TEST REPORT CONCERNING THE COMPLIANCE OF A SPREAD SPECTRUM TRANSMITTER, BRAND Nedap, MODEL ASSY FLR RF+RFID WITH 47 CFR PART 15 (10-1-13 Edition), RSS-Gen (issue 3, December 2010) and RSS-210 (Issue 8, December 2010).

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August 27, 2014

FCC listed : 90828
Industry Canada : 2932G-2
R&TTE, LVD, EMC Notified Body : 1856

TÜV Rheinland Nederland B.V.
Eiberkamp 10
9351 VT Leek
Telephone: +31 88 8887888
Telefax: +31 594 504804

E-mail: info@nl.tuv.com
Web: www.tuv.com

MEASUREMENT/TECHNICAL REPORT

N.V. Nederlandsche Apparatenfabriek "Nedap"
Model: ASSY FLR RF+RFID

FCC ID: CGDFLRRFRFID
IC: 1444A-FLRRFRFID

This report concerns: Original grant/certification ~~Class 1 permissive change~~ ~~Verification~~

Equipment type: Spread Spectrum Transmitter (DSS)

Report prepared by:	Name	: Richard van der Meer
	Company name	: TÜV Rheinland Nederland B.V.
	Address	: Eiberkamp 10
	Postal code/city	: 9351VT Leek
	Mailing address	: P.O. Box 37
	Postal code/city	: 9350 AA Leek
	Country	: The Netherlands
	Telephone number	: + 31 594 505 005
	Telefax number	: + 31 594 504 804
	E-mail	: info@tuv-eps.com

The data taken for this test and report herein was done in accordance with 47 CFR Part 15 (10-1-13 Edition) and the measurement procedures of FCC Public Notice DA 00-705. TÜV Rheinland Nederland B.V. at Leek, The Netherlands, certifies that the data is accurate and contains a true representation of the emission profile of the Equipment Under Test (EUT) on the date of the test as noted in the test report. I have reviewed the test report and find it to be an accurate description of the test(s) performed and the EUT so tested.

Date: August 27, 2014

Signature:

O. Hoekstra
Senior Engineer Telecom TÜV Rheinland Nederland B.V.

Description of test item

Test item	:	Spread Spectrum Transmitter (DSS)
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand	:	Nedap
Model	:	ASSY FLR RF+RFID
Serial number	:	E701 A001 (Antenna 1) and E702 A001 (Antenna 2)
Revision	:	--

Applicant information

Applicant's representative	:	Mr. J. Hulshof
Company	:	N.V. Nederlandsche Apparatenfabriek "Nedap"
Address	:	Parallelweg 2
Postal code	:	7141 DC
City	:	Groenlo
Country	:	The Netherlands
Telephone number	:	+31 544 471 162
Telefax number	:	+31 544 463 475

Test(s) performed

Location	:	Leek
Test(s) started	:	July 16, 2014
Test(s) completed	:	August 21, 2014
Purpose of test(s)	:	Equipment Authorization (Original grant/certification)
Test specification(s)	:	FCC 47 CFR Part 15, Subpart C, Section 15.247 (10-1-13 Edition) RSS-Gen (Issue 3, December 2010) an RSS-210 (Issue 8, December 2010) FCC Public Notice DA 00-705 march 30, 2000
Test engineer(s)	:	R. van der Meer
Report written by	:	R. van der Meer
Report date	:	August 27, 2014

Table of contents

1 General information.

1.1 Product description.

1.1.1 Introduction.

The brand Nedap model ASSY FLR RF+RFID, hereafter referred to as EUT, is a Spread Spectrum Transmitter (DSS) and is part of the EAS (Electronic Article Surveillance) system for detection of 8.2MHz EAS labels used for in-store retail applications. The EUT is factory configured for the 902-928 MHz band.

Photograph of the RFID unit

The content of this report and measurement results have not been changed other than the way of presenting the data.

1.2 Related submittal(s) and/or Grant(s).

1.2.1 General.

This test report supports the original certification in equipment authorization files under FCC ID: CGDFLRRFRFID and IC:1444A-FLRRFRFID.

1.3 Tested system details.

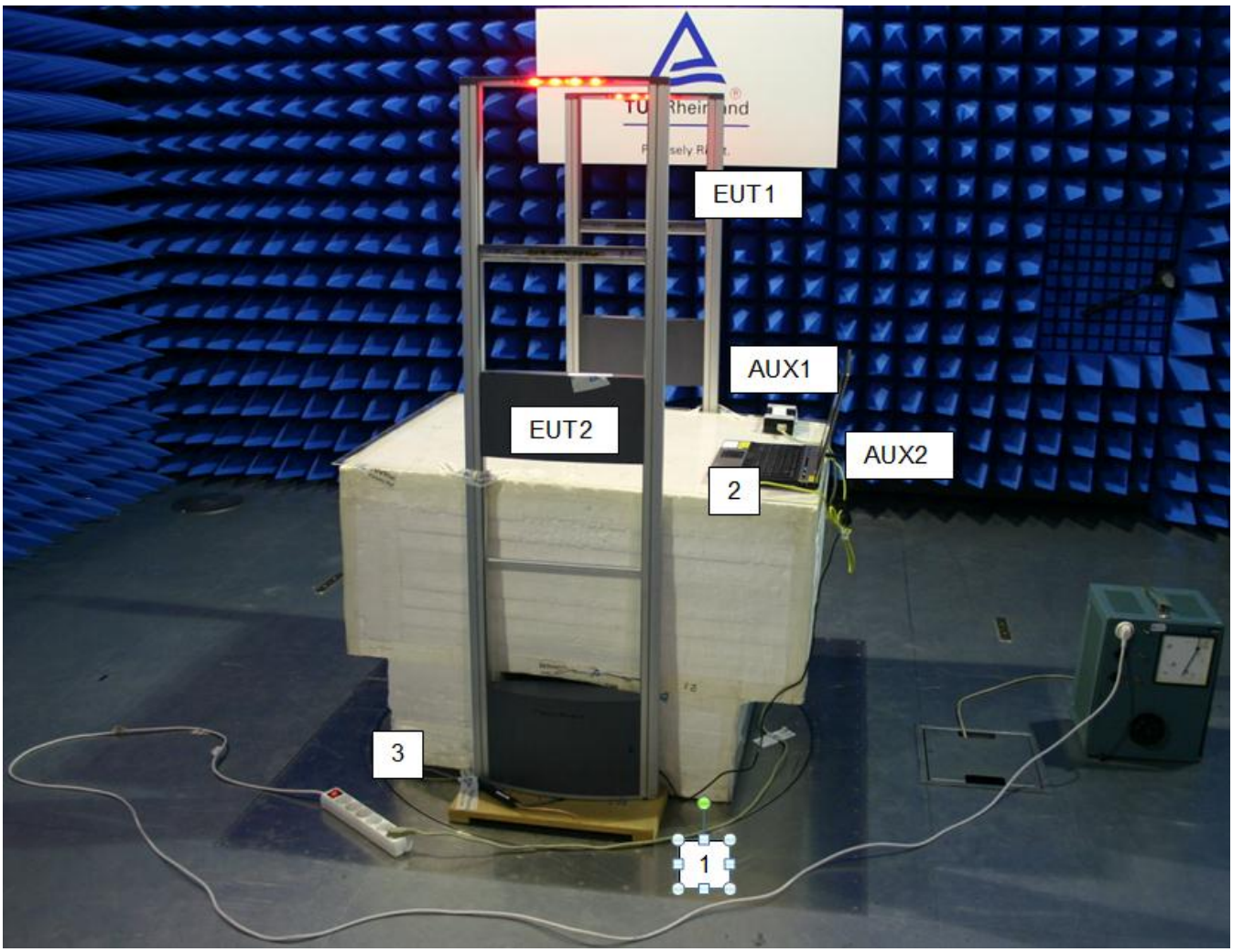
Details and an overview of the system and all of its components, as it has been tested, may be found below.

EUT1	:	Spread Spectrum Transmiiter (DSS)
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand	:	Nedap
Model	:	ASSY FLR RF+RFID
Serial number	:	E701 A001
Voltage input rating	:	56Vdc
Voltage output rating	:	n.a.
Current input rating	:	--
Antenna	:	internal
Operation frequency	:	902 – 928 MHz
Modulation	:	GFSK
Spreading technique	:	FHSS
Remarks	:	--

EUT2	:	Receiver (Antenna 2)
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand	:	Nedap
Model (Type)	:	ASSY FLR RF+RFID
Serial number	:	E702 A001
Voltage input rating	:	56Vdc
Voltage output rating	:	n.a.
Current input rating	:	n.a.
Remarks	:	--

Test item (AUX1)	:	Power Inserter
Manufacturer	:	Power-Win Technology Corp.
Brand	:	Power-Win Technology Corp.
Model	:	PW-085C-1Y560HPOE
Serial number	:	73766261
Voltage input rating	:	100-240Vac 50-60 Hz
Voltage output rating	:	56Vdc
Remark	:	--

AUX2	:	Laptop PC including power supply adapter
Manufacturer	:	HP
Brand	:	HP
Model	:	Elite 8530p
Serial number	:	2CE943F14R
Voltage input rating	:	--
Voltage output rating	:	--
Current input rating	:	--
Remarks	:	Required to program the EUT, property applicant



Photograph of the EUT in the testsetup (schematic overview is given on the next page).

1.3.1 Description of input and output ports.

Number	Terminal	From	To	Remarks	
1	Mains	Mains	AUX1 and AUX2	--	
2	LAN	AUX1 Out	EUT1 In	Shielded cable	
3	Antenna coax cable	EUT1 transmitter	EUT2 receiver	Shielded cable	
4	Power over Ethernet	AUX2	AUX1 In	Shielded cable	
5	LAN	EUT1 Out	EUT2 In	Shielded cable	

Operation mode 1: System "Passive", not detecting a label and metal.
Operation mode 2: System "Active", detecting a label and metal

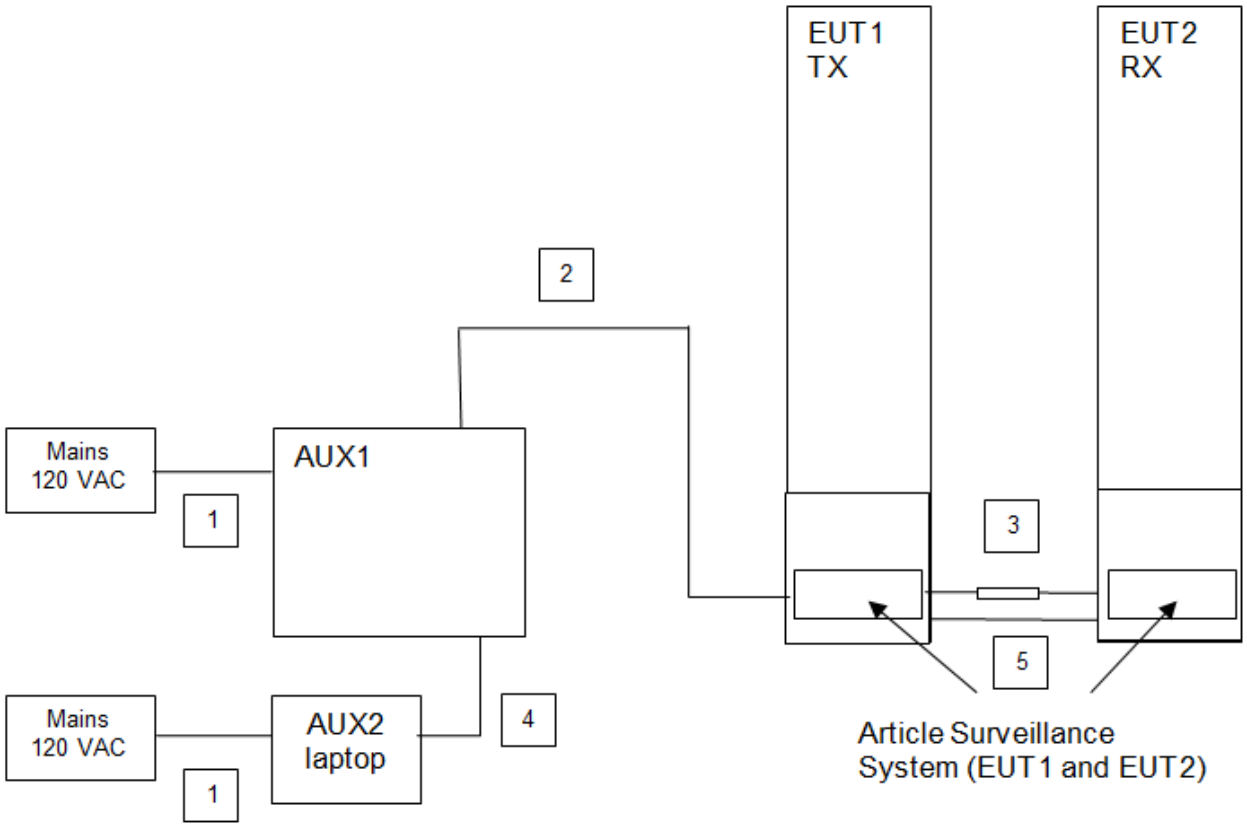


Figure 1. Blockdiagram of the basic test setup and connections

1.4 Test methodology.

The test methodology used is based on the requirements of 47 CFR Part 15 (10-1-13 Edition), sections 15.31, 15.209 and 15.247 and RSS-Gen (issue 3, December 2010) an RSS-210 (Issue 8, December 2010).

