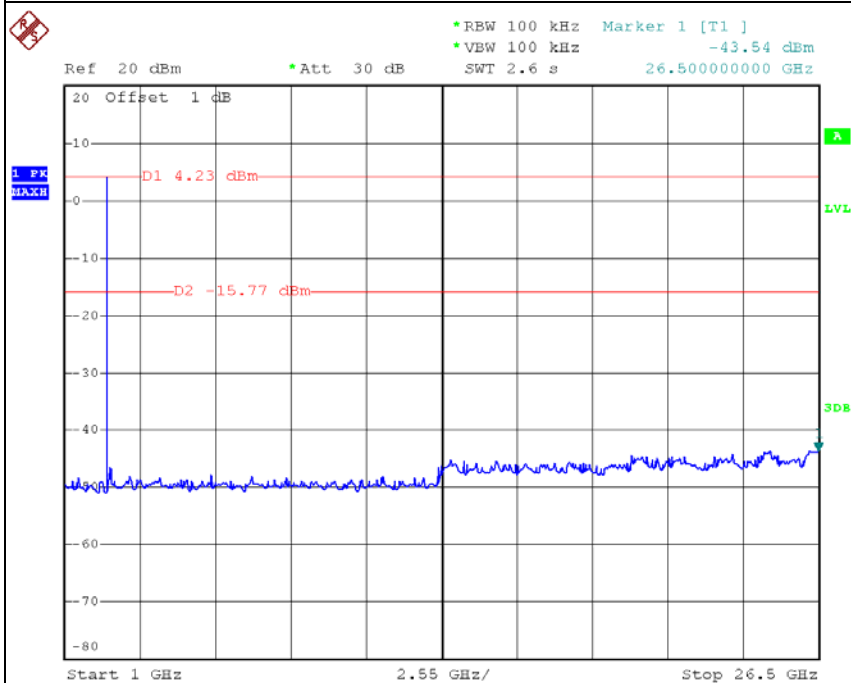


CH39 (30MHz~1GHz)



Date: 19.MAR.2014 10:31:38

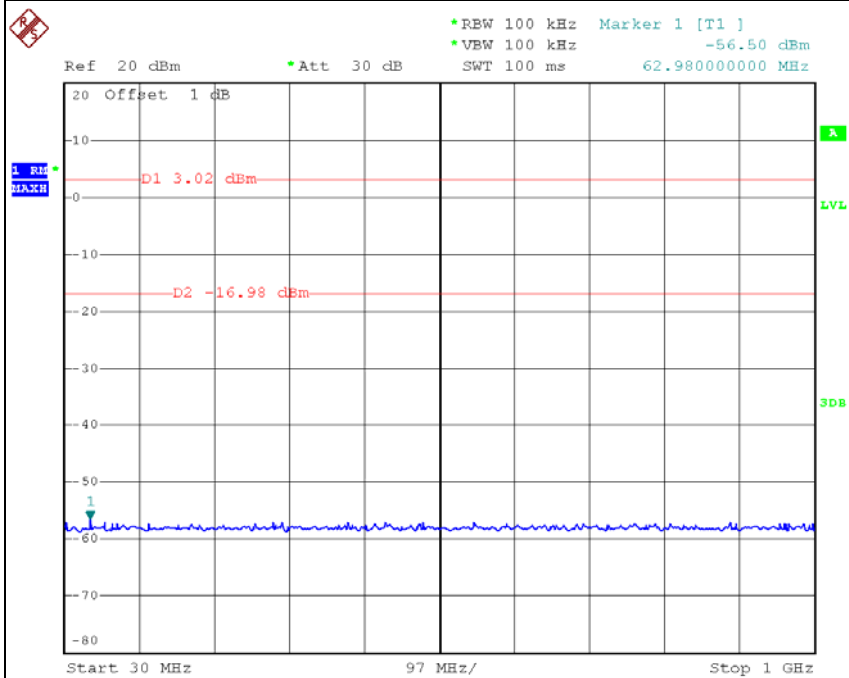
CH39(1GHz~10th Harmonic)



