

TEST REPORT

of

FCC Part 15 Subpart E §15.407

FCC ID: A3LEKGC110

Equipment Under Test : Mobile imaging device
Model Name : EK-GC110
Serial No. : N/A
Applicant : SAMSUNG ELECTRONICS CO., LTD.
Manufacturer : SAMSUNG ELECTRONICS CO., LTD.
Date of Test(s) : 2013.01.22 ~ 2013.02.05
Date of Issue : 2013.02.13

In the configuration tested, the EUT complied with the standards specified above.

Tested By:



Date:

2013.02.13

Harim Lee

Approved By:



Date:

2013.02.13

Denny Ham

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

SGS Korea Co., Ltd. (Gunpo Laboratory) 18-34, Sanbon-dong, Gunpo-si, Gyeonggi-do, Korea, 435-040

Tel. +82 31 428 5700 / Fax. +82 31 427 2371

www.ee.sgs.com/korea

Table of contents

1. General information -----	3
2. Transmitter radiated spurious emissions and conducted spurious emission -----	6
3. 26 dB Bandwidth -----	70
4. Output power -----	85
5. Peak power spectral density -----	97
6. Peak excursion -----	112
7. Transmitter AC Power Line Conducted Emission-----	114

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

1. General information

1.1 Testing laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- Wireless Div. 3FL, 18-34, Sanbon-dong, Gunpo-si, Gyeonggi-do, Korea 435-040

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

Phone No. : +82 31 428 5700

Fax No. : +82 31 427 2371

1.2 Details of applicant

Applicant : SAMSUNG ELECTRONICS CO., LTD.

Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 443-742 Rep. of Korea

Contact Person : Choi, Jeong-Wook

Phone No. : +82 10 8900 2047

1.3. Description of EUT

Kind of Product	Mobile imaging device
Model Name	EK-GC110
Serial Number	N/A
Power Supply	DC 3.8 V
Frequency Range	2 412 MHz ~ 2 462 MHz (11b/g/n_HT20), 5 745 MHz ~ 5 825 MHz (11a/n_HT20), 5 755 MHz ~ 5 795 MHz (11n_HT40), 5 180 MHz ~ 5 240 MHz (11a/n_HT20 – Non DFS), 5 190 MHz ~ 5 230 MHz (11n_HT40 – Non DFS), 5 260 MHz ~ 5 320 MHz (11a/n_HT20 – DFS), 5 270 MHz ~ 5 310 MHz (11n_HT40 – DFS), 5 500 MHz ~ 5 700 MHz (11a/n_HT20 – DFS), 5 510 MHz ~ 5 670 MHz (11n_HT40 – DFS)
Modulation Technique	DSSS, OFDM
Number of Channels	11 channel (11b/g/n_HT20), 5 channel (11a/n_HT20), 2 channel (11n_HT40), 4 channel (11a/n_HT20–Non DFS), 2 channel (11n_HT40 – Non DFS), 15 channel (11a/n_HT20 - DFS), 7 channel (11n_HT40 - DFS)
Antenna Type	PIFA type
Antenna Gain	2 412 MHz ~ 2 462 MHz : -2.50 dB i 5 180 MHz ~ 5 320 MHz : 6.49 dB i 5 500 MHz ~ 5 700 MHz : 6.44 dB i 5 745 MHz ~ 5 825 MHz : 6.28 dB i
H/W Version	REV1.1
S/W Version	GC110.003

1.4. Declaration by the manufacturer

- EUT is SLAVE without DFS and TPC.

- Duty Cycle ≥ 98 percent.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

1.5. Test equipment list

Equipment	Manufacturer	Model	S/N	Cal Date	Cal Interval	Cal Due.
Signal Generator	R&S	SMR40	100272	Aug. 23, 2012	Annual	Aug. 23, 2013
Spectrum Analyzer	Agilent	N9030A	US51350132	Oct. 30, 2012	Annual	Oct. 30, 2013
Spectrum Analyzer	R&S	FSV30	100955	Mar. 29, 2012	Annual	Mar. 29, 2013
Power Meter	Anritsu	ML2495A	1223004	Jul. 20, 2012	Annual	Jul. 20, 2013
Power Sensor	Anritsu	MF2411B	1207272	Jul. 20, 2012	Annual	Jul. 20, 2013
Attenuator	AEROFLEX / INMET	18N – 20dB	2	Apr. 02, 2012	Annual	Apr. 02, 2013
Low Pass Filter	Mini-Circuits	NLP-1200+	V8979400903-1	Jul. 12, 2012	Annual	Jul. 12, 2013
Tunable Band Rejection Filter	Wainwright	WRCJV5100/5850-20/50-8SSK	4	Jul. 12, 2012	Annual	Jul. 12, 2013
High Pass Filter	Wainwright	WHNX7.5/26.5G-6SS	11	Jul. 12, 2012	Annual	Jul. 12, 2013
DC power Supply	Agilent	U8002A	MY49030063	Dec. 20, 2012	Annual	Dec. 20, 2013
Preamplifier	H.P.	8447F	2944A03909	Jul. 03, 2012	Annual	Jul. 03, 2013
Preamplifier	R&S	SCU18	10117	Jan. 14, 2013	Annual	Jan. 14, 2014
Preamplifier	MITEQ Inc.	JS44-18004000-35-8P	1546891	Jul. 12, 2012	Annual	Jul. 12, 2013
Test Receiver	R&S	ESU26	100109	Feb. 21, 2012	Annual	Feb. 21, 2013
Bilog Antenna	SCHWARZBECK	VULB9163	396	May 12, 2011	Biennial	May 12, 2013
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170431	May 15, 2012	Biennial	May 15, 2014
Horn Antenna	R&S	HF 906	100326	Nov. 23, 2011	Biennial	Nov. 23, 2013
Antenna Master	INN-CO	MM4000	N/A	N/A	N/A	N.C.R.
Turn Table	INN-CO	DS 1200 S	N/A	N/A	N/A	N.C.R.
Test Receiver	R&S	ESHS10	863365/018	Jun. 04, 2012	Annual	Jun. 04, 2013
Two-Line V-Network	R&S	ENV216	100190	Jan. 04, 2013	Annual	Jan. 04, 2014
Anechoic Chamber	SY Corporation	L x W x H (6.5 m x 3.5 m x 3.5 m)	N/A	N/A	N/A	N.C.R.
Anechoic Chamber	SY Corporation	L x W x H (9.6 m x 6.4 m x 6.6 m)	N/A	N/A	N/A	N.C.R.

► Support equipment

Description	Manufacturer	Model	Serial Number / FCC ID
N/A	-	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

1.6. Summary of test result

The EUT has been tested according to the following specifications:

APPLIED STANDARD:FCC Part15 subpart E		
Section in FCC 15	Test Item	Result
15.205(a) 15.209(a) 15.407(b)(1) 15.407(b)(2) 15.407(b)(3)	Transmitter radiated spurious emissions and Conducted spurious emission	Complied
15.407(a)(1) 15.407(a)(2)	Output power	Complied
15.407(a)(1) 15.407(a)(2)	Peak power spectral density	Complied
15.407(a)(6)	Peak excursion	Complied
15.207	Transmitter AC power line Conducted emission	Complied

1.7. Test Procedure(s)

The measurement procedures described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (ANSI C63.4-2003) and the guidance provided in KDB 789033 were used in the measurement of the DUT.

1.8. Sample calculation

Where relevant, the following sample calculation is provided:

1.8.1. Conducted test

offset value (dB) = Attenuator (dB) + Cable loss (dB)

1.8.2. Radiation test

Field strength level (dB μ V/m) = Measured level (dB μ V) + Antenna factor (dB) + Cable loss (dB) - amplifier (dB)

1.9. Test report revision

Revision	Report number	Description
0	F690501/RF-RTL006269	Initial

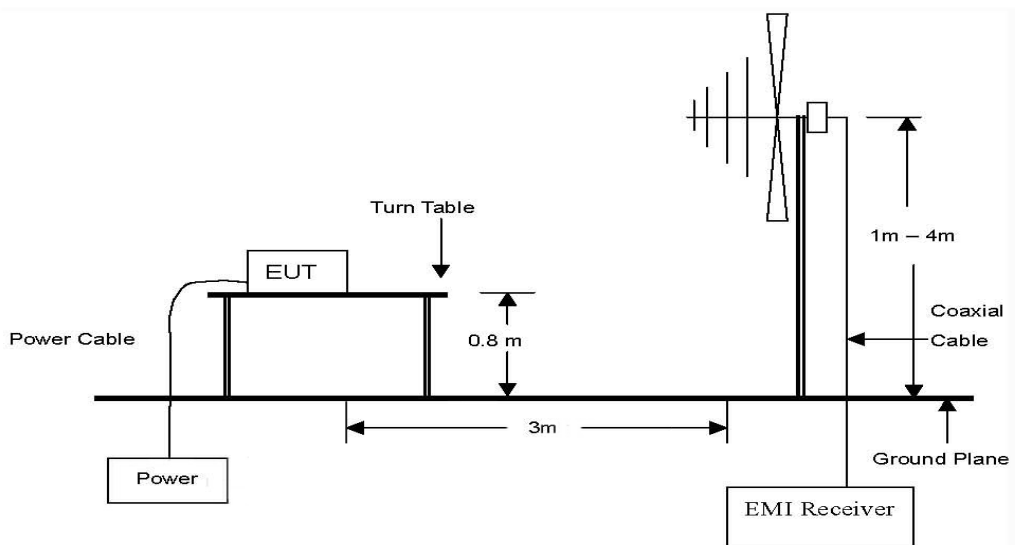
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

2. Transmitter radiated spurious emissions and conducted spurious emission

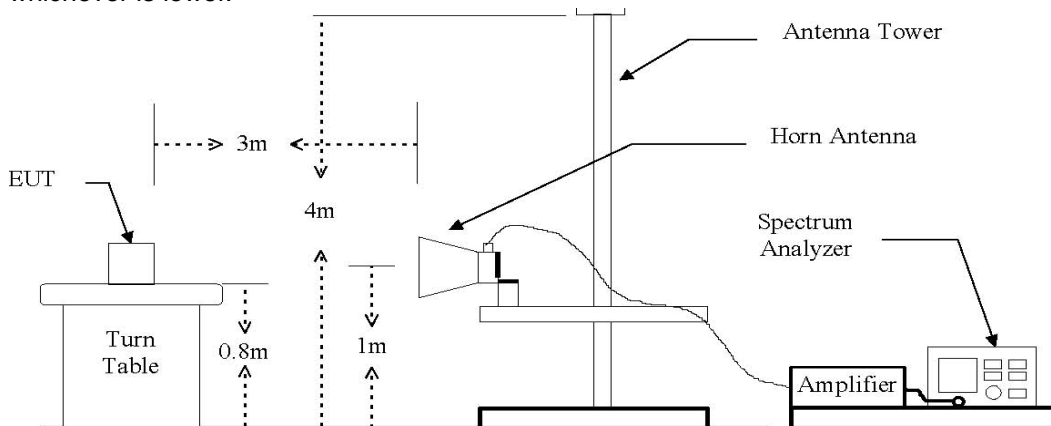
2.1. Test setup

2.1.1. Transmitter radiated spurious emissions

The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz Emissions.

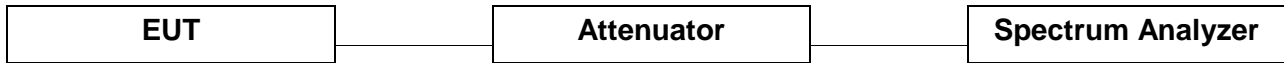


The diagram below shows the test setup that is utilized to make the measurements for emission. The spurious emissions were investigated from 1 GHz to the 10th harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

2.1.2. Conducted spurious emissions



2.2. Limit

For transmitters operating in the 5.15 ~ 5.25 GHz band: all emissions outside of the 5.15 ~ 5.35 GHz band shall not exceed an EIRP of -27 m/MHz.

For transmitters operating in the 5.25 ~ 5.35 GHz band: all emissions outside of the 5.15 ~ 5.35 GHz band shall not exceed an EIRP of -27 dB m/MHz. Devices operating in the 5.25 ~ 5.35 GHz band that generate emissions in the 5.15 ~ 5.25 GHz band must meet all applicable technical requirements for operation in the 5.15 ~ 5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dB m/MHz in the 5.15 ~ 5.25 GHz band.

For transmitters operating in the 5.47 ~ 5.725 GHz band: all emissions outside of the 5.47 ~ 5.725 GHz band shall not exceed an EIRP of -27 dB m/MHz.

According to § 15.209(a), Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table :

Frequency (MHz)	Distance (Meters)	Field Strength (dB μ V/m)	Field Strength (μ V/m)
30 - 88	3	40.0	100
88 – 216	3	43.5	150
216 – 960	3	46.0	200
Above 960	3	54.0	500

2.3. Test procedures

Conducted and Radiated emissions from the EUT were measured according to the dictates in section G of KDB 789033.

All data rates and modes were investigated for conducted spurious emissions. The emissions of the configuration that produced the worst case emissions are reported in this section.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

2.3.1. Test procedures for radiated spurious emissions

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. During performing radiated emission below 1 GHz, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 GHz, the EUT was set 3 meter away from the interference-receiving antenna.
3. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

NOTE;

1. The measurements for below 1 GHz
Compliance shall be demonstrated using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.
2. The measurements for above 1 GHz
 - 1) Peak emission levels are measured by setting the analyzer as follows:
Set to RBW = 1 MHz, VBW \geq 3 MHz, Detector = Peak, Sweep time = auto, Trace mode= Max hold.
 - 2) Average emission levels are measured by setting the analyzer as follows:
Set to RBW = 1 MHz, Detector = Peak, Sweep time = auto, Trace mode= Max hold.
 - If duty cycle \geq 98 percent: VBW < RBW/100 (i.e., 10 kHz) but not less than 10 Hz.
 - If duty cycle < 98 percent: VBW \geq 1/T.
3. To get a maximum emission level from the EUT, the EUT is manipulated through three orthogonal planes.