The test methods, which have been used, are based on FCC Public Notice DA 00-705.

Radiated emission tests were performed at a measurement distance of 3 meters.

The measurement receiver is switching automatically to the right bandwidth in accordance with CISPR 16. This is implemented in the receiver. The antenna factors are programmed in the measurement receiver. The receiver automatically calculates the appropriate correction factor for the utilized antenna and also the appropriate antenna factor for the cable loss. The total correction is automatically added to the measured value.

1.5 Test facility.

The Federal Communications Commission and Industry Canada has reviewed the technical characteristics of the test facilities at TÜV Rheinland Nederland B.V., located in Leek, 9351VT Eiberkamp 10, The Netherlands, and has found these test facilities to be in compliance with the requirements of 47 CFR Part 15, section 2.948.

The description of the test facilities has been filed at the Office of the Federal Communications Commission under registration number 90828. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

The description of the test facilities has been filed to Industry Canada under registration number 2932G-2. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

1.6 Test conditions.

Normal test conditions:

Temperature (*) : +15°C to +35°C
Relative humidity(*) : 20 % to 75 %
Supply voltage : EUT is battery powered and new batteries were used for testing
Air pressure : 950 – 1050 hPa

*When it was impracticable to carry out the tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests are stated separately.

2 System test configuration.

2.1 Justification.

The system was configured for testing in a typical situation as a customer would normally use it. Software was provided by the applicant to enable continues transmit mode or normal mode.

The justification and manipulation of cables and equipment in order to simulate a worst-case behavior of the test setup has been carried out as prescribed in FCC Public Notice DA 00-705.

2.2 EUT mode of operation.

The EUT has been tested in continuous transmit mode and in receive mode. Testing was performed at the lowest operating frequency (902.75), at the operating frequency in the middle of the specified frequency band (914.75MHz) and at the highest operating frequency (927.25 MHz).

2.3 Special accessories.

No special accessories are used and/or needed to achieve compliance.

2.4 Test software.

The EUT was provided by the manufacturer with suitable software to allow operation in all the required modes. Software used for testing: Nedap renos certification.

This software was running on a laptop computer (AUX3). It was used to enable the test operation modes listed in section 2.2 as appropriate.

2.5 Equipment modifications.

No modifications have been made to the equipment in order to achieve compliance.

2.6 Product Labeling

The product labeling information is available at N.V. Nederlandsche Apparatenfabriek “Nedap”.

2.7 Schematics of the EUT.

The schematics are available at N.V. Nederlandsche Apparatenfabriek “Nedap”.

2.8 Part list of the EUT.

The part list is available at N.V. Nederlandsche Apparatenfabriek “Nedap”.

3 Peak output power

Results: Pass

Date of testing: 2014-08-21

Requirements:

FCC 15.247(b)(2) and RSS-210 Section A8.4 (1)

For systems using frequency hopping in the 902-928 MHz band, the maximum peak output power is 1W (30dBm) for systems employing at least 50 hopping channels.

Test procedure:

FCC Public notice DA 00-705 March 30, 2000 Alternative Test Procedure.

The testresults are obtained by conducted measurements using a spectrum analyzer.

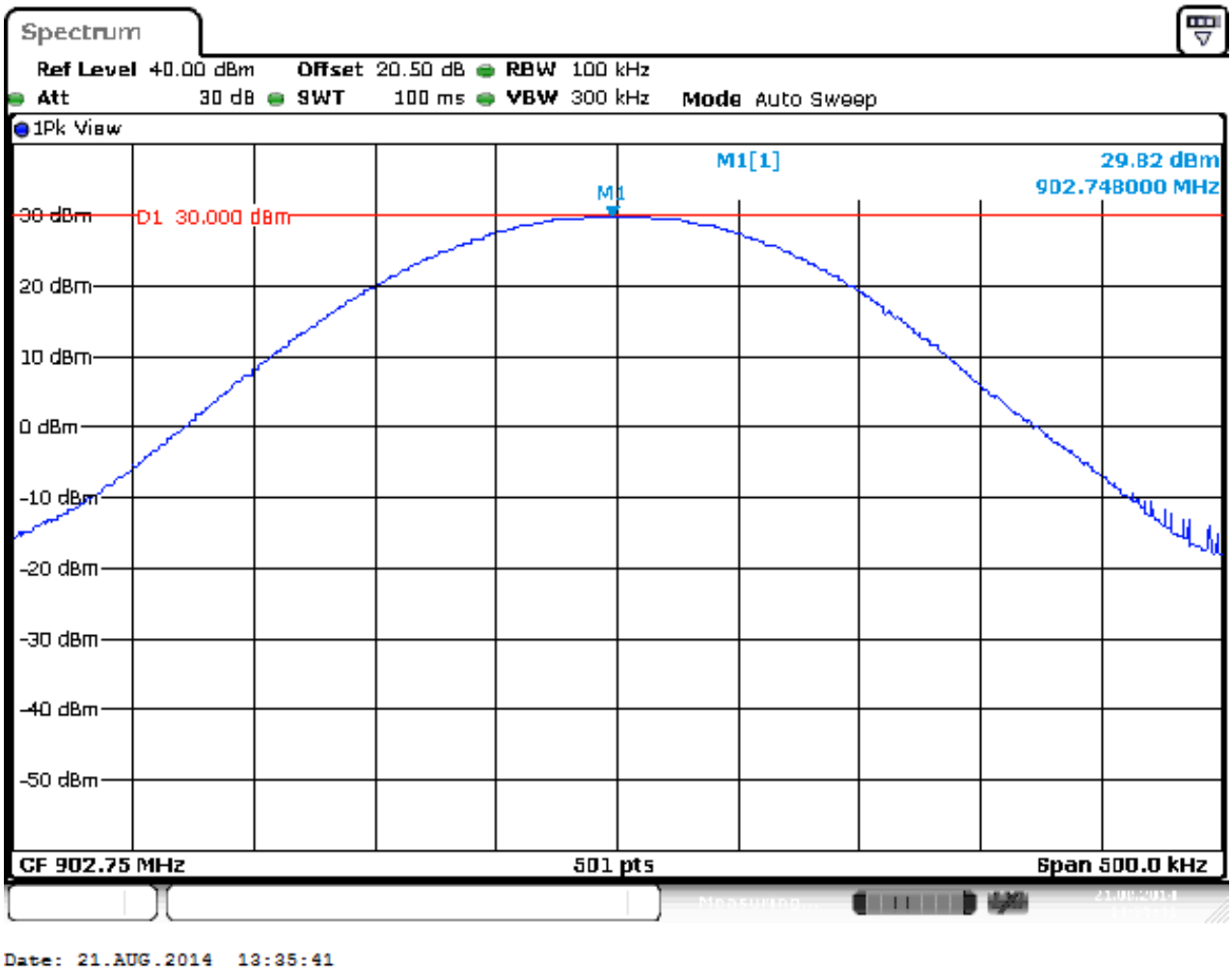
Frequency (MHz)	Measured Peak Output Power (dBm)	Limit (dBm)
902.75	29.82	30
914.75	29.75	30
927.25	29.68	30

Table 2 Peak output power

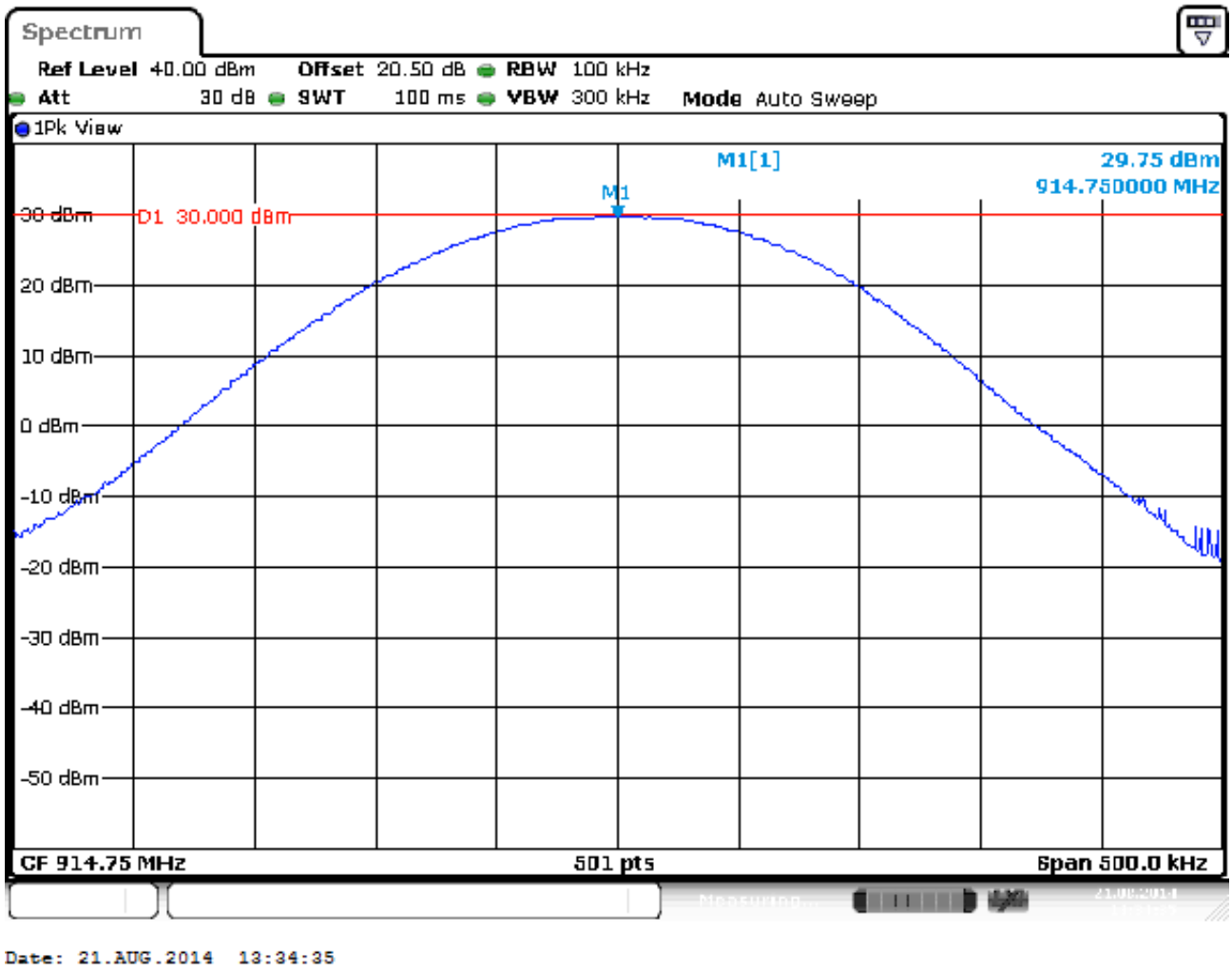
The results of the peak output power measurements on the EUT, carried out in accordance with 47 CFR Part 15 section 15.247(b) and FCC Public Notice DA 00-705.