Date: 19.MAR.2014 10:32:34

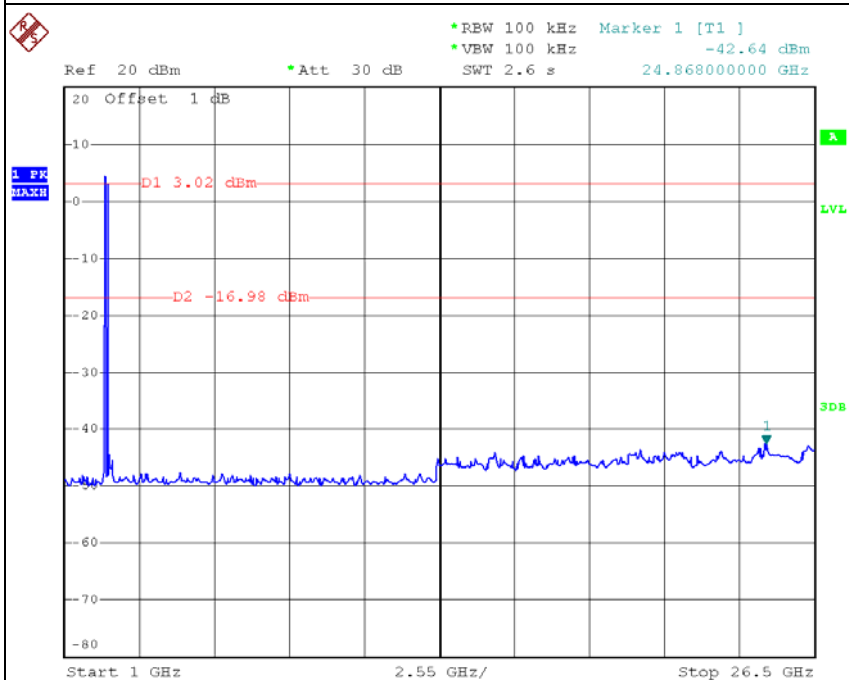


CH78 (30MHz~1GHz)



Date: 19.MAR.2014 10:18:00

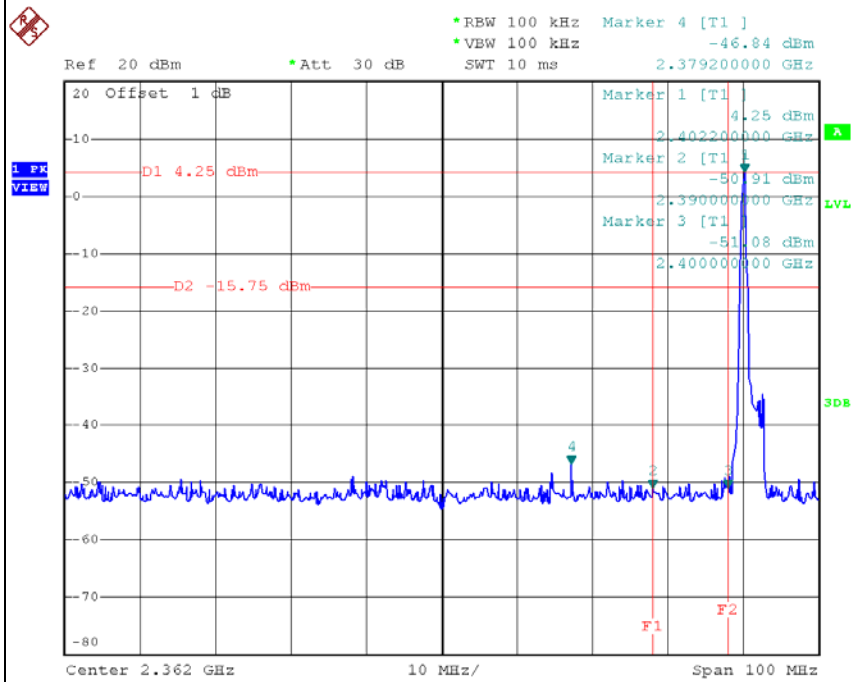
CH78(1GHz~10th Harmonic)



