EMC
TEST REPORT

Report No. : EME-071153
Model No. : VT-802C
Issued Date : Dec. 12, 2007

Applicant : CyraCom International
5780 N. Swan Rd., Tucson, AZ 85718 USA

Test By : Intertek Testing Services Taiwan Ltd.
No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li,
Shiang-Shan District, Hsinchu City, Taiwan

Report Engineer

Sammi Liu

Sammi Liu

Project Engineer

Rico Deng

Rico Deng

Reviewed By

Jimmie Liu

Jimmie Liu

Table of Contents

Summary of Tests

2.4GHz EDCT CORDLESS PHONE-Model: VT-802C
FCC ID: VSWVT-802C

Test	Reference	Results
Maximum Output Power test	15.247(b)	Pass
Carrier Frequency Separation test	15.247(a)(1)	Pass
Number of hopping frequencies test	15.247(a)(1)	Pass
Time of Occupancy (dwell time) test	15.247(a)(1)	Pass
20dB Bandwidth test	15.247(a)(1)	Pass
Radiated Spurious Emission test	15.205, 15.209	Pass
Emission on the Band Edge test	15.247(d)	Pass
AC Power Line Conducted Emission test	15.207	Pass

1. General information

1.1 Identification of the EUT

Applicant	: CyraCom International
Product	: 2.4GHz EDCT CORDLESS PHONE
Model No.	: VT-802C
FCC ID.	: VSWVT-802C
Frequency Range	: 2401.808203MHz ~ 2479.398926MHz
Channel Number	: 88 channels
Channel Spacing	: 1.893.848kHz (for even number channel) 2.889.893kHz (for ODD number channel)
Type of Modulation	: GFSK, FHSS
Rated Power	: 120Vac, 60Hz with adapter (Model No.: 48-D12-830)
Power Cord	: N/A
Sample Received	: Nov. 22, 2007
Test Date(s)	: Nov. 21, 2007 ~ Nov. 29, 2007

A FCC DoC report has been generated for the client.

1.2 Additional information about the EUT

The EUT is a 2.4GHz EDCT CORDLESS PHONE which contains of main, secondary handset unit and base unit. The main and secondary handsets are identical in electrical, mechanical and physical design. The difference was in keypress only. Intertek verified the main and secondary handset, the worst case is handset with keypress. The final test was executed under worst condition than recorded the data in this report.

For more detail features, please refer to User's manual as file name “Installation guide. Pdf”

1.3 Antenna description

The EUT uses a permanently connected antenna.

Antenna Gain	: 2dBi max
Antenna Type	: Dipole antenna
Connector Type	: Pigtail

2. Test specifications

2.1 Test standard

The EUT was performed according to the procedures in FCC Part 15 Subpart C Section §15.205、§15.207、§15.209、§15.247 and ANSI C63.4/2003.

The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of this frequency band were all meet limit requirement, thus we evaluate the EUT pass the specified test.

2.2 Operation mode

The EUT is a 2.4GHz EDCT CORDLESS PHONE which contains of main, secondary handset unit and base unit.

For Handset
This test was verified at three orthogonal axes, after verifying three axes, the worst case was occurred at setup 1 for Horizontal and Vertical configuration. Please see page 48 for the detail.

For Base
The base was placed on the wooden table and was transmitted continuously during the test.

2.3 Test equipment

Equipment	Brand	Frequency range	Model No.	Intertek ID No.	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	9kHz~2.75GHz	ESCS 30	EC303	08/08/2008
Spectrum Analyzer	Rohde & Schwarz	9kHz~30GHz	FSP 30	EC353	08/05/2008
Spectrum Analyzer	Rohde & Schwarz	20Hz~40GHz	FSEK 30	EC365	11/12/2008
Horn Antenna	SCHWARZBECK	1GHz~18GHz	BBHA 9120 D	EC371	03/04/2008
Horn Antenna	SCHWARZBECK	14GHz~40GHz	BBHA 9170	EC351	08/08/2008
Bilog Antenna	SCHWARZBECK	25MHz~2GHz	VULB 9168	EC347	03/20/2008
Pre-Amplifier	MITEQ	100MHz~26.5GHz	919981	EC373	03/18/2008
Pre-Amplifier	MITEQ	26GHz~40GHz	828825	EC374	01/15/2008
Wideband Peak Power Meter/ Sensor	Anritsu	100MHz~18GHz	ML2497A/ MA2491A	EC396	11/12/2008
Controller	HDGmbH	N/A	CM 100	EP346	N/A
Antenna Tower	HDGmbH	N/A	MA 240	EP347	N/A
LISN	Rohde & Schwarz	9KHz~30MHz	ESH3-Z5	EC344	03/30/2008

Note: 1. The above equipments are within the valid calibration period.
2. The test antennas (receiving antenna) are calibration per 1 year.

3. 20dB Bandwidth test

3.1 Operating environment

Temperature:	25	℃
Relative Humidity:	55	%
Atmospheric Pressure:	1023	hPa

3.2 Test setup & procedure

The 20dB bandwidth per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 100 kHz, the video bandwidth≧RBW, and the SPAN may equal to approximately 2 to 3 times the 20dB bandwidth. The test was performed at 3 channels (lowest, middle and highest channel). The maximum 20dB modulation bandwidth is in the following Table.

3.3 Measured data of modulated bandwidth test results

Test unit: Handset

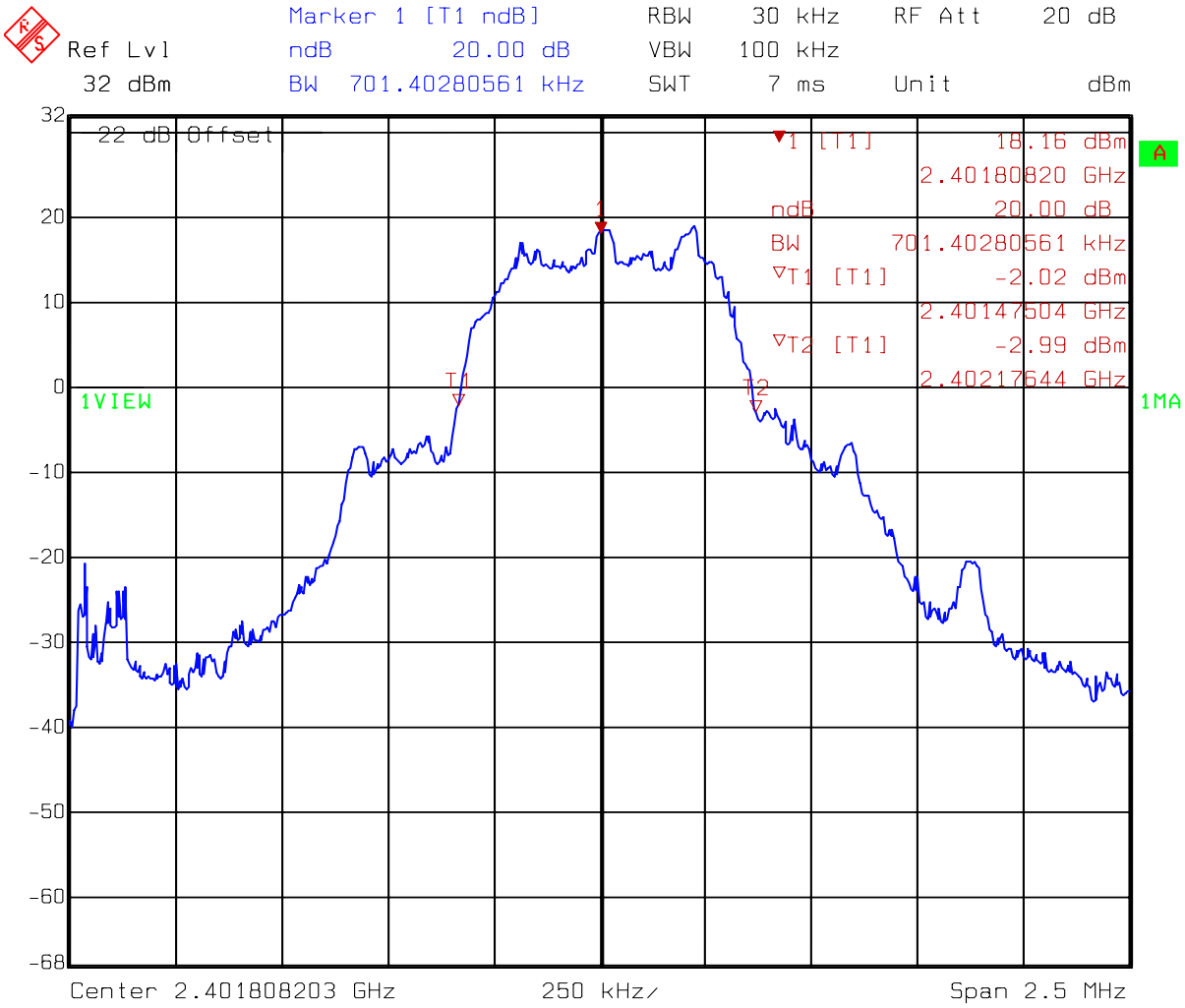
Channel	Frequency (MHz)	Bandwidth (kHz)
Channel 12	2401.808	701.403
Channel 55	2440.159	741.483
Channel 99	2479.401	816.633

Test unit: Base

Channel	Frequency (MHz)	Bandwidth (kHz)
Channel 12	2401.811	721.443
Channel 55	2440.159	741.483
Channel 99	2479.396	796.593

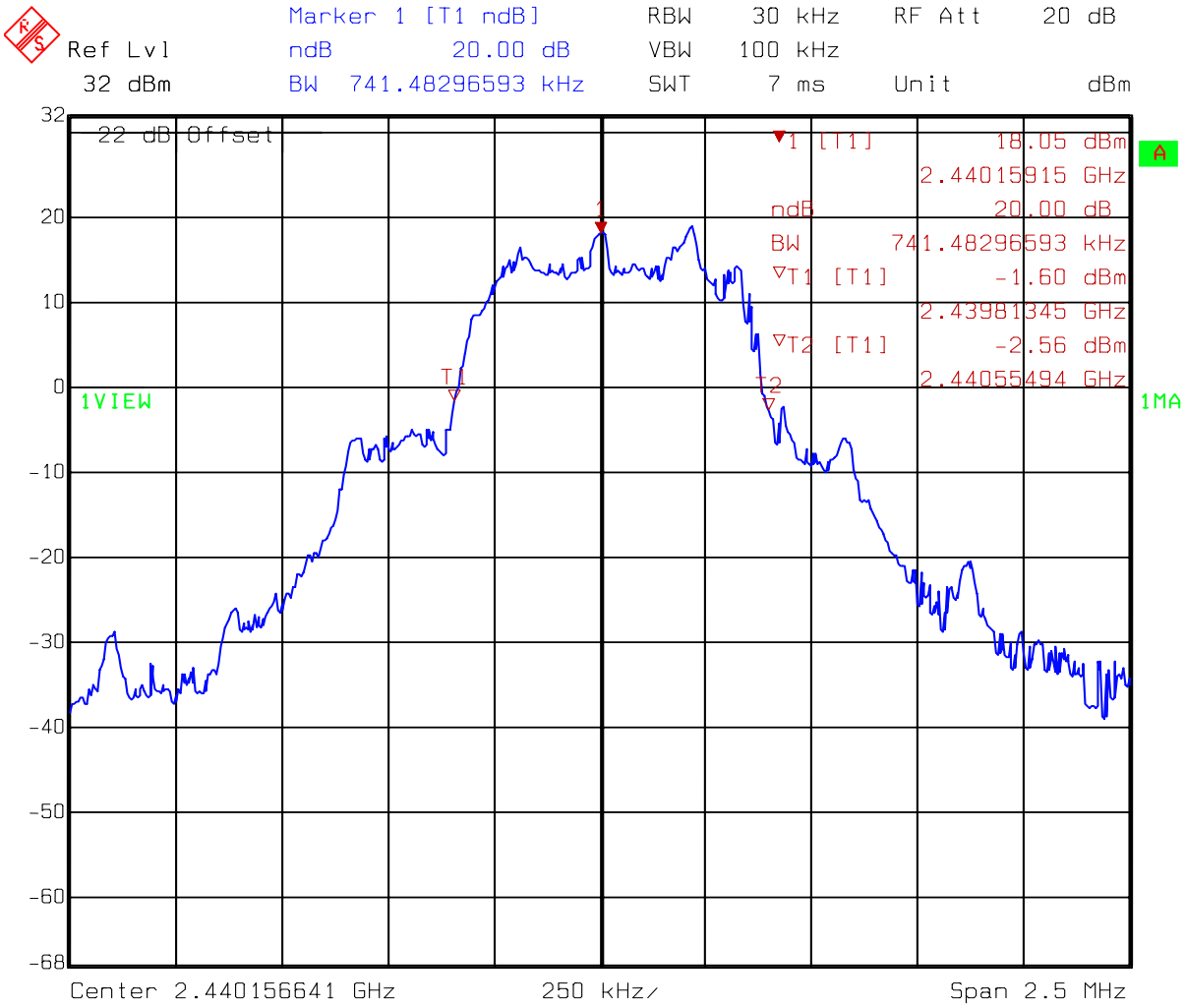
Please see the plot below.

Test unit: Handset (ch12)



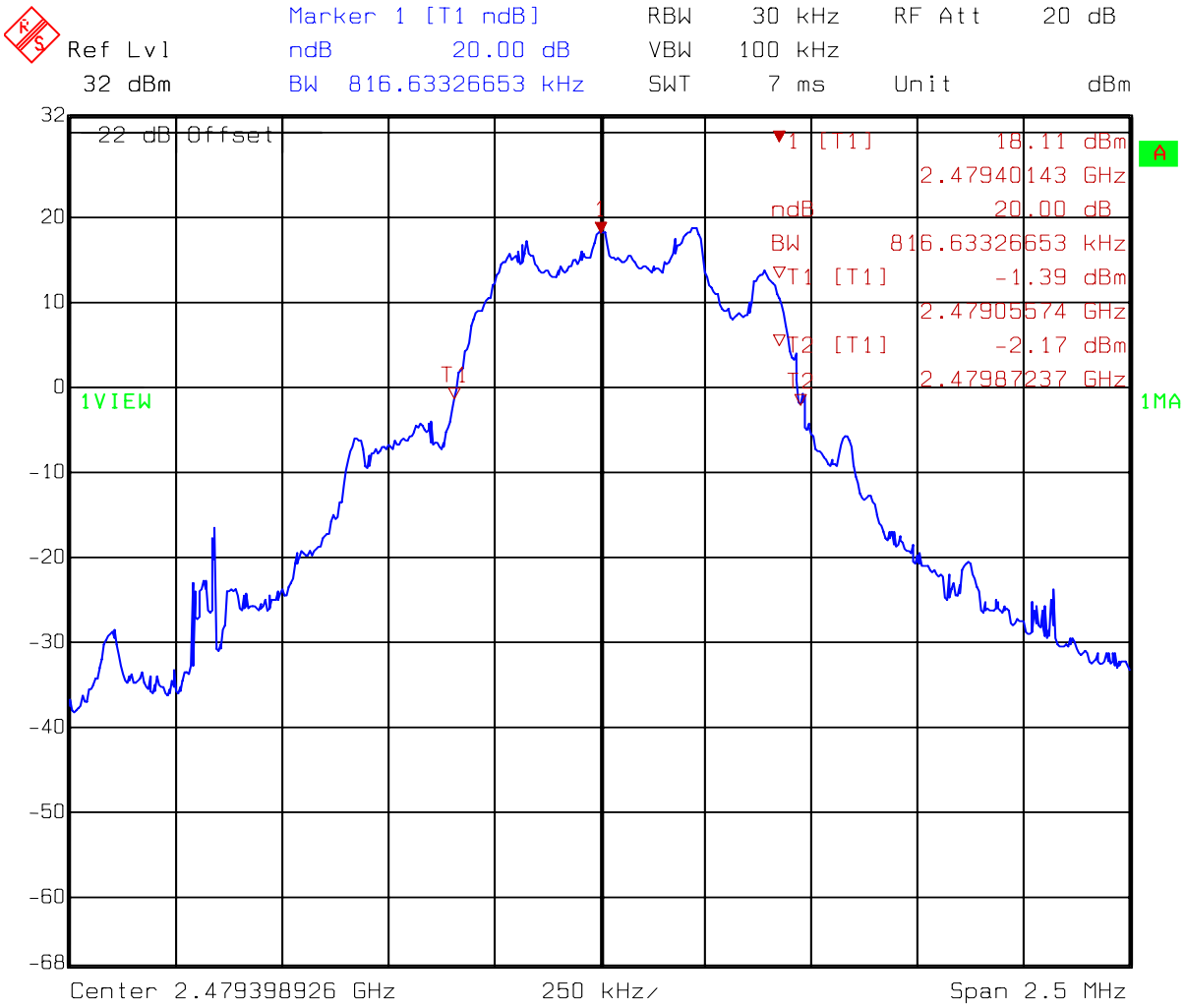
Title: 20dB Bandwith
Comment A: CH 12
Date: 21.NOV.2007 14:30:27

Test unit: Handset (ch55)



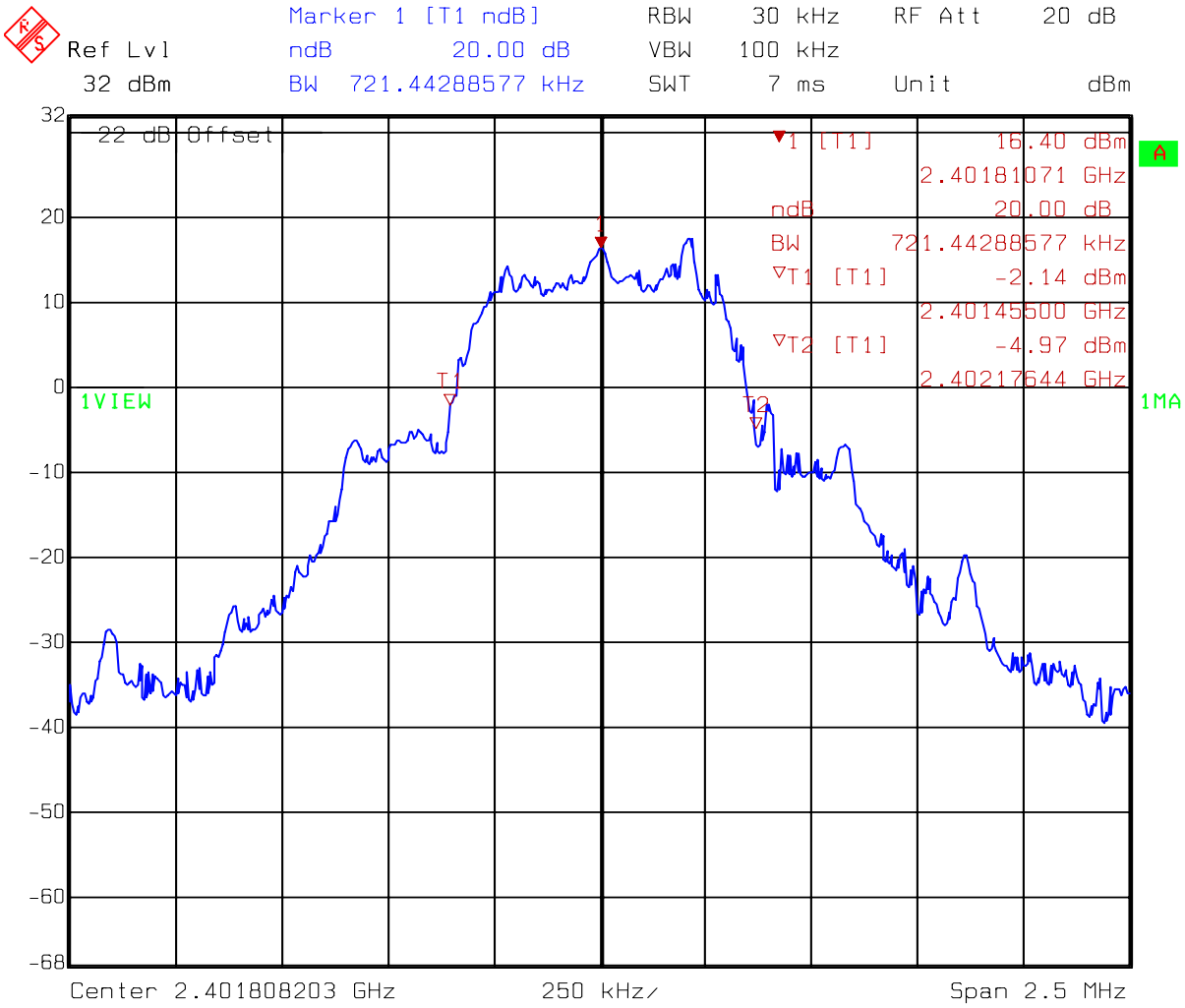
Title: 20dB Bandwith
Comment A: CH 55
Date: 21.NOV.2007 14:33:19

Test unit: Handset (ch99)



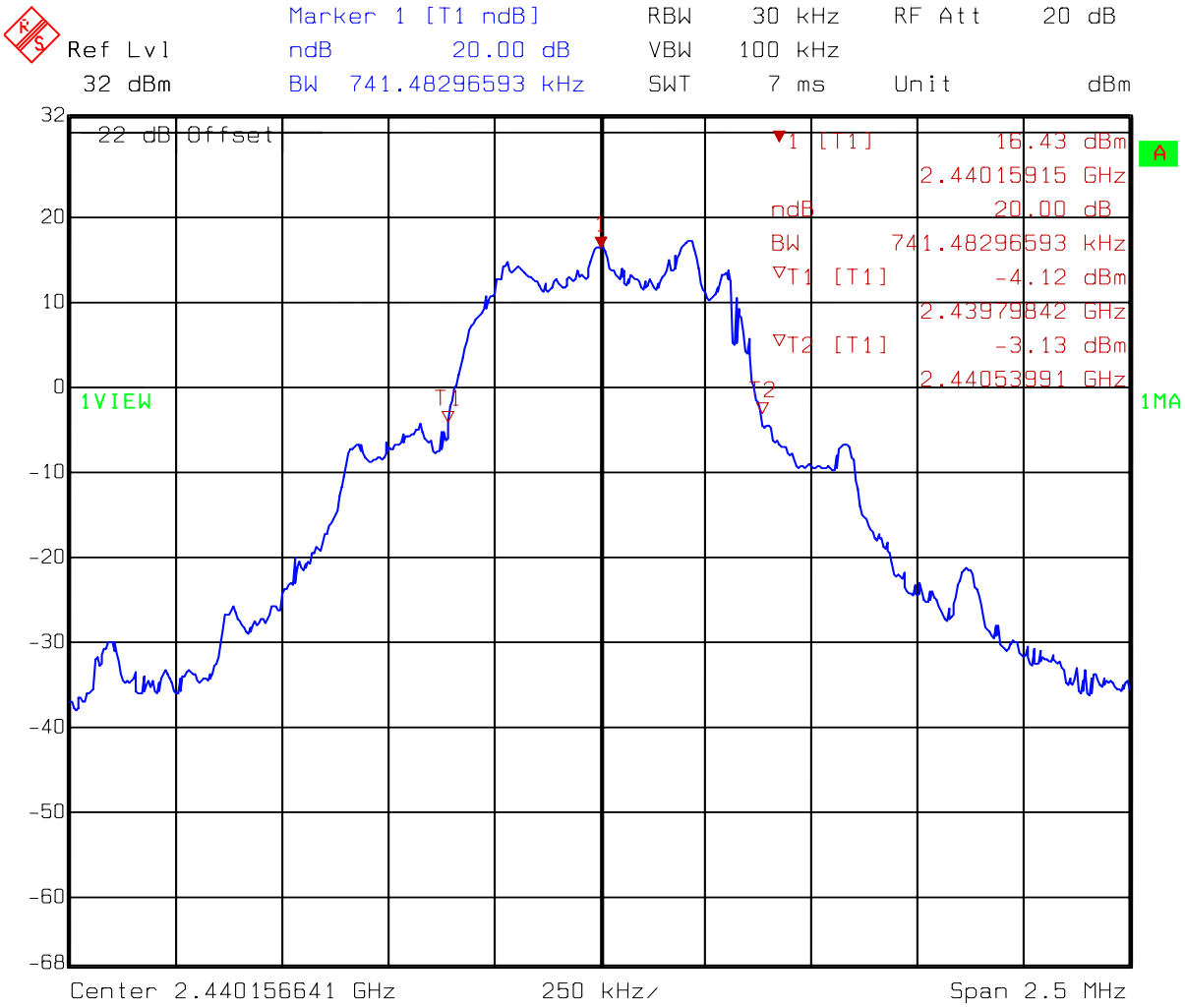
Title: 20dB Bandwith
Comment A: CH 99
Date: 21.NOV.2007 14:38:46