Notes:

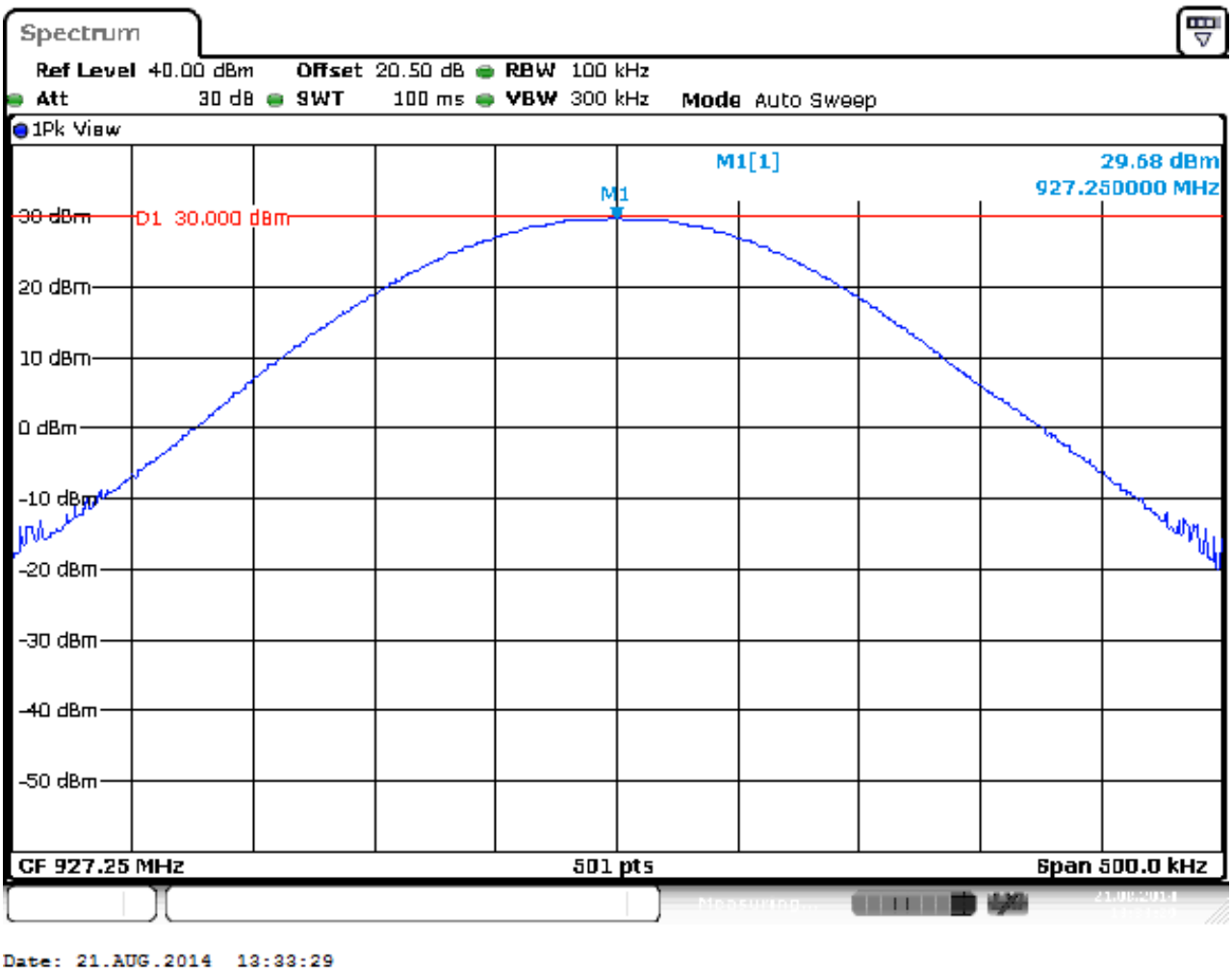
1. Measured value includes correction factor for cable loss.
2. See plots on the next pages.



Plot 1: Peak Output Power (902.75 MHz)



Plot 2: Peak Output Power (914.75 MHz)



Plot 3: Peak Output Power (927.25 MHz)

4 Occupied bandwidth and 99% bandwidth

Results: Pass

Date of testing: 2014-08-21

Requirements:

FCC 15.247(a)(1)(i) and RSS-210 Section A8.1(c).

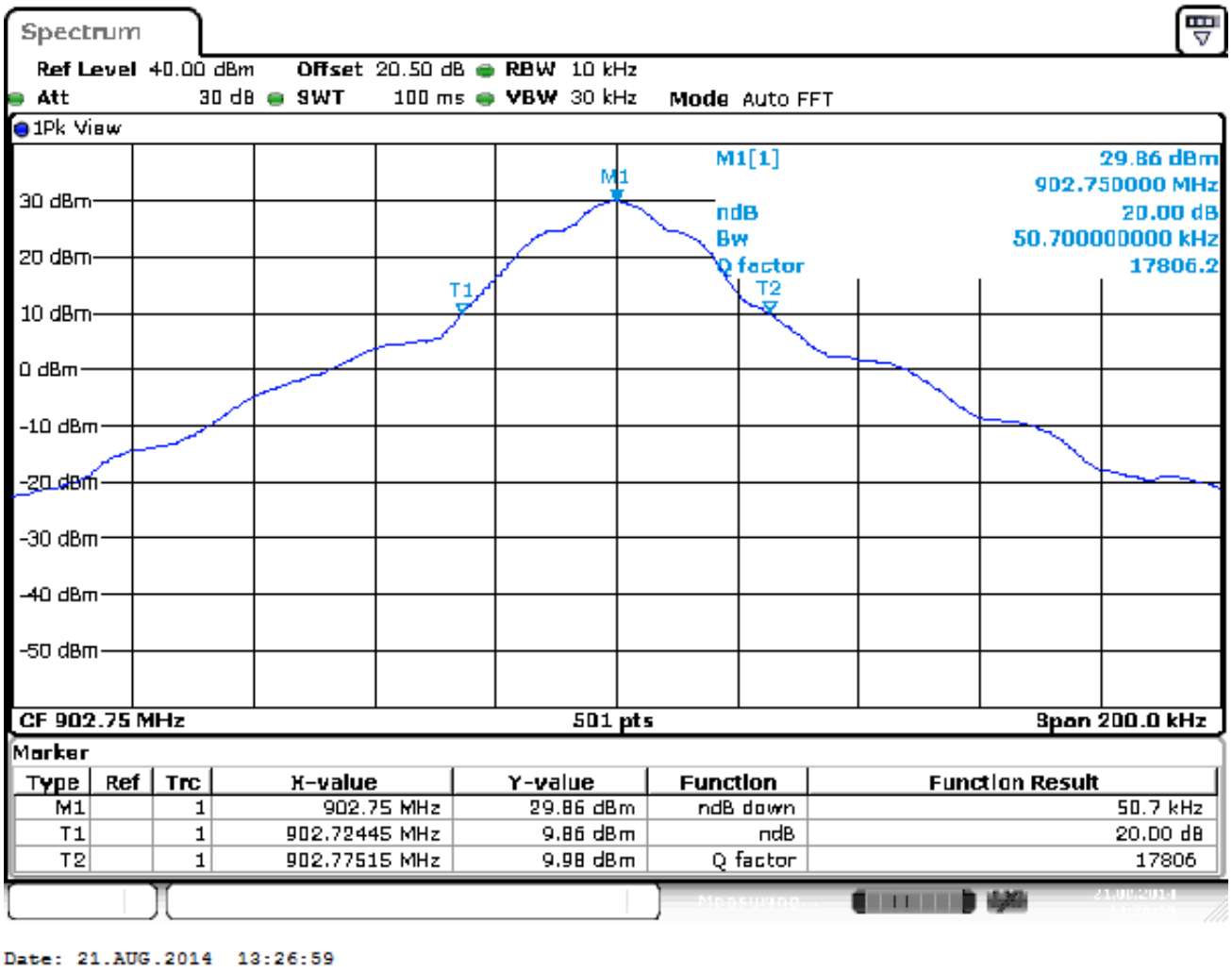
For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall have at least have 50 hopping channels and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

Test procedure:

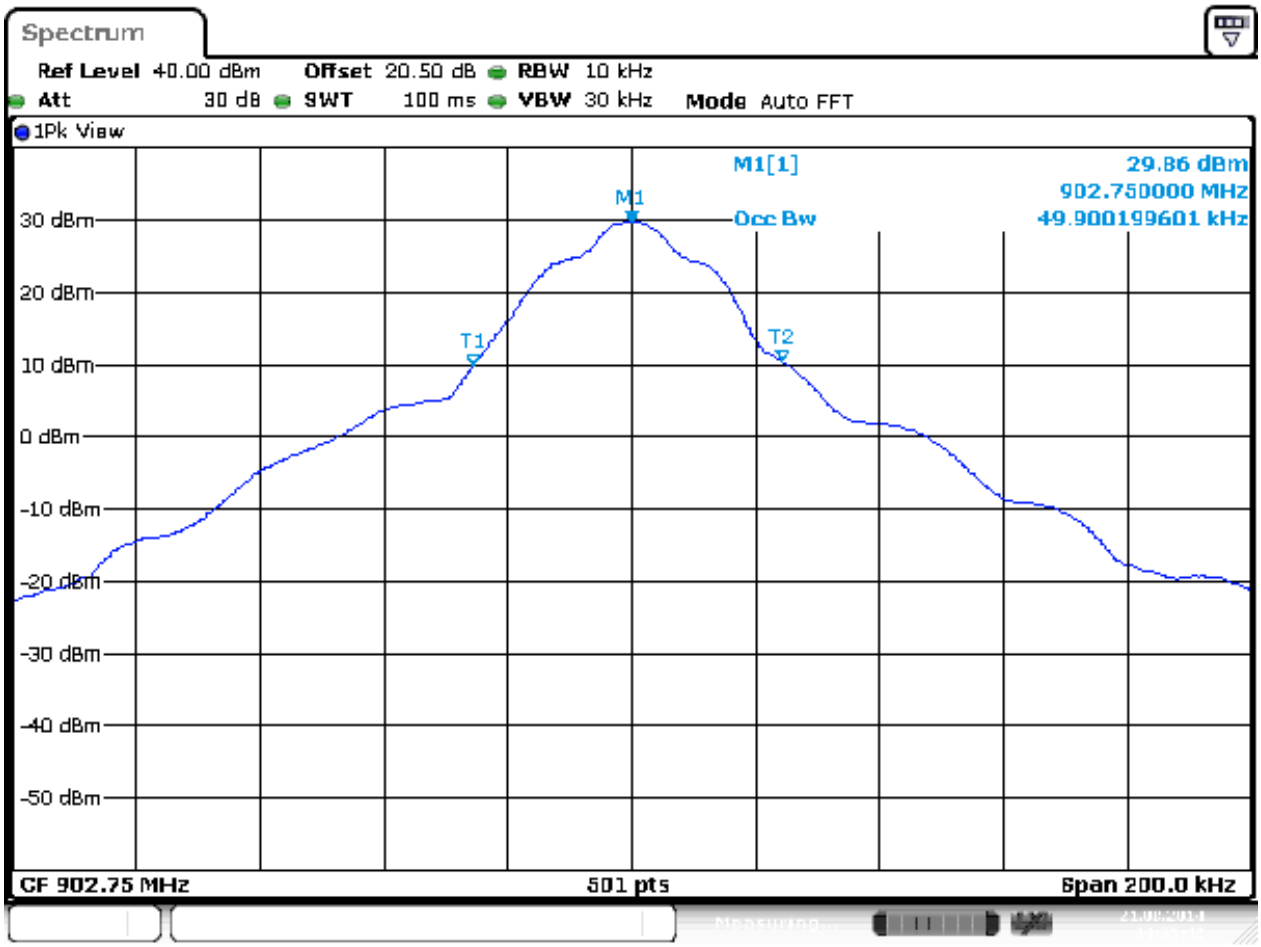
Public notice DA 00-705 March 30, 2000

The Occupied bandwidth was measured with the conducted test setup. The spectrum analyzer resolution bandwidth was set to 10kHz and the span between 2 – 5 times the emission bandwidth.

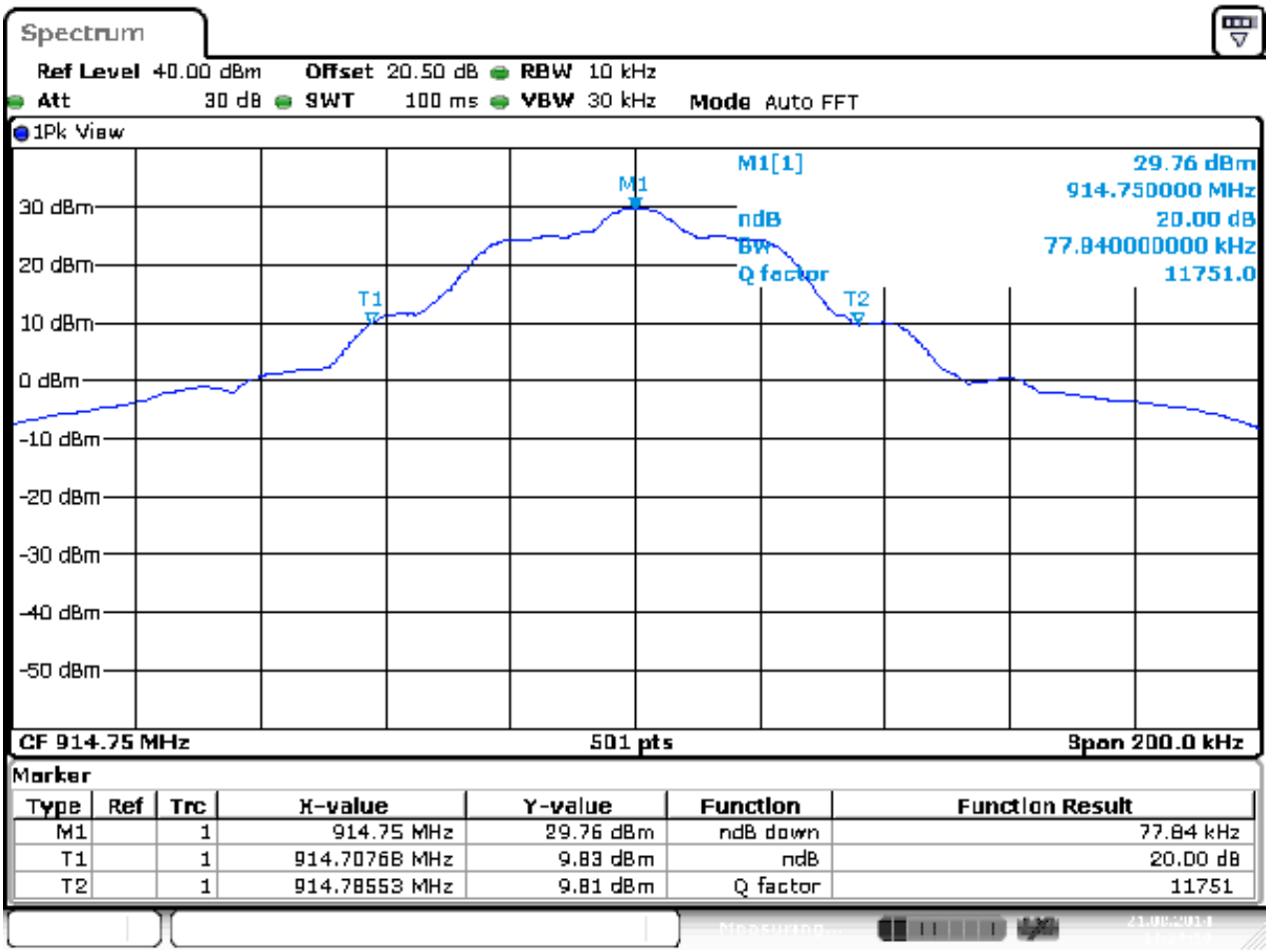
The EUT’s 20 dB bandwidth was less than 250 kHz. See plots on the next pages.