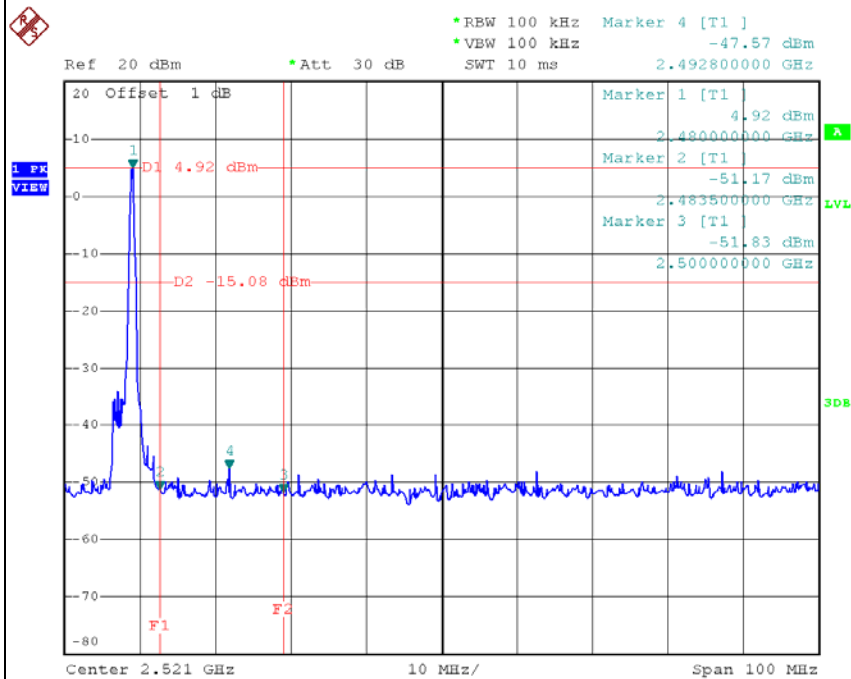
Date: 19.MAR.2014 10:29:23



CH00 (Lower) -3Mbps

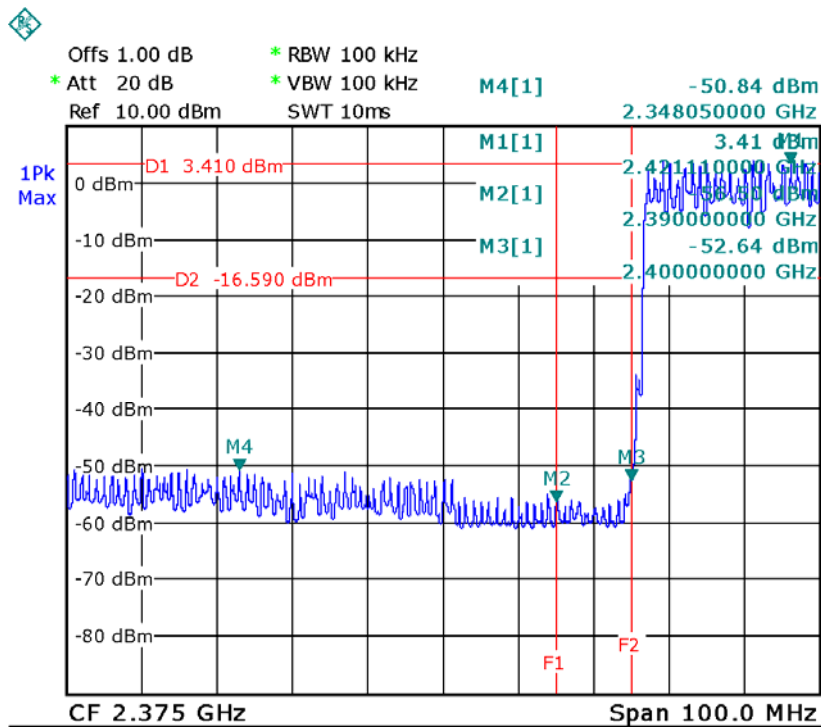


CH 78 (Upper) -3Mbps