Test unit: Base (ch12)



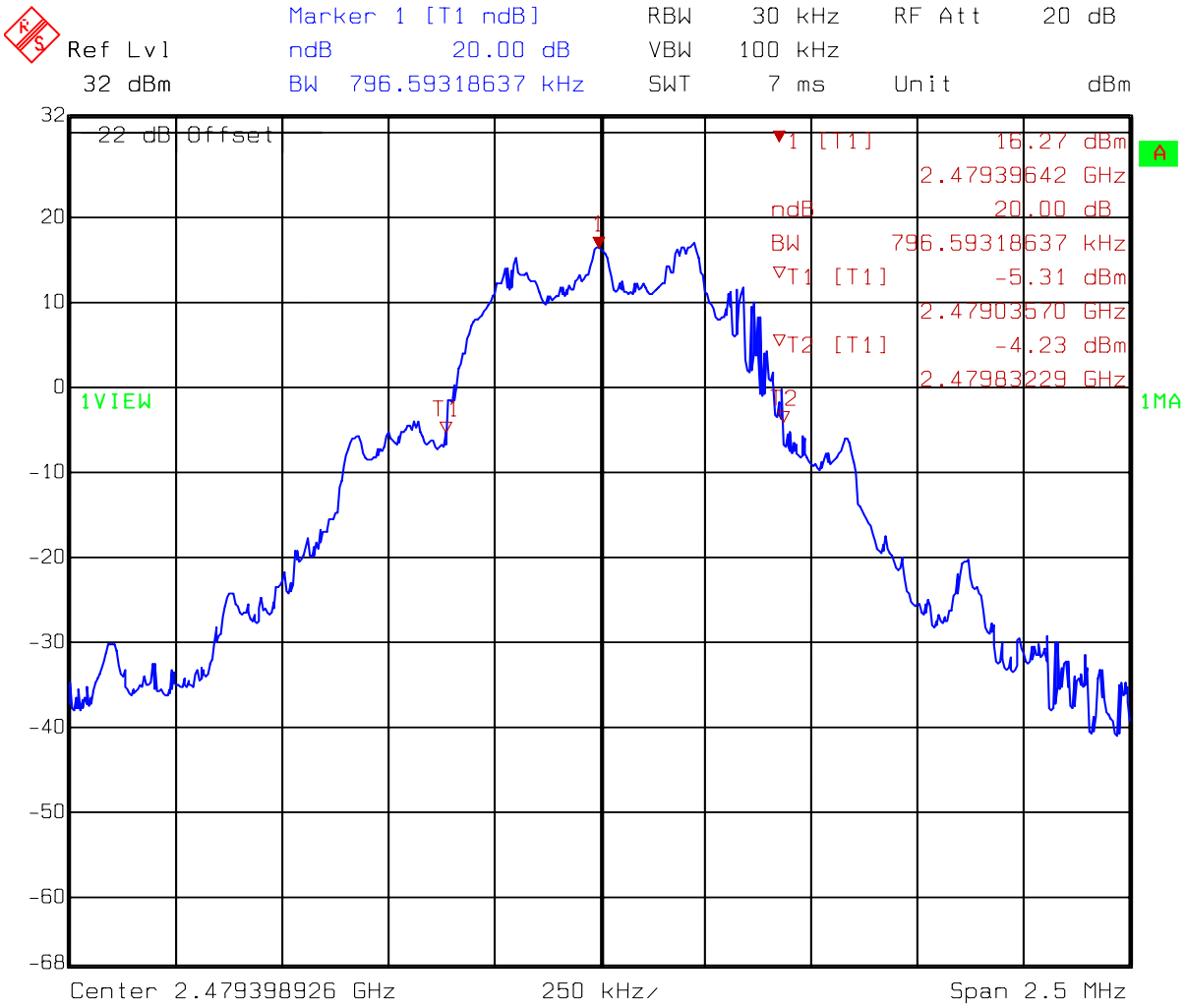
Title: 20dB Bandwidth
Comment A: CH 12
Date: 20.NOV.2007 15:31:59

Test unit: Base (ch55)



Title: 20dB Bandwidth
Comment A: CH 55
Date: 20.NOV.2007 15:47:50

Test unit: Base (ch99)



Title: 20dB Bandwidth
Comment A: CH 99
Date: 20.NOV.2007 15:52:34

4. Carrier Frequency Separation test

4.1 Operating environment

Temperature:	25	℃
Relative Humidity:	55	%
Atmospheric Pressure:	1023	hPa

4.2 Test setup & procedure

The carrier frequency separation per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at ≧1％of the span, the video bandwidth≧RBW, and the SPAN was wide enough to capture the peaks of two adjacent channels. The carrier frequency separation result is in the following Table.

4.3 Measured data of Carrier Frequency Separation test result

Test unit: Handset

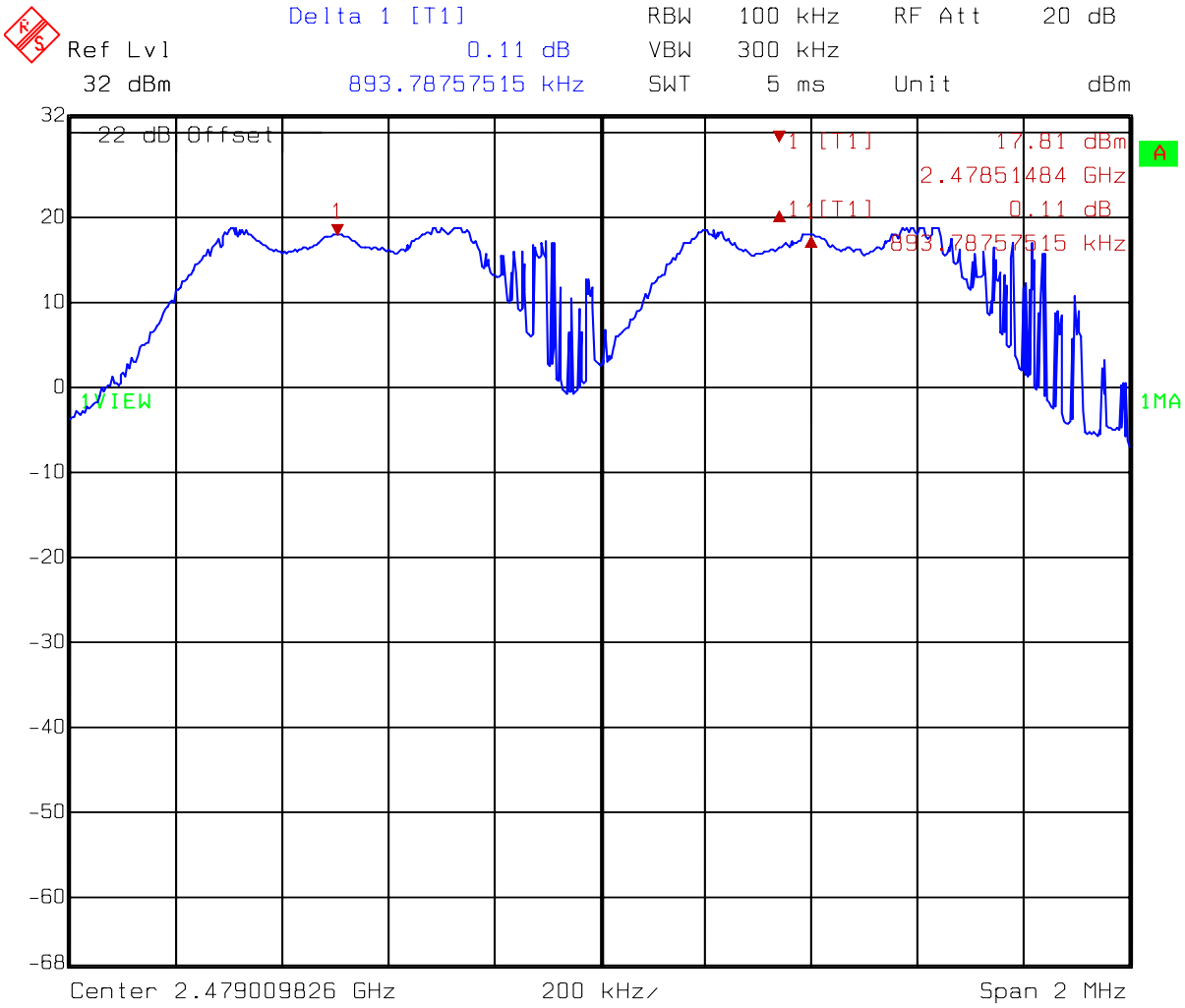
Channel	Frequency (MHz)	Measurement Frequency separation (kHz)
98	2479	893.788
99	2480	

Test unit: Base

Channel	Frequency (MHz)	Measurement Frequency separation (kHz)
98	2479	890.675
99	2480	

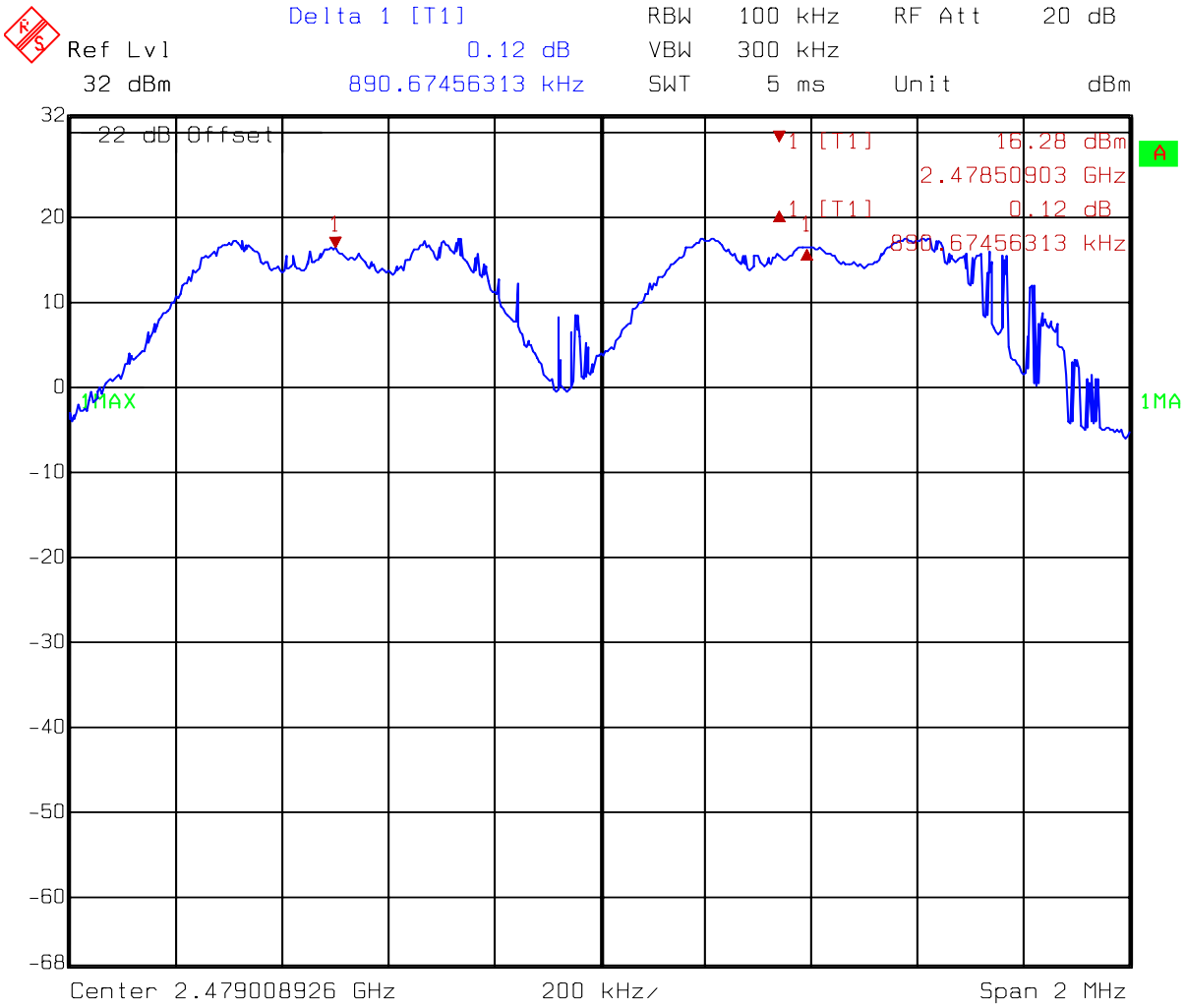
Please see the plot below.

Test unit: Handset



Title: Carrier freq. separation
Comment A: ch98 to ch99
Date: 21.NOV.2007 14:49:06

Test unit: Base



Title: Carrier freq. separation
Comment A: CH 98 to CH99
Date: 20.NOV.2007 16:07:17

5. Number of hopping frequencies test

5.1 Operating environment

Temperature:	25	℃
Relative Humidity:	55	%
Atmospheric Pressure:	1023	hPa

5.2 Test setup & procedure

The number of hopping frequencies per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at ≧1 % of the span, the video bandwidth≧RBW, and the SPAN was the frequency band of operation. The carrier frequency separation result is in the following Table.

5.3 Measured data of number of hopping frequencies test result

Test unit: Handset

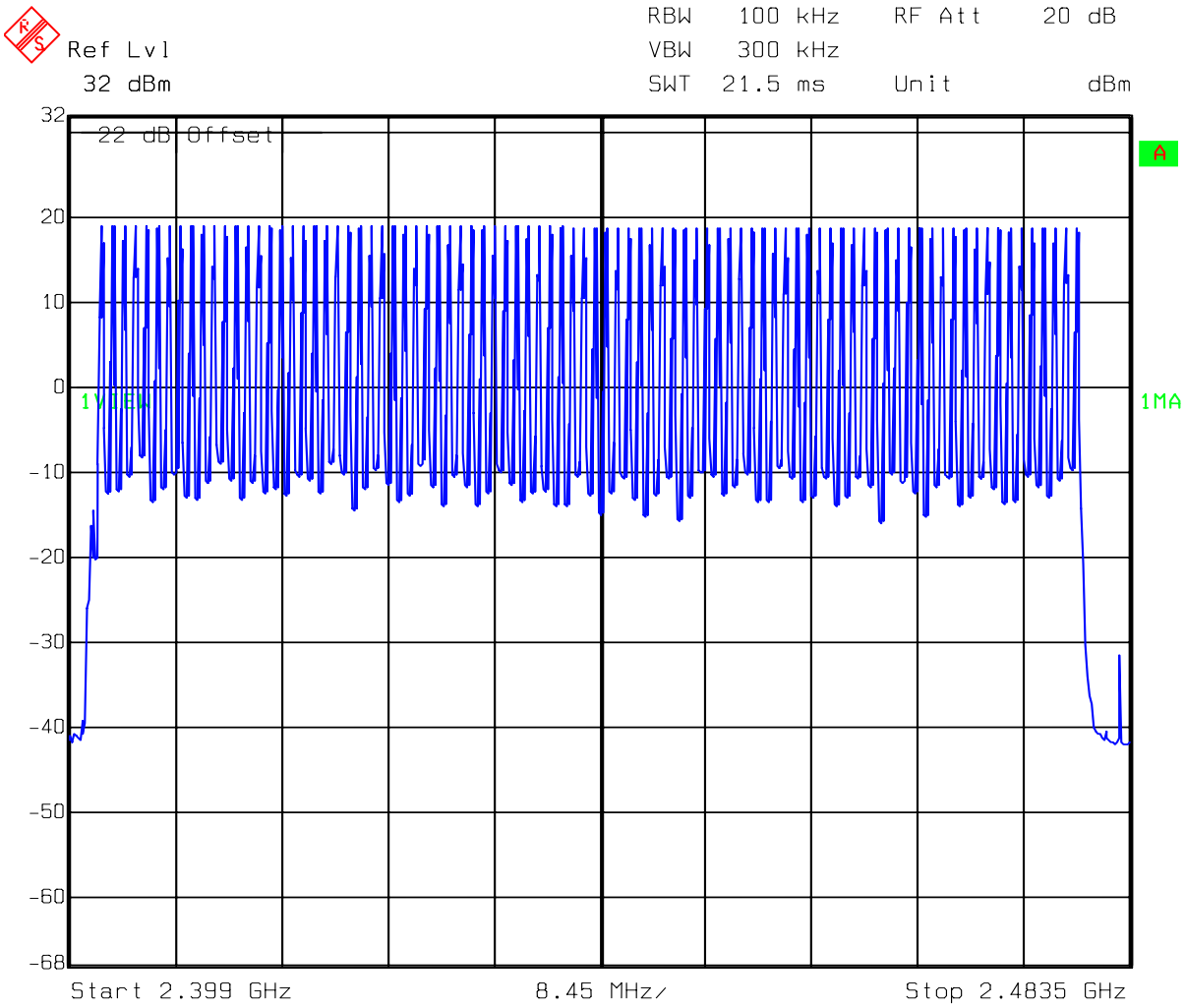
Frequency Range (MHz)	Total hopping channels
2400 ~ 2483.5	88

Test unit: Base

Frequency Range (MHz)	Total hopping channels
2400 ~ 2483.5	88

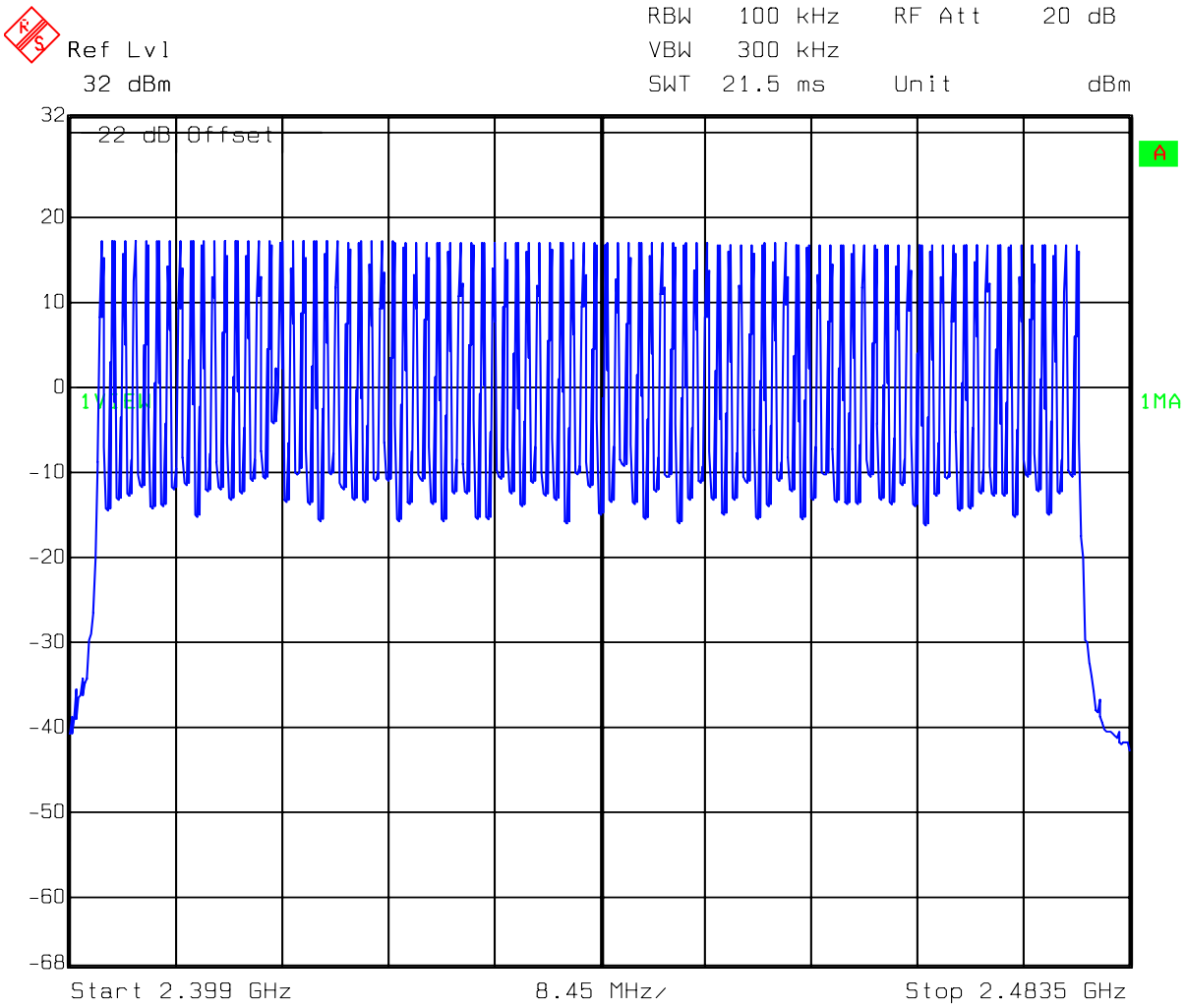
Please see the plot below.

Test unit: Handset



Title: Number of hopping freq.
Date: 21.NOV.2007 14:45:30

Test unit: Base



Title: Number of hopping freq.

Date: 20.NOV.2007 16:16:47

6. Time of Occupancy (dwell time) test

6.1 Operating environment

Temperature:	25	℃
Relative Humidity:	55	%
Atmospheric Pressure:	1023	hPa

6.2 Test setup & procedure

The time of occupancy (dwell time) per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 1MHz, the video bandwidth≧RBW, and the zero span function of spectrum analyzer was enable. The EUT has its hopping function enable.