3.3.2. Test procedures for conducted spurious emissions

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. Peak emission levels are measured by setting the analyzer as follows: RBW = 1 MHz, VBW \geq 3 MHz, Detector = Peak, Sweep time = auto, Trace hold = max hold.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

2.4. Test result

Ambient temperature : (24 ± 2) °C
 Relative humidity : 49 % R.H.

2.4.1. Spurious radiated emission (Worst case configuration_11a mode, 6 Mbps)

The frequency spectrum from 30 MHz to 1 000 MHz was investigated. Emission levels are not reported much lower than the limits by over 30 dB. All reading values are peak values.

Radiated emissions			Ant	Correction factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	Amp gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
314.70	40.90	Peak	H	12.80	-24.60	29.10	46.00	16.90
522.19	42.40	Peak	H	16.30	-25.30	33.40	46.00	12.60
575.99	43.60	Peak	V	17.20	-25.20	35.60	46.00	10.40
922.20	46.90	Peak	V	17.10	-23.40	40.60	46.00	5.40

Remark:

- All spurious emission at channels are almost the same below 1 GHz, So that the Middle channel was chose at representative in final test.
- Actual = Reading + AF + AMP + CL

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

2.4.2. Spurious radiated emission for above 1 GHz

802.11a (Non-DFS) _6 Mbps

A. Low Channel (5 180 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 150.00	14.39	Peak	H	33.43	10.81	58.63	74.00	15.37
*5 150.00	5.04	Average	H	33.43	10.81	49.28	54.00	4.72
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 357.80	58.19	Peak	V	37.58	-32.03	63.74	68.23	4.49
Above 10 400.00	Not Detected	-	-	-	-	-	-	-

B. Middle Channel (5 220 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 435.85	53.47	Peak	V	37.66	-33.02	58.11	68.23	10.12
Above 10 500.00	Not Detected	-	-	-	-	-	-	-

C. High Channel (5 240 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 479.50	53.52	Peak	V	37.61	-33.62	57.51	68.23	10.72
Above 10 500.00	Not Detected	-	-	-	-	-	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

802.11a (DFS) _6 Mbps
A. Low Channel (5 260 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 516.70	50.40	Peak	V	37.53	-34.04	53.89	68.23	14.34
Above 10 600.00	Not Detected	-	-	-	-	-	-	-

B. Middle Channel (5 300 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*10 603.20	51.25	Peak	V	37.64	-34.76	54.13	74.00	19.87
*10 603.20	33.96	Average	V	37.64	-34.76	36.84	54.00	17.16
Above 10 700.00	Not Detected	-	-	-	-	-	-	-

C. High Channel (5 320 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 350.00	14.31	Peak	H	33.75	10.43	58.49	74.00	15.51
*5 350.00	3.69	Average	H	33.75	10.43	47.87	54.00	6.13
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*10 636.70	50.68	Peak	V	37.68	-34.93	53.43	74.00	20.57
*10 636.70	35.23	Average	V	37.68	-34.93	37.98	54.00	16.02
Above 10 700.00	Not Detected	-	-	-	-	-	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

802.11a (DFS) _6 Mbps
A. Low Channel (5 500 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 460.00	14.61	Peak	H	34.29	10.51	59.41	74.00	14.59
*5 460.00	3.75	Average	H	34.29	10.51	48.55	54.00	5.45
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 003.40	44.39	Peak	V	38.10	-31.54	50.95	74.00	23.05
*11 003.40	29.09	Average	V	38.10	-31.54	35.65	54.00	18.35
Above 11 100.00	Not Detected	-	-	-	-	-	-	-

B. Middle Channel (5 580 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 158.85	50.29	Peak	V	37.94	-30.51	57.72	74.00	16.28
*11 158.85	34.03	Average	V	37.94	-30.51	41.46	54.00	12.55
Above 11 200.00	Not Detected	-	-	-	-	-	-	-

C. High Channel (5 700 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 400.10	46.42	Peak	V	37.92	-28.17	56.17	74.00	17.84
*11 400.10	29.65	Average	V	37.92	-28.17	39.40	54.00	14.60
Above 11 500.00	Not Detected	-	-	-	-	-	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

802.11n-HT20 (Non-DFS)_MCS0
A. Low Channel (5 180 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 150.00	14.54	Peak	H	33.43	10.81	58.78	74.00	15.22
*5 150.00	5.07	Average	H	33.43	10.81	49.31	54.00	4.69
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 355.55	58.43	Peak	V	37.57	-32.00	64.00	68.23	4.23
Above 10 400.00	Not Detected	-	-	-	-	-	-	-

B. Middle Channel (5 220 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 440.15	53.65	Peak	V	37.67	-33.08	58.24	68.23	9.99
Above 10 500.00	Not Detected	-	-	-	-	-	-	-

C. High Channel (5 240 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 478.10	52.84	Peak	V	37.61	-33.60	56.85	68.23	11.38
Above 10 500.00	Not Detected	-	-	-	-	-	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

802.11n_HT20 (DFS)_MCS0

A. Low Channel (5 260 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 521.45	50.51	Peak	V	37.52	-34.08	53.95	68.23	14.28
Above 10 600.00	Not Detected	-	-	-	-	-	-	-

B. Middle Channel (5 300 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*10 600.35	50.50	Peak	V	37.63	-34.74	53.39	74.00	20.61
*10 600.35	33.34	Average	V	37.63	-34.74	36.23	54.00	17.77
Above 10 700.00	Not Detected	-	-	-	-	-	-	-

C. High Channel (5 320 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 350.00	12.47	Peak	H	33.75	10.43	56.65	74.00	17.35
*5 350.00	3.65	Average	H	33.75	10.43	47.83	54.00	6.17
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*10 641.85	50.97	Peak	V	37.67	-34.96	53.68	74.00	20.33
*10 641.85	35.18	Average	V	37.67	-34.96	37.89	54.00	16.11
Above 10 700.00	Not Detected	-	-	-	-	-	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

802.11n_HT20 (DFS)_MCS0
A. Low Channel (5 500 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 460.00	13.66	Peak	H	34.29	10.51	58.46	74.00	15.54
*5 460.00	3.79	Average	H	34.29	10.51	48.59	54.00	5.41
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*10 997.80	48.93	Peak	V	38.10	-31.70	49.72	74.00	24.28
*10 997.80	33.44	Average	V	38.10	-31.70	34.58	54.00	19.42
Above 11 000.00	Not Detected	-	-	-	-	-	-	-

B. Middle Channel (5 580 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 165.10	48.93	Peak	V	37.94	-30.49	56.38	74.00	17.62
*11 165.10	33.44	Average	V	37.94	-30.49	40.89	54.00	13.11
Above 11 200.00	Not Detected	-	-	-	-	-	-	-

C. High Channel (5 700 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 406.15	45.85	Peak	V	37.96	-28.18	55.63	74.00	18.37
*11 406.15	29.10	Average	V	37.96	-28.18	38.88	54.00	15.12
Above 11 500.00	Not Detected	-	-	-	-	-	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

802.11n-HT40 (Non-DFS) _MCS0

A. Low Channel (5 190 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 150.00	14.76	Peak	H	33.43	10.81	59.00	74.00	15.00
*5 150.00	5.20	Average	H	33.43	10.81	49.44	54.00	4.56
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 388.00	52.59	Peak	V	37.57	-32.38	57.78	68.23	10.45
Above 10 400.00	Not Detected	-	-	-	-	-	-	-

B. High Channel (5 230 MHz)

Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 468.00	49.97	Peak	V	37.62	-33.46	54.13	68.23	14.10
Above 10 500.00	Not Detected	-	-	-	-	-	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

802. 11n-HT40 (DFS)_MCS0
A. Low Channel (5 270 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
10 536.20	46.83	Peak	V	37.54	-34.21	50.16	68.23	18.07
Above 10 600.00	Not Detected	-	-	-	-	-	-	-

B. High Channel (5 310 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 350.00	11.80	Peak	H	33.75	10.43	55.98	74.00	18.02
*5 350.00	3.89	Average	H	33.75	10.43	48.07	54.00	5.93
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*10 628.00	45.82	Peak	V	37.69	-34.89	48.62	74.00	25.38
*10 628.00	28.45	Average	V	37.69	-34.89	31.25	54.00	22.75
Above 10 700.00	Not Detected	-	-	-	-	-	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

802. 11n-HT40 (DFS)_MCS0

A. Low Channel (5 510 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*5 460.00	11.95	Peak	H	34.29	10.51	56.75	74.00	17.25
*5 460.00	3.75	Average	H	34.29	10.51	48.55	54.00	5.45
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 027.90	37.80	Peak	V	38.09	-31.32	44.57	74.00	29.43
*11 027.90	23.64	Average	V	38.09	-31.32	30.41	54.00	23.59
Above 11 100.00	Not Detected	-	-	-	-	-	-	-

B. Middle Channel (5 550 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 108.30	43.55	Peak	V	37.99	-30.65	50.89	74.00	23.12
*11 108.30	26.89	Average	V	37.99	-30.65	34.23	54.00	19.77
Above 11 200.00	Not Detected	-	-	-	-	-	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

C. High Channel (5 670 MHz)

Radiated Emissions			Ant	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB uV)	Detect Mode	Pol.	AF (dB/m)	Amp Gain+CL (dB)	Actual (dB uV/m)	Limit (dB uV/m)	Margin (dB)
*11 337.70	42.46	Peak	V	38.11	-29.14	51.43	74.00	22.57
*11 337.70	26.89	Average	V	38.11	-29.14	35.86	54.00	18.14
Above 11 400.00	Not Detected	-	-	-	-	-	-	-

Remark:

1. "*" means the restricted band.
2. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using Peak / average detector mode if frequency was in restricted band. Otherwise the frequency was in outside of restricted band, only peak detector should be used.
3. Average test would be performed if the peak result was greater than the average limit and frequency was in the restricted band.
4. If frequency was outside of restricted band, the calculation method for peak limit is same as below:
 $68.23 \text{ dB}\mu\text{V/m} = \text{EIRP} - 20 \log(d) + 104.77 = -27 - 20 \log(3) + 104.77$
 *distance: 3 m, *EIRP: -27 dB m/MHz

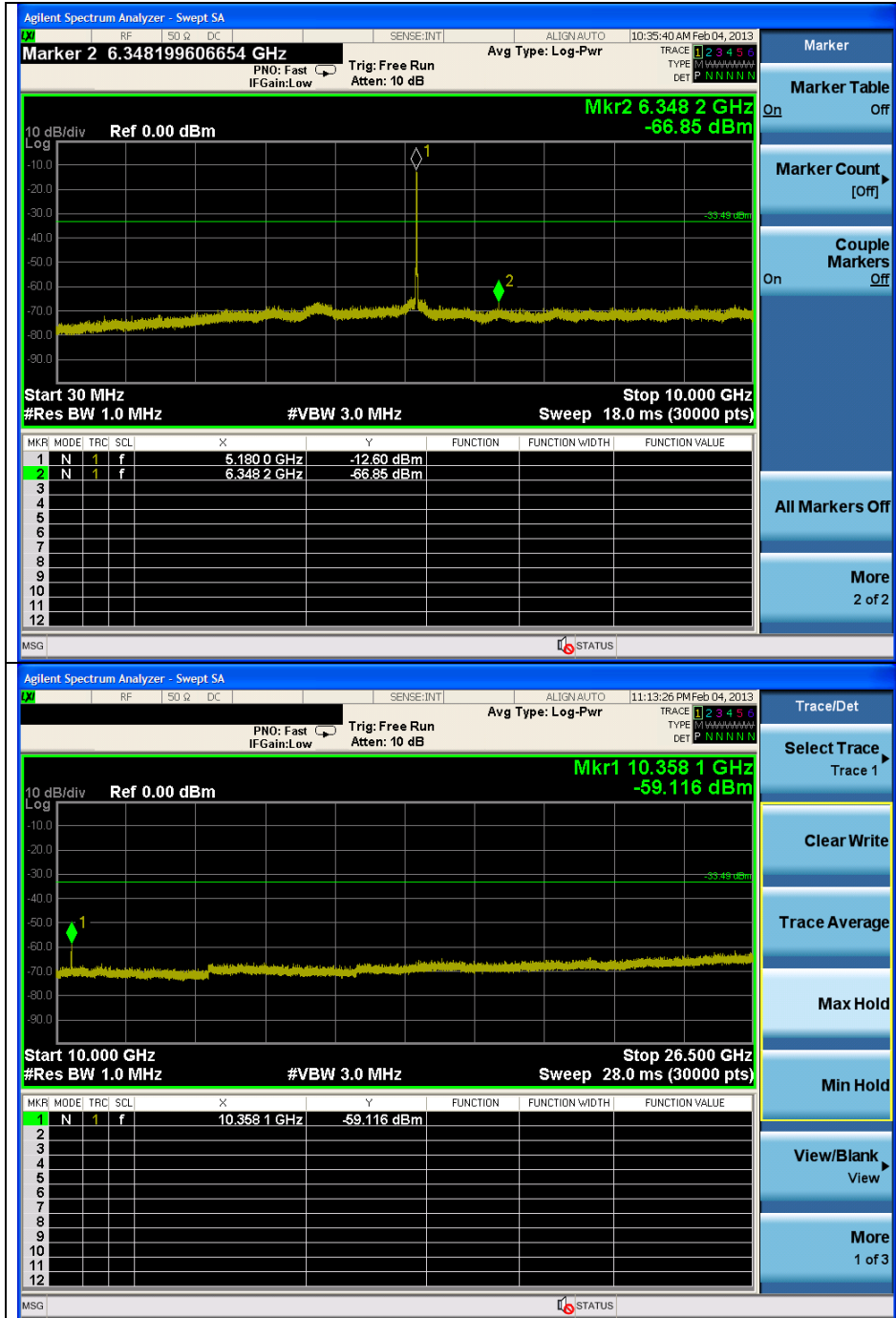
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