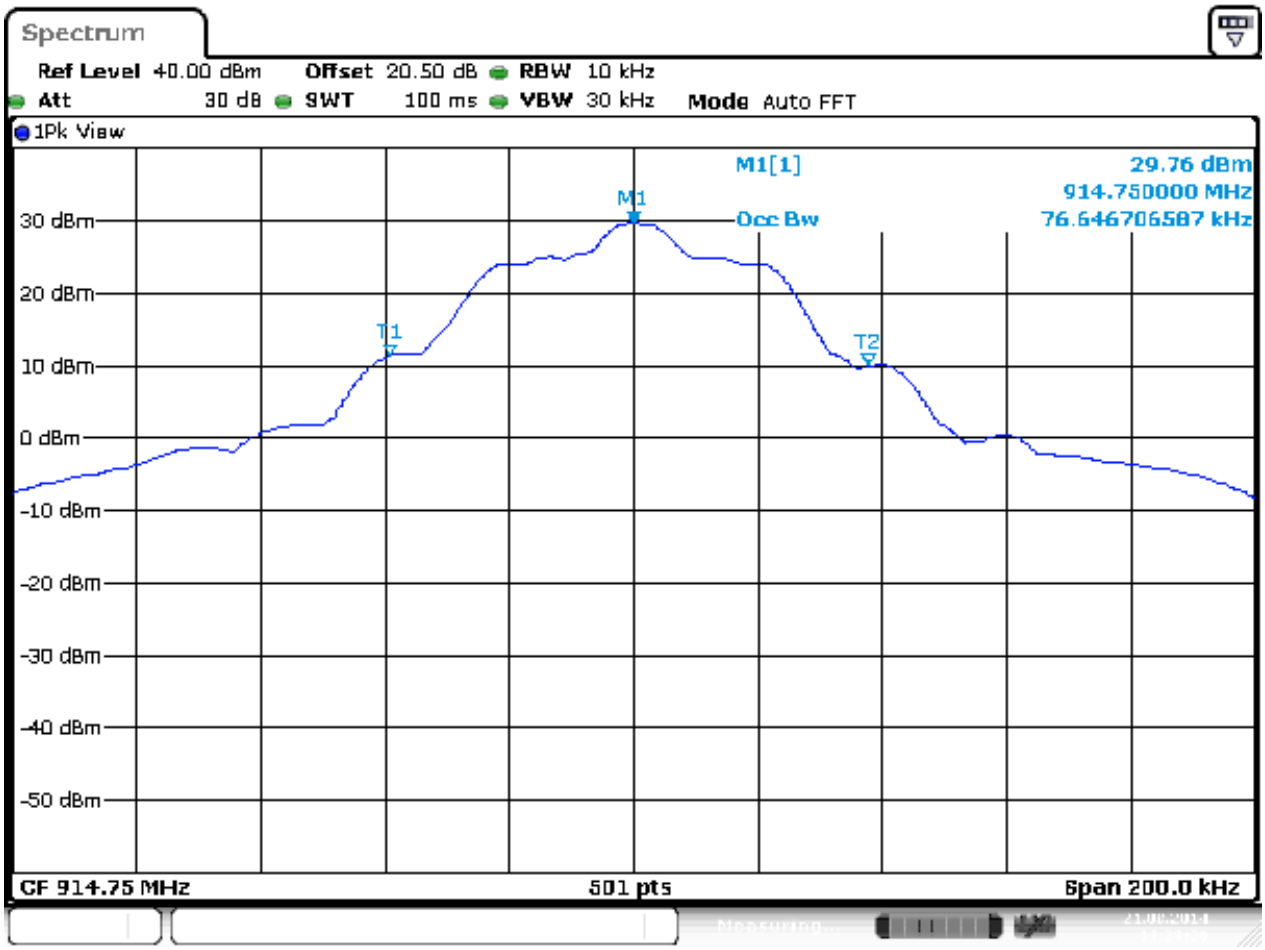
Plot 4a: Occupied 20dB Bandwidth (= 50.7 kHz) of the EUT transmitting at 902.75 MHz



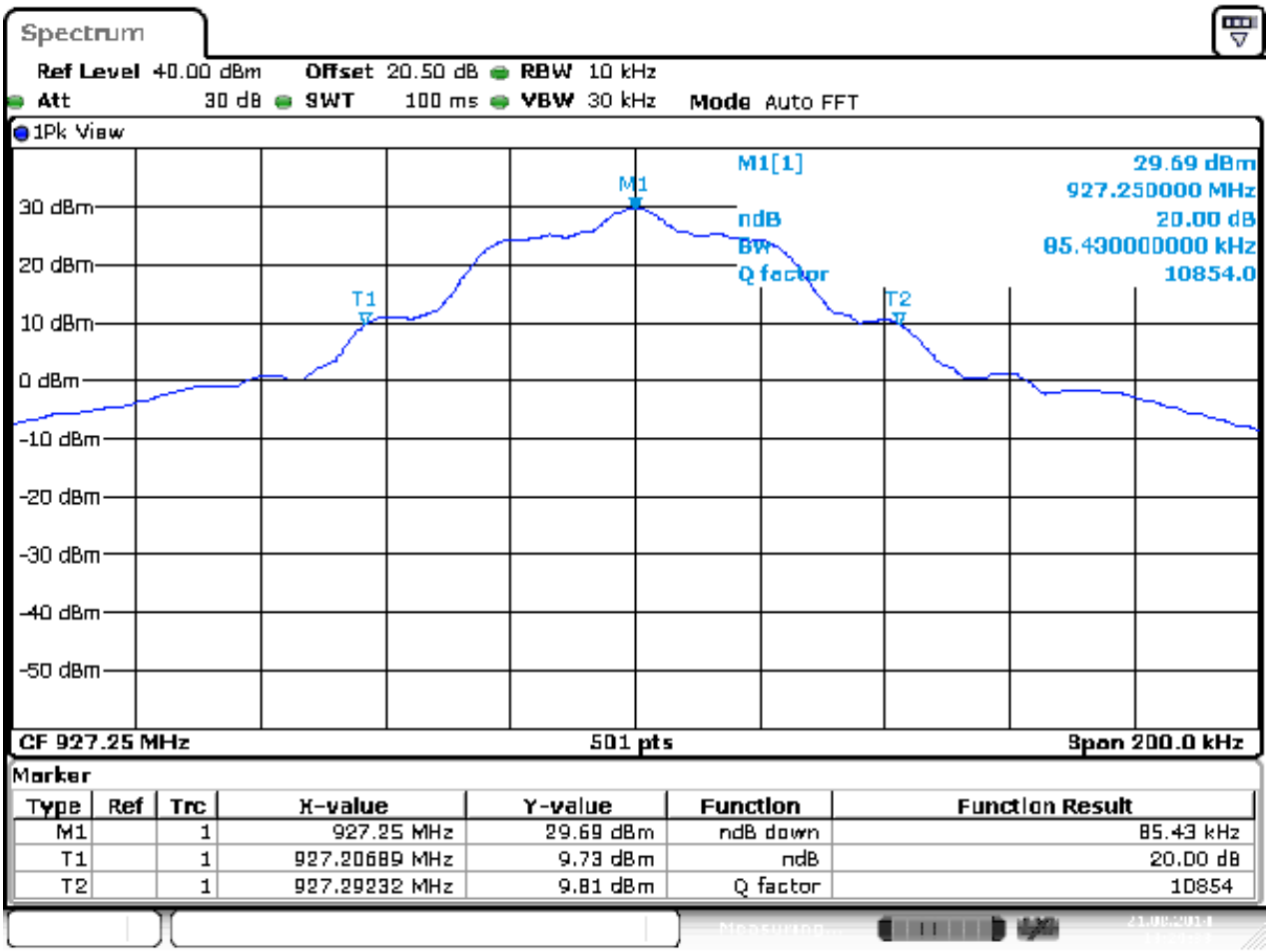
Plot 4b: 99% Bandwidth (= 49.9 kHz) of the EUT transmitting at 902.75 MHz



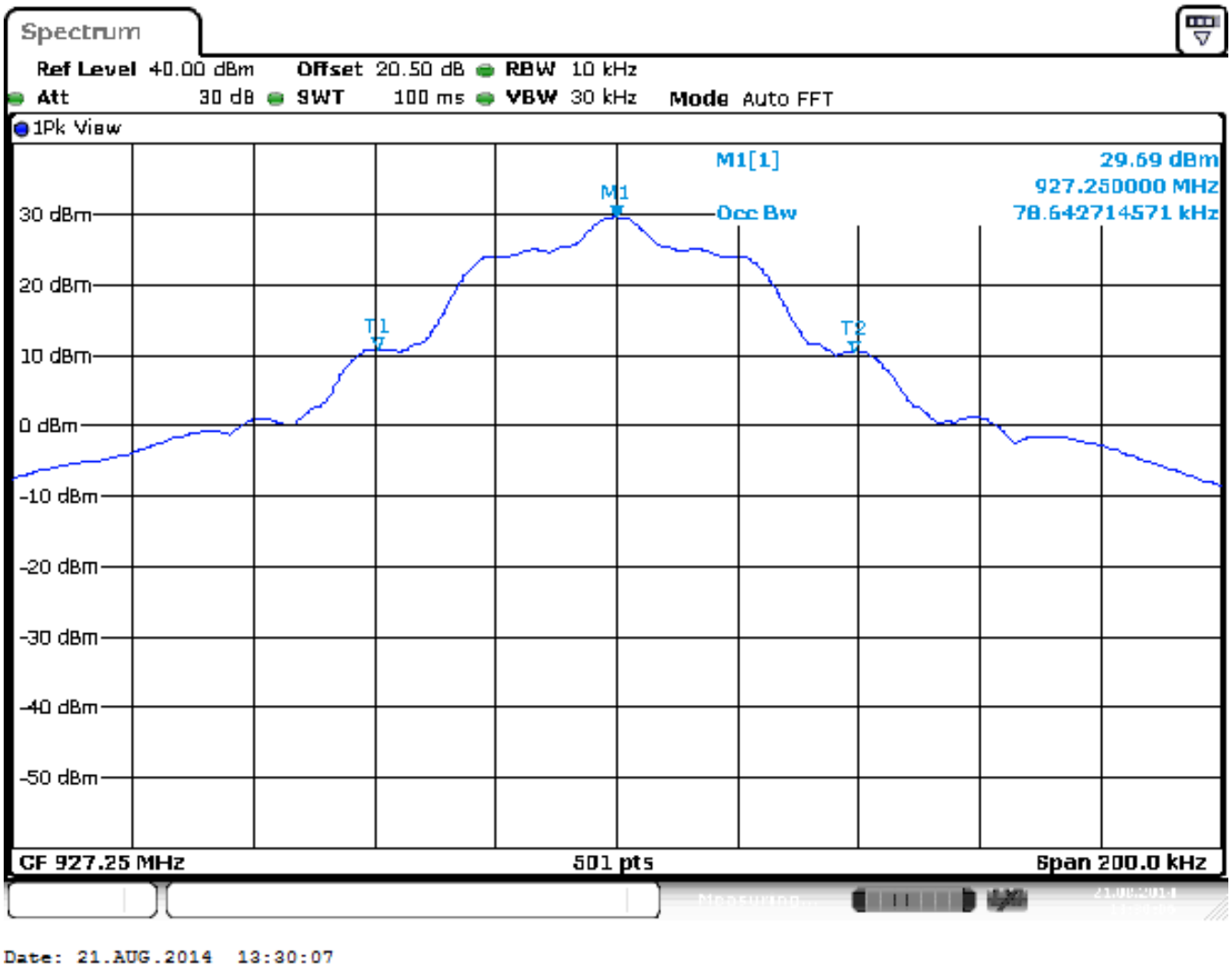
Plot 5a: Occupied 20dB Bandwidth (= 77.84 kHz) of the EUT transmitting at 914.75 MHz