The system has 88 hopping frequencies. There are 79 pukes within the 35.2 second period.

Time of occupancy (dwell time) for Handset

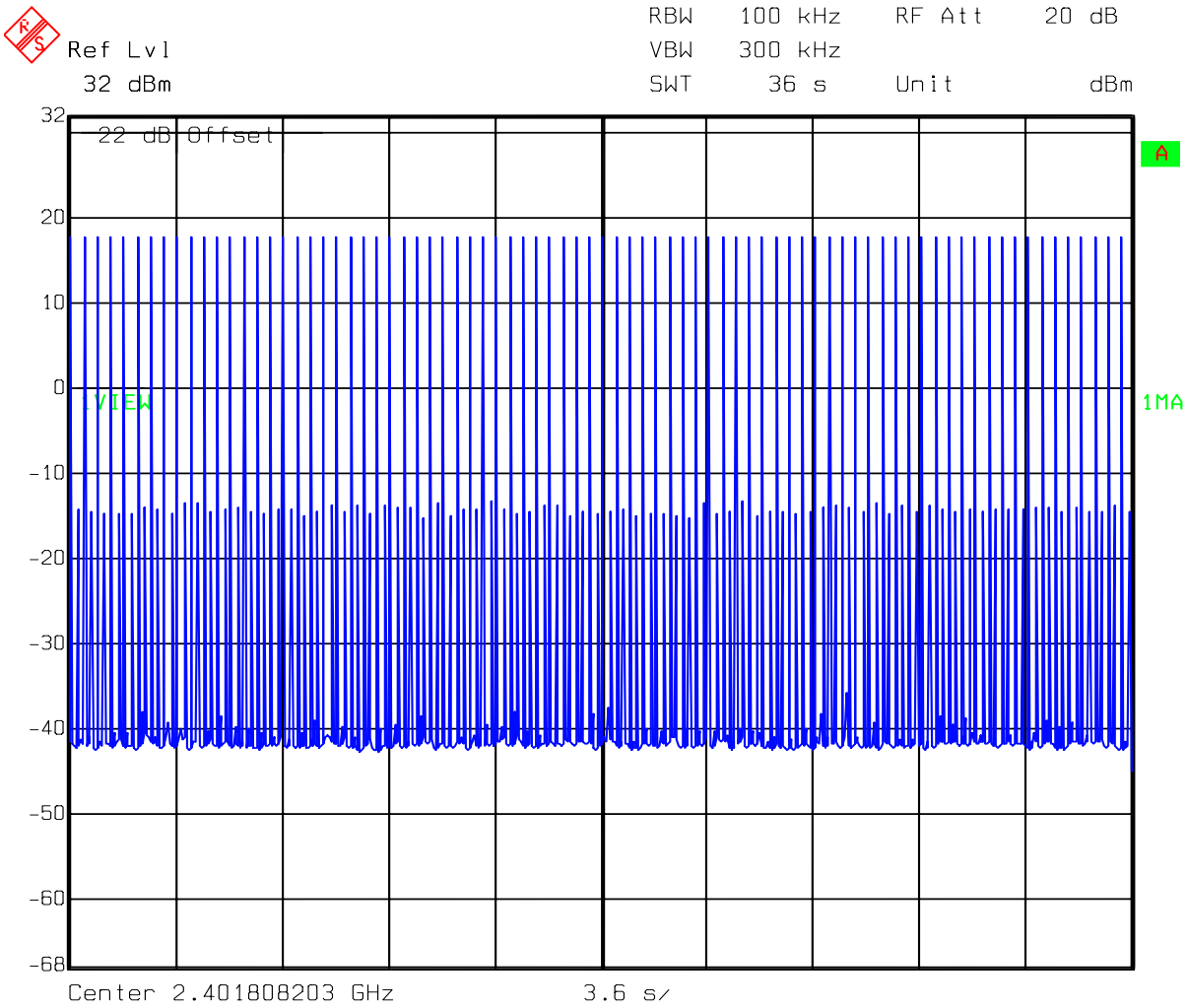
Dwell time = 1.060521ms *79 slot= 83.781159ms ＜ 0.4s

Time of occupancy (dwell time) for Base

Dwell time = 1.066132 ms * 79slot
= 84.224428 ms ＜ 0.4s

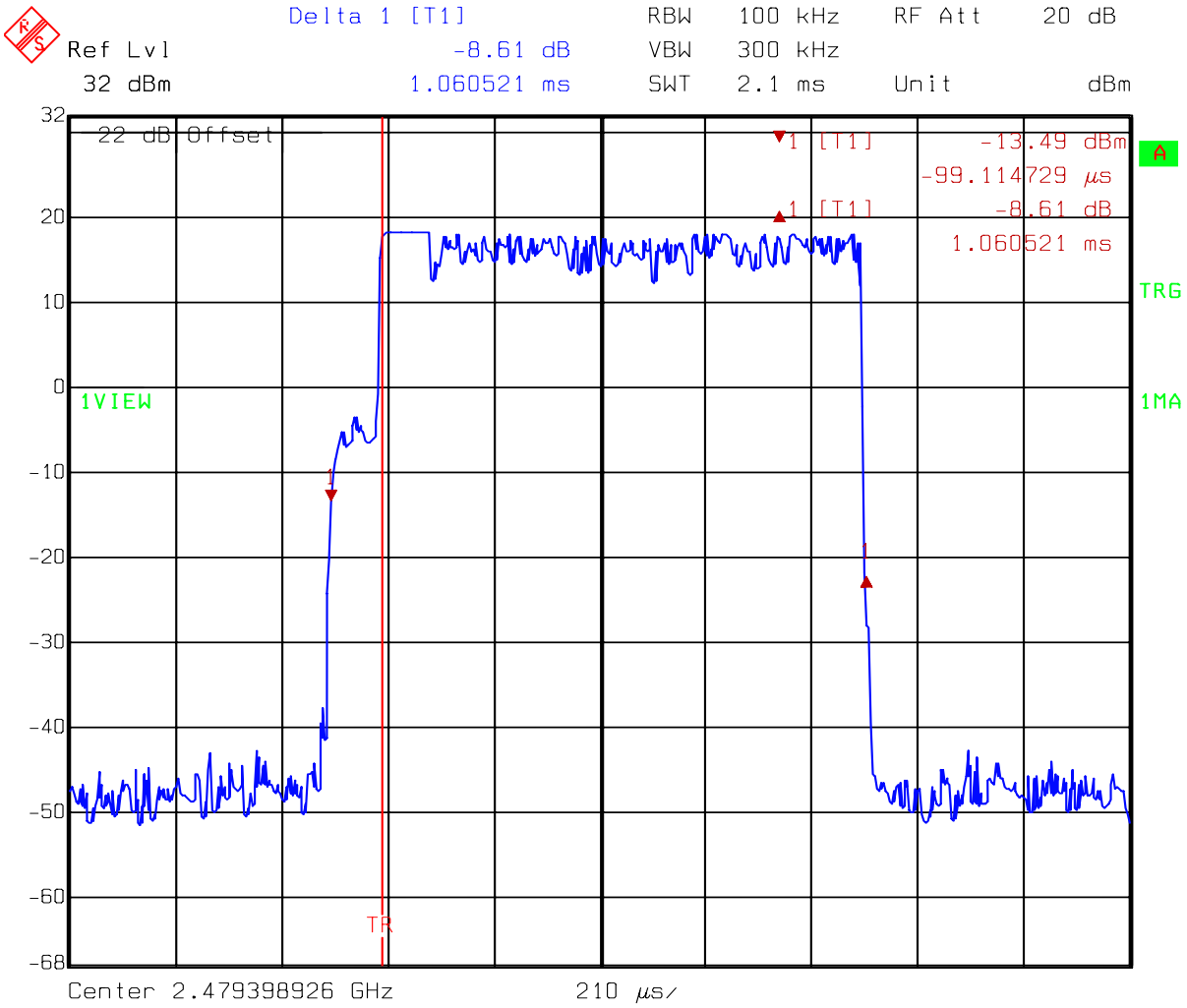
Please see the plot below.

Test unit: Handset



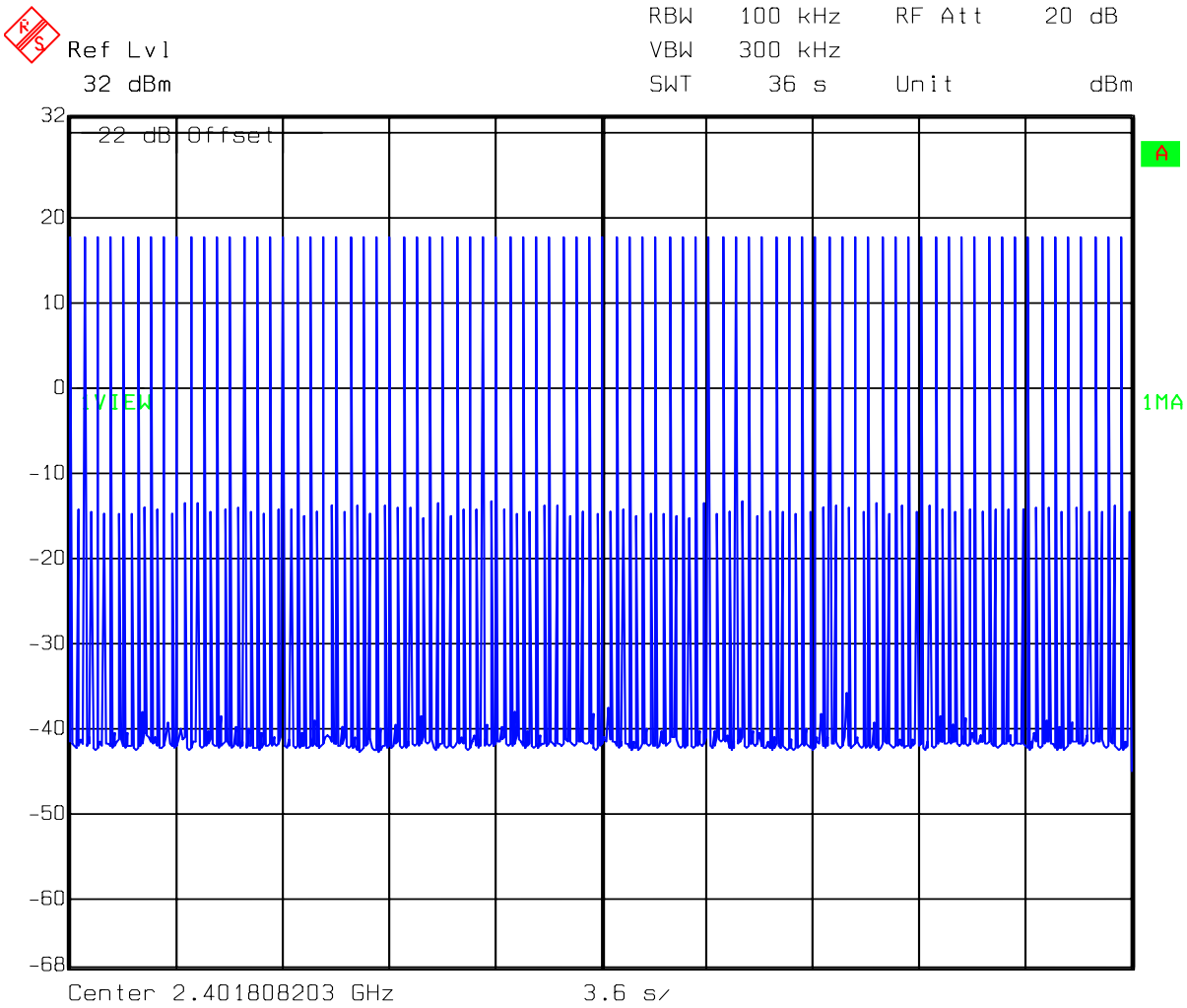
Title: Dtime 35.2s
Date: 20.NOV.2007 16:49:11

Test unit: Handset



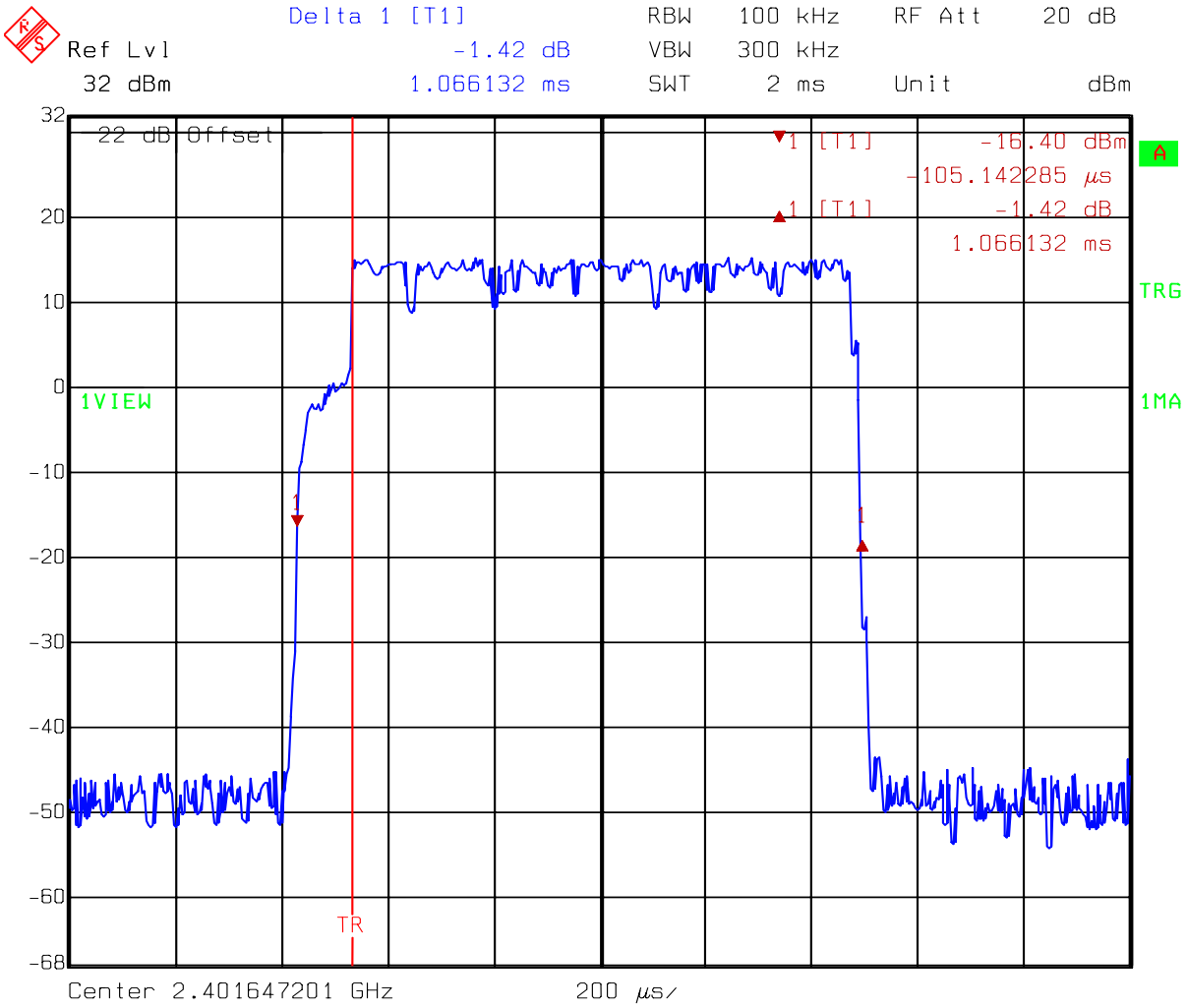
Title: 1 slot
Date: 21.NOV.2007 14:52:30

Test unit: Base



Title: Dtime 35.2s
Date: 20.NOV.2007 16:49:11

Test unit: Base



Title: 1 slot
Date: 20.NOV.2007 16:54:42

7. Maximum Output Power test

7.1 Operating environment

Temperature: 25 ℃
Relative Humidity: 50 %
Atmospheric Pressure: 1022 hPa

7.2 Test setup & procedure

The power output per FCC §15.247(b) was measured on the EUT using a 50 ohm SMA cable connected to peak power meter via power sensor. Power was read directly and cable loss correction (2 dB) was added to the reading to obtain power at the EUT antenna terminals. The test was performed at 3 channels (lowest, middle and highest channel).

7.3 Measured data of Maximum Output Power test results

Test unit: Handset

Channel	Freq. (MHz)	C.L. (dB)	Reading (dBm)	Conducted Peak Output Power		Limit (W)
				(dBm)	(mW)	
12 (lowest)	2402	2	17.12	19.12	81.66	1
55 (middle)	2442	2	16.92	18.92	77.98	1
99 (highest)	2480	2	16.95	18.95	78.52	1

Test unit: Base

Channel	Freq. (MHz)	C.L. (dB)	Reading (dBm)	Conducted Peak Output Power		Limit (W)
				(dBm)	(mW)	
12 (lowest)	2402	2	15.30	17.30	53.70	1
55 (middle)	2442	2	15.05	17.05	50.70	1
99 (highest)	2480	2	15.16	17.16	52.00	1

Remark:
Conducted Peak Output Power = Reading + C.L.

8. RF Antenna Conducted Spurious test

8.1 Operating environment

Temperature:	25	℃
Relative Humidity:	58	%

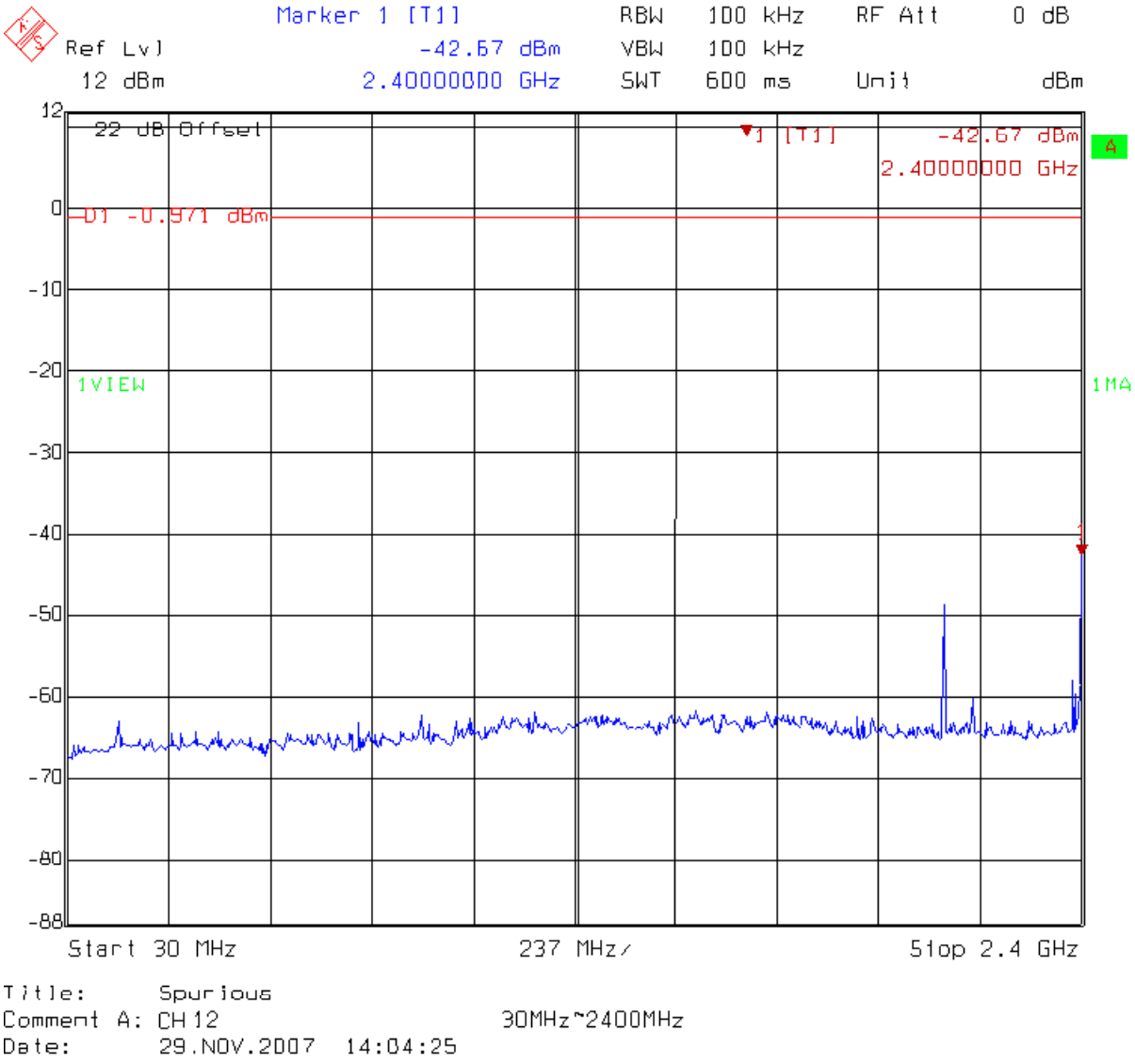
8.2 Test setup & procedure

The measurements were performed from 30MHz to 25GHz RF antenna conducted per FCC 15.247 (c) was measured from the EUT antenna port using a 50ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz.
Harmonics and spurious noise must be at least 20dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. The table below is the results from the highest emission for each channel within the authorized band. This table was used to determine the spurious limits for each channel.