2.4.3. Spurious RF Conducted Emissions: Plot of Spurious RF Conducted Emission

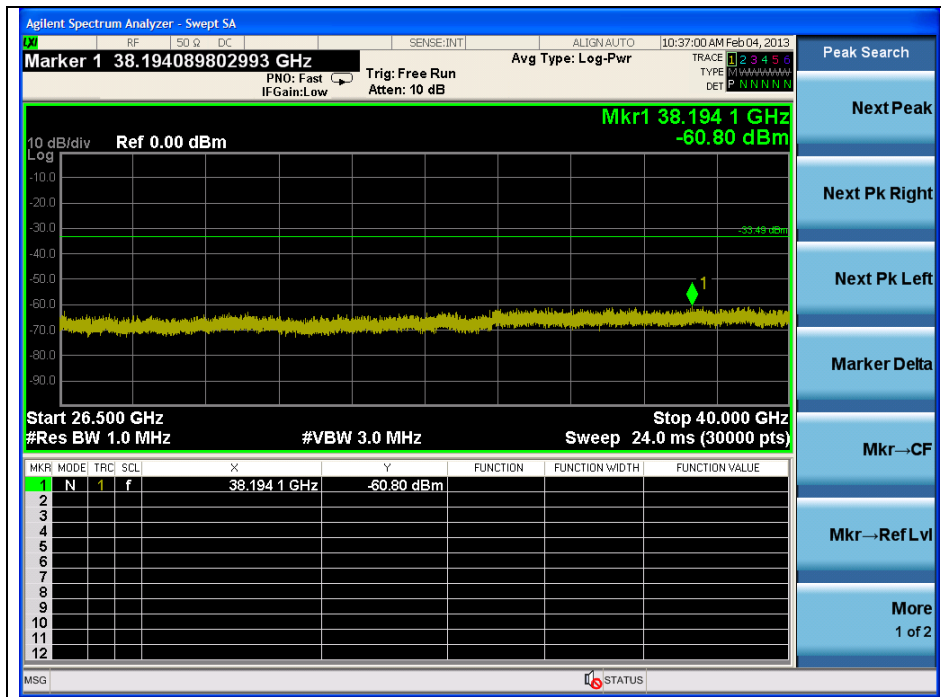
For 5.15 – 5.35 GHz, the antenna gain is 6.49 dB i, So the EIRP limit is -33.49 dB m/Hz

802.11a_6 Mbps

5 180 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

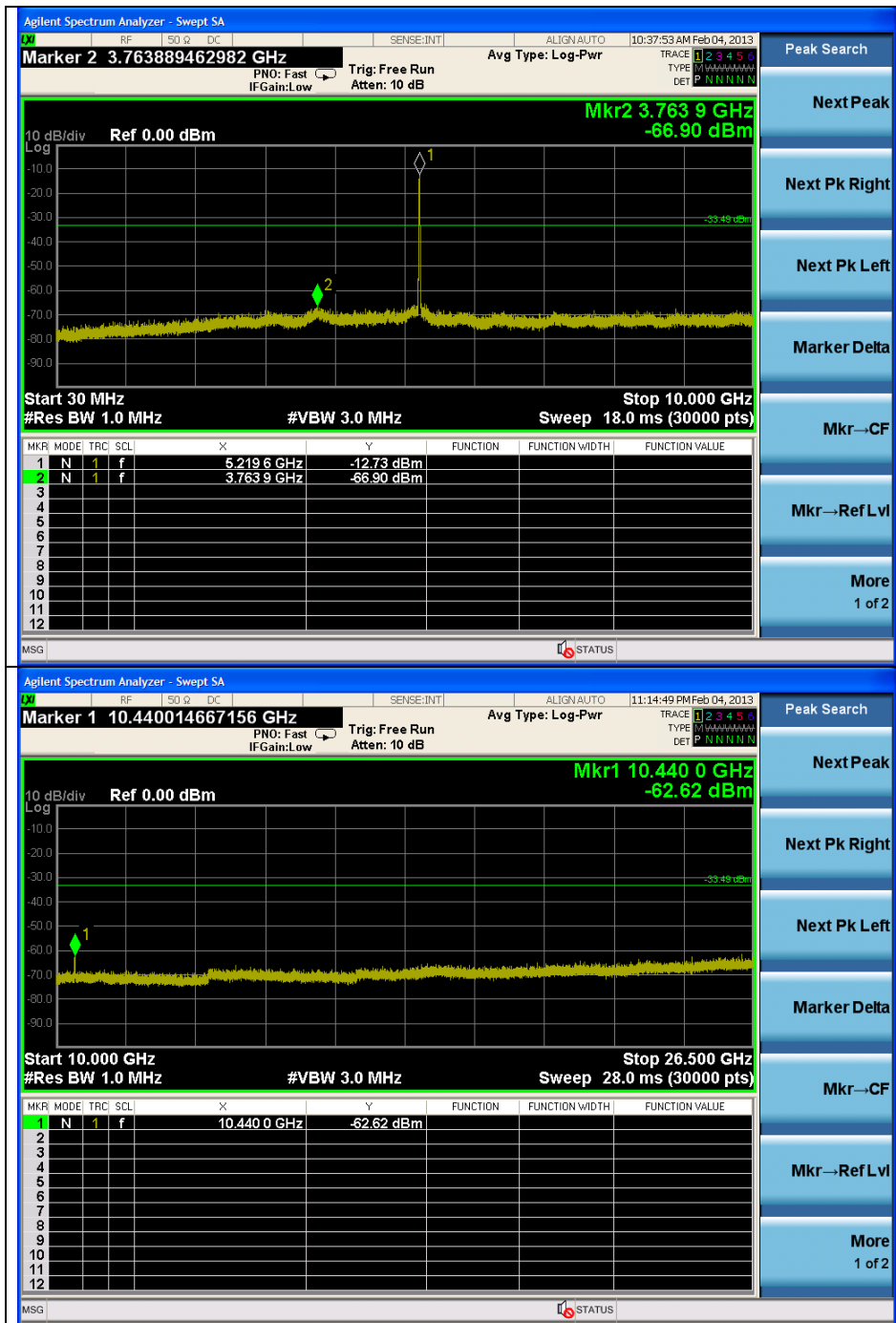
Offset (dB) = Attenuator(dB) + Cable loss (dB)

Result (dB m) = Spurious offset (dB) + Reading values (dB m)

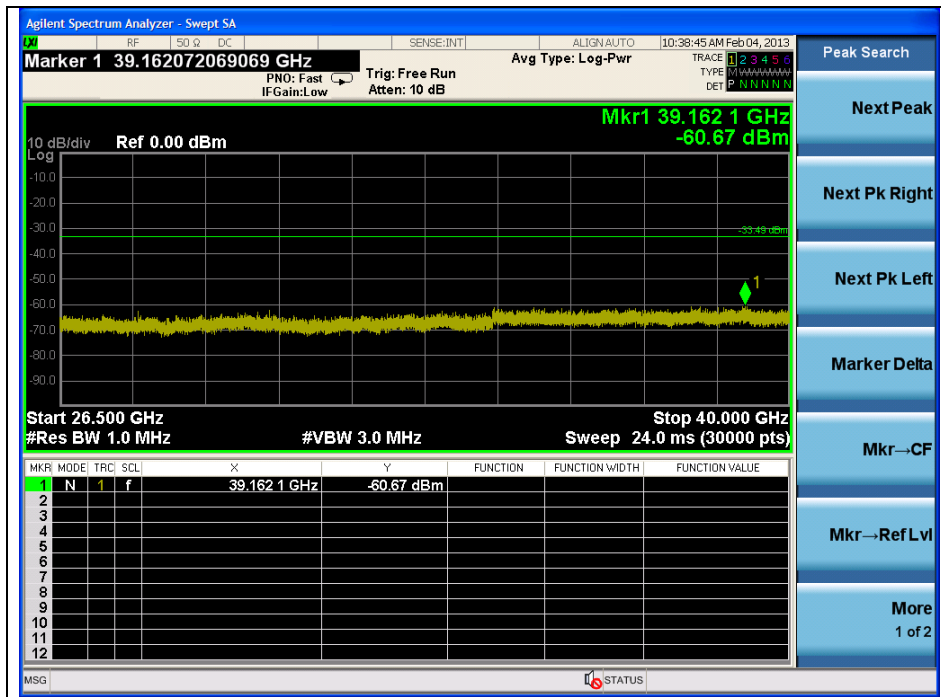
Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
6 348.20	-66.85	21.18	-45.67
10 358.10	-59.12	21.82	-37.30
38 194.10	Noise floor	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

5 220 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

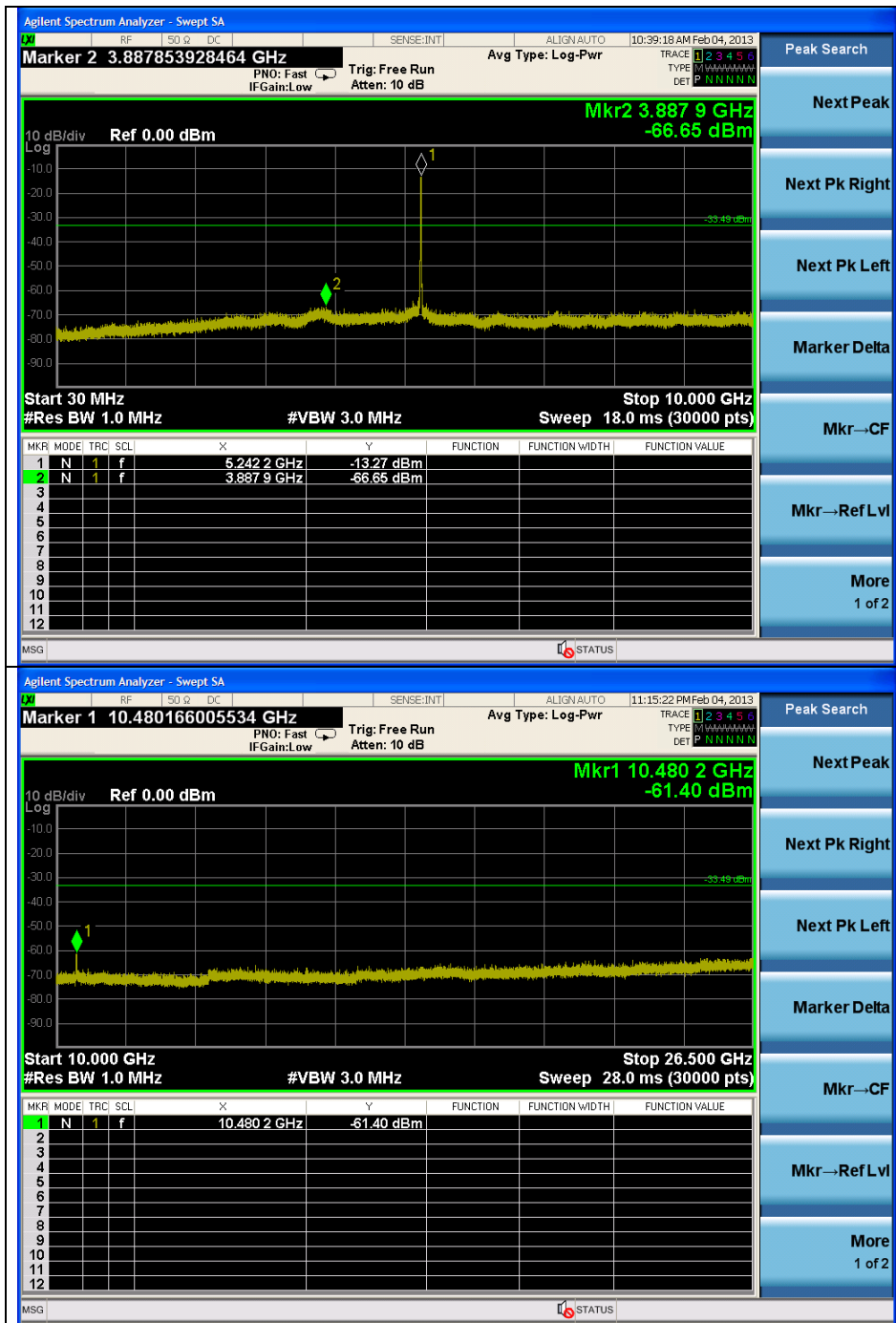
Offset (dB) = Attenuator(dB) + Cable loss (dB)

Result (dB m) = Spurious offset (dB) + Reading values (dB m)

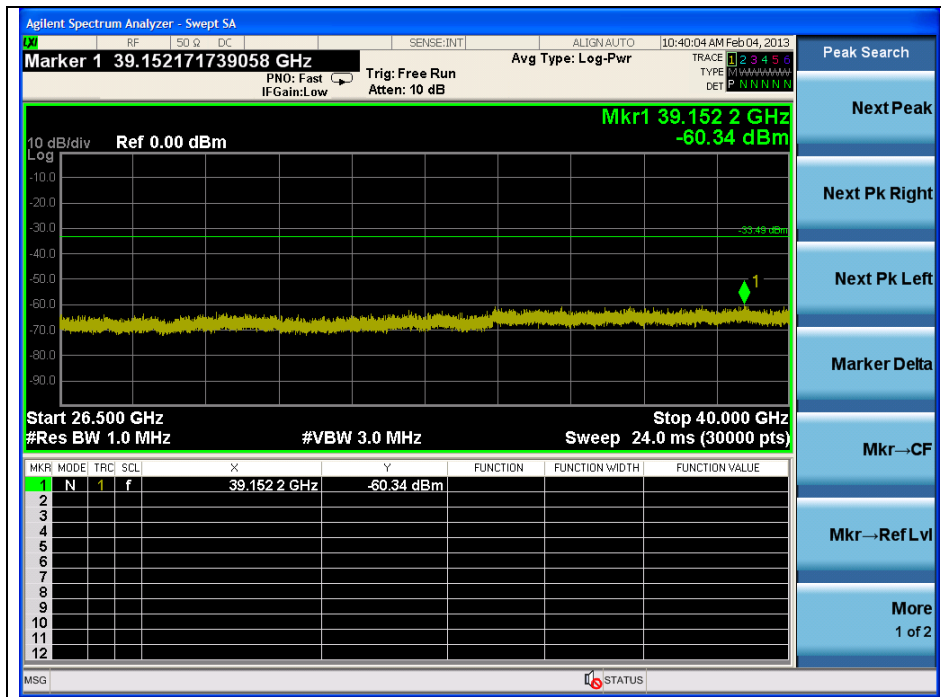
Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 763.90	Noise floor	-	-
10 440.00	-62.62	22.08	-40.54
39 162.10	Noise floor	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