Plot 5b: 99% Bandwidth (= 77.65 kHz) of the EUT transmitting at 914.75 MHz



Plot 6a: Occupied 20dB Bandwidth (= 85.43 kHz) of the EUT transmitting at 927.25 MHz



Plot 6b: 99% Bandwidth (= 78.64 kHz) of the EUT transmitting at 927.25 MHz

5 Hopping frequencies, Average time of occupancy and Channel spacing.

RESULT: PASS

Date of testing: 2014-08-21

Requirements:

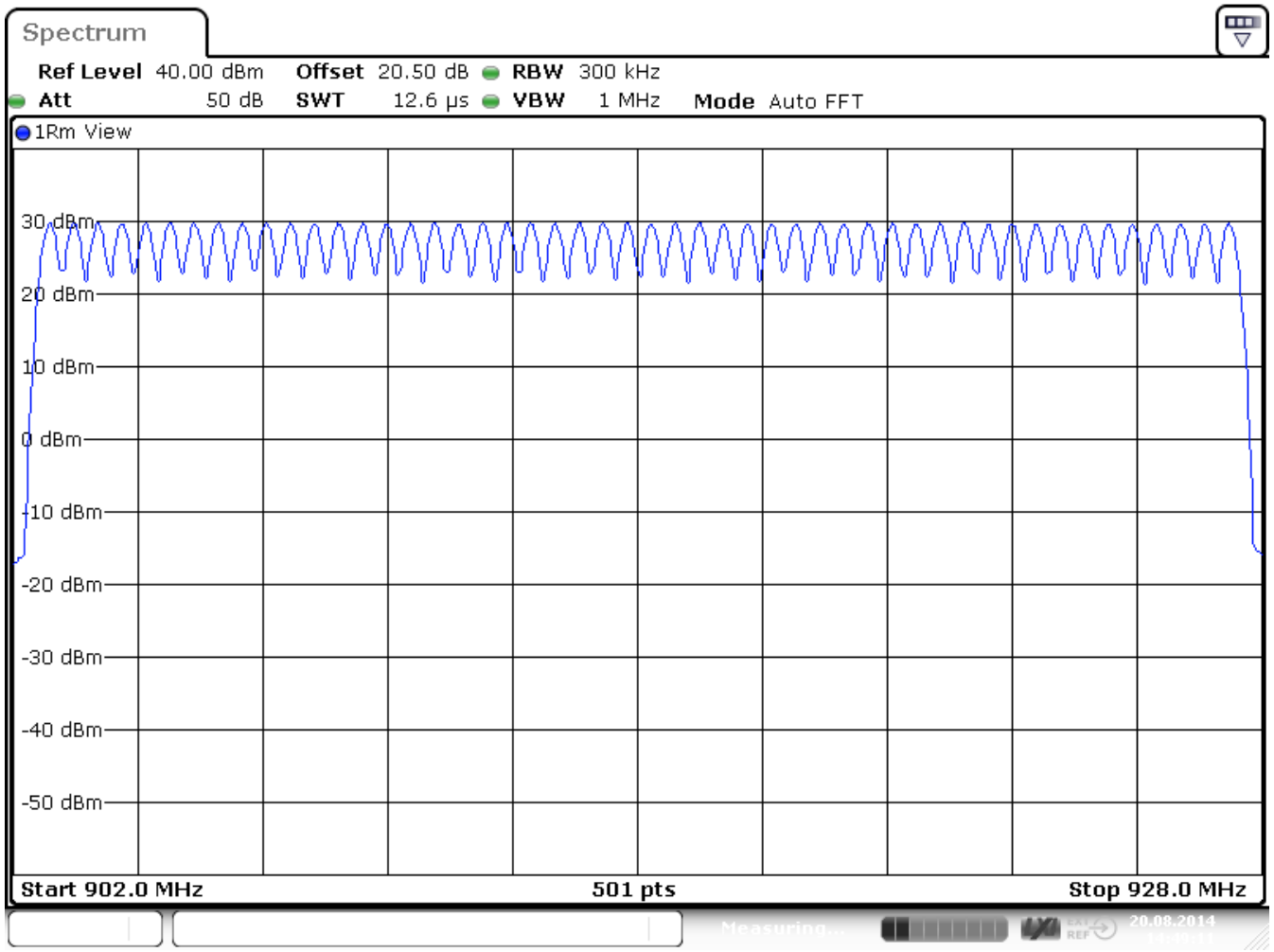
FCC 15.247(a)(1)(i) and RSS-210 A8.1(c).

For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Test procedure:

FCC Public notice DA 00-705 March 30, 2000.

The tests were done with the conducted test setup (spectrum analyzer). See plots on the next pages.



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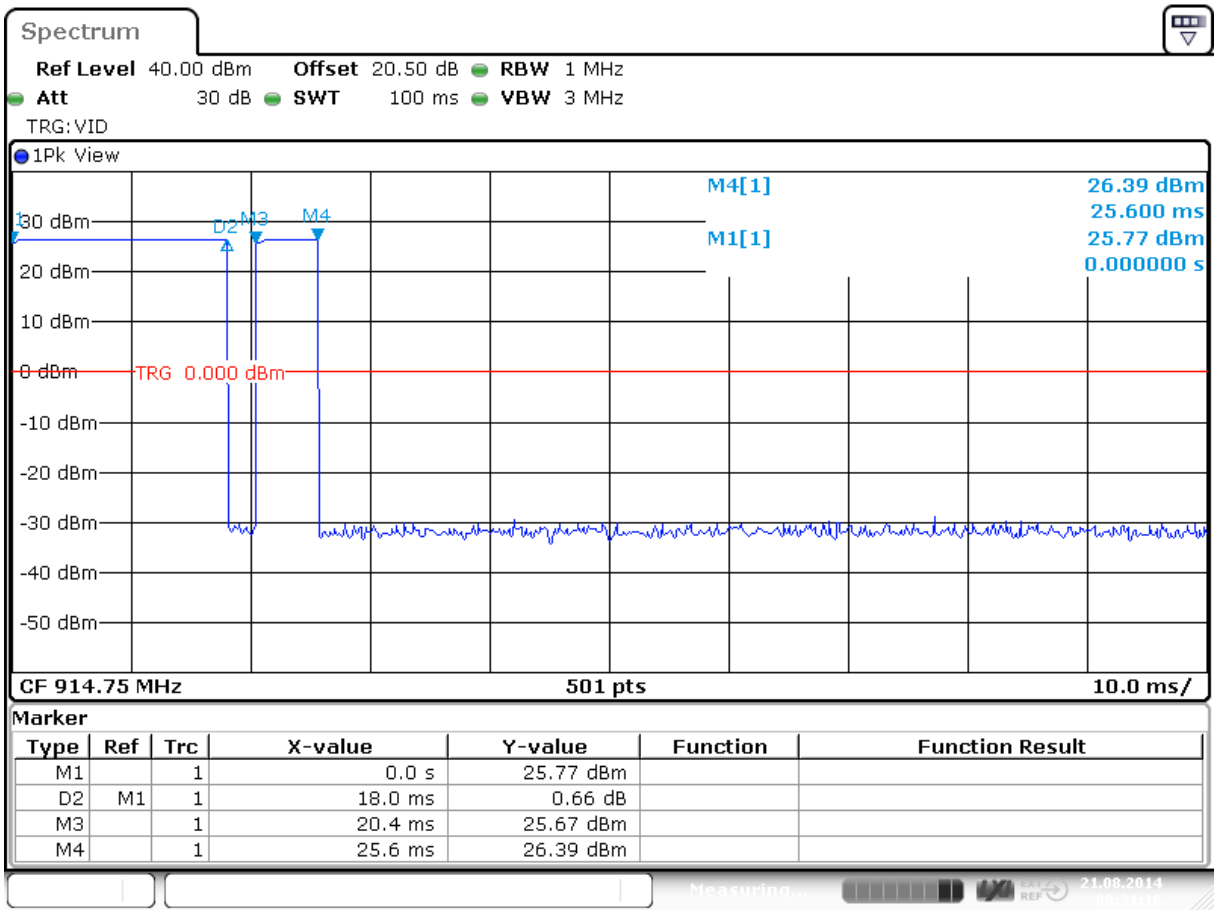
Plot 7: at least 50 (actual = 50) hopping frequencies as required by section 15.247(1)i , as measured on a spectrum analyzer



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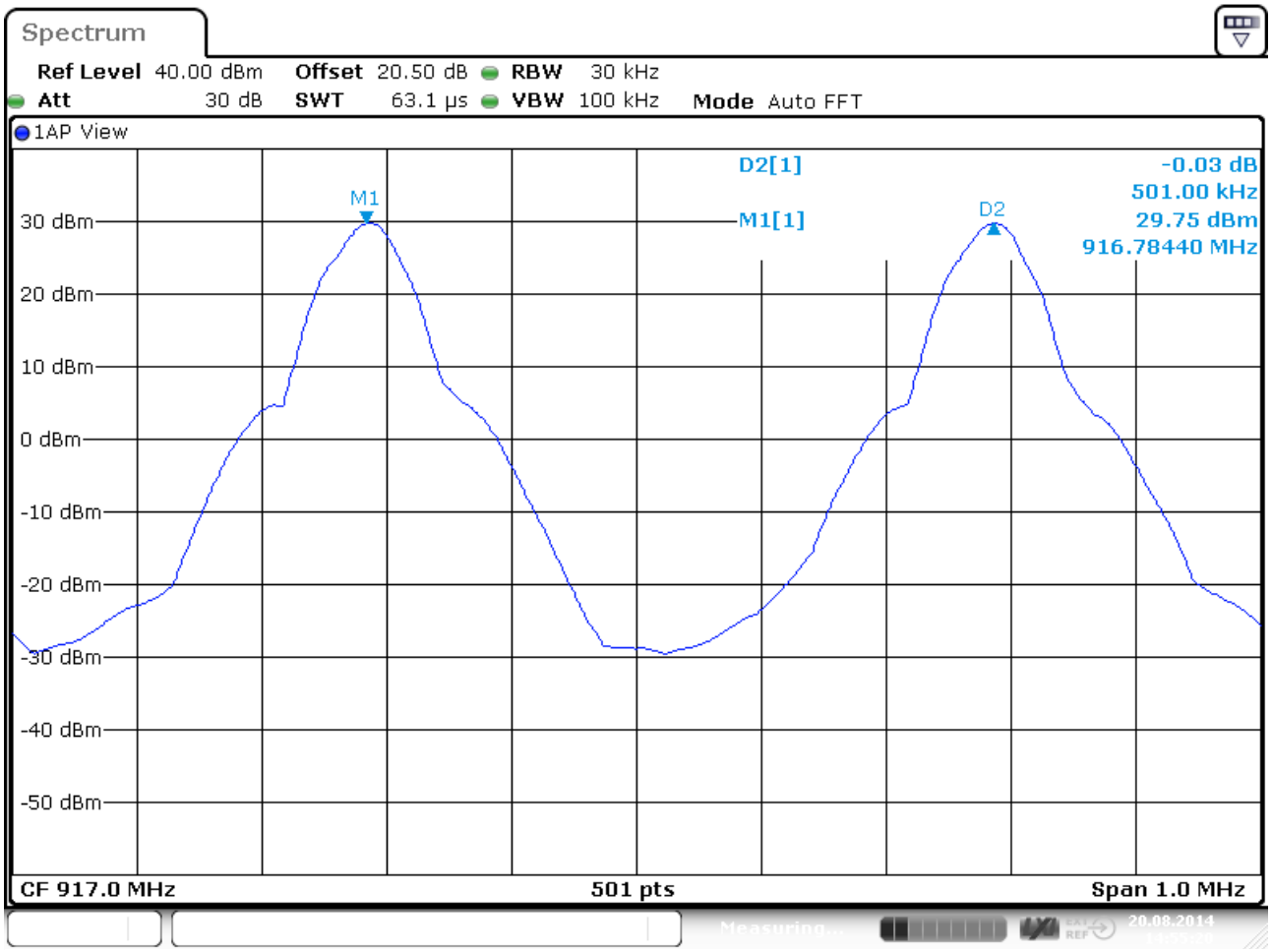
Plot 8: showing Average time of occupancy <0.4 s within a 20 sec period as required by section 15.247 (1) i

Average time of occupancy (Dwell time) as measure on a spectrum analyzer. Plot 8 shows a hoplenght of 23.2 ms (18 ms + (25.6-20.4)) for 1 channel. The EUT has 50 channels for which each channel can transmit once per 1160 ms period (50 * 23.2 ms). During an observation of 20 seconds, the channel may there for transmit 17.24 times. The average time of occupancy would therefore be 17.24 * 23.2ms = 399.968 ms, which is below the 400 ms limit.



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Plot 9: showing approximately 500 kHz spacing between channels as measured on a spectrum analyzer.

6 Band edge compliance

RESULT: Pass

Date of testing: 2014-08-21

Requirements:

FCC 15.205, FCC 15.209, FCC 15.247(d) and RSS-210 section A8.5.