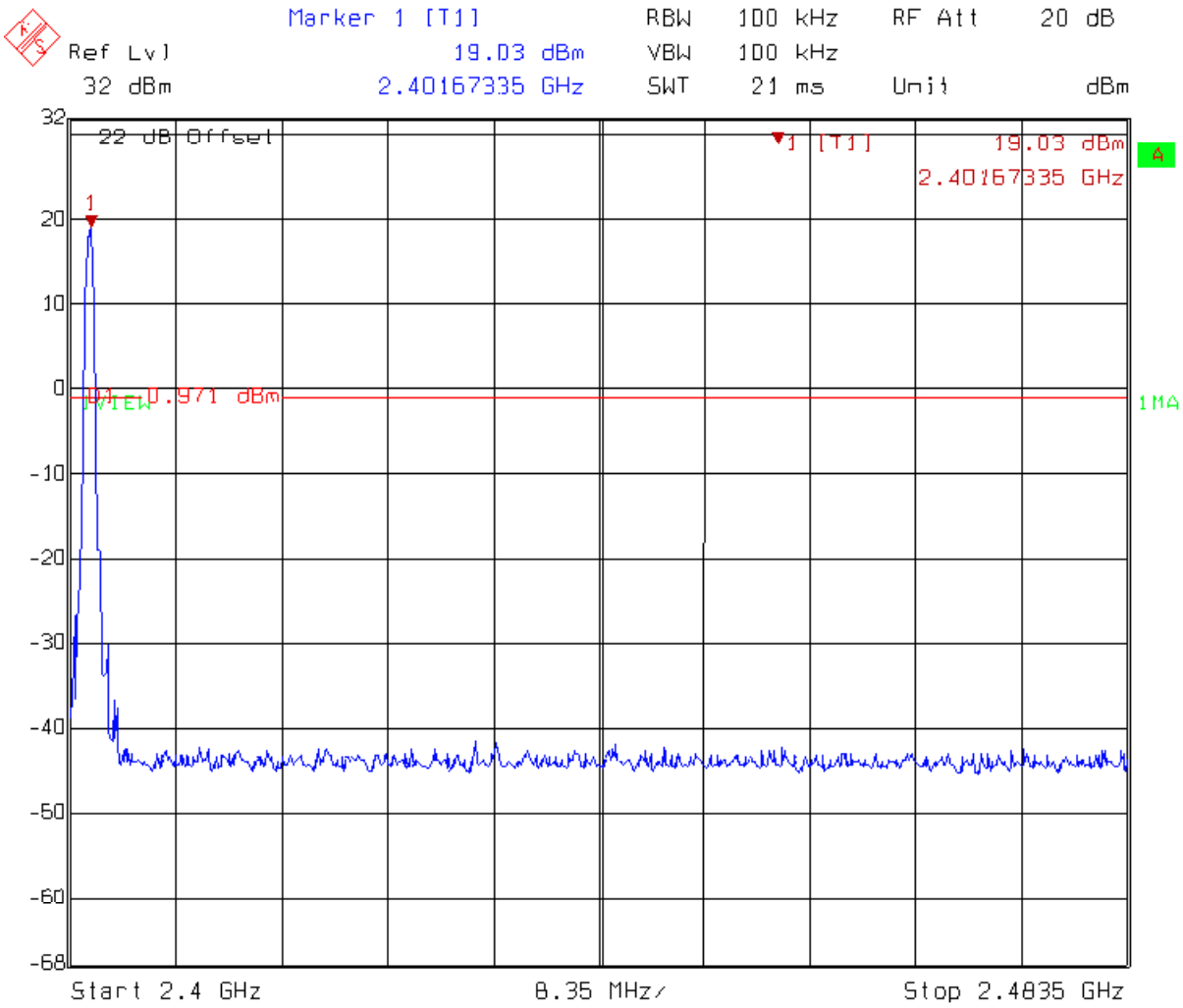
8.3 Measured data of the highest RF Antenna Conducted Spurious test result

The test results please see the plot below.

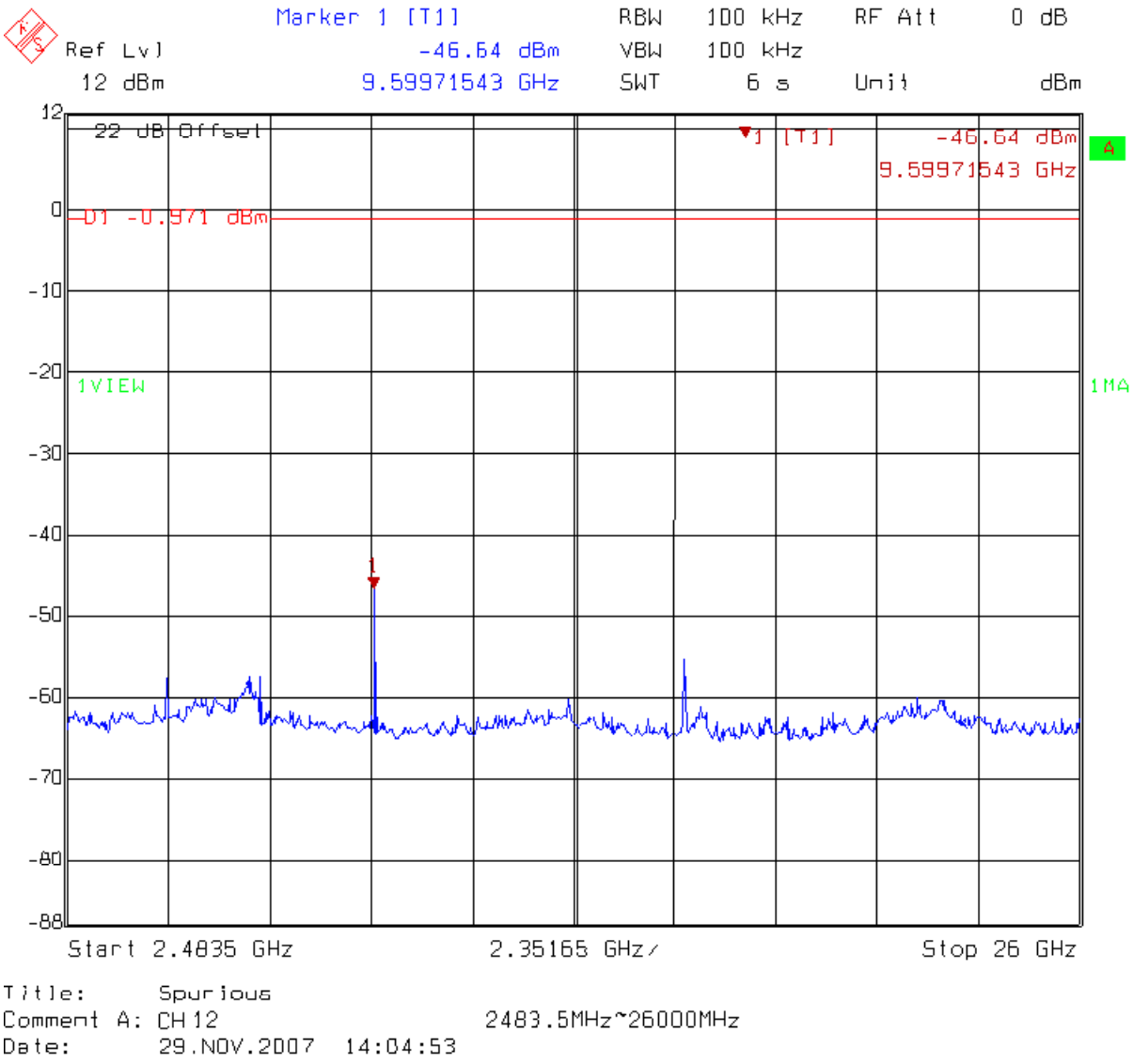
Test unit: Handset (ch12)



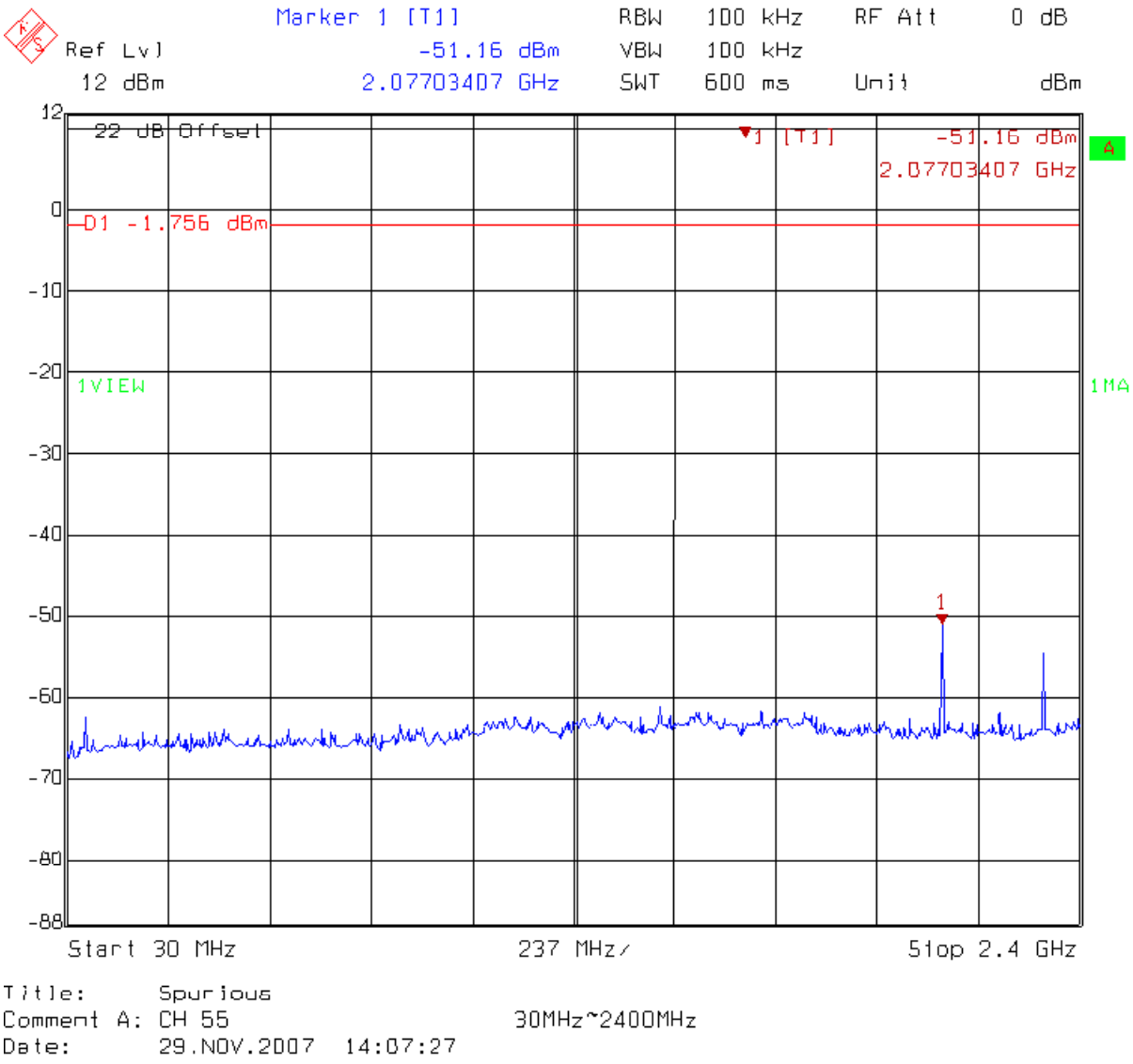
Test unit: Handset (ch12)



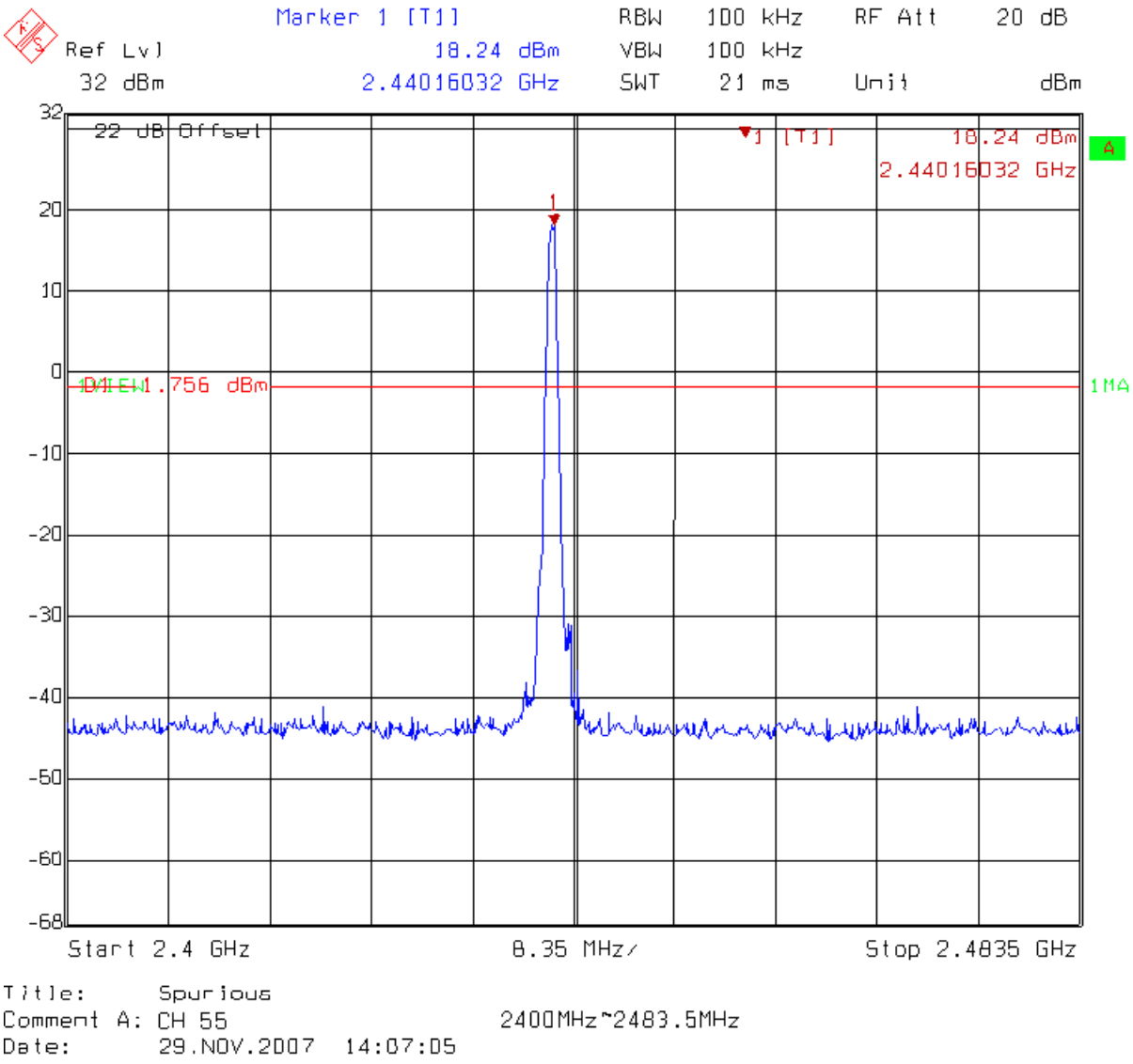
Test unit: Handset (ch12)



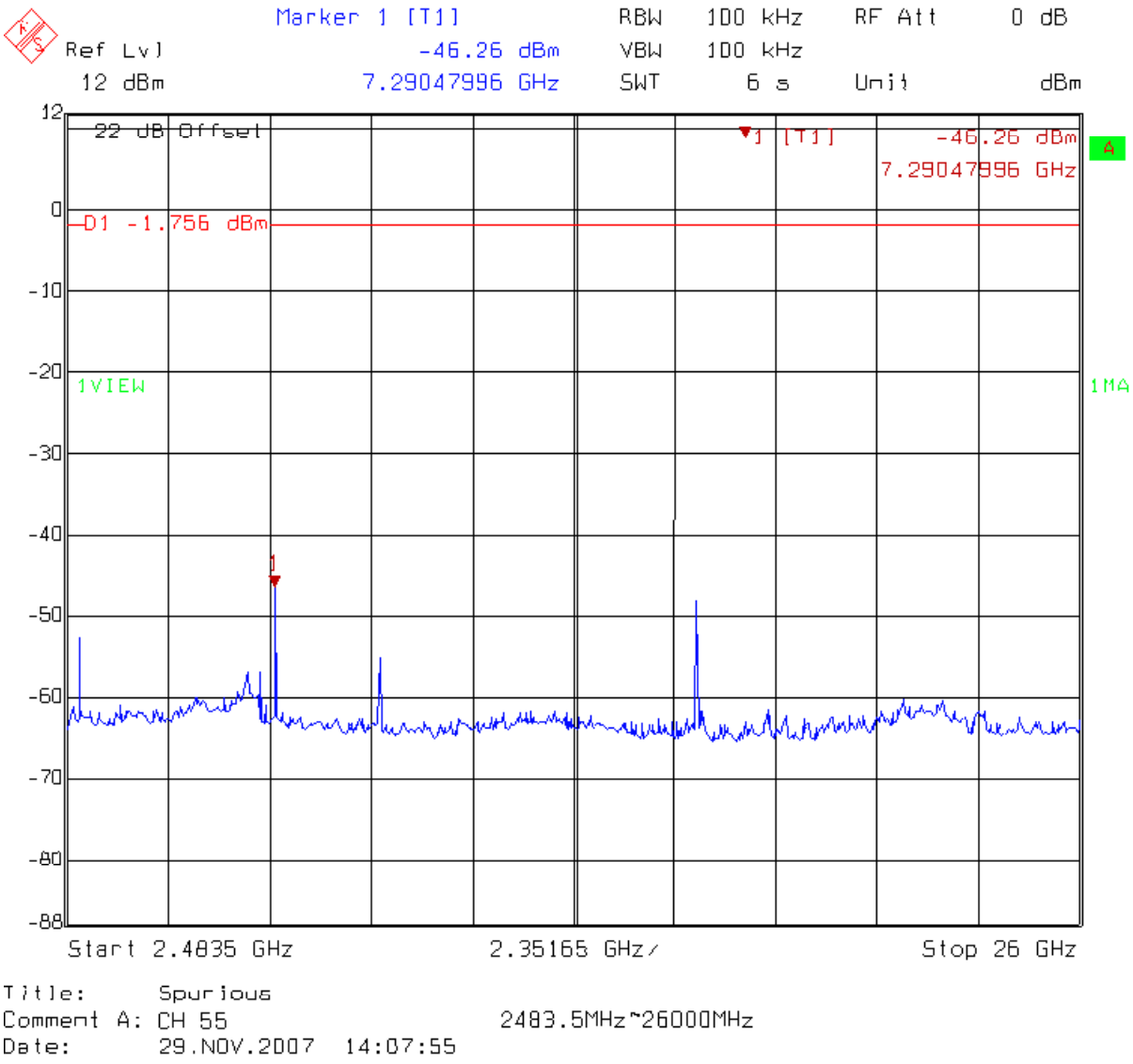
Test unit: Handset (ch55)



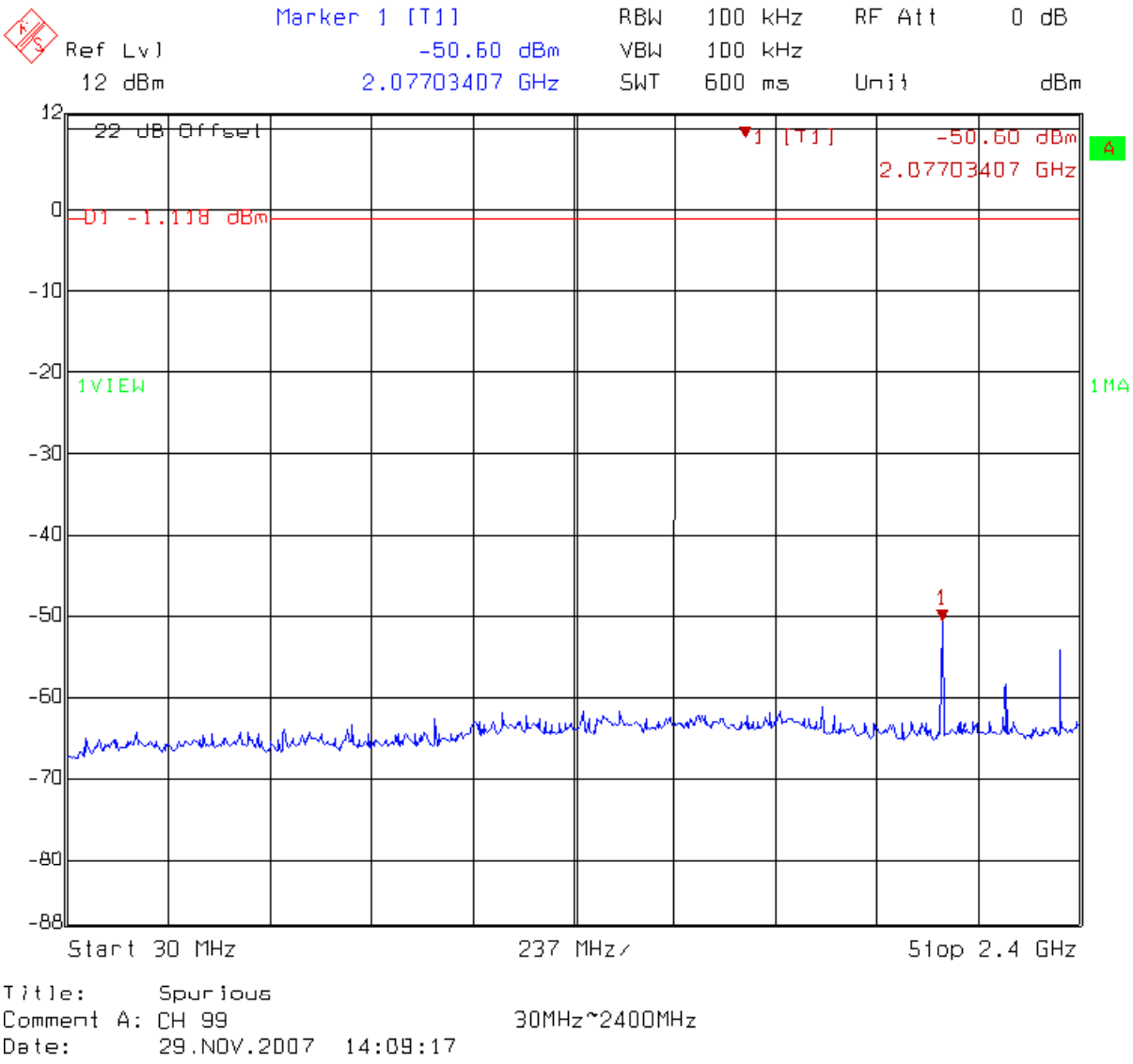
Test unit: Handset (ch55)