5 240 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

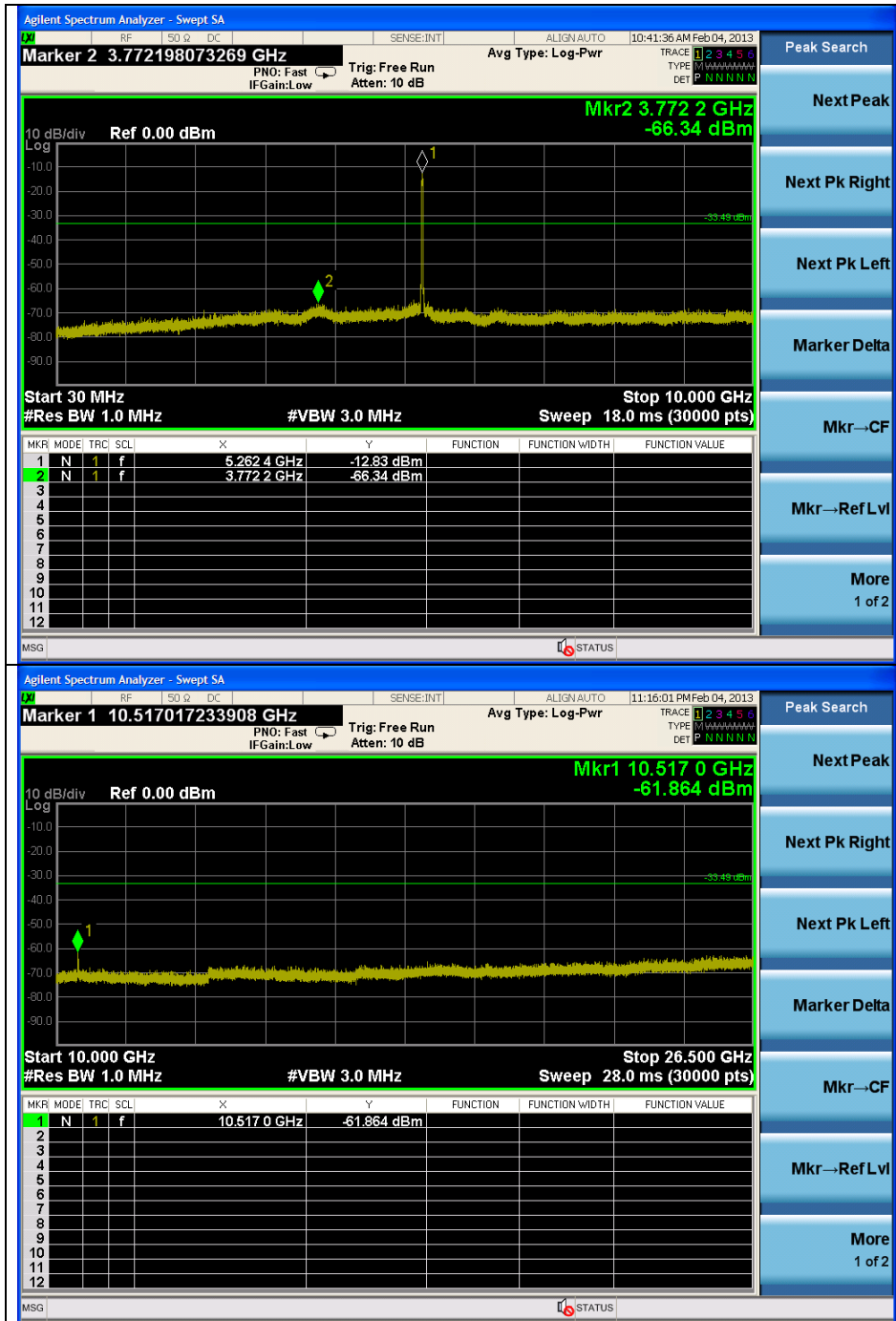
Offset (dB) = Attenuator(dB) + Cable loss (dB)

Result (dB m) = Spurious offset (dB) + Reading values (dB m)

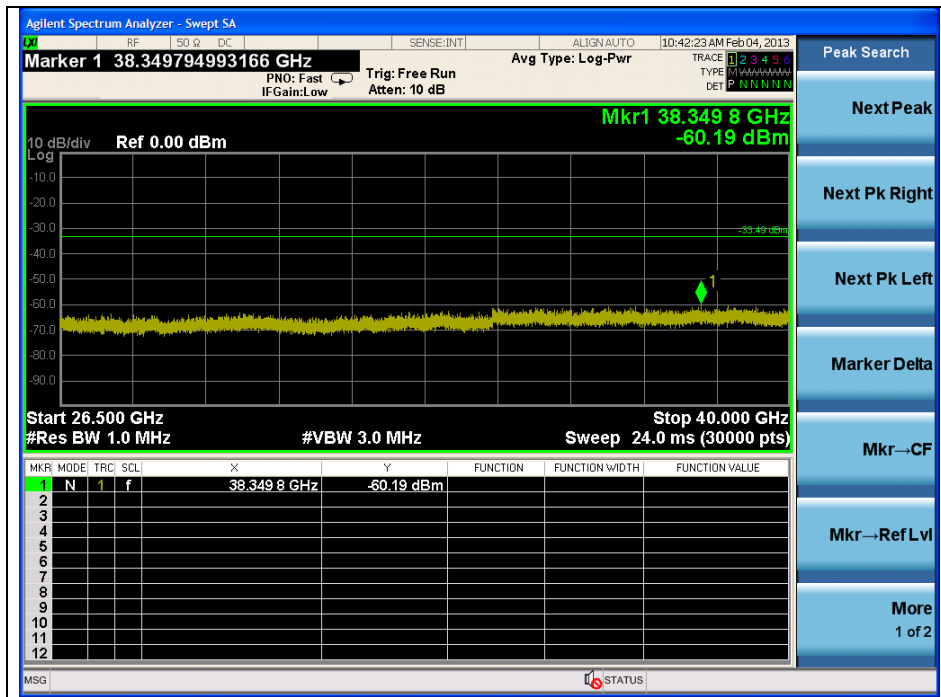
Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 887.90	Noise floor	-	-
10 480.20	-61.40	22.23	-39.17
39 152.20	Noise floor	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

5 260 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

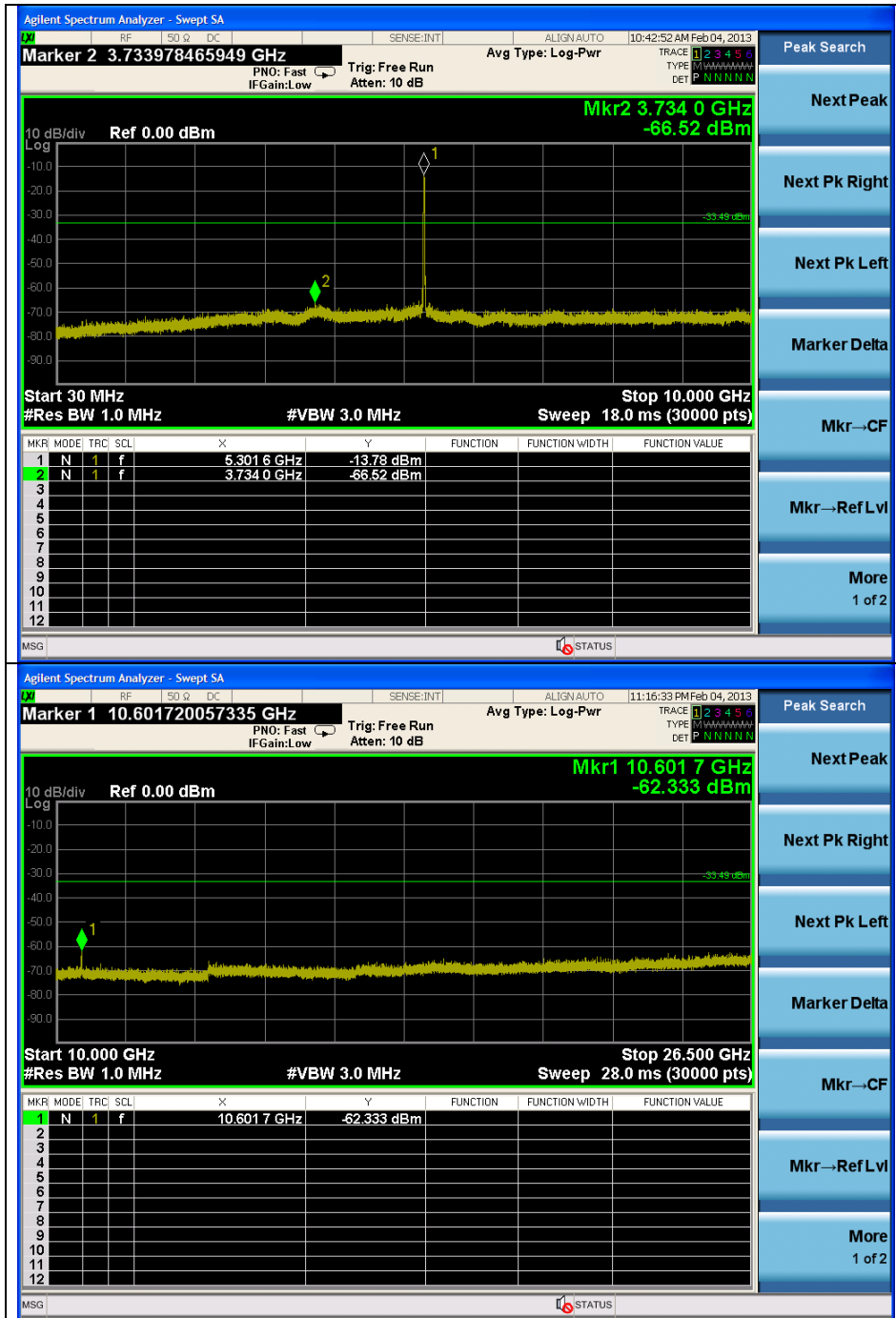
Offset (dB) = Attenuator(dB) + Cable loss (dB)

Result (dB m) = Spurious offset (dB) + Reading values (dB m)

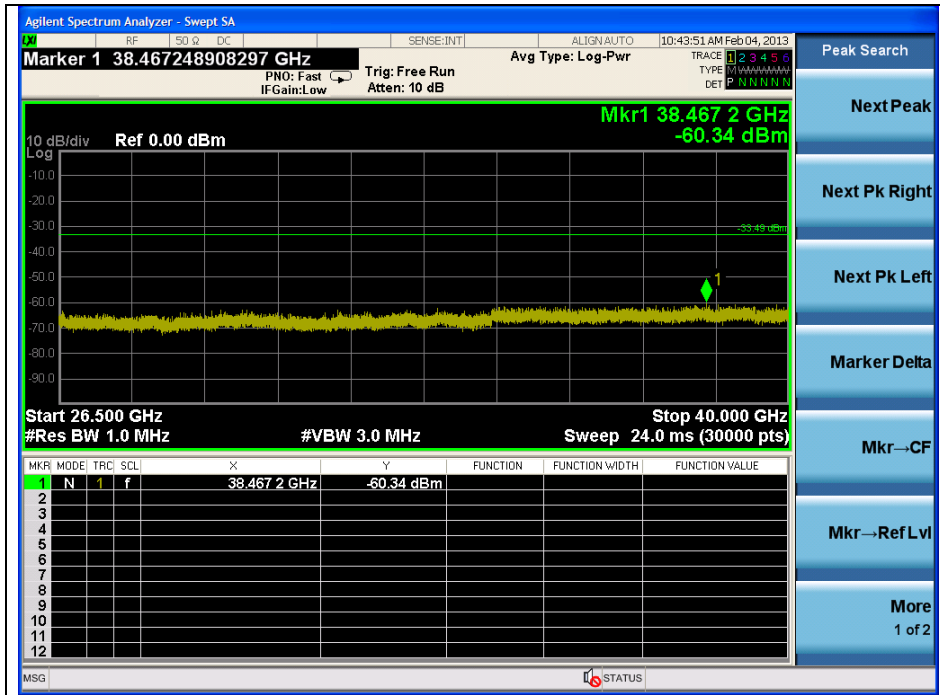
Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 772.20	Noise floor	-	-
10 517.00	-61.86	22.28	-39.58
38 349.80	Noise floor	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