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 or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

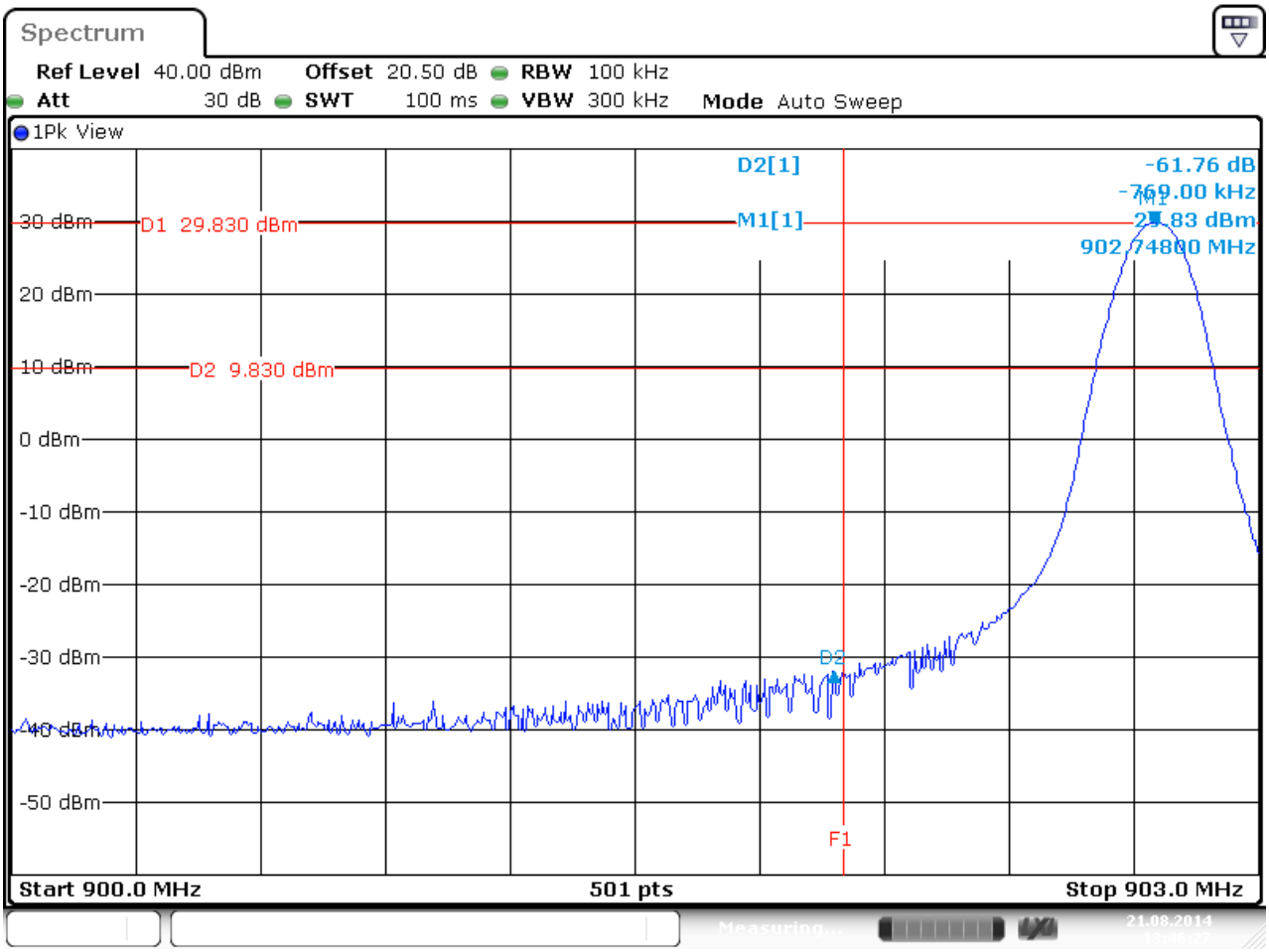
Test procedure:

FCC Public notice DA 00-705 March 30, 2000.

Measurements were performed with the conducted test setup using a spectrum analyzer with a suitable span to encompass the peak of the fundamental and using the following settings:
RBW = 100kHz, VBW = 300kHz.

The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Results: All out of band spurious emissions are more than 20 dB below the fundamental.
See plots on the following pages.



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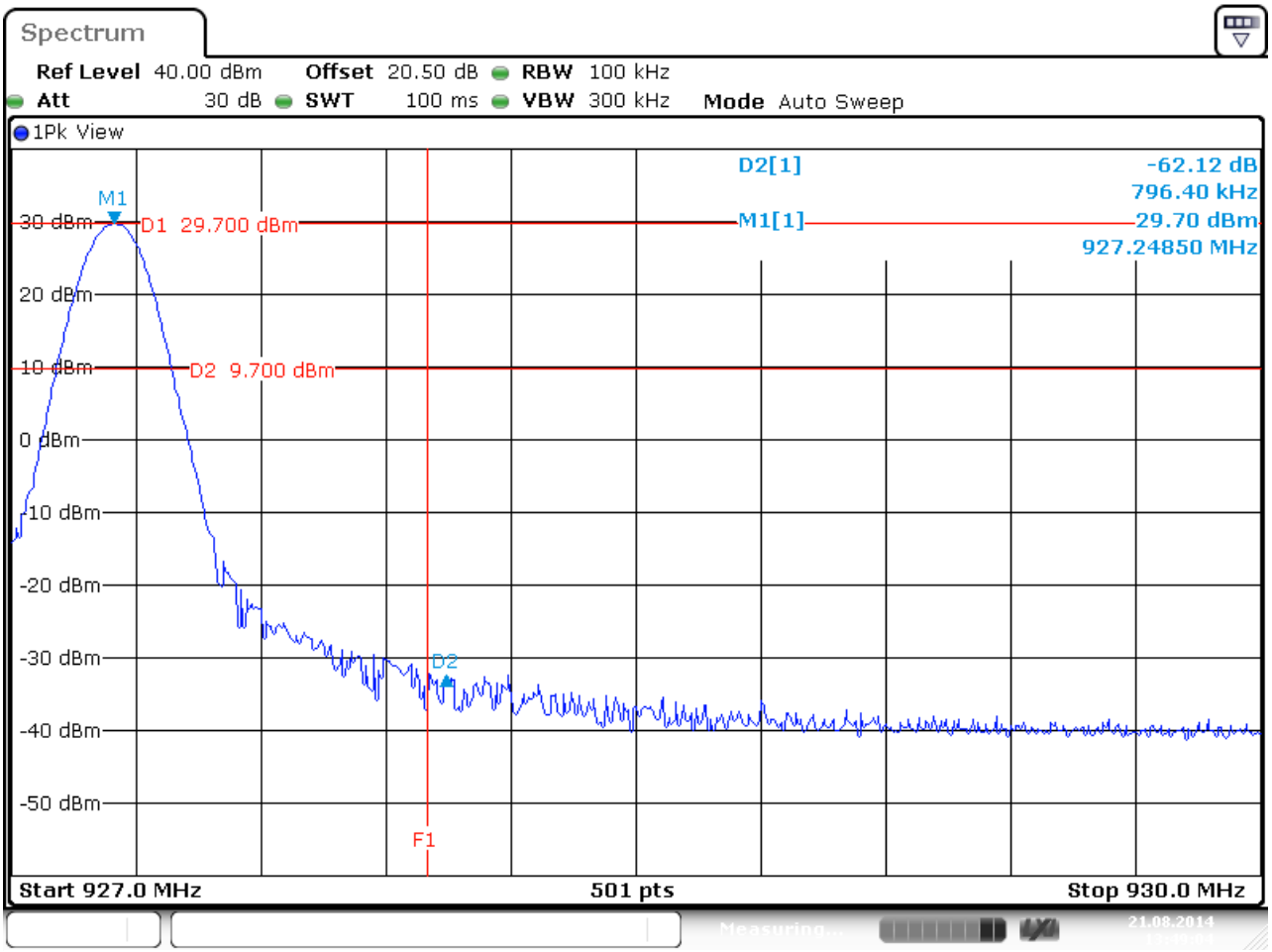
Plot 10. showing more than 20 dB band edge attenuation, EUT continues modulated carrier at 902.75 MHz F1 shows the band edge frequency of 902 MHz.



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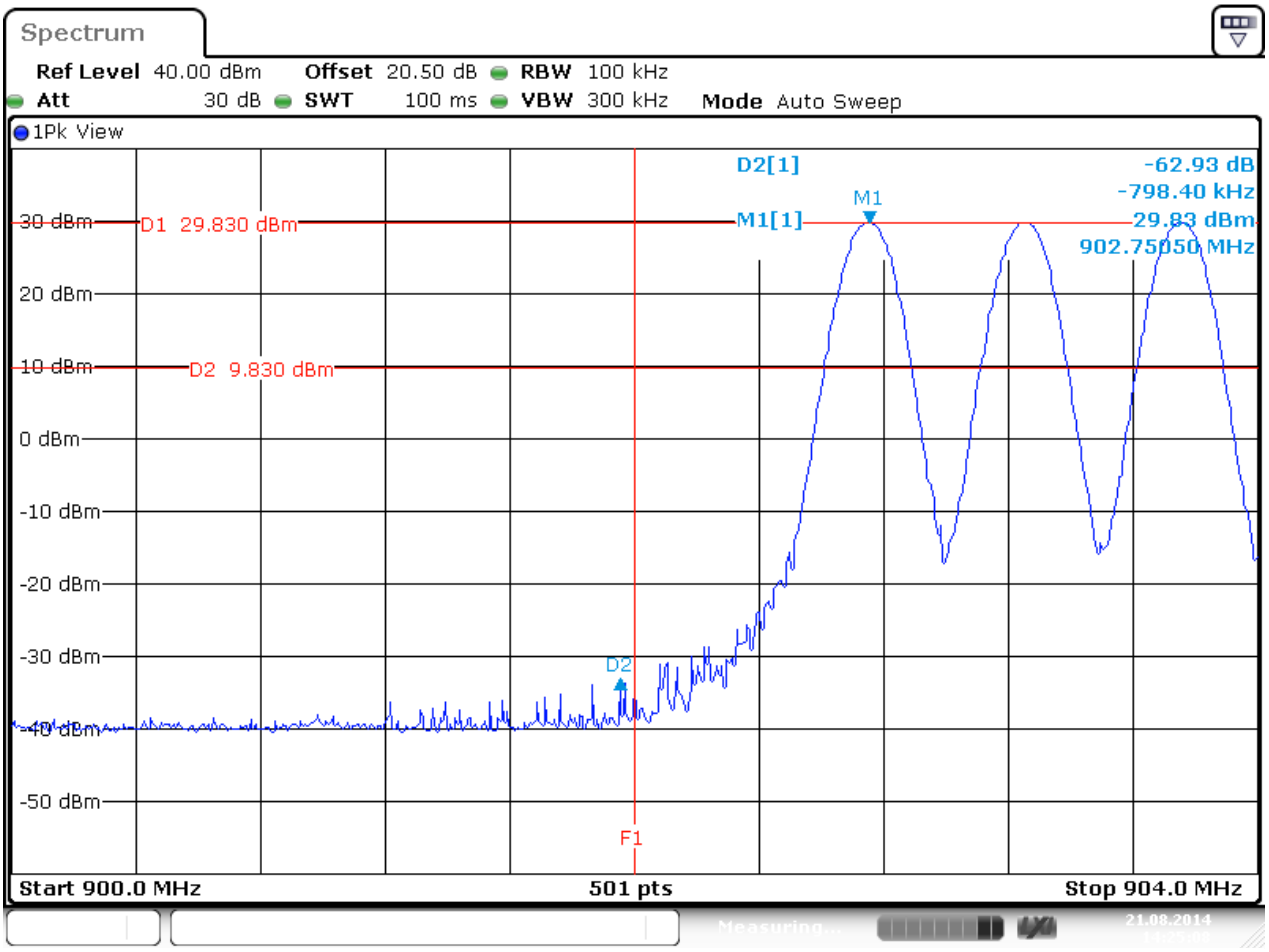
Plot 11. showing more than 20 dB band edge attenuation, EUT continues modulated carrier at 927.25 MHz F1 shows the band edge frequency of 928 MHz.