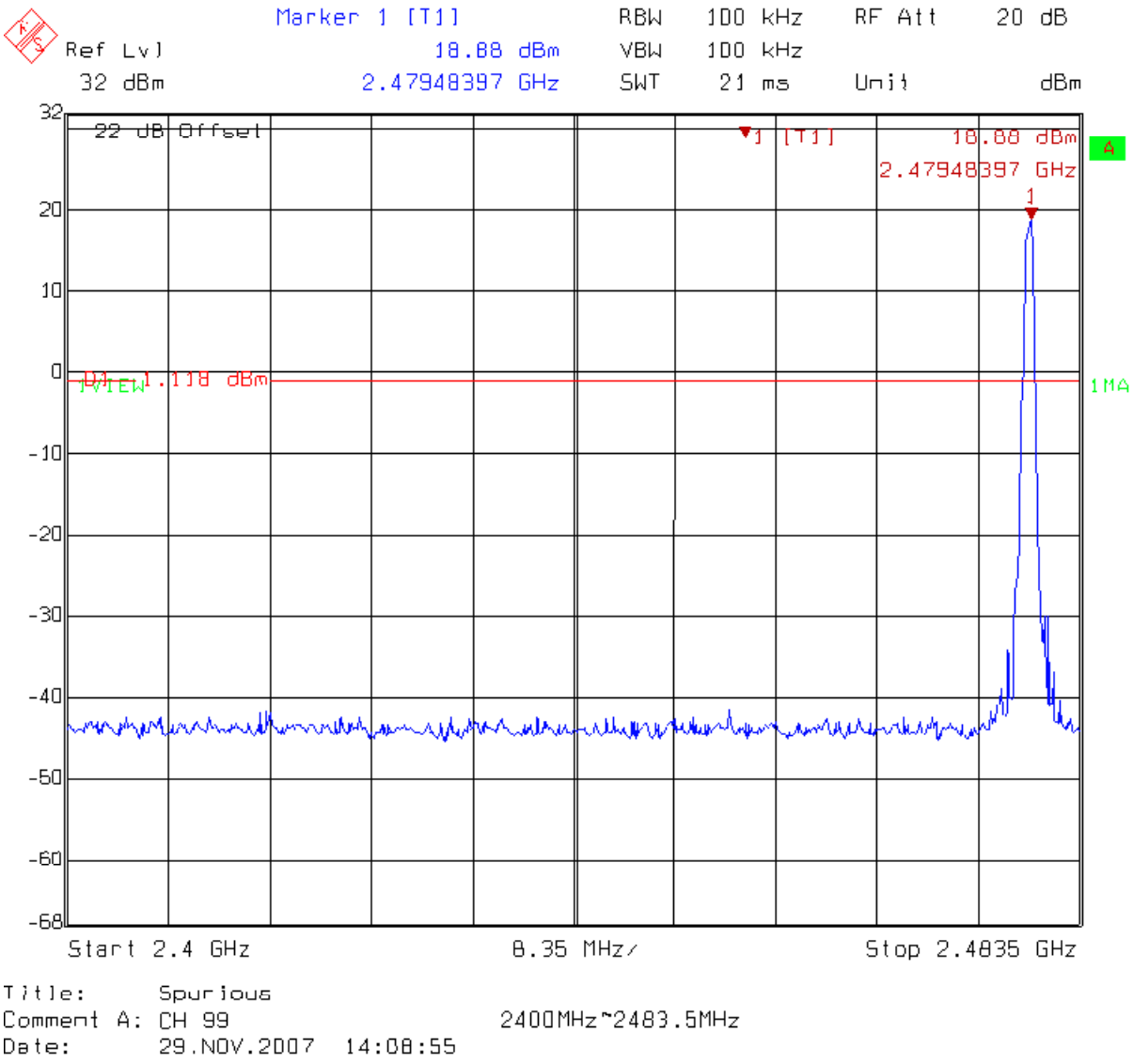
Test unit: Handset (ch55)



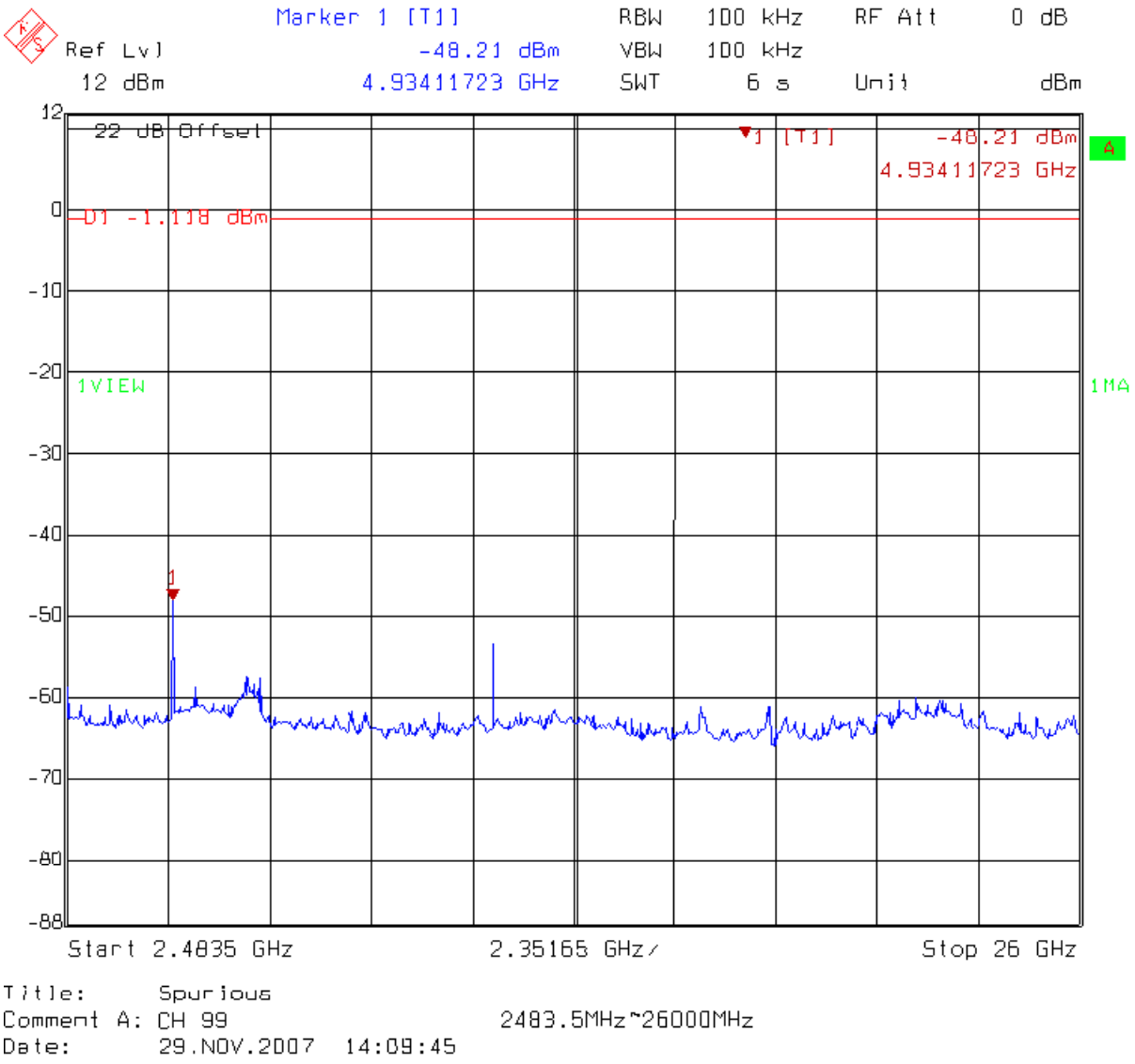
Test unit: Handset (ch99)



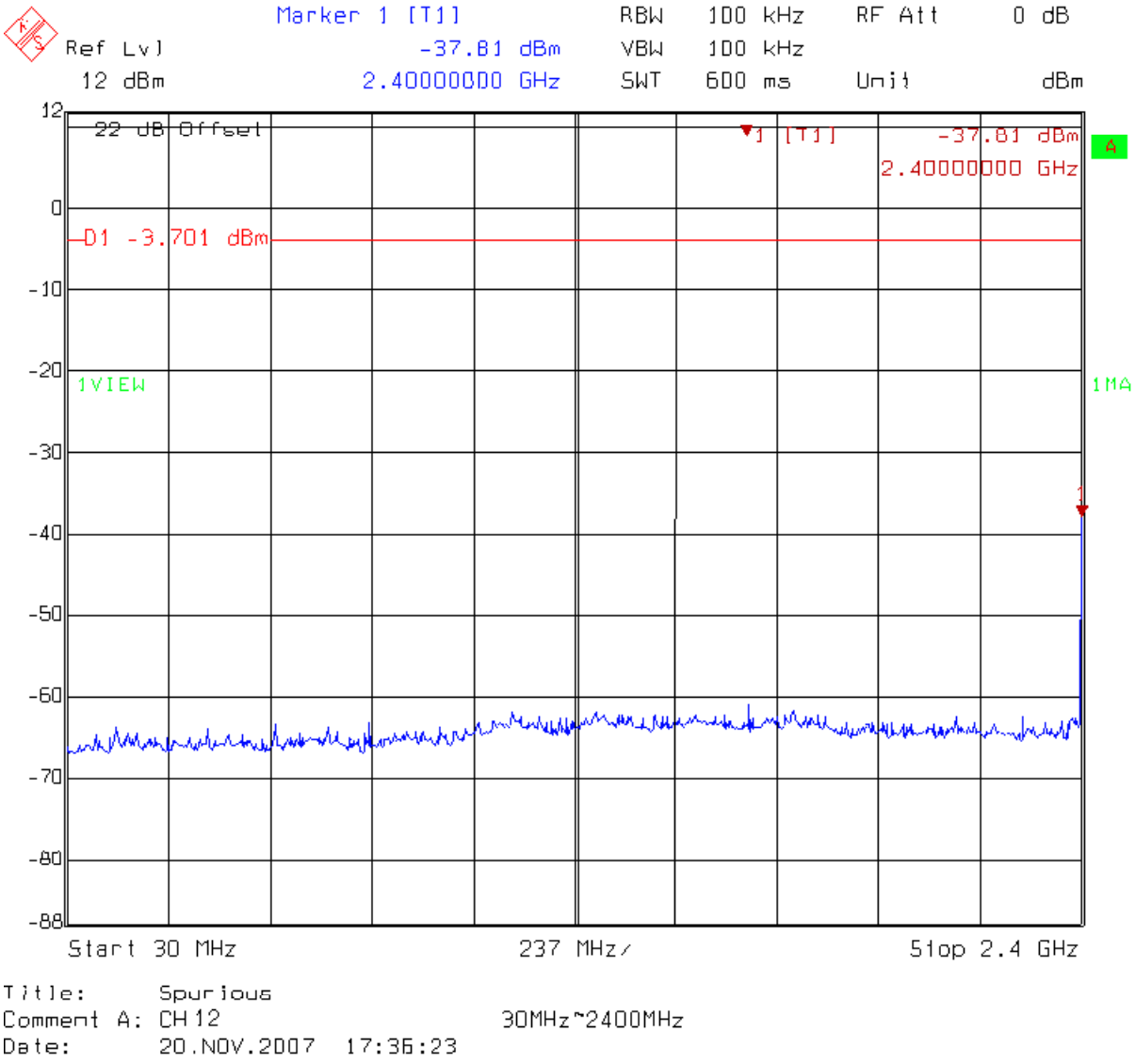
Test unit: Handset (ch99)



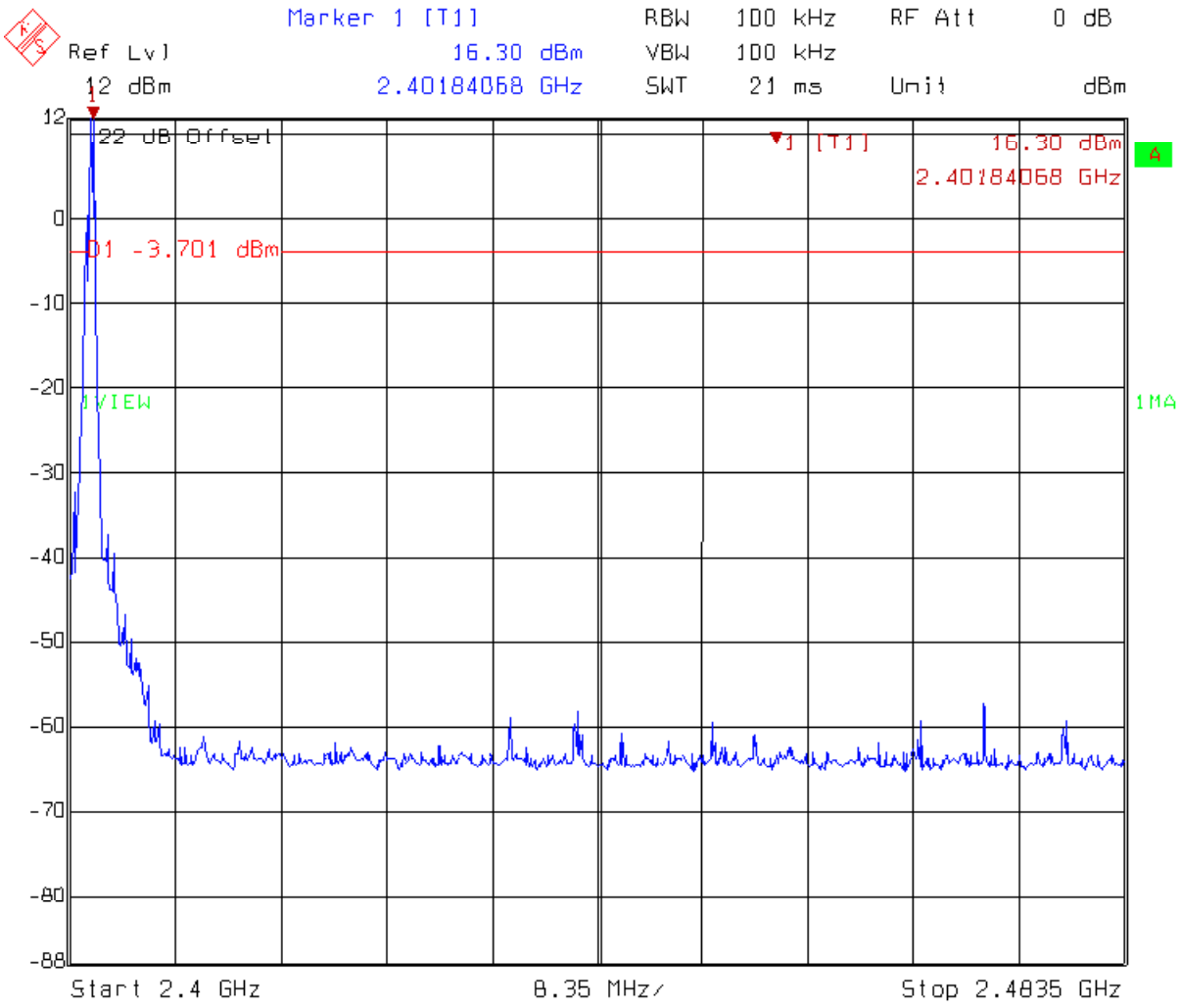
Test unit: Handset (ch99)



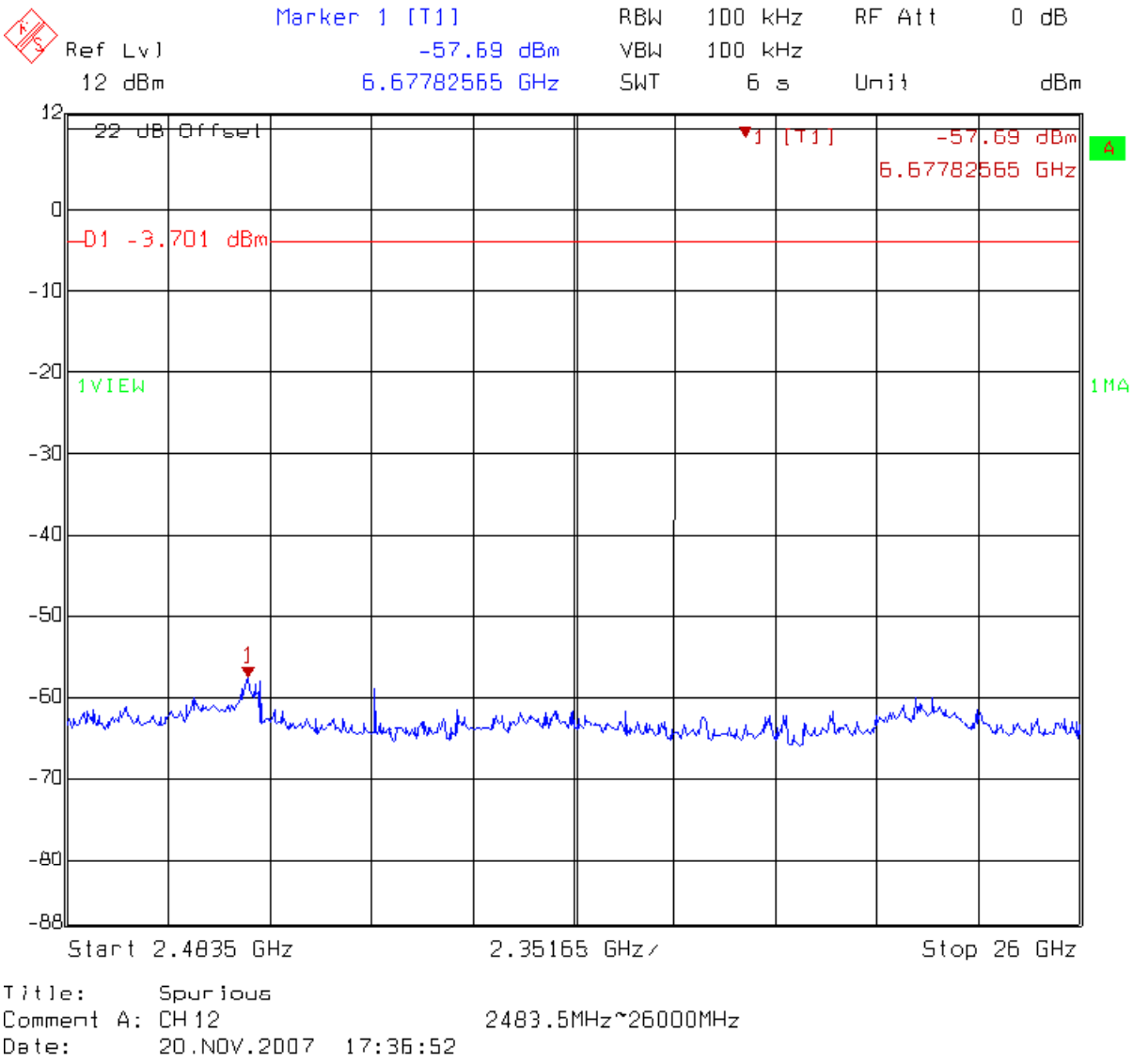
Test unit: Base (ch12)



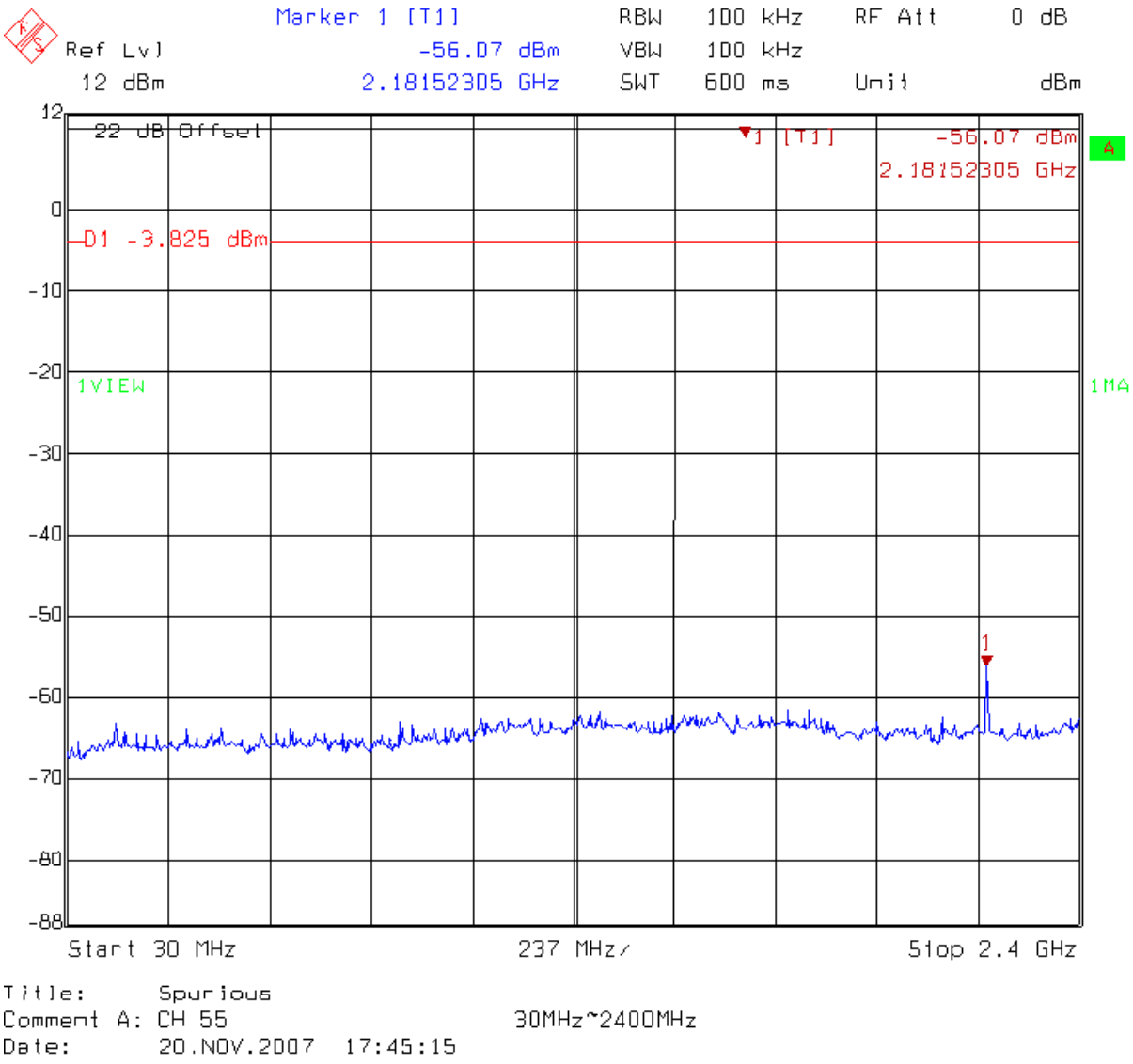
Test unit: Base (ch12)