5 300 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

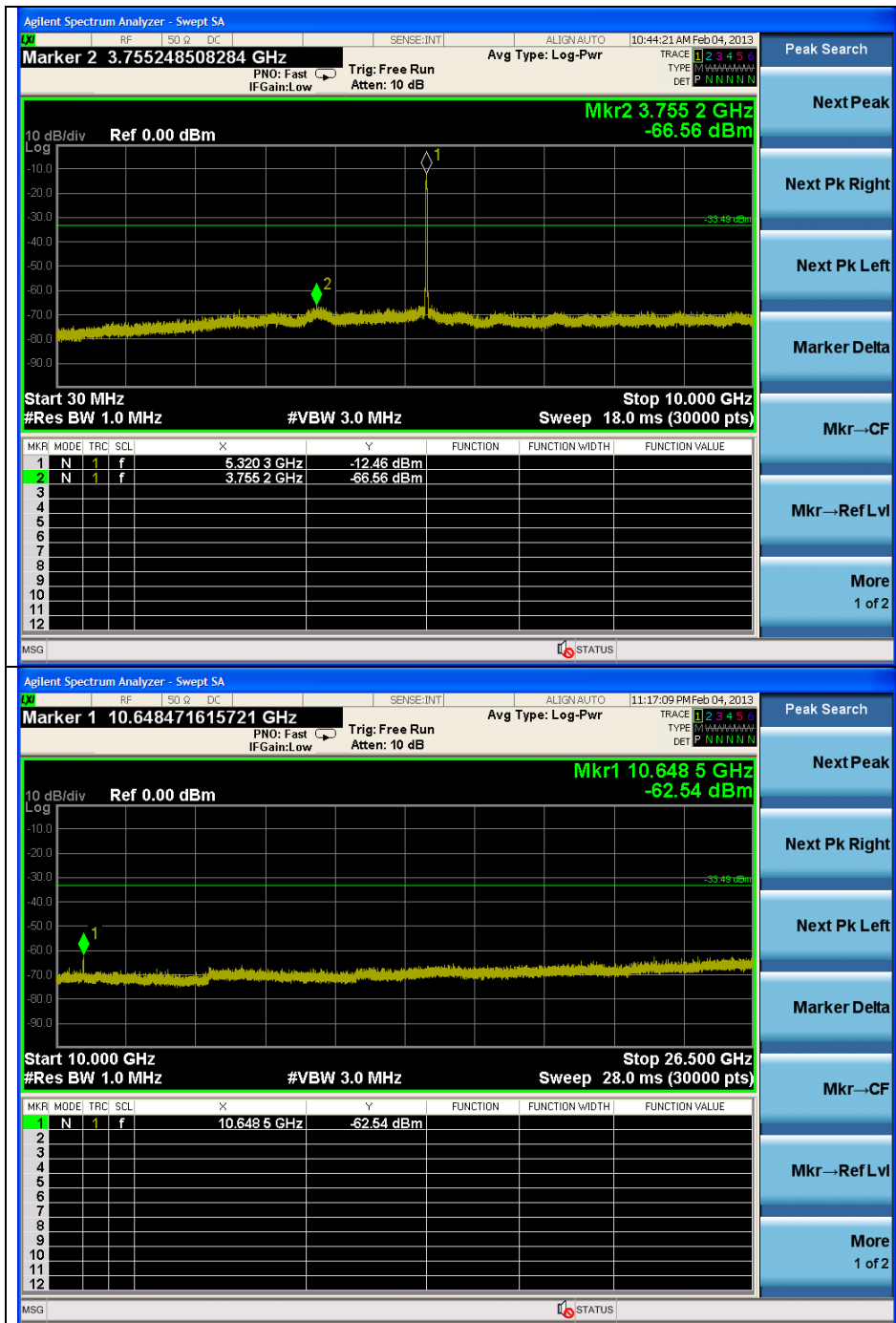
Offset (dB) = Attenuator(dB) + Cable loss (dB)

Result (dB m) = Spurious offset (dB) + Reading values (dB m)

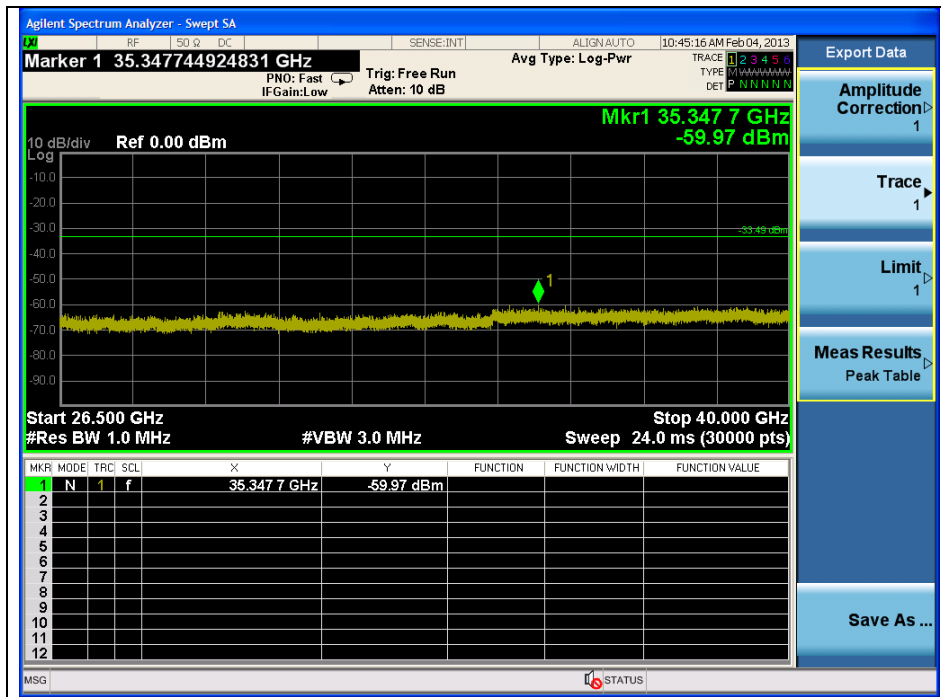
Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 734.00	Noise floor	-	-
10 601.70	-62.33	22.63	-39.70
38 467.20	Noise floor	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

5 320 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

Offset (dB) = Attenuator(dB) + Cable loss (dB)

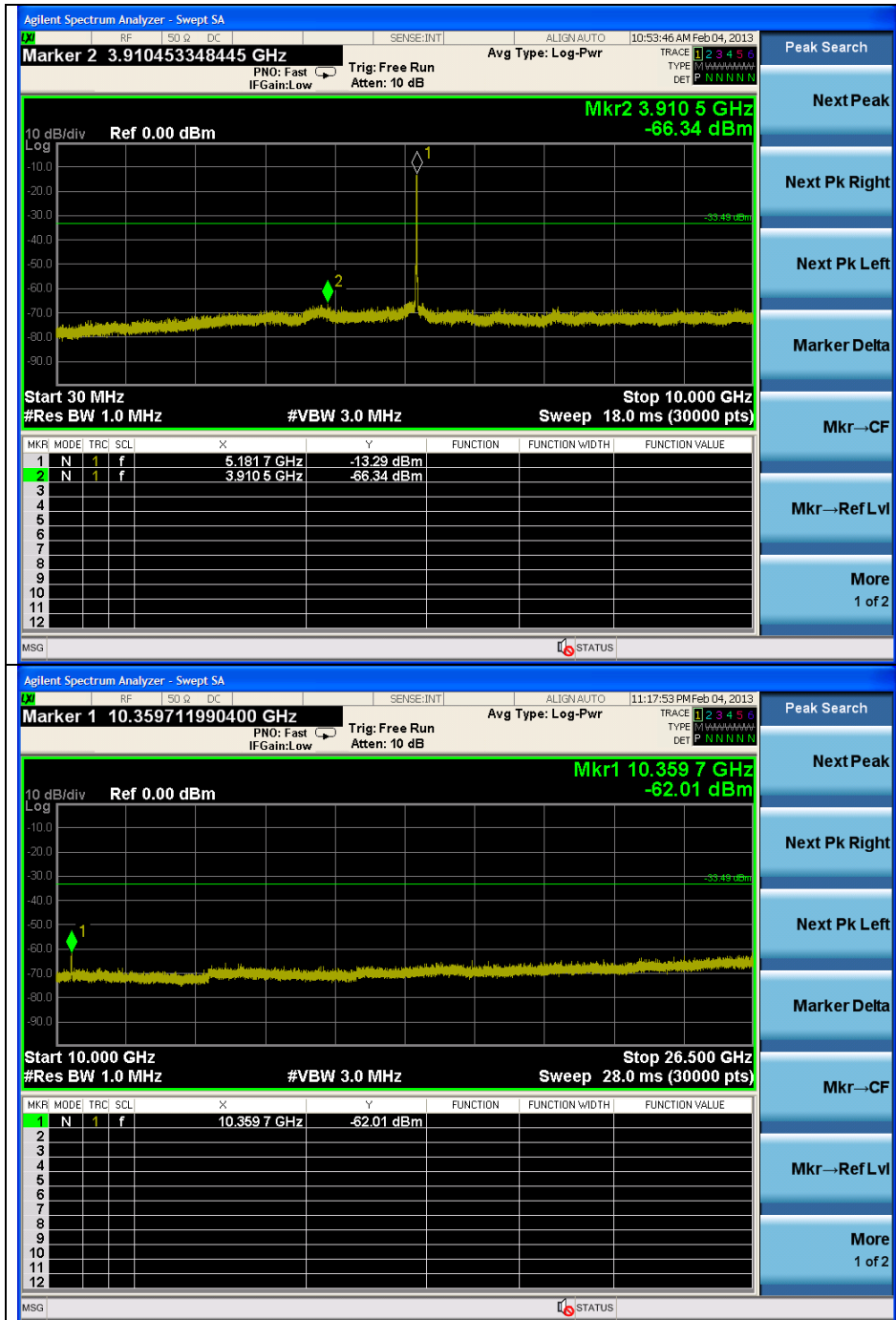
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 755.20	Noise floor	-	-
10 648.50	-62.54	22.78	-39.76
36 347.70	Noise floor	-	-

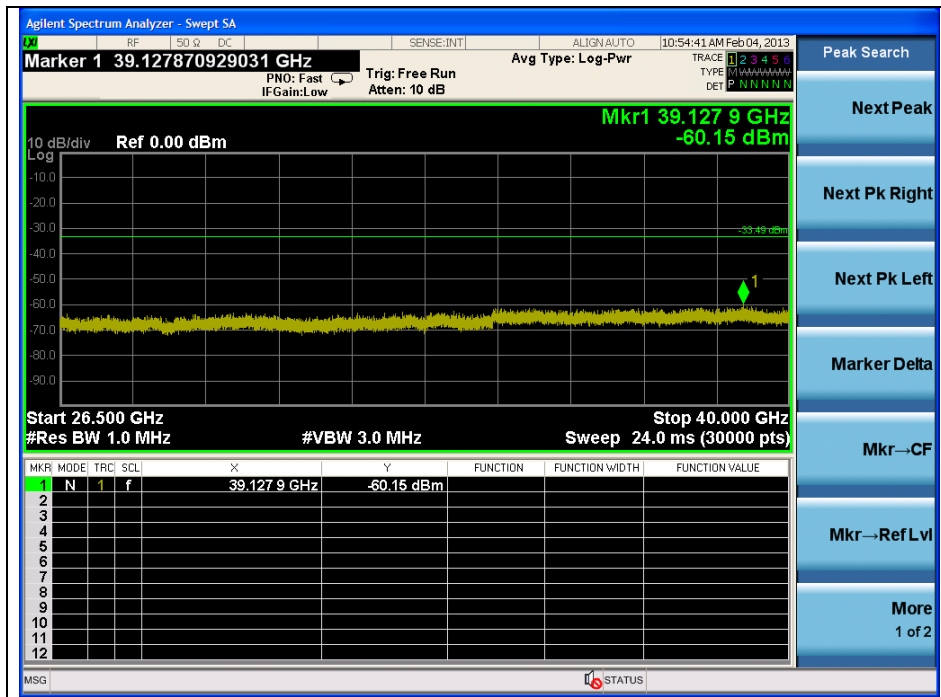
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

802.11n-HT20_MCS0

5 180 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

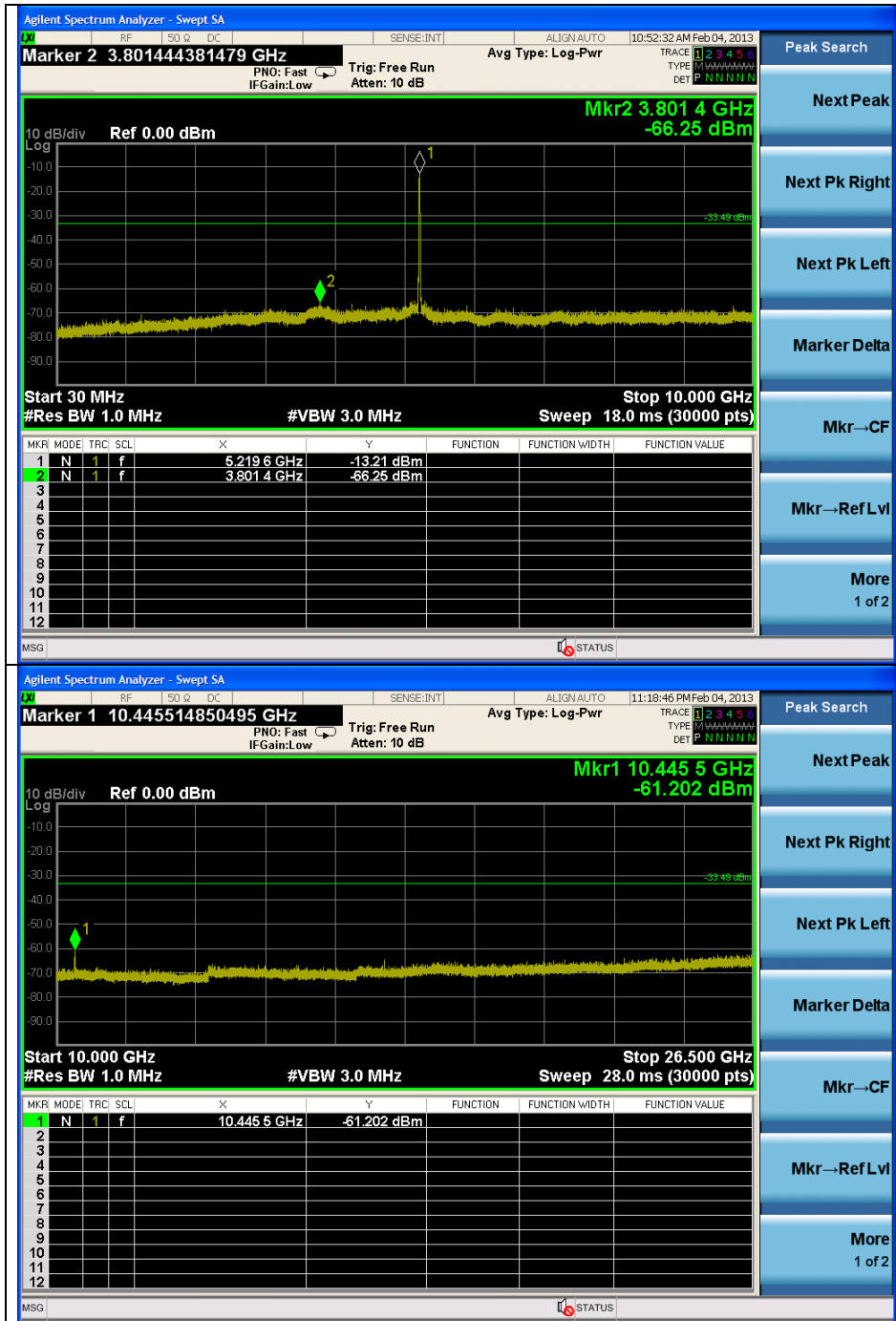
Offset (dB) = Attenuator(dB) + Cable loss (dB)