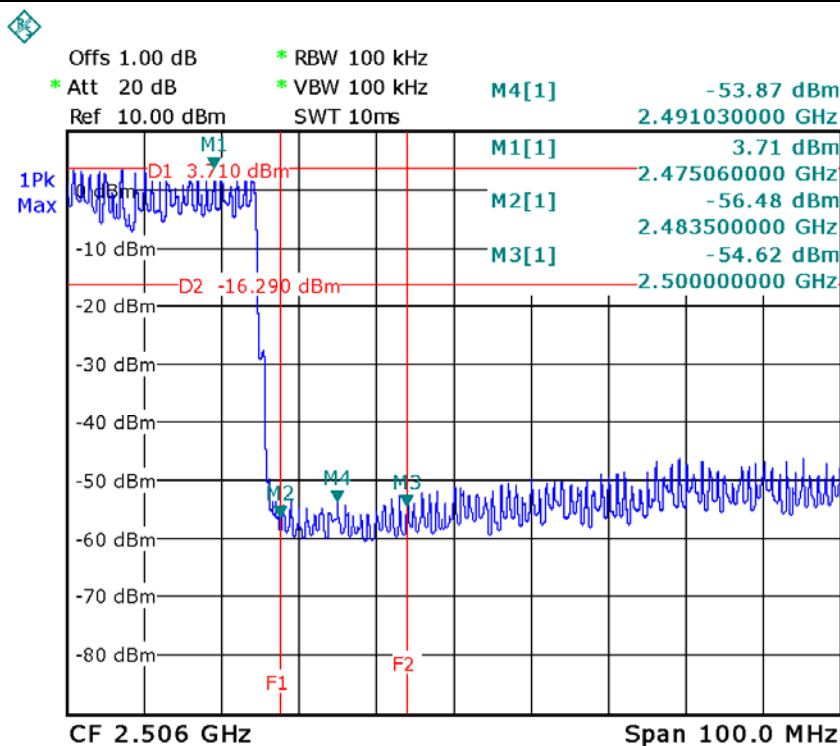


Hopping on mode (3Mbps- Lower)

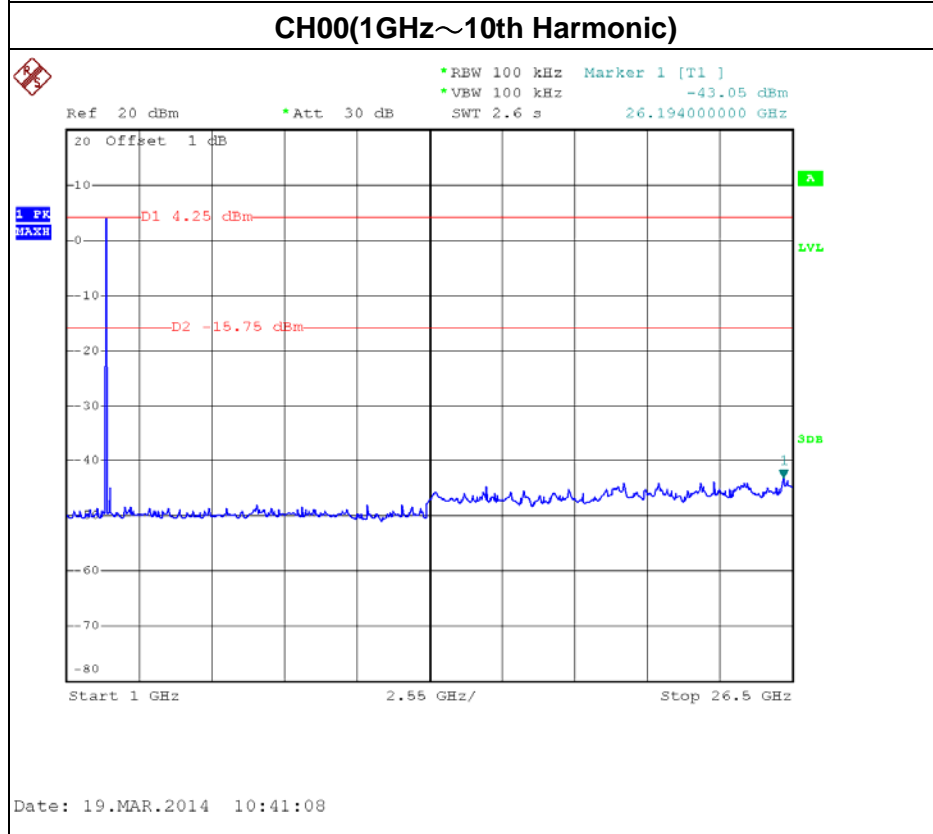
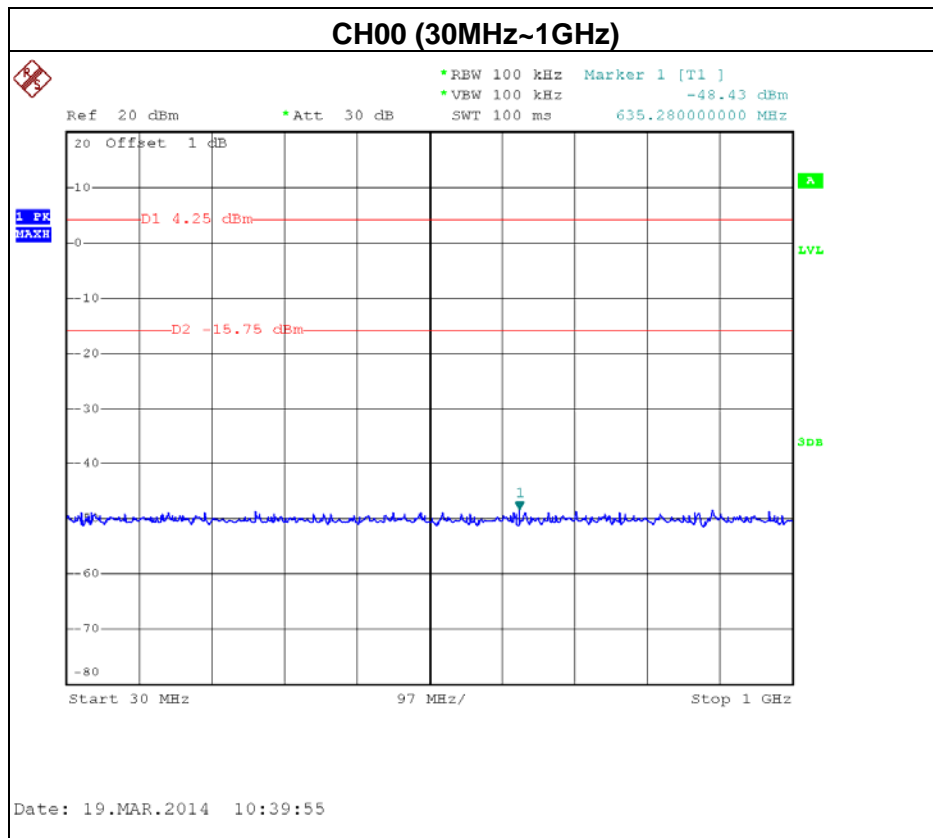