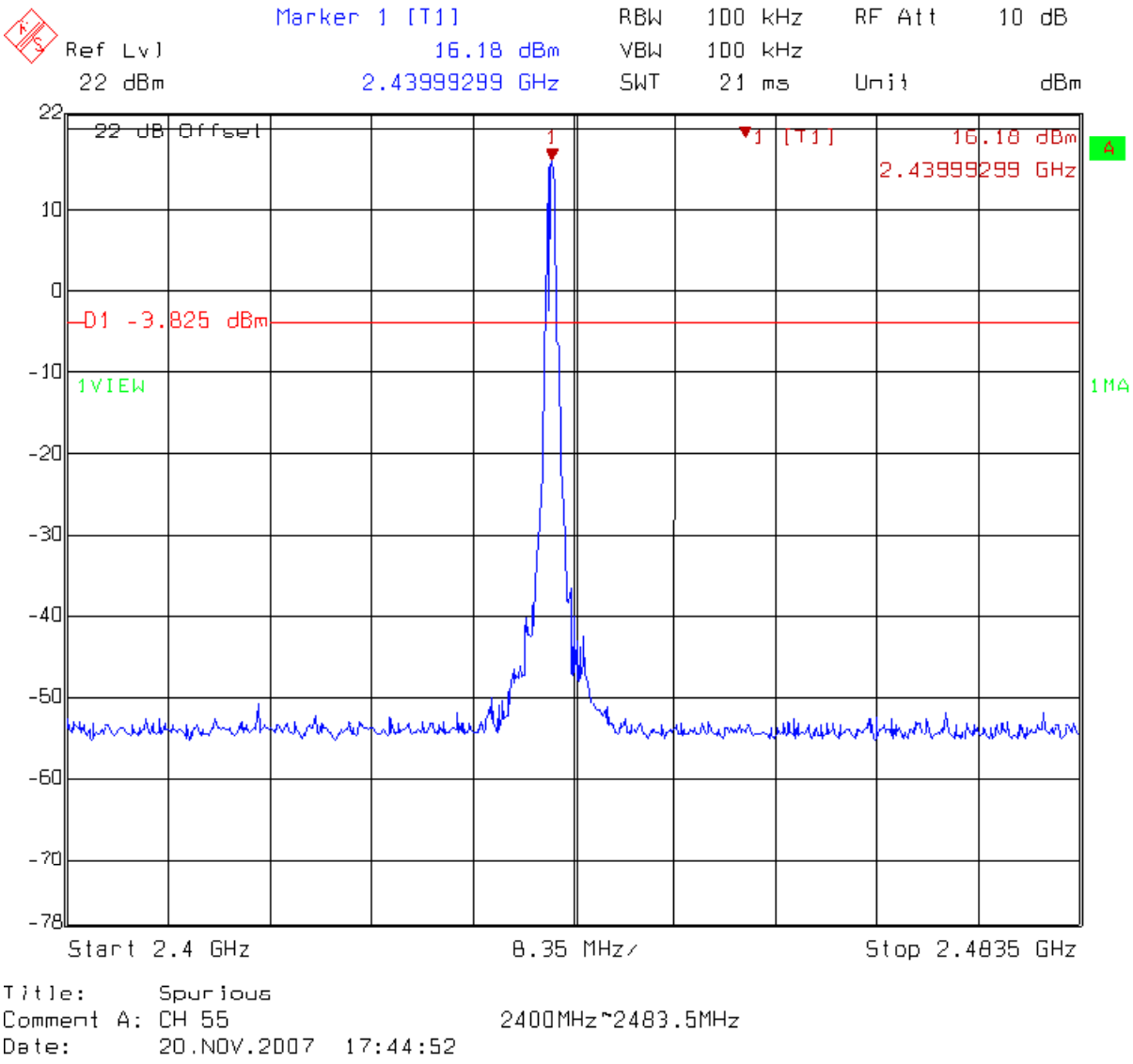
Test unit: Base (ch12)



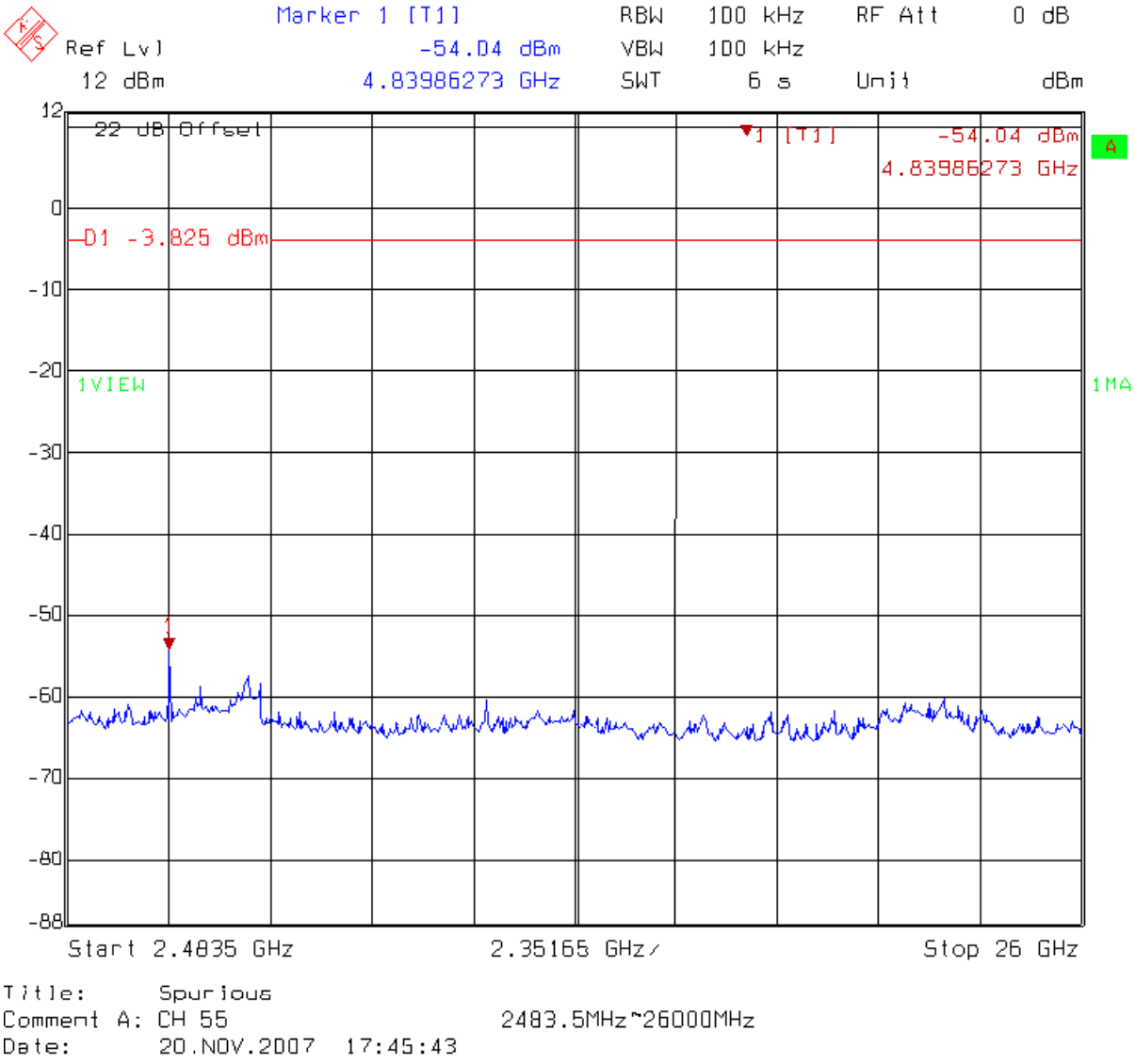
Test unit: Base (ch55)



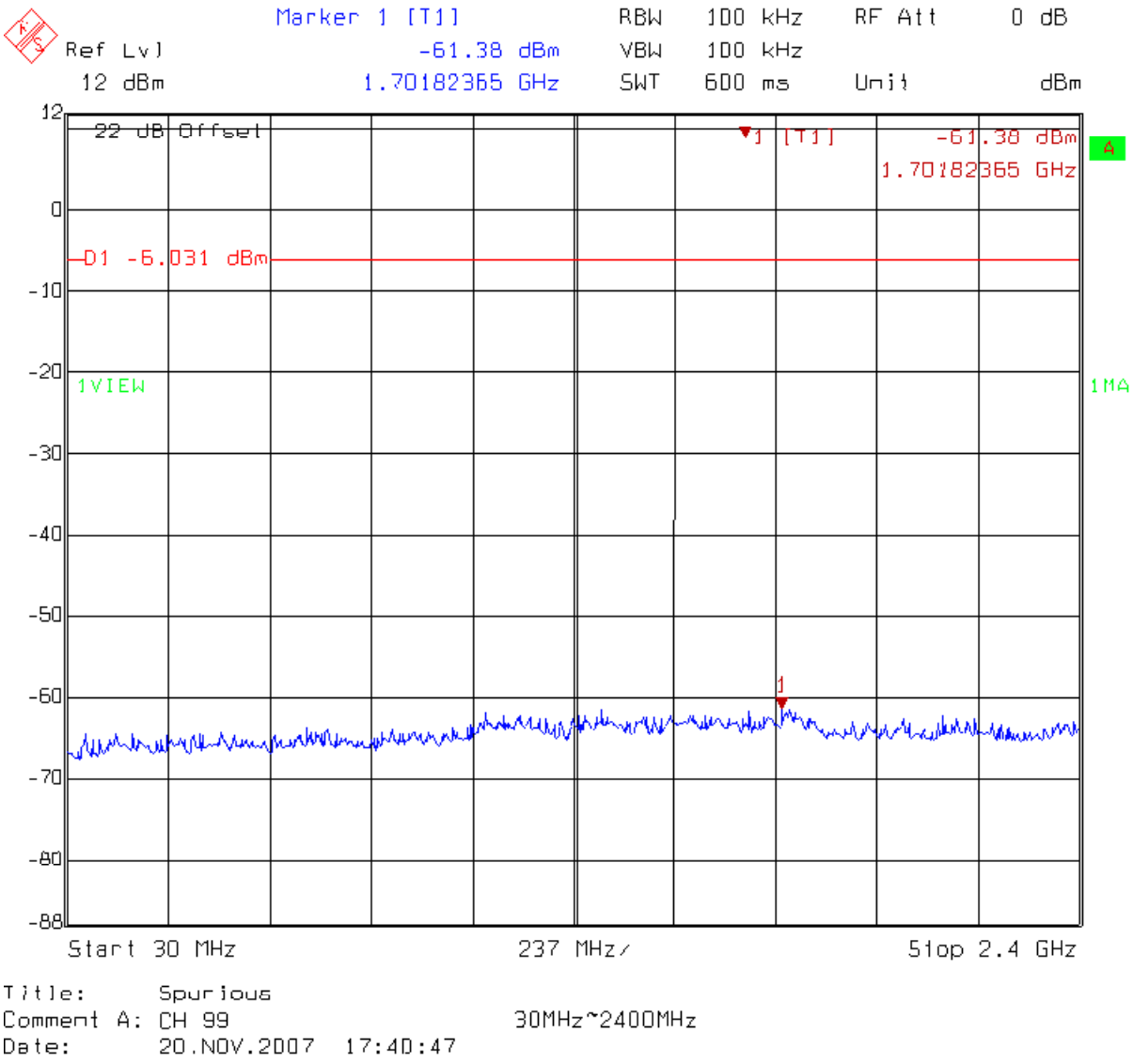
Test unit: Base (ch55)



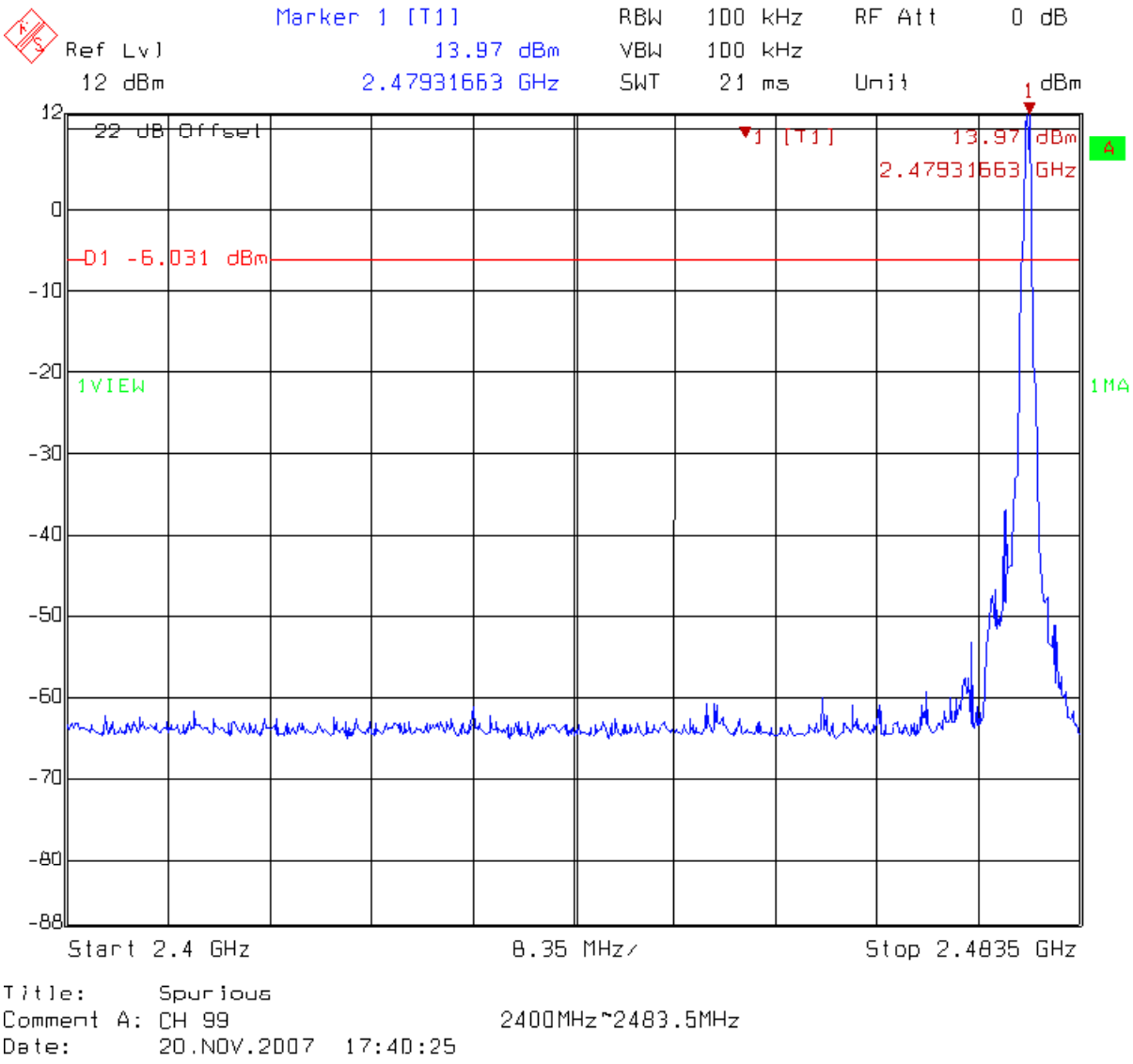
Test unit: Base (ch55)



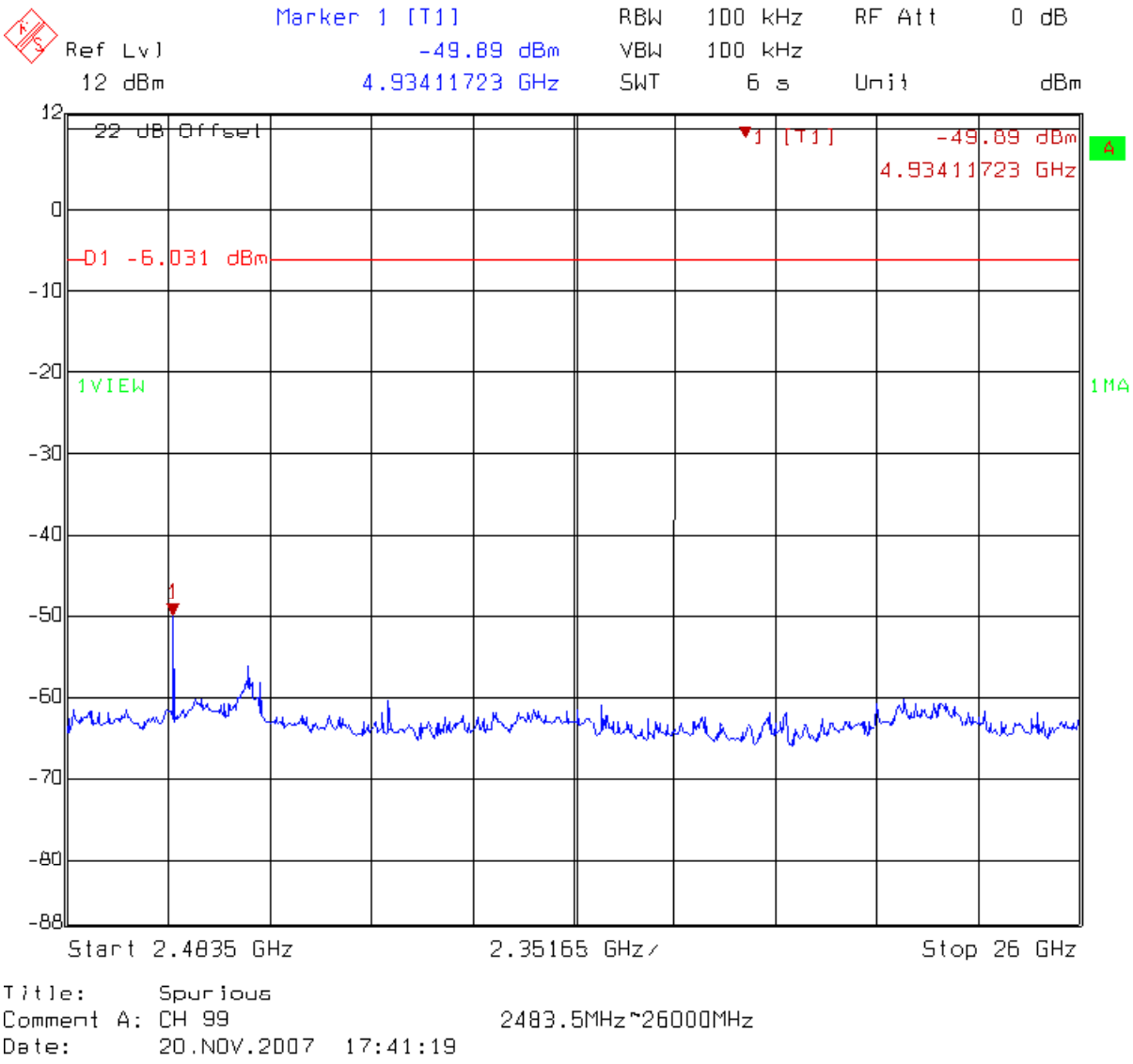
Test unit: Base (ch99)



Test unit: Base (ch99)



Test unit: Base (ch99)



9. Radiated Emission test

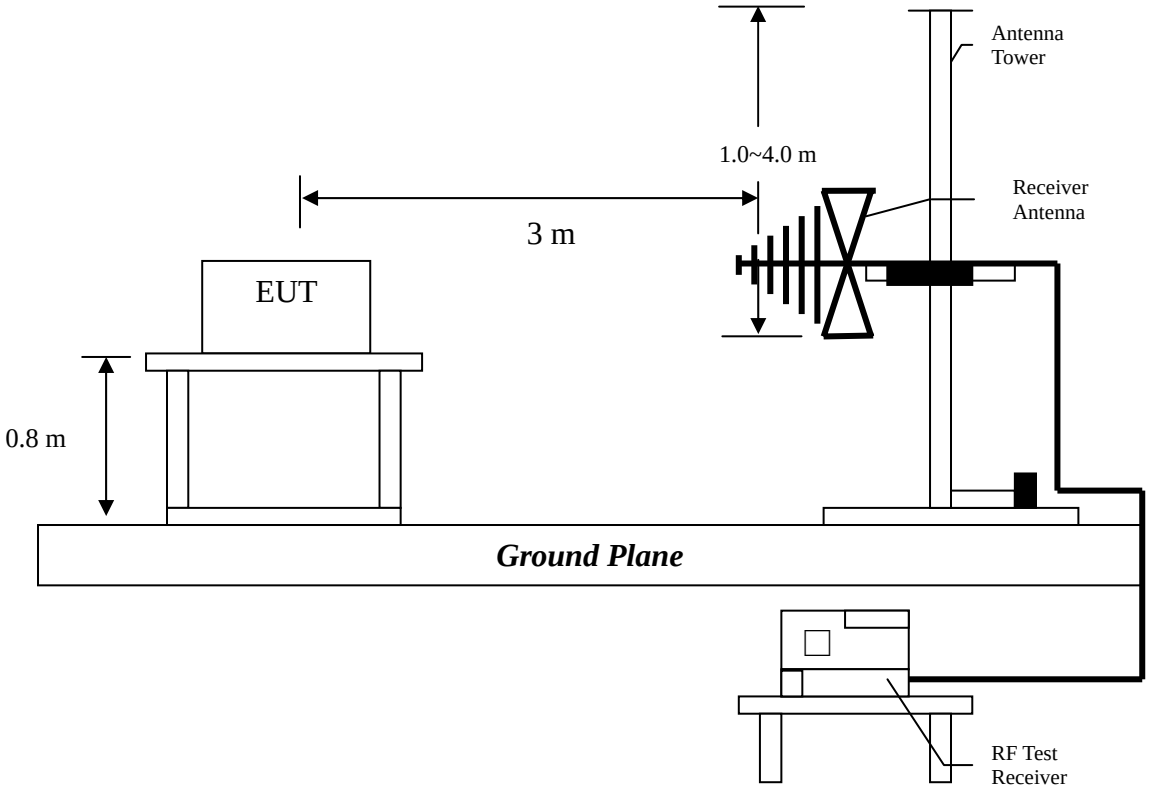
9.1 Operating environment

Temperature:	23	℃
Relative Humidity:	53	%
Atmospheric Pressure:	1023	hPa

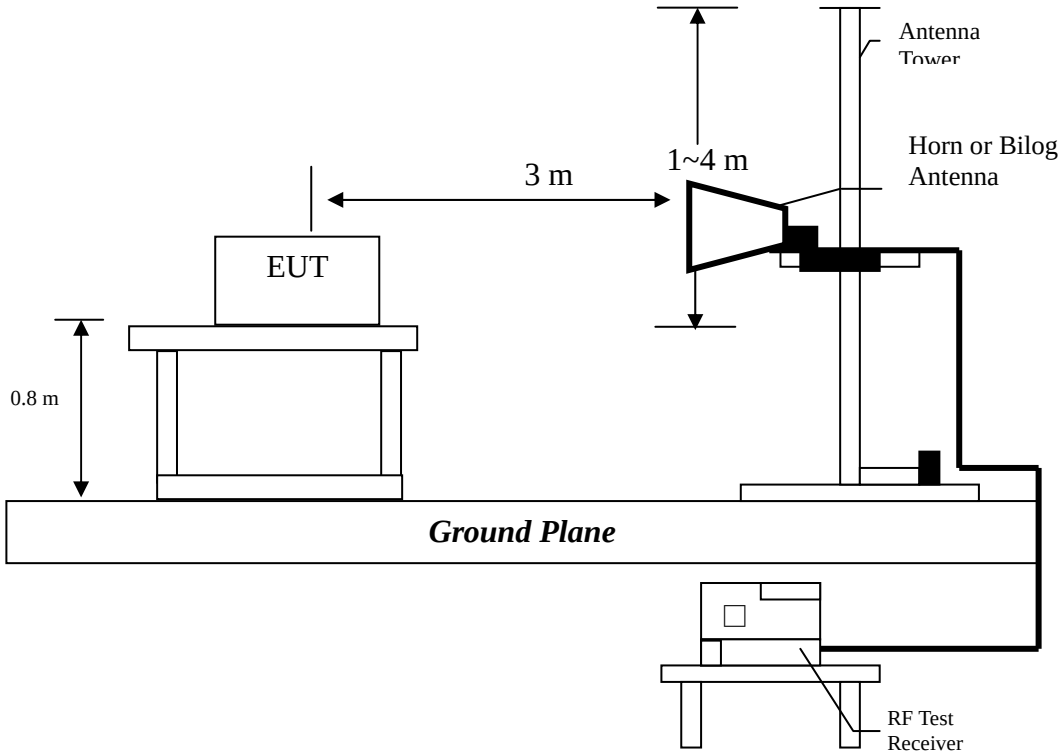
9.2 Test setup & procedure

The Diagram below shows the test setup, which is utilized to make these measurements.