Result (dB m) = Spurious offset (dB) + Reading values (dB m)

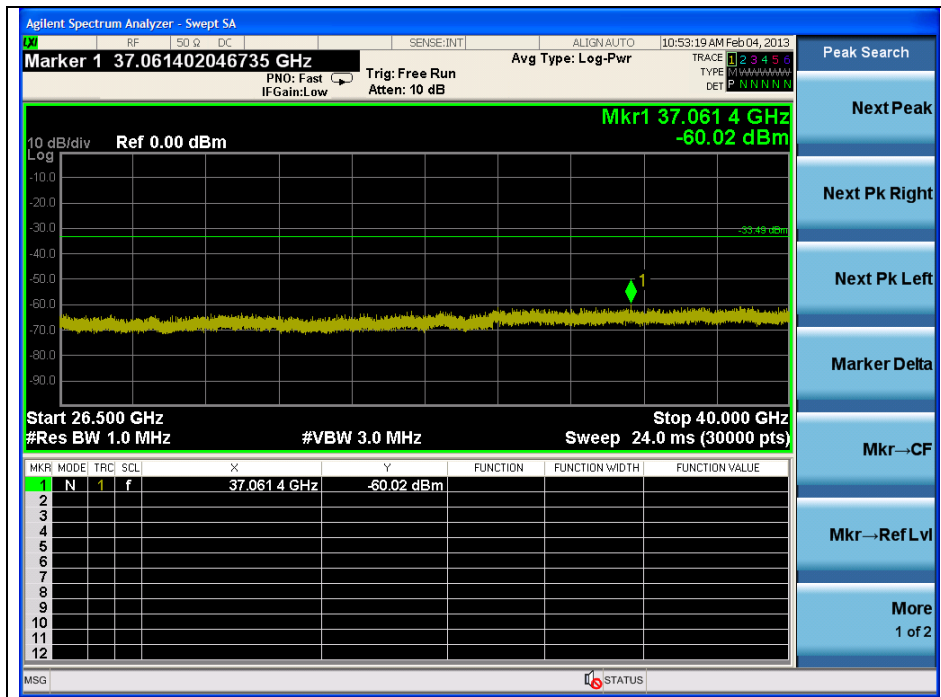
Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 910.50	Noise floor	-	-
10 359.70	-62.01	21.82	-40.19
39 127.90	Noise floor	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

5 220 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

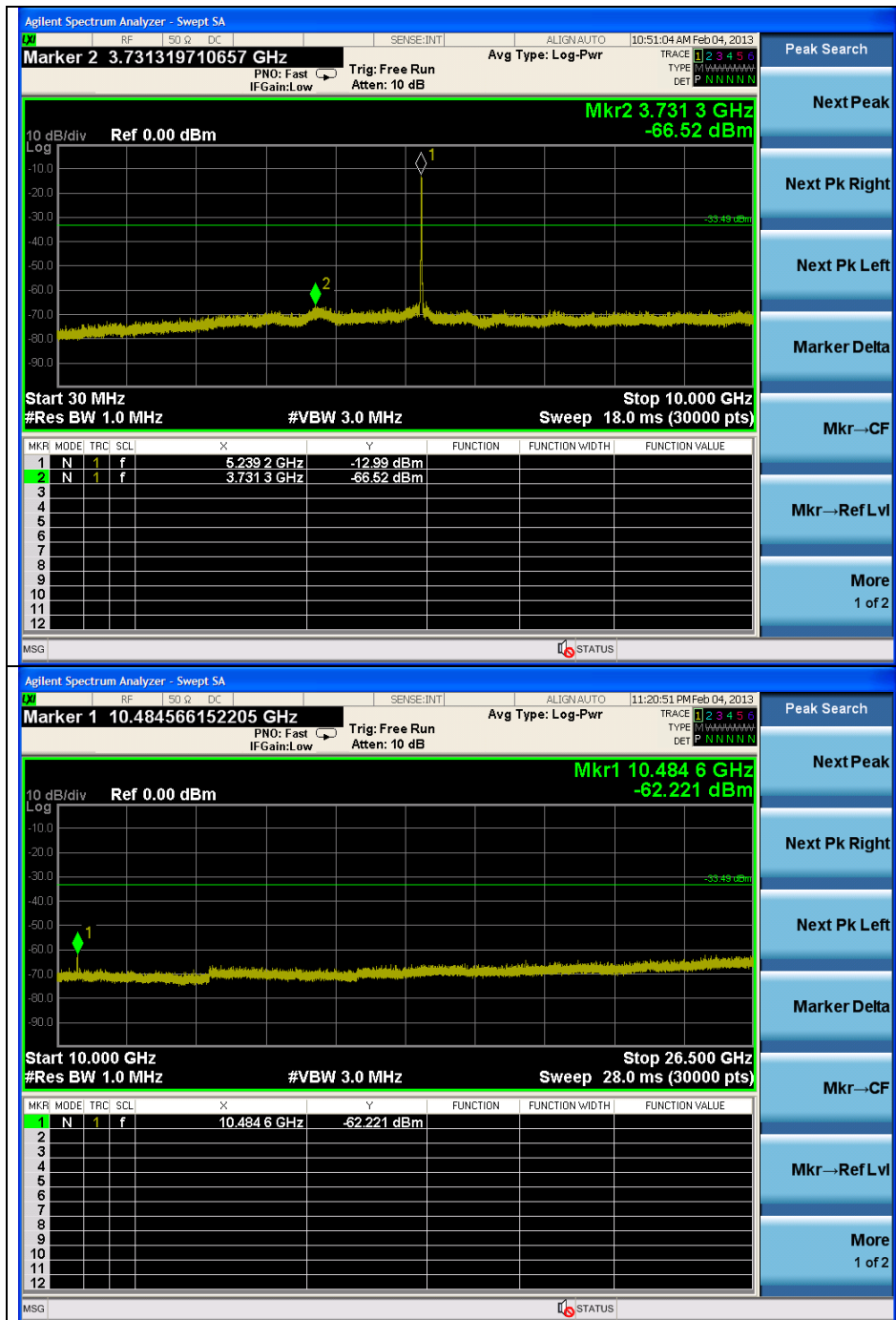
Offset (dB) = Attenuator(dB) + Cable loss (dB)

Result (dB m) = Spurious offset (dB) + Reading values (dB m)

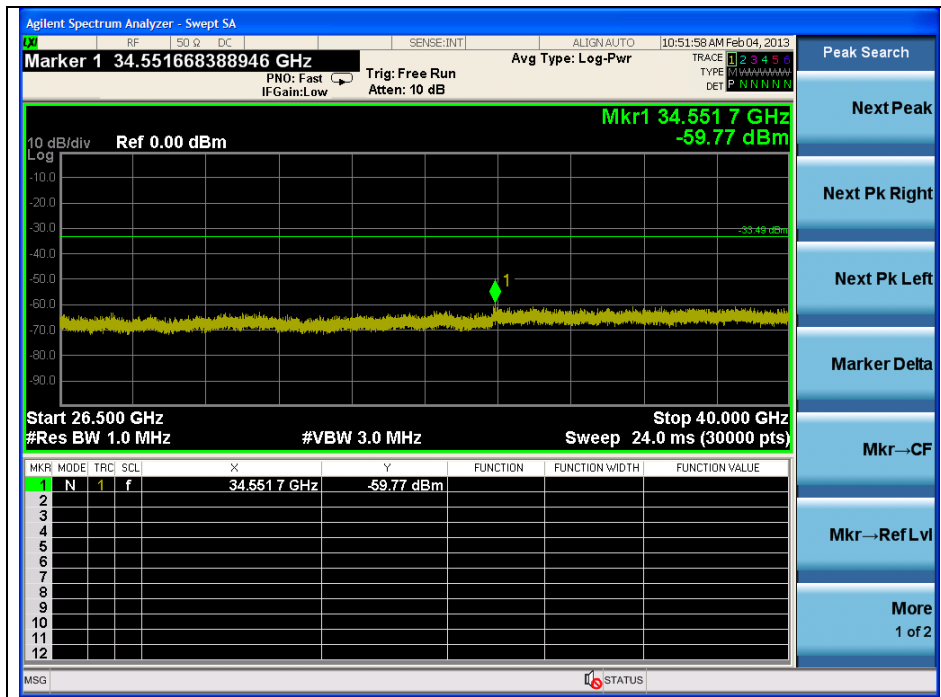
Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 801.40	Noise floor	-	-
10 445.50	-61.20	22.08	-39.12
37 061.40	Noise floor	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

5 240 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

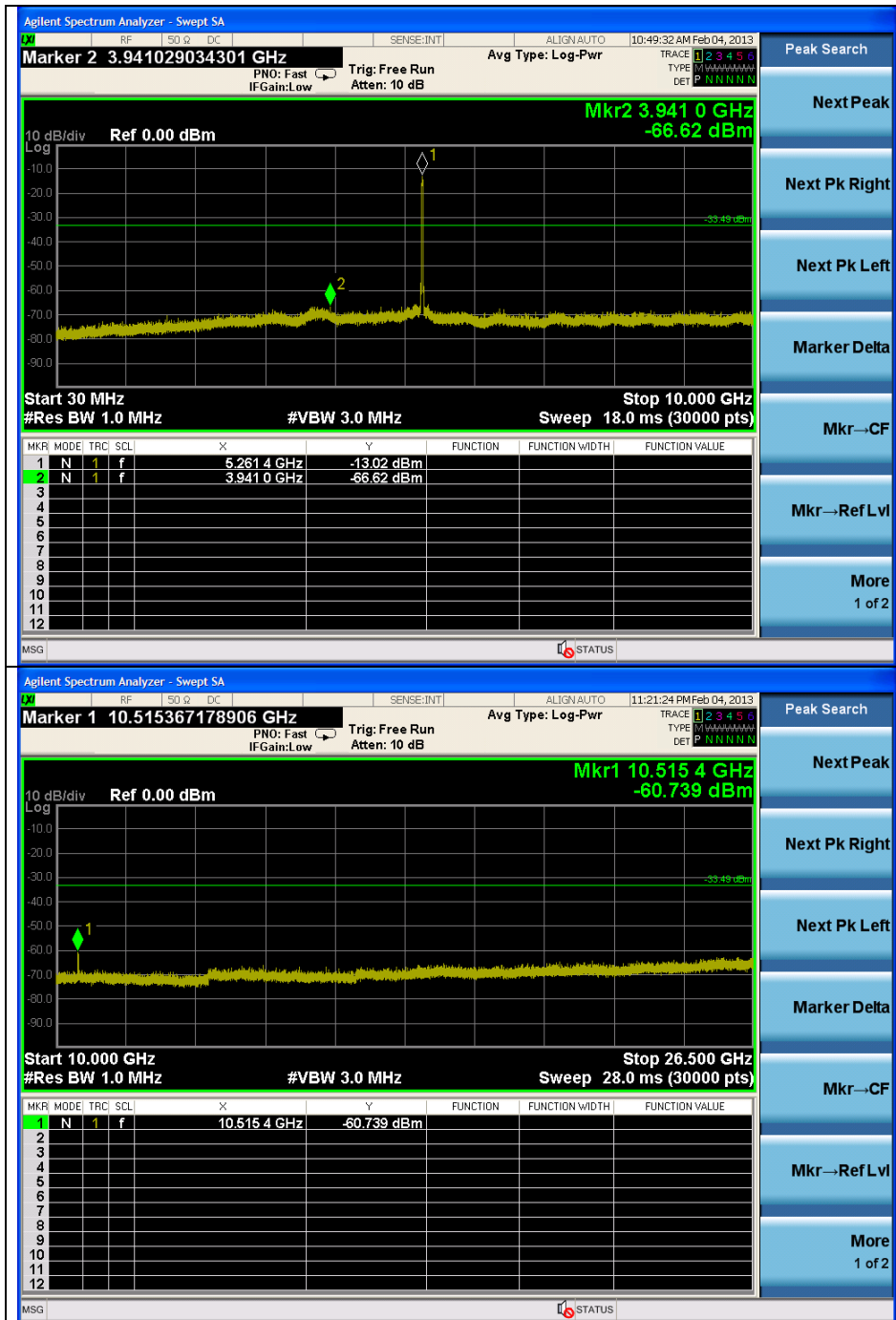
Offset (dB) = Attenuator(dB) + Cable loss (dB)

Result (dB m) = Spurious offset (dB) + Reading values (dB m)

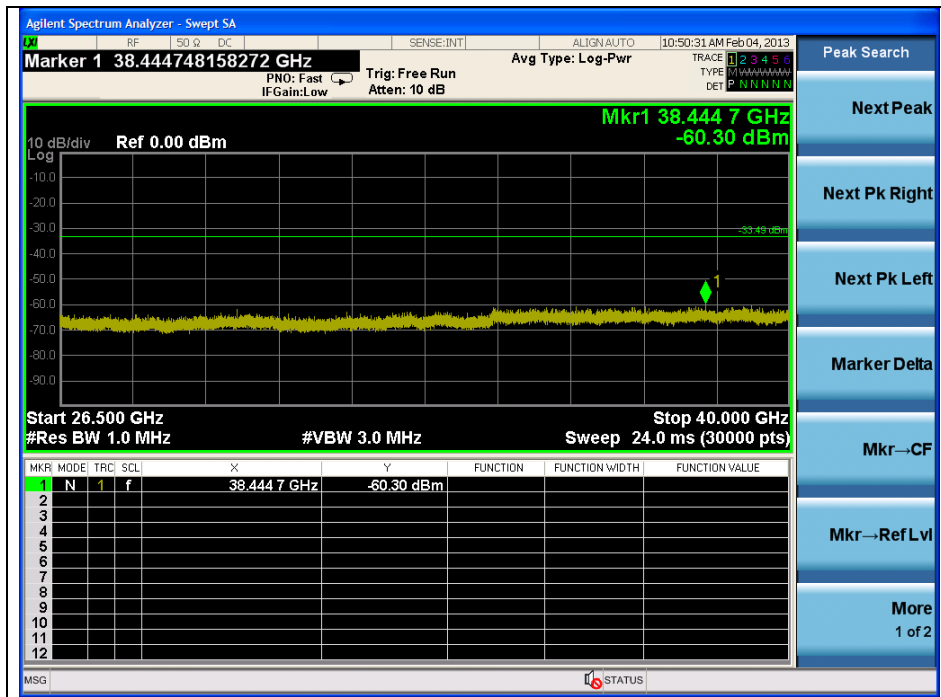
Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 731.30	Noise floor	-	-
10 484.60	-62.22	22.25	-39.97
34 551.70	Noise floor	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