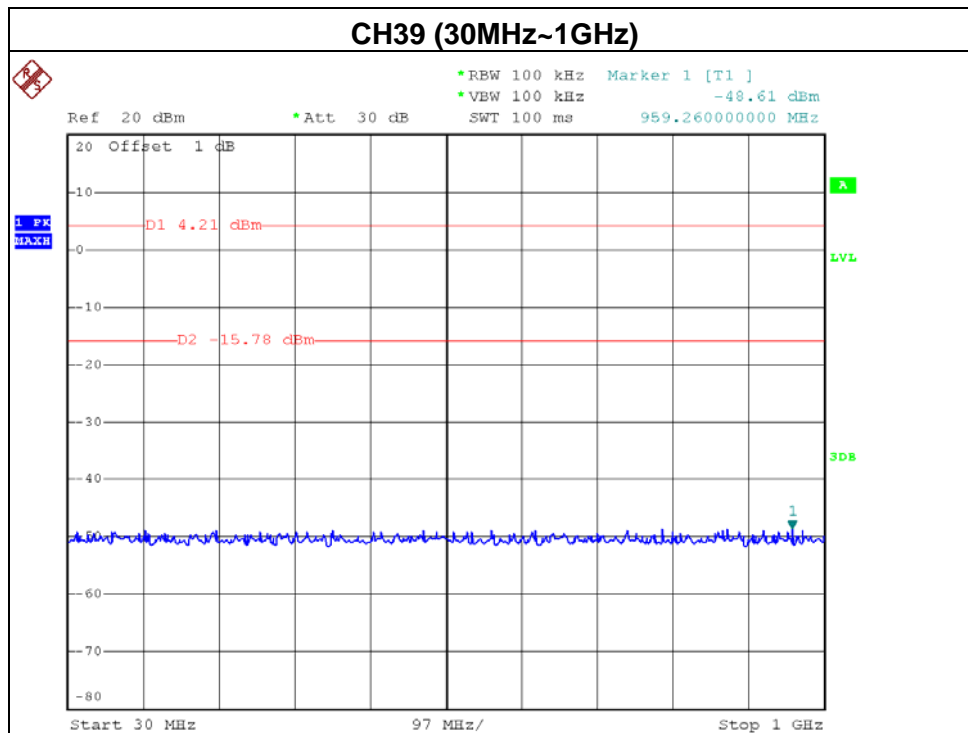
Date: 18.MAR.2014 19:34:30

Hopping on mode (3Mbps-upper)