The frequency spectrum from 30MHz to 1000MHz was investigated.



The frequency spectrum from over 1GHz was investigated.



The signal is maximized through rotation and placement in the three orthogonal axes.

Radiated emission measurements were performed from 30MHz to 25GHz. Spectrum Analyzer Resolution Bandwidth is 100kHz or greater for frequencies 30MHz to 1GHz, 1MHz – for frequencies above 1GHz.
The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent 3 meter reading using inverse scaling with distance.

This test was verified at three orthogonal axes, and the test configuration was listed below:

Setup 1

Setup 2

Setup 3

After verifying three axes, the worst case was occurred at setup 1 for Horizontal and Vertical configuration. The final test was executed under this configuration and recorded in this report.

The EUT configuration please refer to the “Spurious set-up photo.pdf”.

9.3 Emission limits

The spurious Emission shall test through the 10th harmonic. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

Frequency (MHz)	Limits (dB μ V/m@3m)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Remark:
1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

Uncertainty was calculated in accordance with NAMAS NIS 81.
Expanded uncertainty (k=2) of radiated emission measurement is 4.98 dB.

9.4 Radiated spurious emission test data

9.4.1 Measurement results: frequencies equal to or less than 1 GHz

The test was performed on EUT under continuously transmitting mode, channel 12, 55 and 99 were verified. The worse case occurred at TX channel 12.

EUT : VT-802C
Worst Case : TX at channel 12
Test unit : Handset, Setup 1

Antenna Polariz. (V/H)	Freq. (MHz)	Receiver Detector	Corr. Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
V	59.100	QP	12.90	4.43	17.33	40.00	-22.68
V	149.310	QP	14.27	3.80	18.07	43.50	-25.43
V	170.650	QP	14.96	4.42	19.38	43.50	-24.13
V	302.570	QP	14.10	4.44	18.54	46.00	-27.46
V	386.960	QP	16.40	4.77	21.17	46.00	-24.83
V	545.070	QP	19.46	5.09	24.55	46.00	-21.45
H	142.520	QP	13.24	5.70	18.94	43.50	-24.57
H	199.750	QP	11.27	7.20	18.47	43.50	-25.04
H	255.040	QP	12.64	8.32	20.96	46.00	-25.04
H	352.040	QP	15.48	8.51	23.99	46.00	-22.02
H	365.620	QP	15.48	9.60	25.08	46.00	-20.93
H	380.170	QP	16.74	7.83	24.57	46.00	-21.43

Remark:

1. Corr. Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Corr. Factor

EUT : VT-802C
Worst Case : TX at channel 12
Test unit : Base, Setup 1

Antenna Polariz. (V/H)	Freq. (MHz)	Receiver Detector	Corr. Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
V	48.430	QP	12.84	21.06	33.90	40.00	-6.10
V	75.590	QP	10.39	7.67	18.06	40.00	-21.94
V	156.100	QP	15.83	2.99	18.82	43.50	-24.68
V	294.810	QP	13.95	7.48	21.43	46.00	-24.57
V	460.680	QP	17.68	5.24	22.92	46.00	-23.08
V	627.520	QP	21.53	4.27	25.80	46.00	-20.20
H	41.640	QP	14.20	6.17	20.37	40.00	-19.63
H	147.370	QP	13.24	5.68	18.92	43.50	-24.59
H	165.800	QP	13.84	5.06	18.90	43.50	-24.61
H	294.810	QP	14.17	13.15	27.32	46.00	-18.69
H	331.670	QP	14.40	7.78	22.18	46.00	-23.83
H	750.710	QP	23.02	5.23	28.25	46.00	-17.75

Remark:

1. Corr. Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Corr. Factor

9.4.2 Measurement results: frequency above 1GHz

EUT : VT-802C
Test Condition : Tx at channel 12
Test unit : Handset, Setup 1

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4802.00	PK	V	36.07	37.77	47.53	49.23	54	-4.77
7204.00	PK	V	36.18	43.97	50.36	58.15	74	-15.85
7204.00	AV	V	36.18	43.97	28.75	36.54	54	-17.46
9607.00	PK	V	34.28	48.31	48.25	62.28	74	-11.72
9607.00	AV	V	34.28	48.31	24.46	38.49	54	-15.51
4802.00	PK	H	36.07	37.77	40.50	42.2	54	-11.80
7204.00	PK	H	36.18	43.97	44.17	51.96	54	-2.04

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

Noise floor level is:

For PK:
1GHz-3GHz: 20dBuV
3GHz-14GHz: 27dBuV
14GHz-26.5GHz: 39dBuV

For AV:
1GHz-3GHz: 10dBuV
3GHz-14GHz: 16dBuV
14GHz-26.5GHz: 28dBuV

EUT : VT-802C
Test Condition : Tx at channel 55
Test unit : Handset, Setup 1

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4860.00	PK	V	36.07	37.77	43.18	44.88	54	-9.12
7320.00	PK	V	36.18	43.97	52.77	60.56	74	-13.44
7320.00	AV	V	36.18	43.97	29.60	37.39	54	-16.61
9760.00	PK	V	34.28	48.31	46.44	60.47	74	-13.53
9760.00	AV	V	34.28	48.31	24.49	38.52	54	-15.48
12200.00	PK	V	36.09	49.60	47.00	60.51	74	-13.49
12200.00	AV	V	36.09	49.60	26.11	39.62	54	-14.38
4860.00	PK	H	36.07	37.77	44.47	46.17	54	-7.83
7320.00	PK	H	36.18	43.97	42.75	50.54	54	-3.46

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

Noise floor level is:

For PK:
1GHz-3GHz: 20dBuV
3GHz-14GHz: 27dBuV
14GHz-26.5GHz: 39dBuV

For AV:
1GHz-3GHz: 10dBuV
3GHz-14GHz: 16dBuV
14GHz-26.5GHz: 28dBuV

EUT : VT-802C
Test Condition : Tx at channel 99
Test unit : Handset, Setup 1

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
7437.00	PK	V	36.18	43.97	54.88	62.67	74	-11.33
7437.00	AV	V	36.18	43.97	29.69	37.48	54	-16.52
9916.00	PK	V	34.28	48.31	45.55	59.58	74	-14.42
9916.00	AV	V	34.28	48.31	24.97	39.00	54	-15.00
12397.00	PK	V	36.09	49.60	51.45	64.96	74	-9.04
12397.00	AV	V	36.09	49.60	26.62	40.13	54	-13.87
7437.00	PK	H	36.18	49.60	51.54	59.33	74	-14.67
7437.00	AV	H	36.18	43.97	29.44	37.23	54	-16.77

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

Noise floor level is :

For PK:
1GHz-3GHz: 20dBuV
3GHz-14GHz: 27dBuV
14GHz-26.5GHz: 39dBuV

For AV:
1GHz-3GHz: 10dBuV
3GHz-14GHz: 16dBuV
14GHz-26.5GHz: 28dBuV

EUT : VT-802C
Test Condition : Tx at channel 12
Test unit : Base, Setup 1

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4802.00	PK	V	36.07	37.77	61.12	62.82	74	-11.18
4802.00	AV	V	36.07	37.77	28.41	30.11	54	-23.89
7205.00	PK	V	36.18	43.97	60.58	68.37	74	-5.63
7205.00	AV	V	36.18	43.97	29.51	37.30	54	-16.70
9606.00	PK	V	34.28	48.31	47.95	61.98	74	-12.02
9606.00	AV	V	34.28	48.31	23.12	37.15	54	-16.85
12006.00	PK	V	36.09	49.60	48.11	61.62	74	-12.38
12006.00	AV	V	36.09	49.60	27.93	41.44	54	-12.56
4802.00	PK	H	36.07	37.77	56.94	58.64	74	-15.36
4802.00	AV	H	36.07	37.77	27.80	29.50	54	-24.50
7205.00	PK	H	36.18	43.97	54.23	62.02	74	-11.98
7205.00	AV	H	36.18	43.97	28.71	36.50	54	-17.50

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

Noise floor level is:

For PK:
1GHz-3GHz: 20dBuV
3GHz-14GHz: 27dBuV
14GHz-26.5GHz: 39dBuV

For AV:
1GHz-3GHz: 10dBuV
3GHz-14GHz: 16dBuV
14GHz-26.5GHz: 28dBuV

EUT : VT-802C
Test Condition : Tx at channel 55
Test unit : Base

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4860.00	PK	V	36.07	37.77	49.05	50.75	54	-3.25
7320.00	PK	V	36.18	43.97	59.15	66.94	74	-7.06
7320.00	AV	V	36.18	43.97	29.93	37.72	54	-16.28
4860.00	PK	H	36.07	37.77	46.42	48.12	54	-5.88
7320.00	PK	H	36.18	43.97	42.74	50.53	54	-3.47

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

Noise floor level is:

For PK:
1GHz-3GHz: 20dBuV
3GHz-14GHz: 27dBuV
14GHz-26.5GHz: 39dBuV

For AV:
1GHz-3GHz: 10dBuV
3GHz-14GHz: 16dBuV
14GHz-26.5GHz: 28dBuV

EUT : VT-802C
Test Condition : Tx at channel 99
Test unit : Base

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
4950.00	PK	V	36.07	37.77	50.13	51.83	54	-2.17
7438.00	PK	V	36.18	43.97	57.49	65.28	74	-8.72
7438.00	AV	V	36.18	43.97	29.77	37.56	54	-16.44
4950.00	PK	H	36.07	37.77	46.12	47.82	54	-6.18

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 25GHz.The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

Noise floor level is :

For PK:
1GHz-3GHz: 20dBuV
3GHz-14GHz: 27dBuV
14GHz-26.5GHz: 39dBuV

For AV:
1GHz-3GHz: 10dBuV
3GHz-14GHz: 16dBuV
14GHz-26.5GHz: 28dBuV

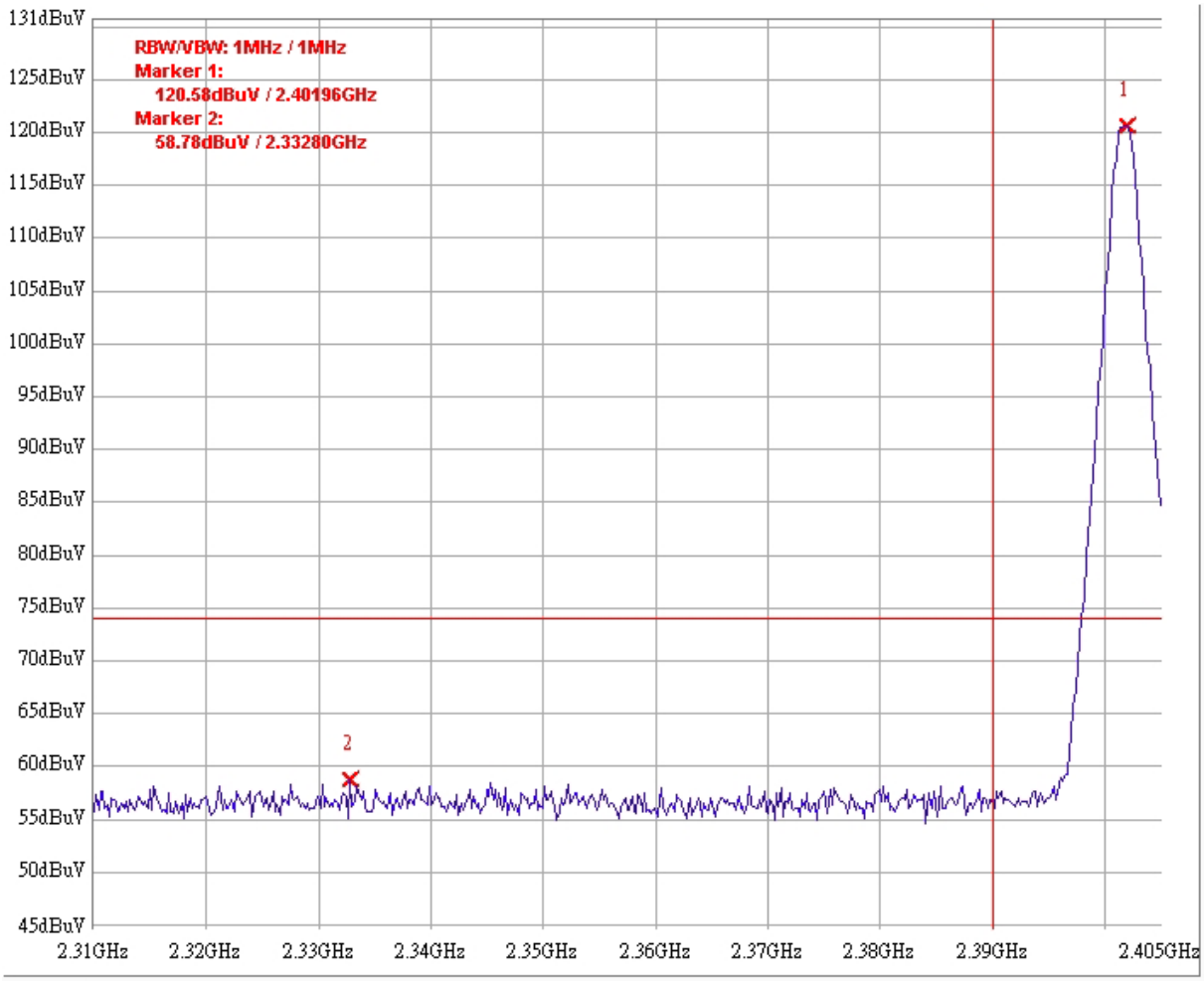
10. Emission on the band edge §FCC 15.247(C)

In any 100kHz bandwidth outside the frequency band in which the spread spectrum 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 or a radiated measurement.

Please see the plot below.

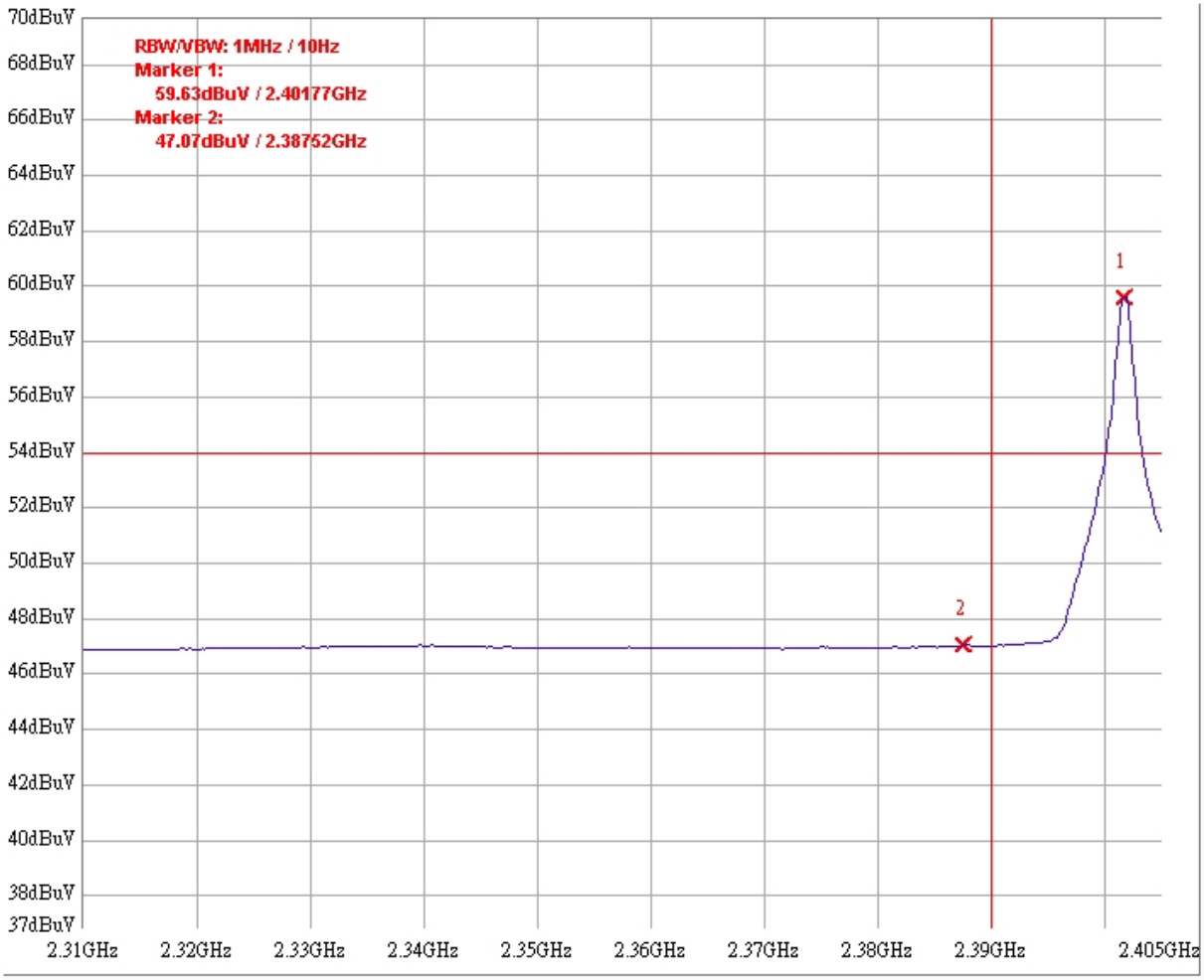
10.1 Band-edge

Test unit: Handset PK (ch12)



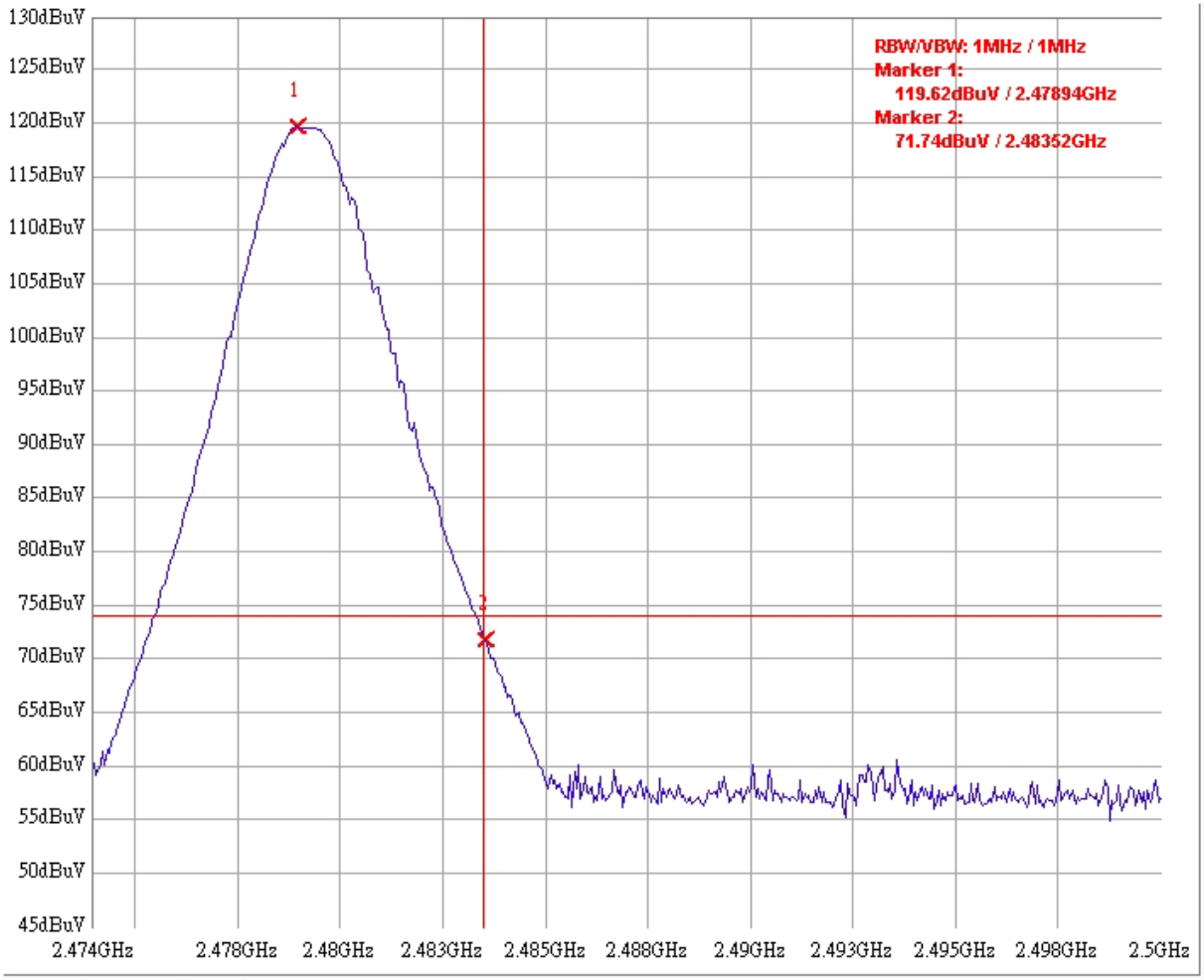
Band-edge test at ch12 pk

Test unit: Handset AV (ch12)



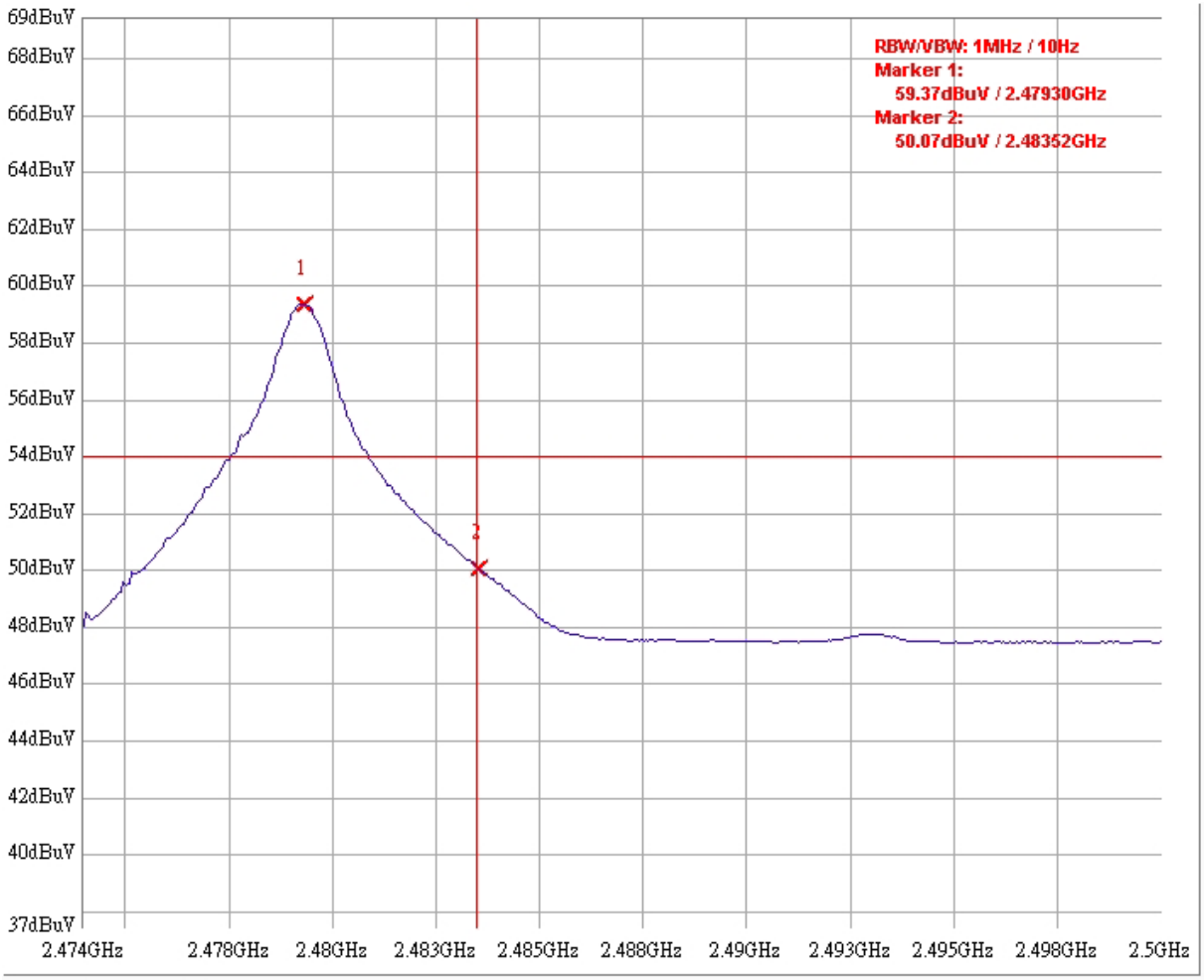
Band-edge test at ch12 av

Test unit: Handset PK (ch99)