5 260 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

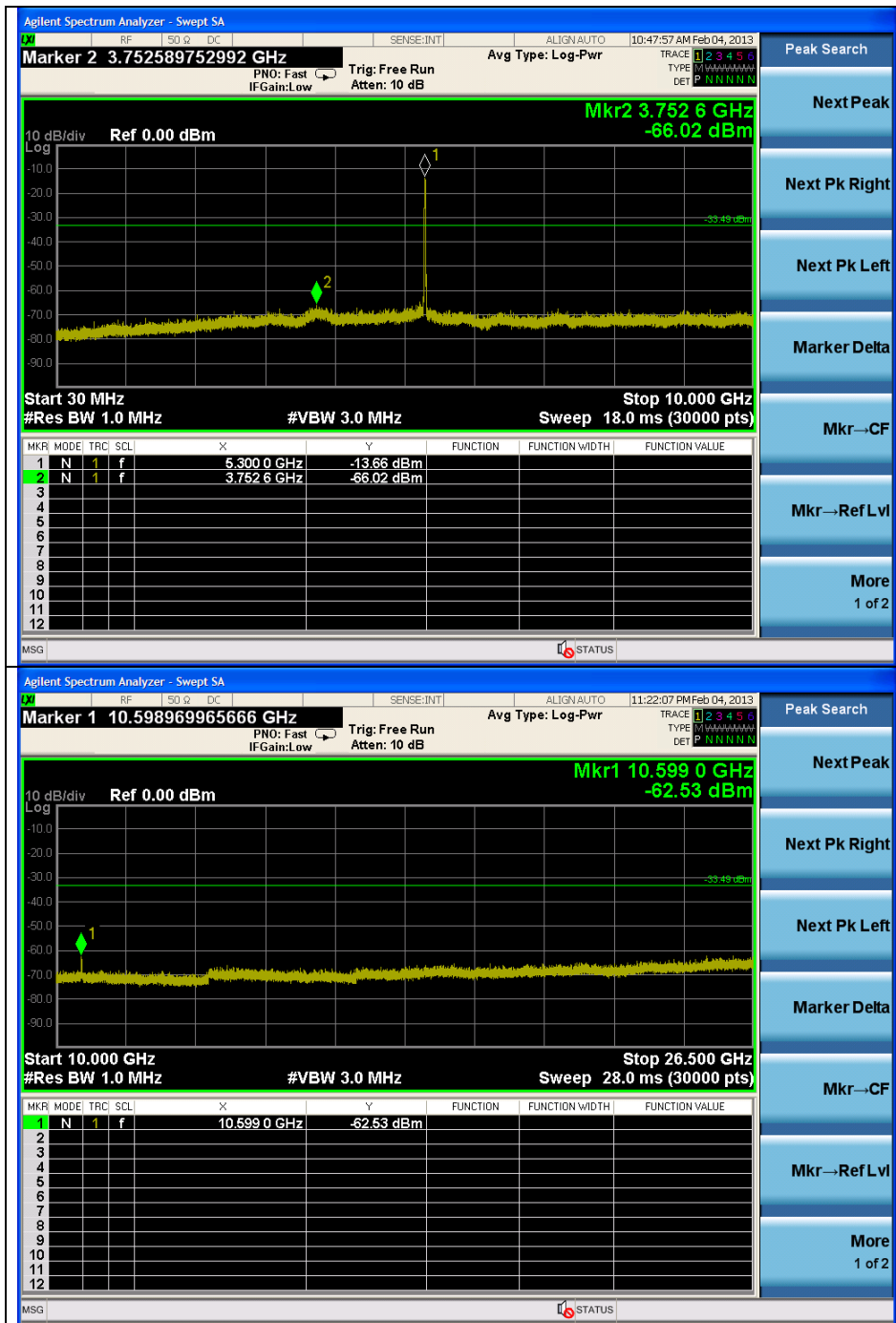
Offset (dB) = Attenuator(dB) + Cable loss (dB)

Result (dB m) = Spurious offset (dB) + Reading values (dB m)

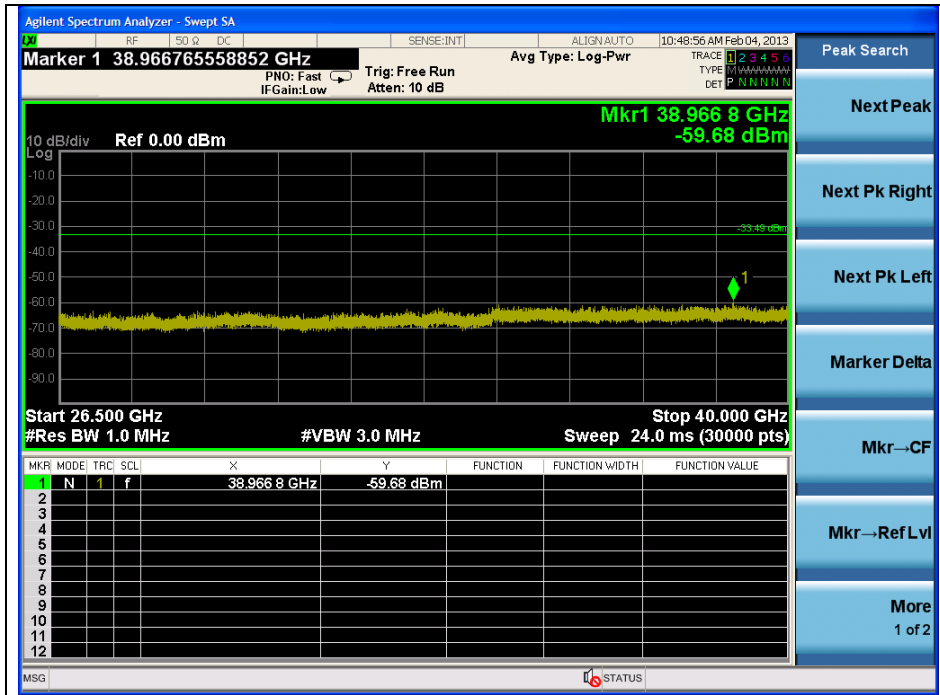
Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 941.00	Noise floor	-	-
10 515.40	-60.74	22.28	-38.46
38 444.70	Noise floor	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

5 300 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

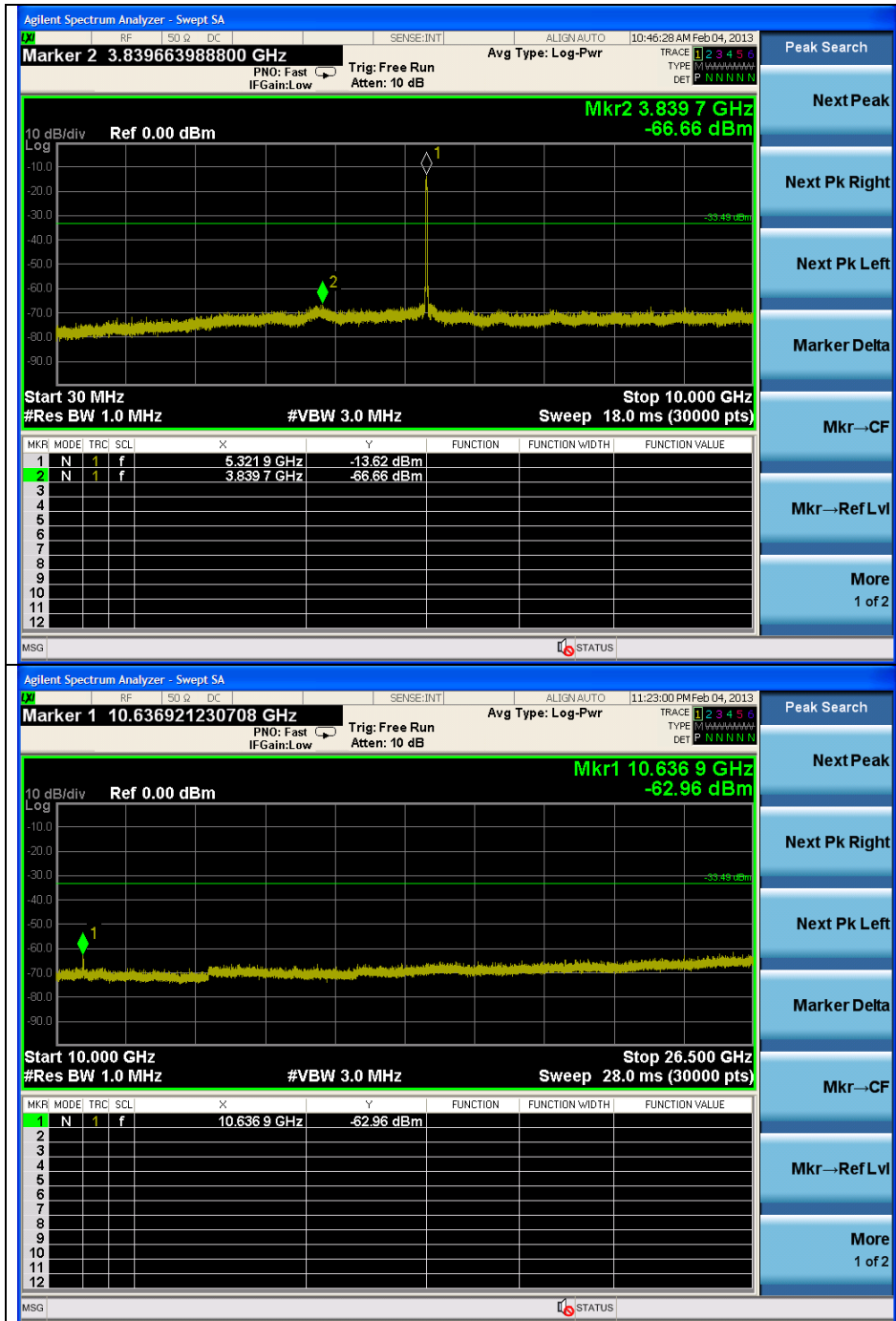
Offset (dB) = Attenuator(dB) + Cable loss (dB)

Result (dB m) = Spurious offset (dB) + Reading values (dB m)

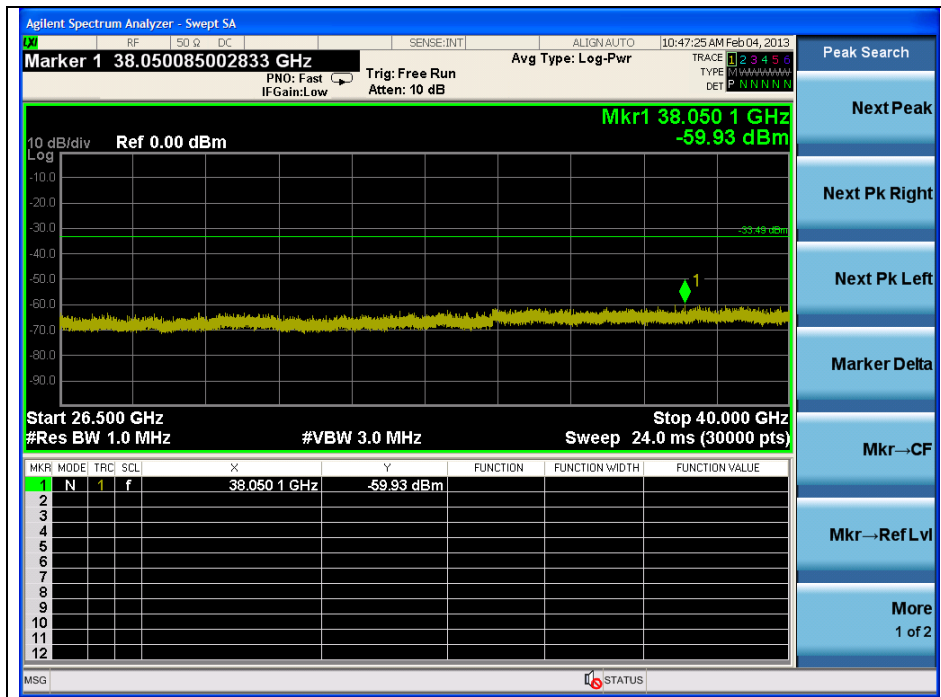
Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 752.60	Noise floor	-	-
10 599.00	-62.53	22.63	-39.90
38 966.80	Noise floor	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

5 320 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

Offset (dB) = Attenuator(dB) + Cable loss (dB)