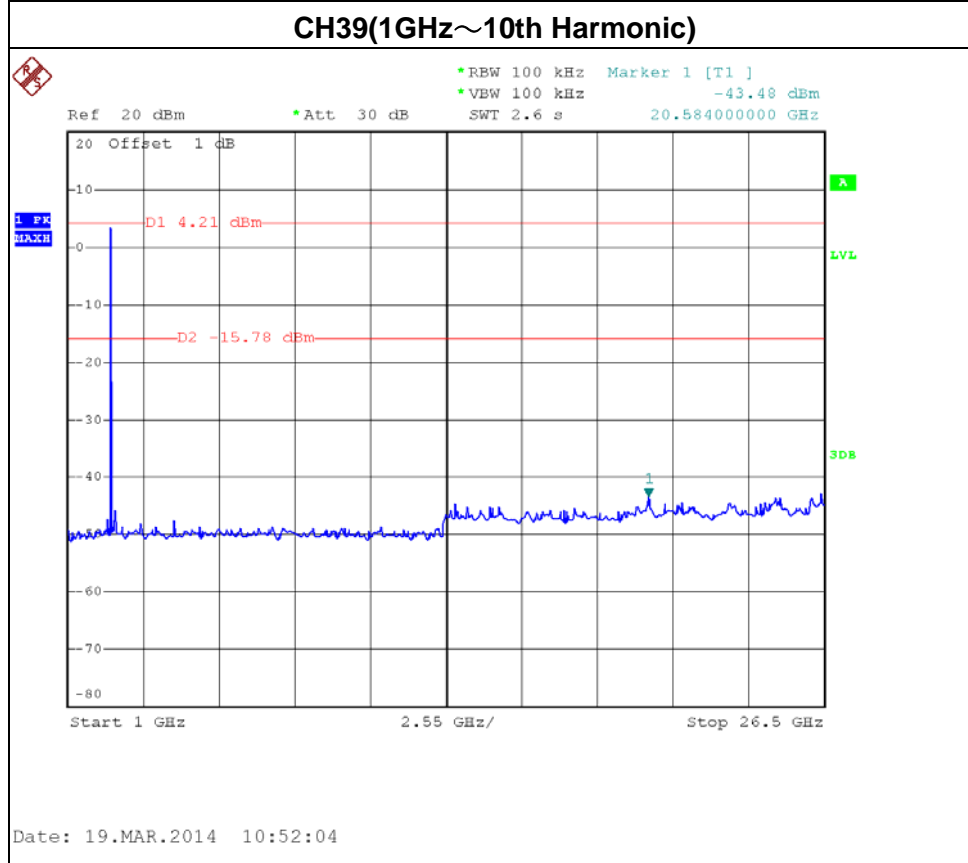


Date: 18.MAR.2014 19:23:22

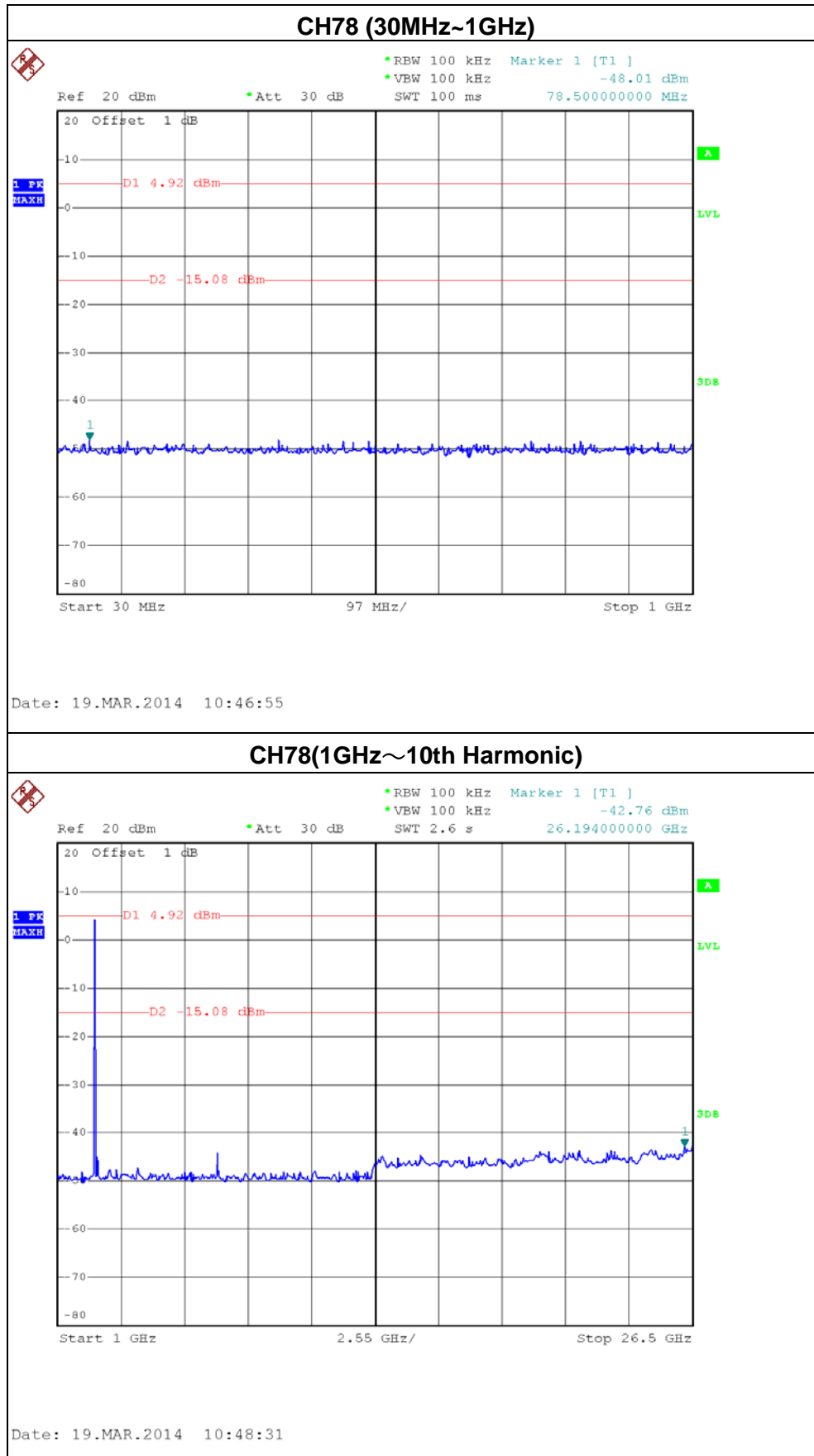




Date: 19.MAR.2014 10:51:15



Date: 19.MAR.2014 10:52:04





11. MEASUREMENT INSTRUMENTS LIST AND SETTING

Conducted Emission Measurement

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	EMCO	3816/2	00052765	Apr. 25, 2014
2	LISN	R&S	ENV216	100087	Nov.09, 2014
3	Test Cable	N/A	C_17	N/A	Mar.14, 2015
4	EMI TEST RECEIVER	R&S	ESCS30	826547/022	Apr. 25, 2014
5	50Ω Terminator	SHX	TF2-3G-A	08122902	Apr. 25, 2014

Radiated Emission Measurement

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Apr. 25, 2014
2	Amplifier	HP	8447D	2944A09673	Apr. 25, 2014
3	Test Receiver	R&S	ESCI	100382	Apr. 25, 2014
4	Test Cable	N/A	C-01_CB03	N/A	Jul. 02, 2014
5	Antenna	ETS	3115	00075789	Apr. 25, 2014
6	Amplifier	Agilent	8449B	3008A02274	Apr. 25, 2014
7	Spectrum	Agilent	E4408B	US39240143	Nov. 09, 2014
8	Test Cable	HUBER+SUHNER	C-45	N/A	Apr. 30, 2014
9	Controller	CT	SC100	N/A	N/A
10	Horn Antenna	EMCO	3115	9605-4803	Apr. 25, 2014
11	Active Loop Antenna	R&S	HFH2-Z2	830749/020	Apr. 25, 2014
12	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Oct. 22, 2014