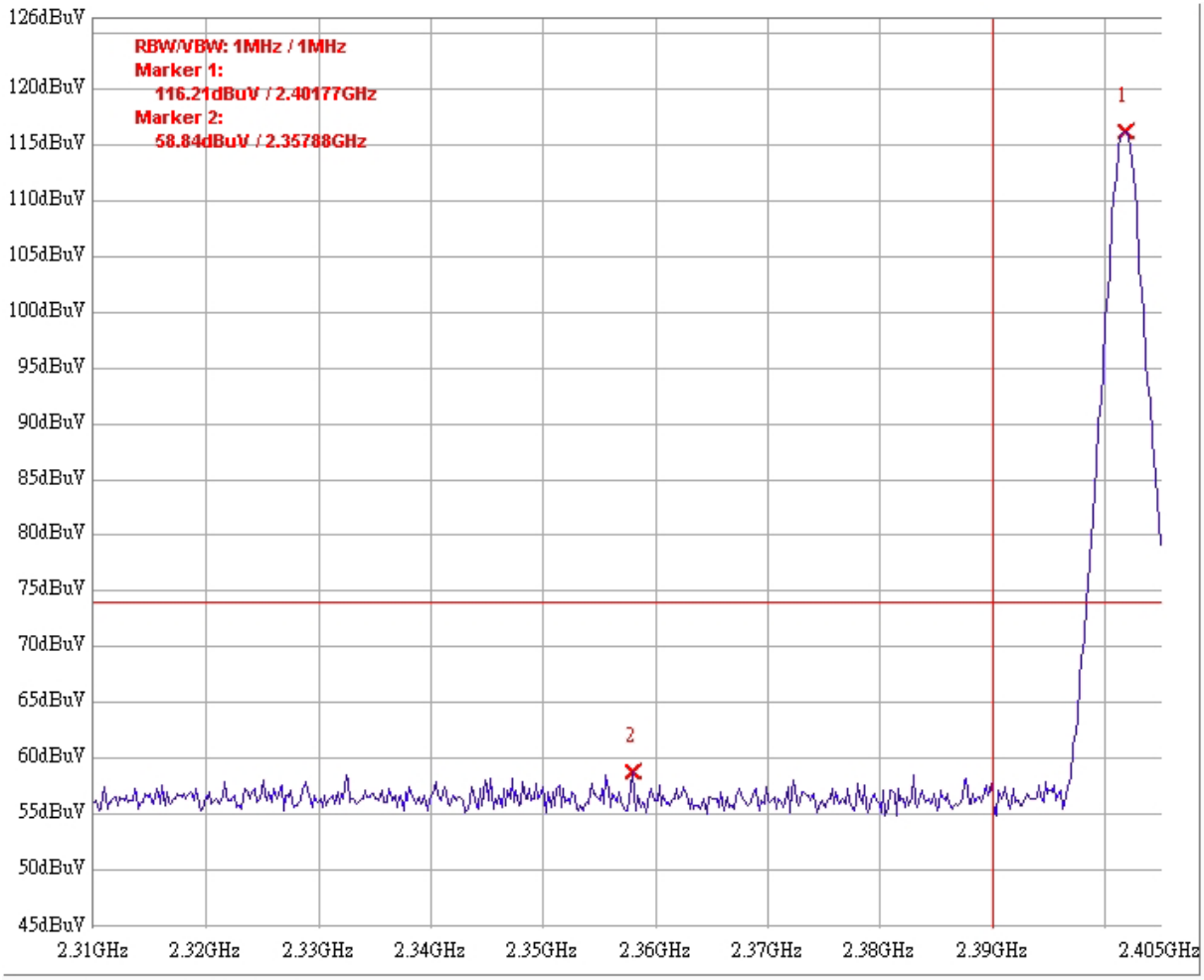
Band-edge test at ch99 PK

Test unit: Handset AV (ch99)



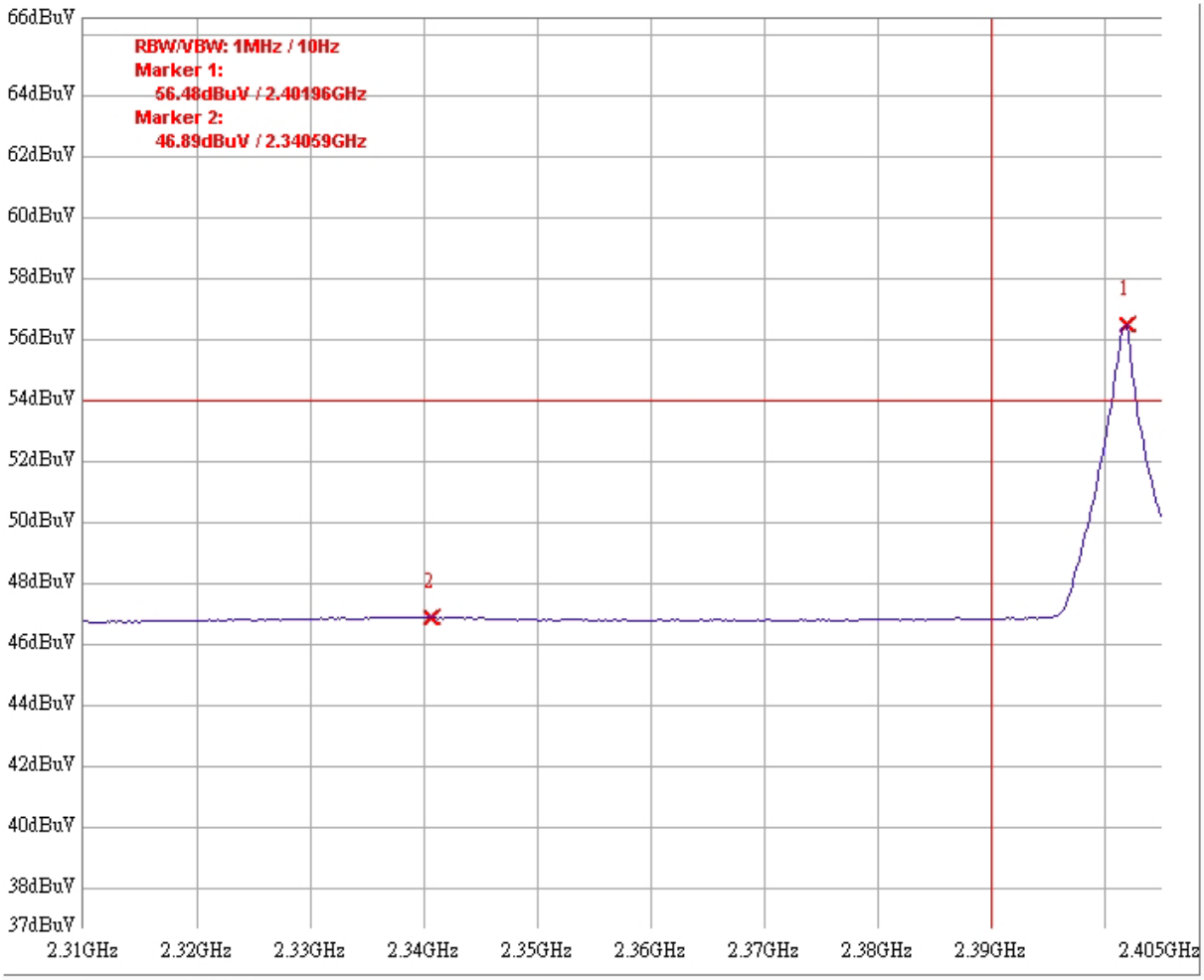
Band-edge test at ch99 AV

Test unit: Base PK (ch12)



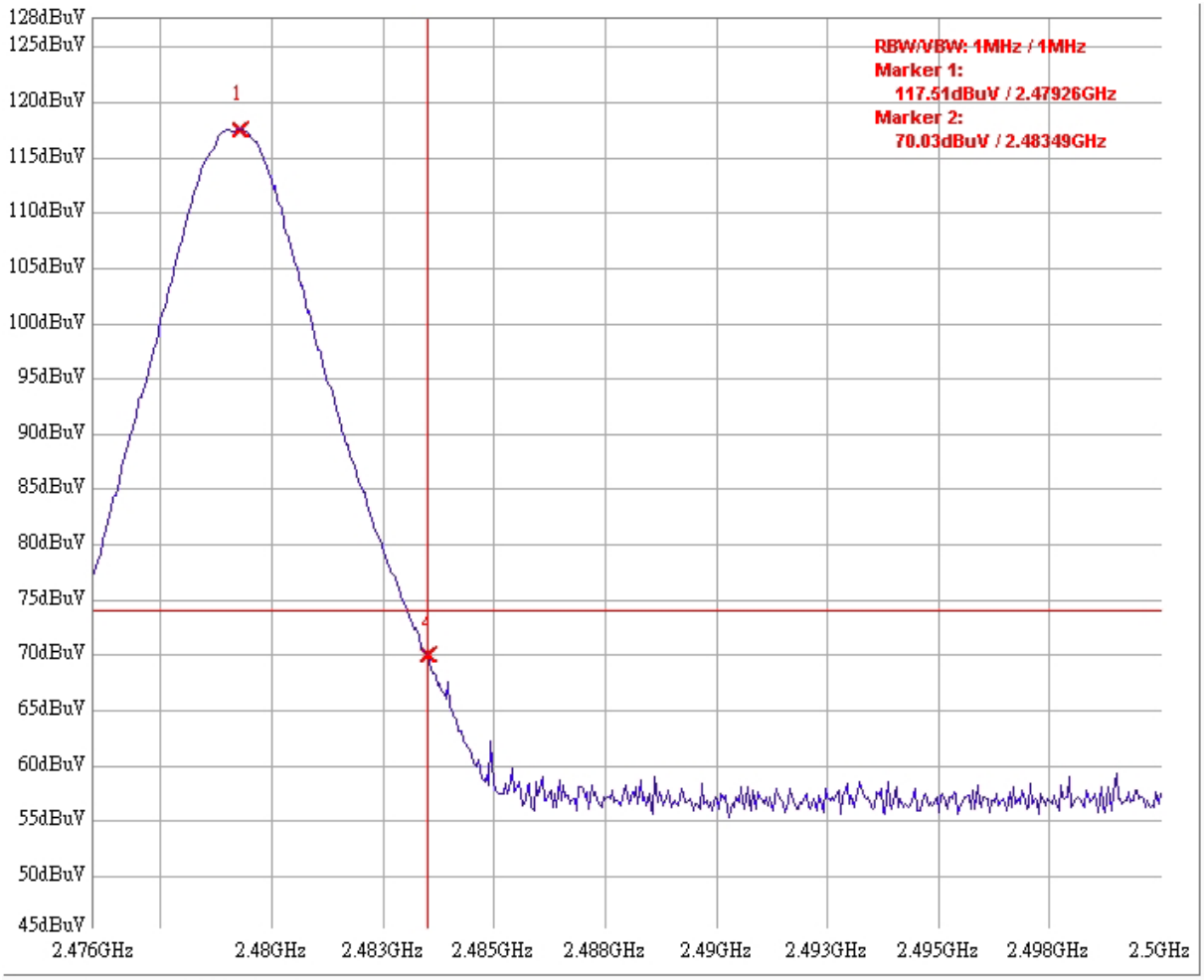
Band-edge test at CH12 座機 PK

Test unit: Base AV (ch12)



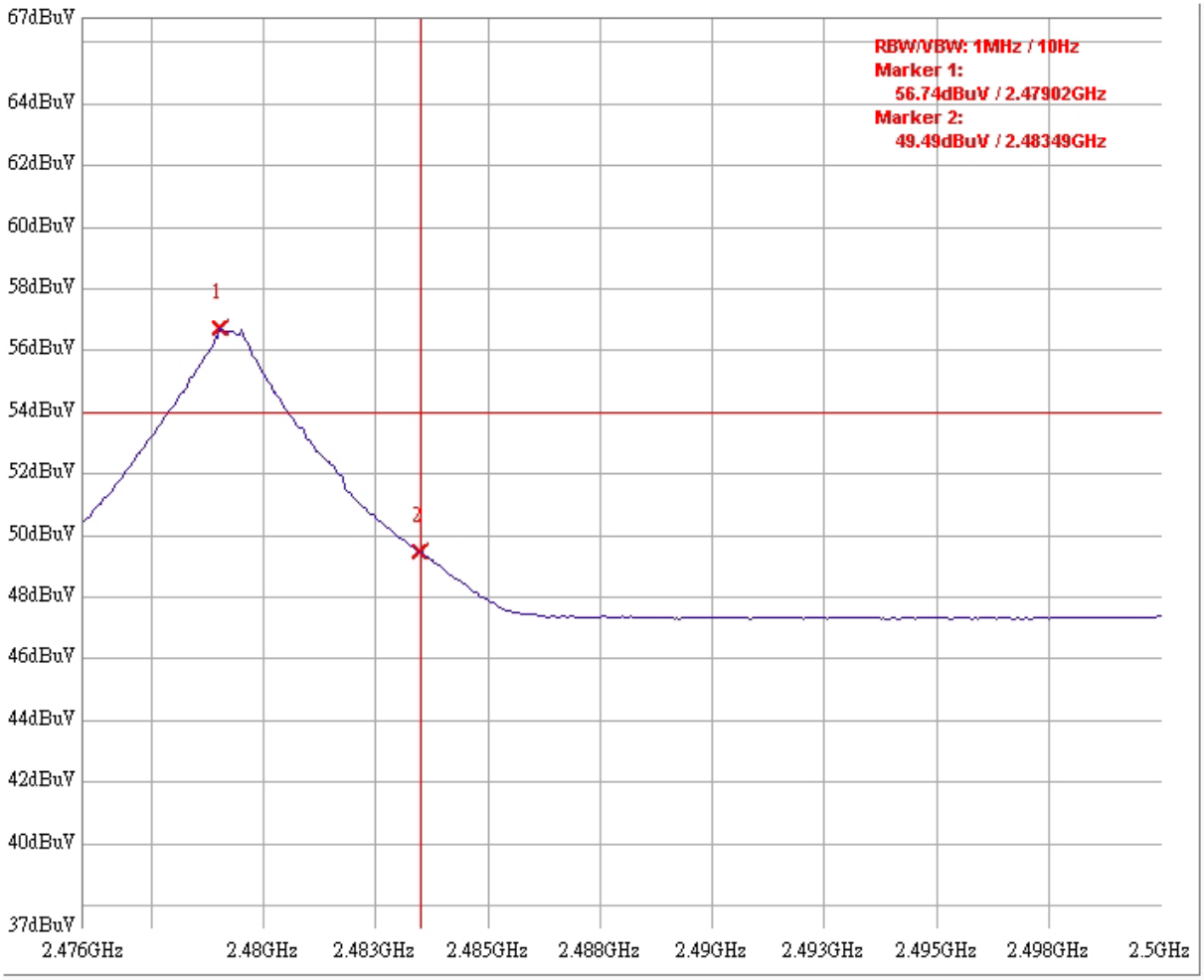
Band-edge test at CH12 座機 AV

Test unit: Base PK (ch99)



Band-edge test at CH99 座機 PK

Test unit: Base AV (ch99)



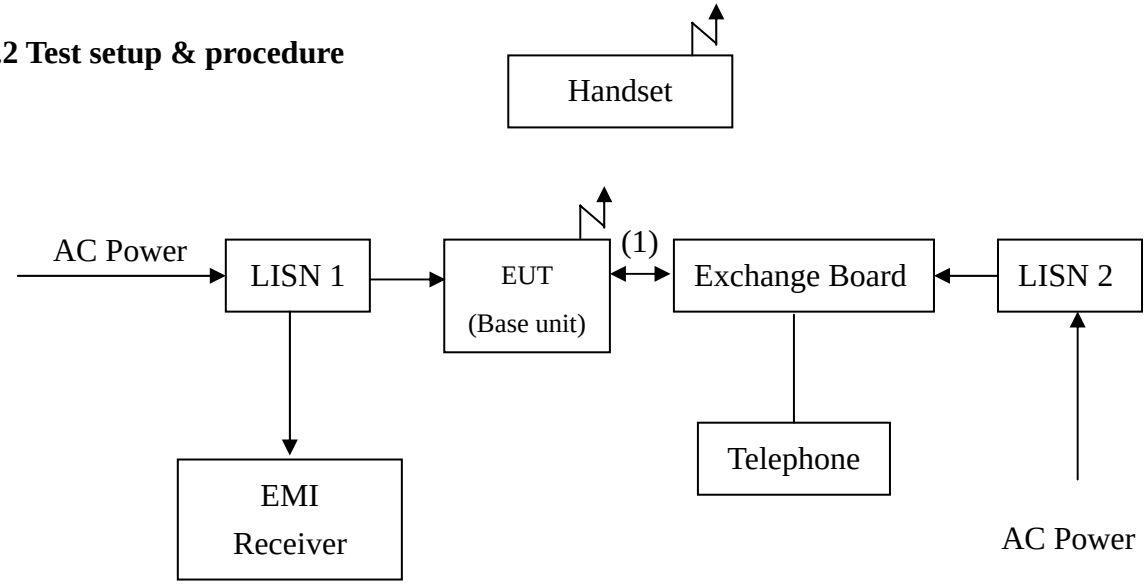
Band-edge test at CH99 座機 AV

11. Power Line Conducted Emission test §FCC 15.207

11.1 Operating environment

Temperature:	25	℃
Relative Humidity:	60	%
Atmospheric Pressure	1023	hPa

11.2 Test setup & procedure



(1) RJ-11 unshielded cable 10meter × 1

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50 ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.
Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4/2003 on conducted measurement.
The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

The EUT configuration please refer to the “Conducted set-up photo.pdf”.

11.3 Emission limit

Freq. (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56*	56 – 46*
0.50~5.00	56	46
5.00~30.0	60	50

*Decreases with the logarithm of the frequency.

11.4 Uncertainty of Conducted Emission

Expanded uncertainty (k=2) of conducted emission measurement is ±2.26 dB.

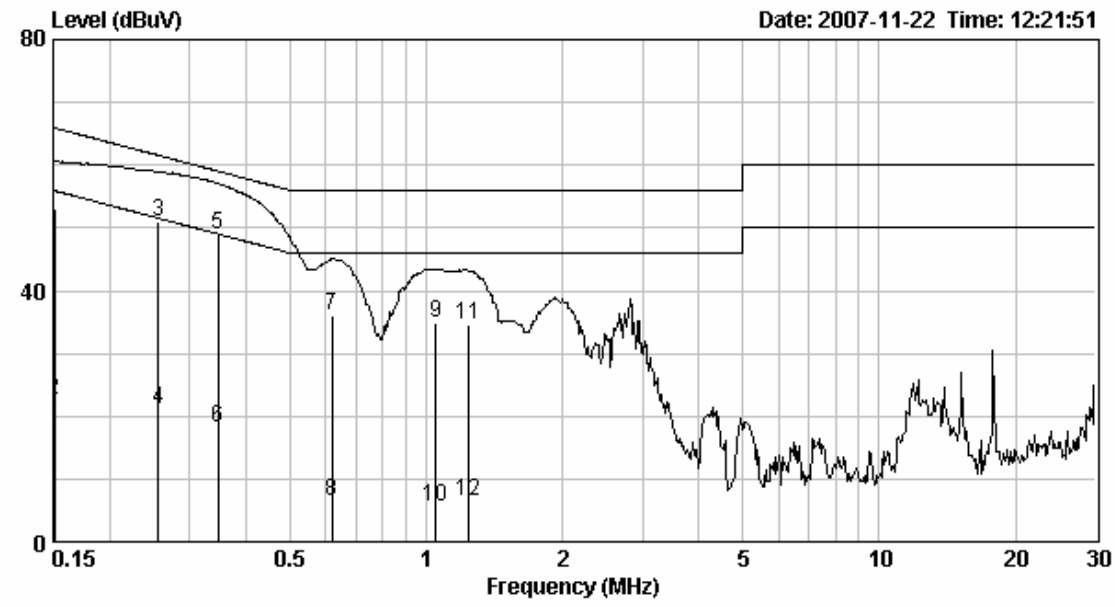
11.5 Power Line Conducted Emission test data

The EUT was pre-scanned under Talk, Ring, Standby and USB modes. The worst conducted emission was found out Talk mode.

Phase : Line
EUT : VT-802C
Worst Case : Talk mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Margin (dB) Av
0.151	0.80	53.10	65.93	22.61	55.93	-12.83	-33.32
0.256	0.55	51.00	61.57	21.05	51.57	-10.57	-30.52
0.346	0.24	48.83	59.05	18.30	49.05	-10.22	-30.75
0.620	0.10	36.19	56.00	6.55	46.00	-19.81	-39.45
1.048	0.10	34.93	56.00	5.60	46.00	-21.07	-40.40
1.239	0.11	34.65	56.00	6.41	46.00	-21.35	-39.59

Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase : Neutral
EUT : VT-802C
Worst Case : Talk mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Margin (dB) Av
0.150	0.10	52.22	66.00	22.24	56.00	-13.78	-33.76
0.258	0.10	50.05	61.50	24.58	51.50	-11.45	-26.92
0.344	0.10	48.33	59.12	18.03	49.12	-10.79	-31.09
0.447	0.10	45.34	56.93	15.23	46.93	-11.59	-31.70
0.704	0.10	35.04	56.00	6.17	46.00	-20.96	-39.83
1.191	0.11	34.50	56.00	6.76	46.00	-21.50	-39.24

Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)