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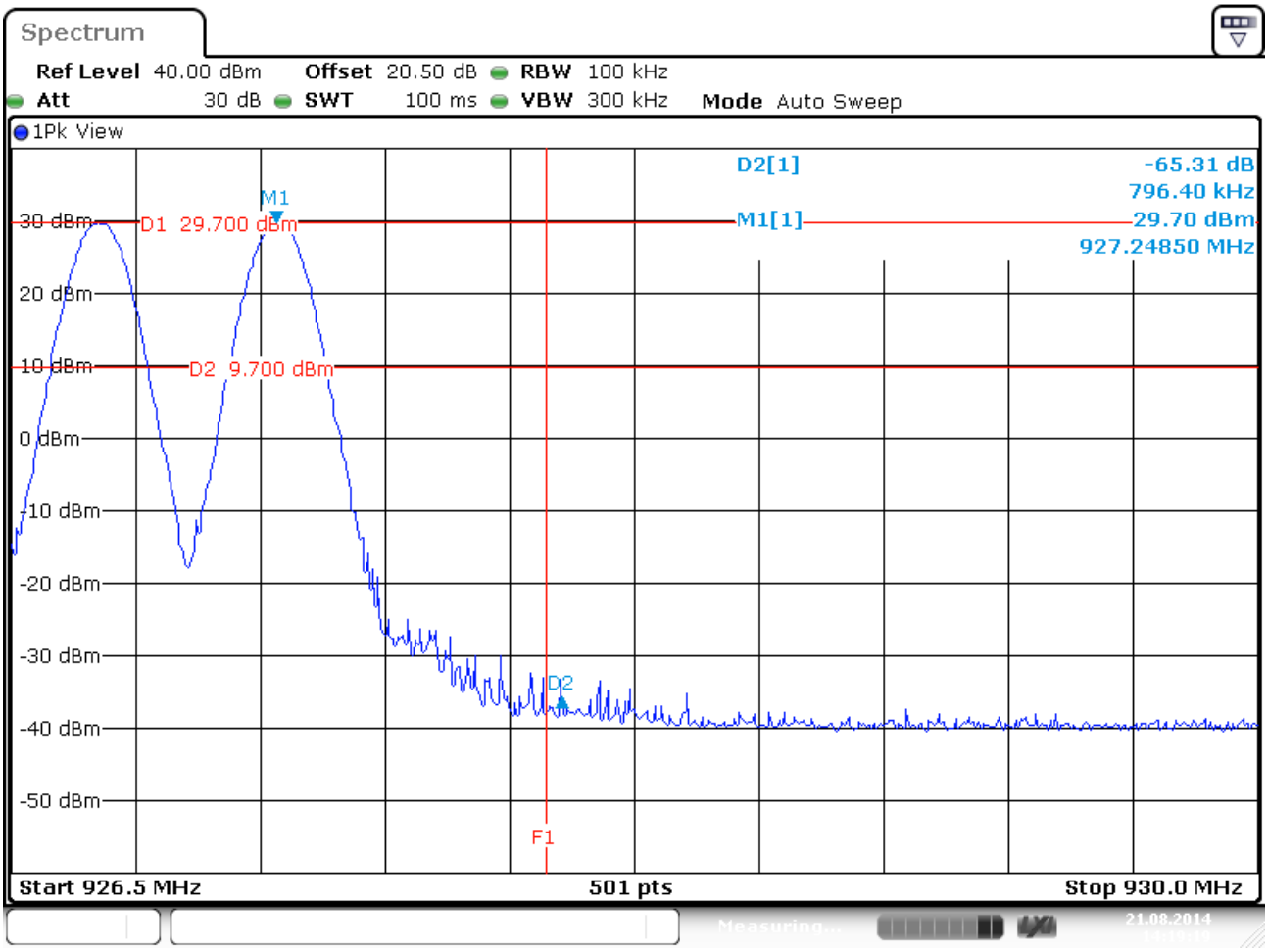
Plot 12. showing more than 20 dB band edge attenuation, EUT in Hopping mode
F1 shows the band edge frequency of 902 MHz.



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Plot 13. showing more than 20 dB band edge attenuation, EUT in Hopping mode
F1 shows the band edge frequency of 928 MHz.

7 Conducted Spurious Emissions of the Transmitter.

RESULT: PASS

Date of testing: 2014-08-21

Requirements:

FCC 15.247(d) and RSS-210 Section A8.5.

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 or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Test procedure:

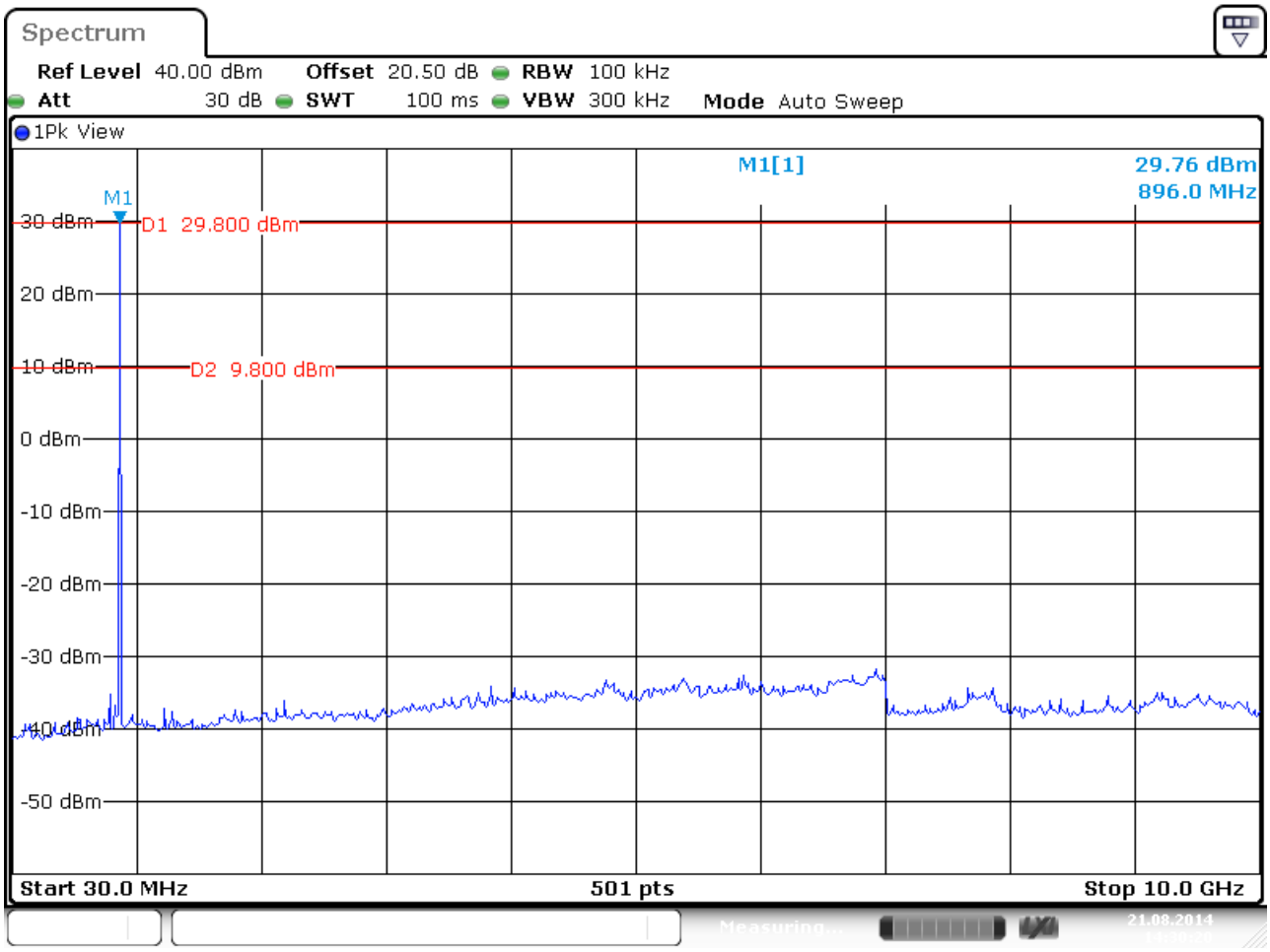
Public Notice DA 00-705 March 30, 2000 Alternative test procedures.
The tests were performed by RF conducted measurement by connecting a spectrum analyzer to the MMCX RF Output connector.

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10^{th} harmonic.

RBW = 100 kHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section. See the plots on the next pages.



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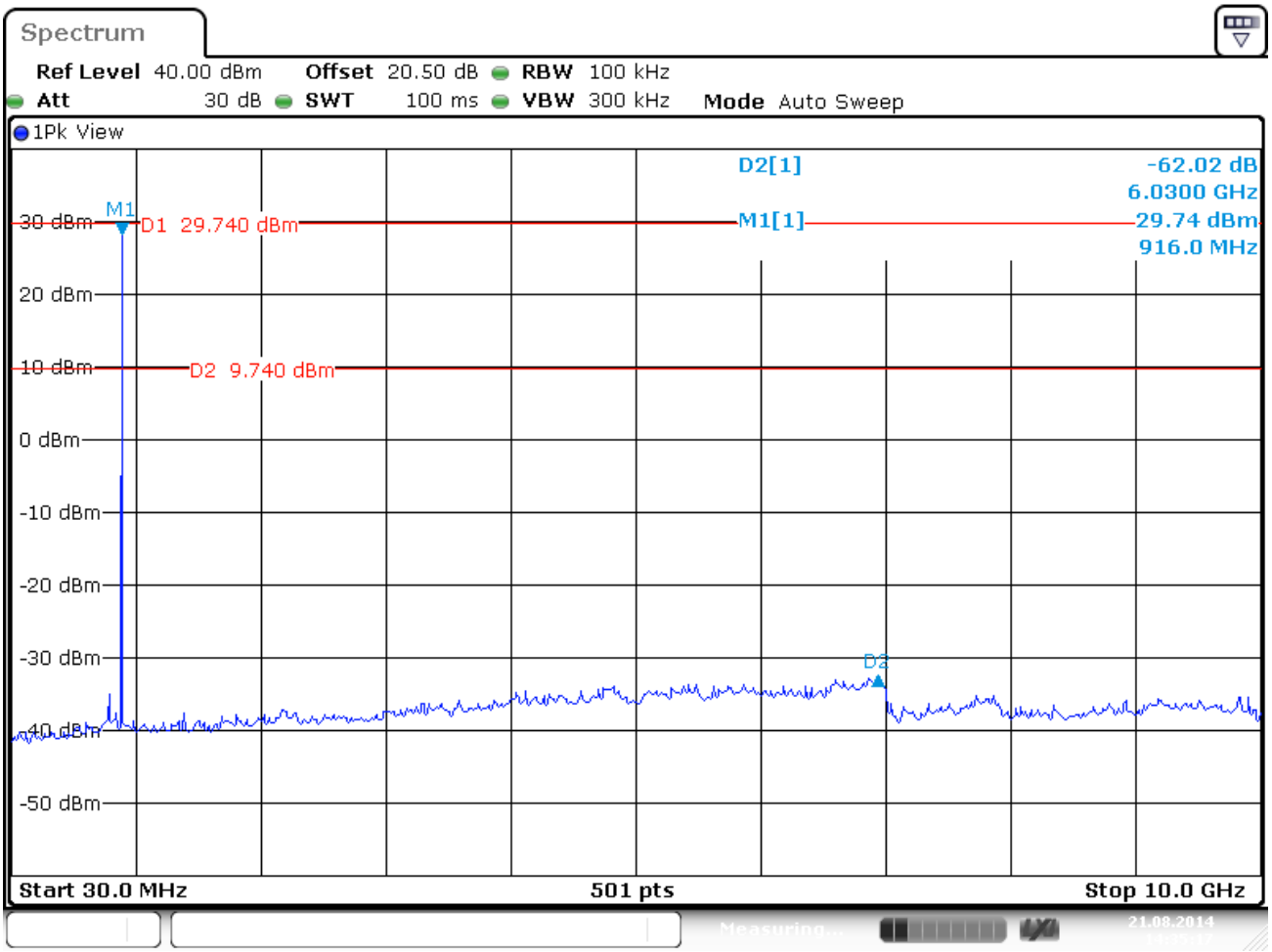
Plot 14 of the conducted spurious emission, EUT frequency 902.75 MHz Constant modulated carrier.