Number of Hopping Channel

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 09, 2014

Average Time of Occupancy

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 09, 2014



Hopping Channel Separation Measurement

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 09, 2014

Bandwidth

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 09, 2014

Peak Output Power

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 09, 2014

Antenna Conducted Spurious Emission

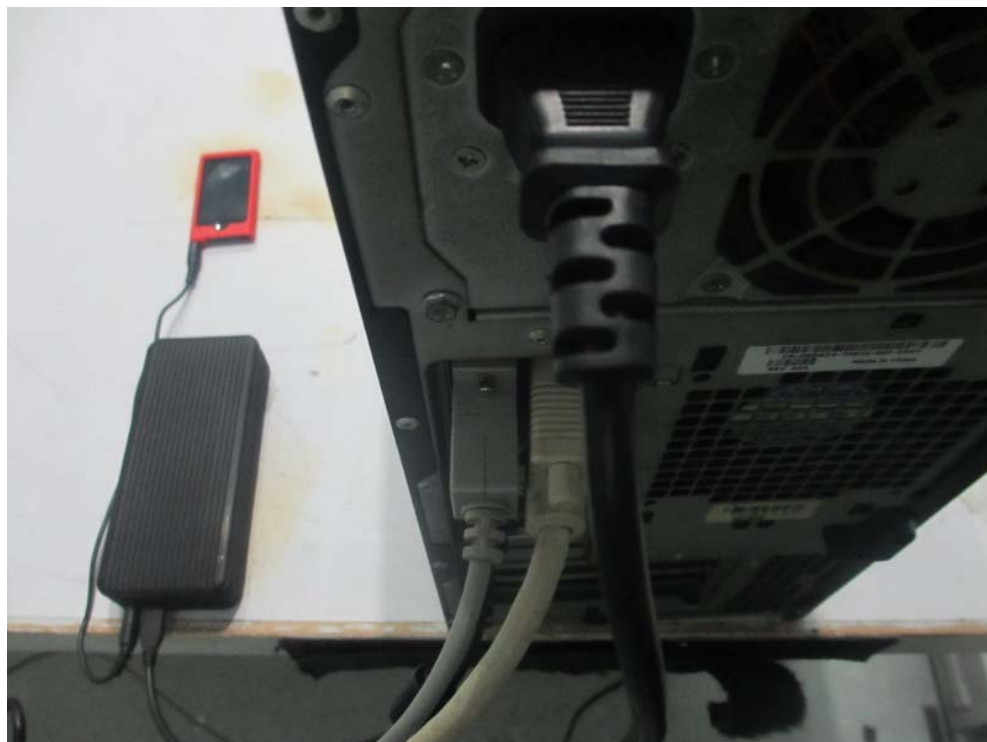
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP 40	100185	Nov. 09, 2014

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



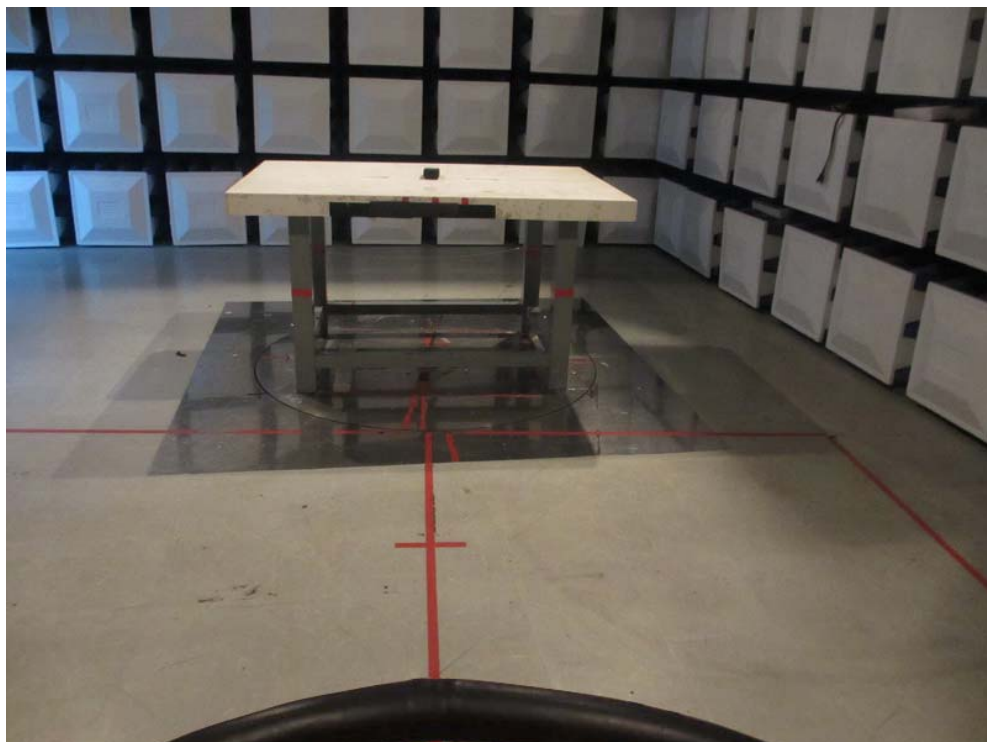
12. EUT TEST PHOTO

Conducted Measurement Photos





**Radiated Measurement Photos
9K~30MHz**





**Radiated Measurement Photos
30M~1000MHz**



**Radiated Measurement Photos
Above 1000MHz**