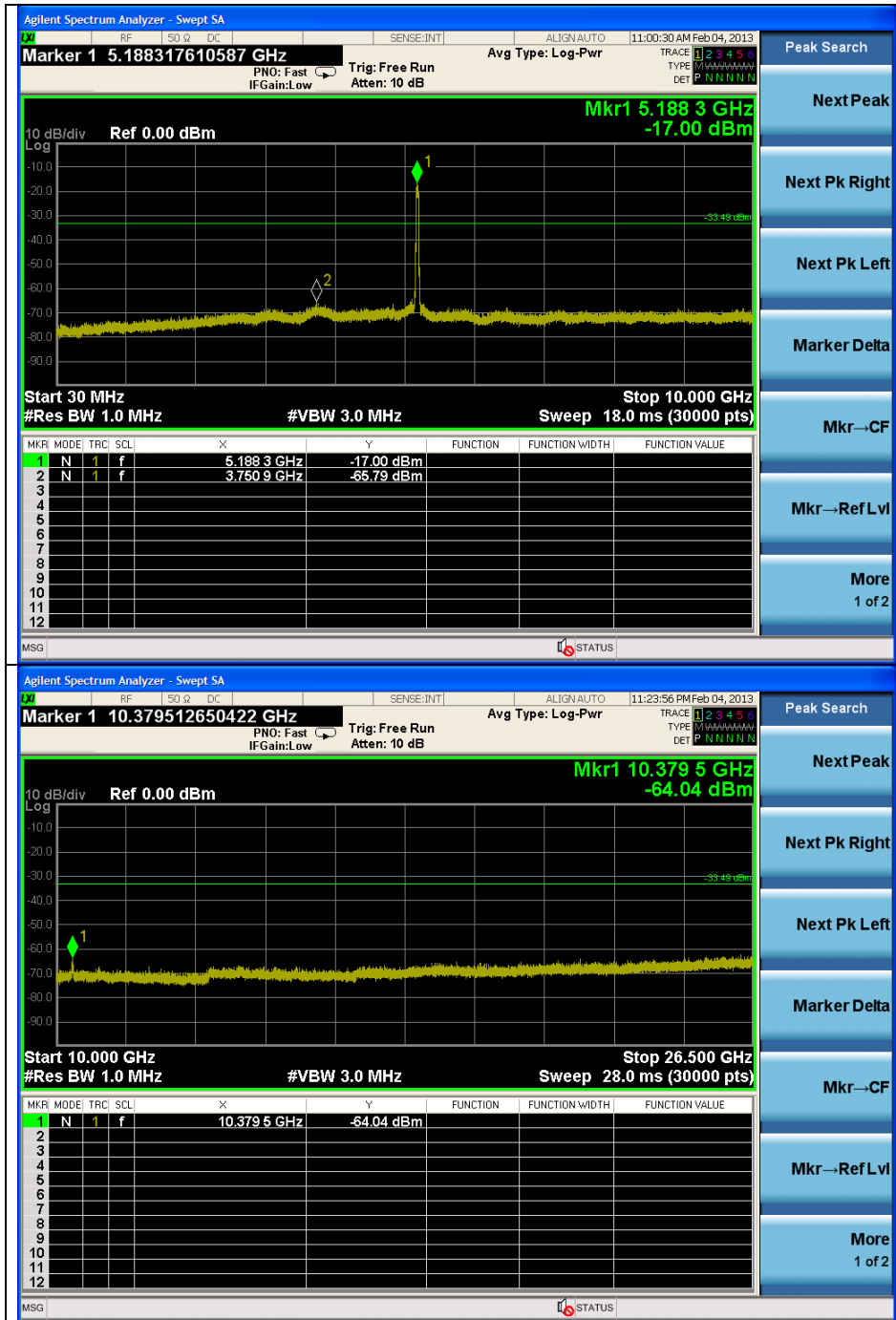
Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 839.70	Noise floor	-	-
10 636.90	-62.96	22.78	-40.18
38 050.10	Noise floor	-	-

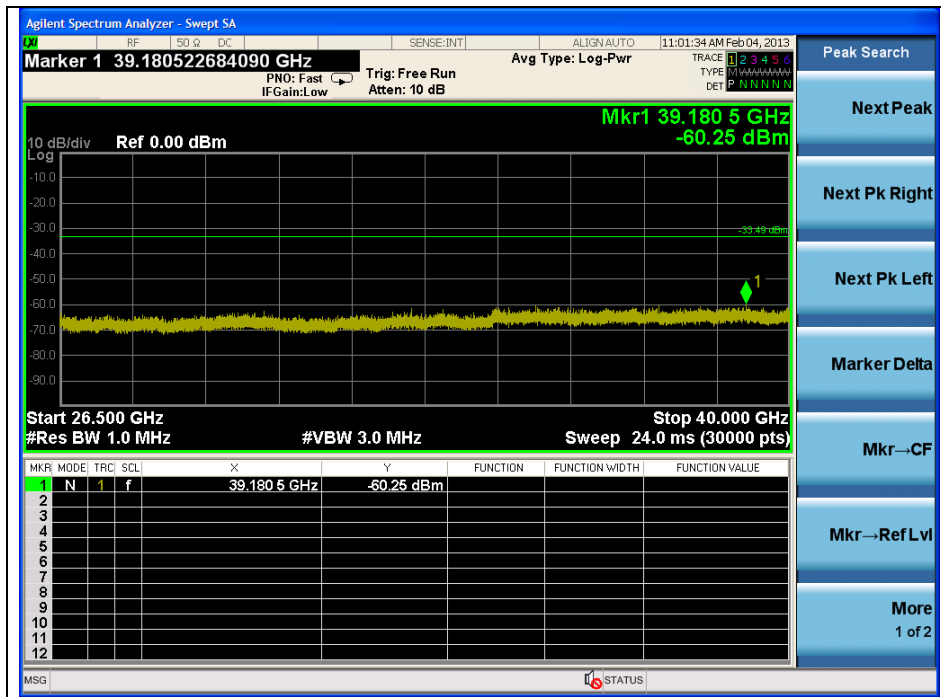
The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

802.11n-HT40_MCS0

5 190 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



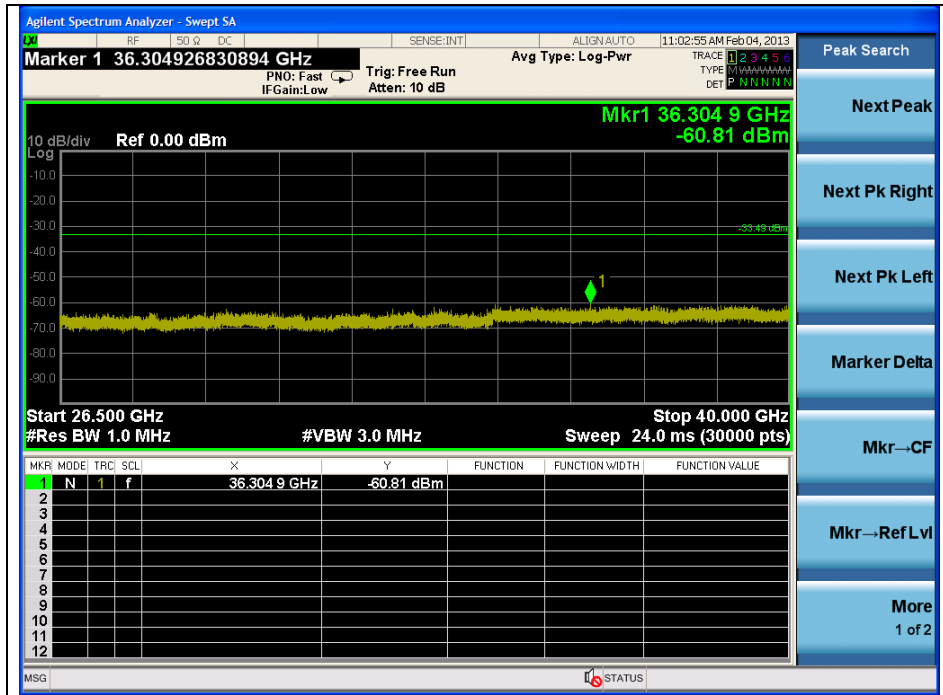
Note:

Offset (dB) = Attenuator(dB) + Cable loss (dB)

Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 750.90	Noise floor	-	-
10 379.50	-64.04	21.89	-42.15
39 180.50	Noise floor	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

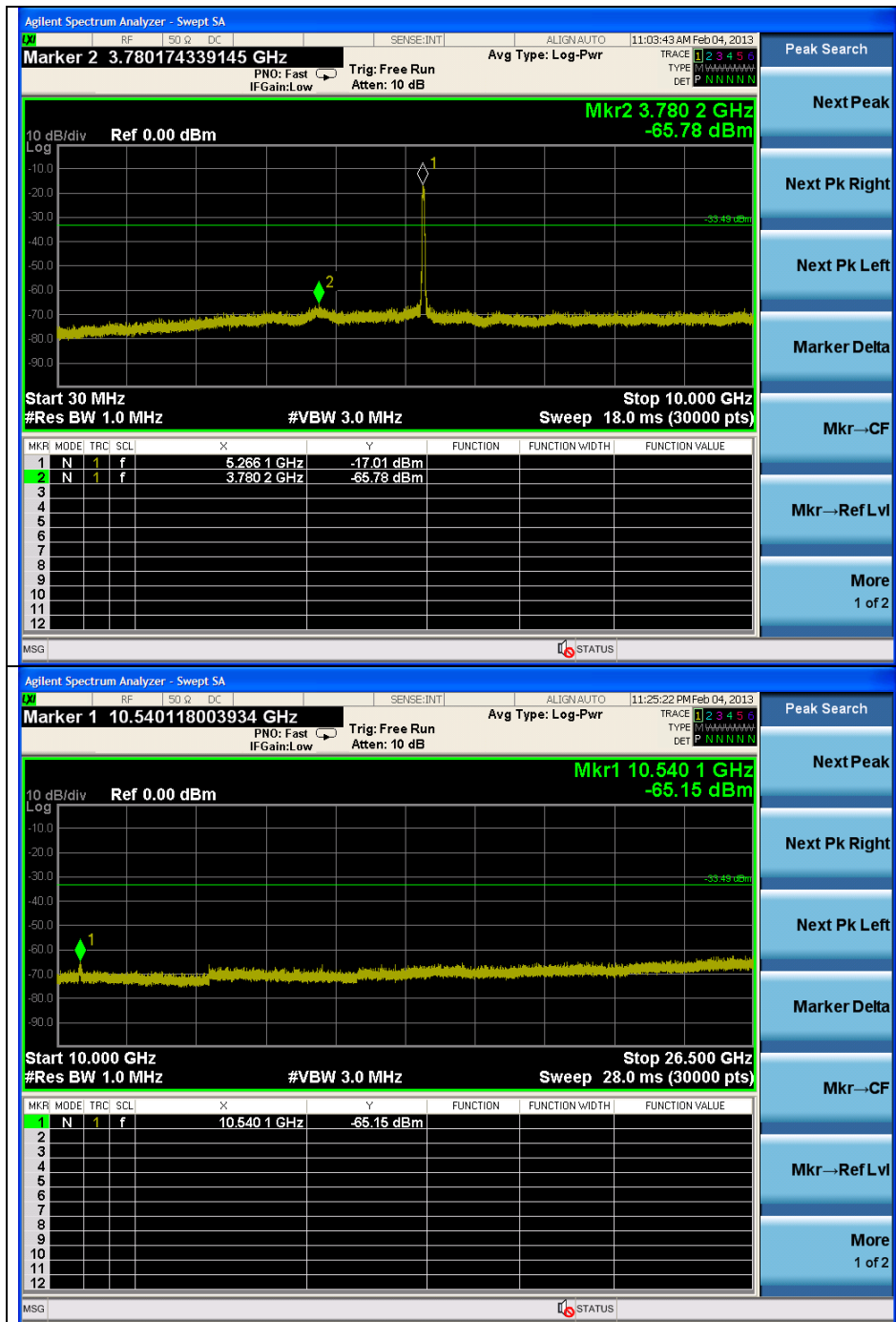
Offset (dB) = Attenuator(dB) + Cable loss (dB)

Result (dB m) = Spurious offset (dB) + Reading values (dB m)

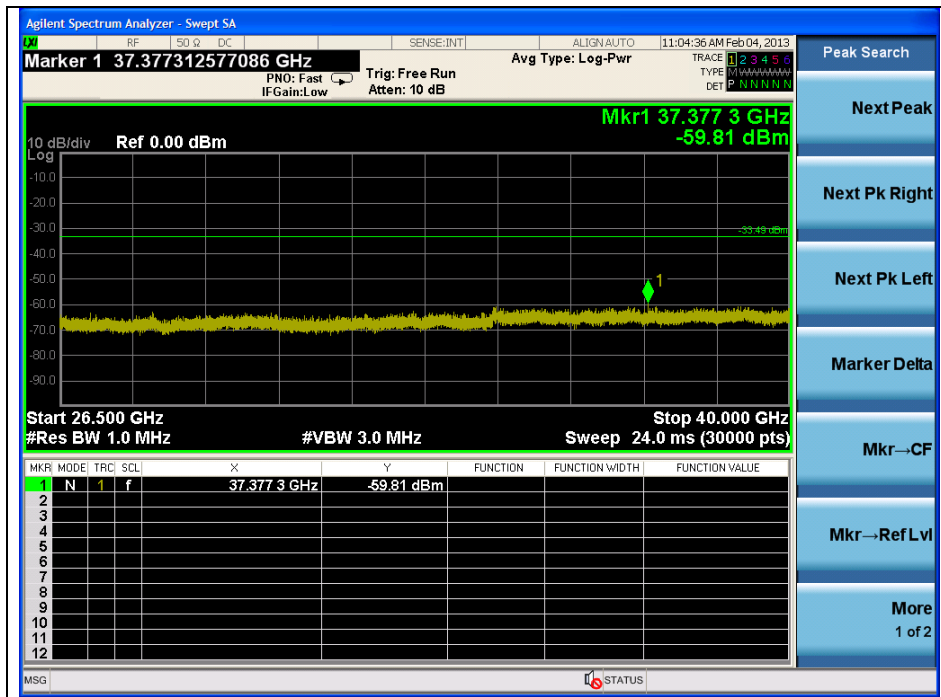
Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 776.20	Noise floor	-	-
10 464.80	-64.39	22.28	-42.11
36 304.90	Noise floor	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

5 270 MHz



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.



Note:

Offset (dB) = Attenuator(dB) + Cable loss (dB)

Result (dB m) = Spurious offset (dB) + Reading values (dB m)

Frequency (MHz)	Reading values (dB m)	Spurious offset (dB)	Result (dB m)
3 780.20	Noise floor	-	-
10 540.10	-65.15	22.42	-42.73
37 377.30	Noise floor	-	-

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company.