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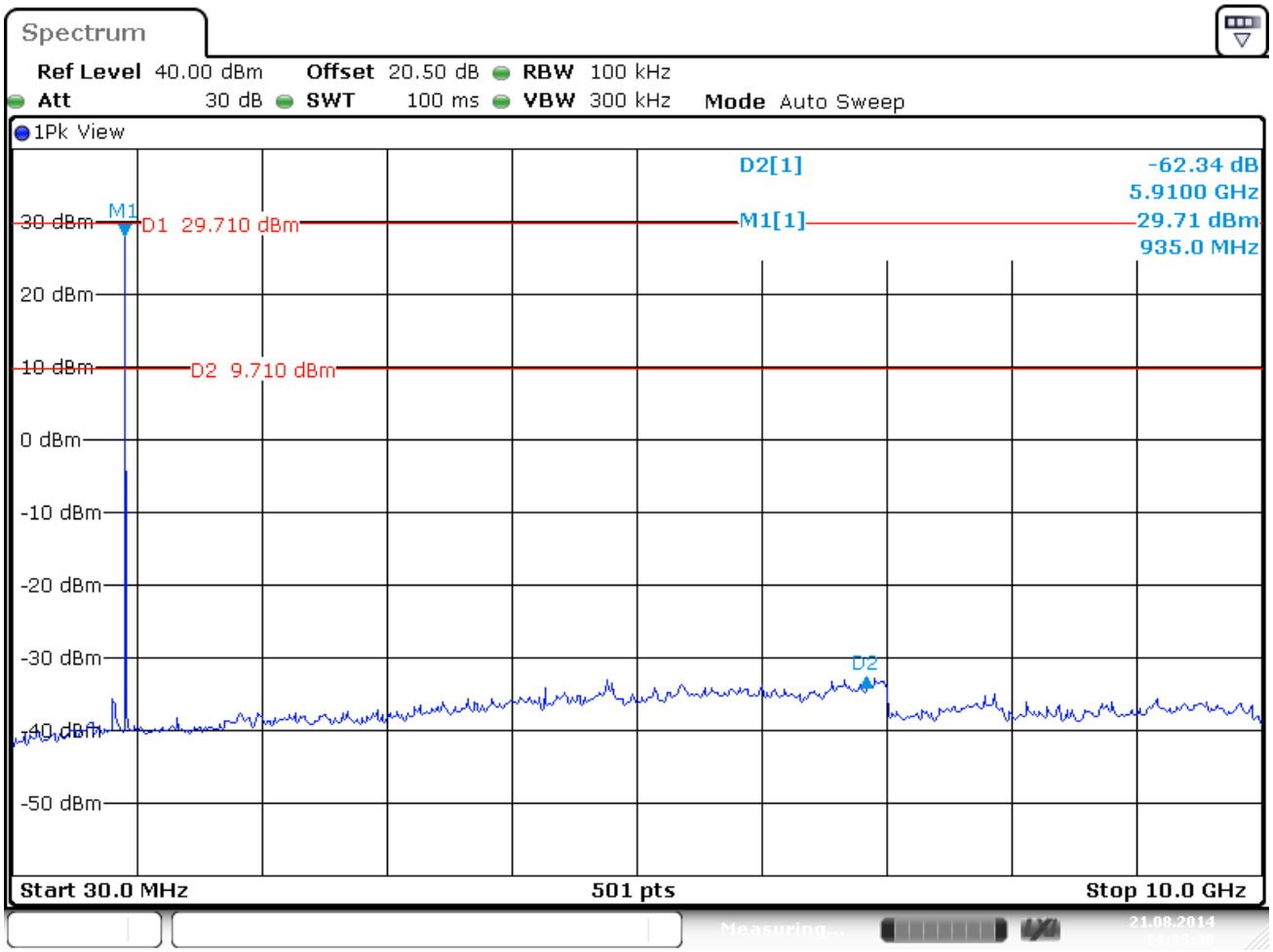
Plot 15 of the conducted spurious emission, EUT frequency 914.75 MHz Constant modulated carrier.



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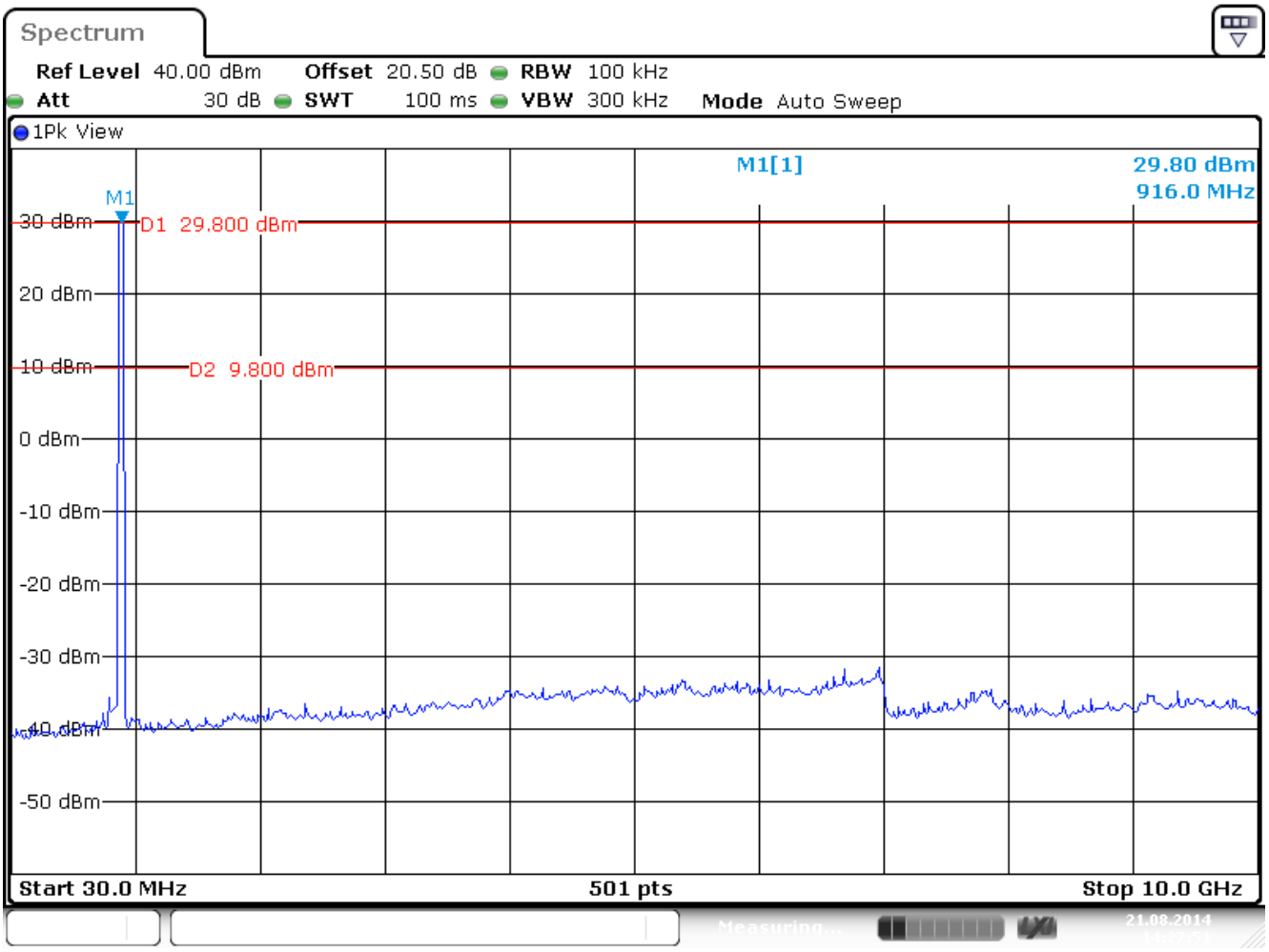
Plot 16 of the conducted spurious emission, EUT frequency 927.25 MHz Constant modulated carrier.



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Plot 17 of the conducted spurious emission, EUT in Hopping mode.

8 Radiated Spurious Emissions of the Transmitter in restricted bands.

RESULT: PASS

Date of testing: 2014-07-16

Requirements:

Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a) and RSS-Gen Table 3, must comply with the radiated emission limits specified in FCC 15.209(a) and RSS-Gen Table 5.

Test procedure:

Public Notice DA 00-705 March 30, 2000 Alternative test procedures.

The EUT was tested against the limit specified in FCC 15.209(a)/ RSS Gen Table 5.

This test is required for any spurious emission or modulation product that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

The EUT was placed on a nonconductive turntable 0.8m above the ground plane. Before final measurements of radiated emissions were performed, the EUT was scanned to determine its emission spectrum profile. The physical arrangement of the test system, the associated cabling and the EUT orientation (X, Y, Z) were varied in order to ensure that maximum emission amplitudes were attained.

The spectrum was examined from 30MHz to the 10th harmonic of the highest fundamental transmitter frequency (10GHz). Final radiated emission measurements were made at 3m distance.

At each frequency where a spurious emission was found, the EUT was rotated 360° and the antenna was raised and lowered from 1 to 4m in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Field strength values of radiated emissions at frequencies not listed in the tables are more than 20 dB below the applicable limit. The final measurement takes into account the loss generated by all the involved cables and filters. The levels are expressed in dBm which are derived from dBm = E(dBµV/m) – 95.2dB.

The Dwell Time of the EUT, see plot 8 page 26, is less than 100 ms and the measured value with Average detector may be adjusted with a ''duty cycle correction factor", derived from 20 log (dwell time/100ms). In this case:
Duty Cycle Correction factor = 20 log (23.2ms/100ms) = -12.7 dB.

Freq. [MHz]	Antenna Orientation	Detector	Level [dBm]	Duty Cycle correction factor [dB]	Level after correction [dBm]	Limit [dBm]
2242.0	Vertical	Pk	-48.7	0	-48.7	-21.2
2242.0	Vertical	Av	-48.7	-12.7	-61.4	-41.2
2823.2	Vertical	Pk	-50.2	0	-50.2	-21.2
2823.2	Vertical	Av	-50.2	-12.7	-62.9	-41.2
3625*[h]	Vertical	Pk	-46.4	0	-46.4	-21.2
3625*[h]	Vertical	Av	-46.4	-12.7	-59.1	-41.2
4528*[h]	Vertical	Pk	-46.8	0	-46.8	-21.2
4528*[h]	Vertical	Av	-46.8	-12.7	-59.5	-41.2

Table 1a Radiated spurious emissions of the EUT at 902.75 MHz

Freq. [MHz]	Antenna Orientation	Detector	Level [dBm]	Duty Cycle correction factor [dB]	Level after correction [dBm]	Limit [dBm]
2288.0	Vertical	Pk	-49.4	0	-49.4	-21.2
2288.0	Vertical	Av	-49.4	-12.7	-62.1	-41.2
2745*[h]	Vertical	Pk	-48.8	0	-48.8	-21.2
2745*[h]	Vertical	Av	-48.8	-12.7	-61.5	-41.2
3659*[h]	Vertical	Pk	-47.3	0	-47.3	-21.2
3659*[h]	Vertical	Av	-47.3	-12.7	-60.0	-41.2
4574*[h]	Vertical	Pk	-45.9	0	-45.9	-21.2
4574*[h]	Vertical	Av	-45.9	-12.7	-58.6	-41.2

Table 1b Radiated spurious emissions of the EUT at 914.75 MHz

Freq. [MHz]	Antenna Orientation	Detector	Level [dBm]	Duty Cycle correction factor [dB]	Level after correction [dBm]	Limit [dBm]
2315.0	Vertical	Pk	-49.1	0	-49.1	-21.2
2315.0	Vertical	Av	-49.1	-12.7	-61.8	-41.2
3709*[h]	Vertical	Pk	-47.7	0	-47.7	-21.2
3709*[h]	Vertical	Av	-47.7	-12.7	-60.4	-41.2
4636*[h]	Vertical	Pk	-46.5	0	-46.5	-21.2
4636*[h]	Vertical	Av	-46.5	-12.7	-59.2	-41.2

Table 1c Radiated spurious emissions of the EUT at 927.25 MHz

Freq. [MHz]	Antenna Orientation	Detector	Level [dBm]	Duty Cycle correction factor [dB]	Level after correction [dBm]	Limit [dBm]
250.31	Horizontal	Qp	-67.7	0	-67.7	-49.2
404.47	Vertical	Qp	-64.0	0	-64.0	-49.2
2330.0	Vertical	Pk	-49.1	0	-49.1	-21.2
2330.0	Vertical	Av	-49.1	-12.7	-61.8	-41.2
2708*^{h}	Vertical	Pk	-48.6	0	-48.6	-21.2
2708*^{h}	Vertical	Av	-48.6	-12.7	-61.3	-41.2
3659*^{h}	Vertical	Pk	-46.1	0	-46.1	-21.2
3659*^{h}	Vertical	Av	-46.1	-12.7	-58.8	-41.2
4536^{*h}	Vertical	Pk	-46.9	0	-46.9	-21.2
4536^{*h}	Vertical	Av	-46.9	-12.7	-59.6	-41.2

Table 1d Radiated spurious emissions of the EUT in normal mode (hopping)

The results of the radiated emission tests in the range 30 MHz – 10 GHz, carried out in accordance with 47 CFR Part 15 section 15.209 and 15.205 with the system operating in transmit mode are depicted in Table 1a through 1d.

Notes:

1. Field strength values of radiated emissions at frequencies in the range 30 MHz – 10 GHz not listed in the table above are more than 20 dB below the applicable limit.
2. Measurement uncertainty is ±5.0dB
3. The reported field strength values are the worst case values at the indicated frequency. The receiving antenna was varied in horizontal and vertical orientations and also in height (between 1m and 4m).
4. *^{h} = harmonic of the fundamental frequency.
5. Both transmitters (RF and RFID) were transmitting at the same time.

9 List of utilized test equipment.

Kind of Equipment	Manufacturer	Model Name	Inventory number	Calibration date (mm/yyyy)	Calibration due date (mm/yyyy)
For Antenna Port Conducted Tests					
Spectrum Analyzer	Rohde & Schwarz	FSV	99733	08-05/2014	08-05/2015
Temperature-Humiditymeter	Extech	SD500	99857	02/2014	02/2015
RF Cable	H&S	--	99738	04/2014	04/2015
For Radiated Emission					
Measurement Receiver	Rohde & Schwarz	ESCI	99699	03/2014	03/2015
RF Cable S-AR	Gigalink	APG0500	99858	02/2014	02/2015
Controller	Heinrich Deisel	4630-100	99107	N/A	N/A
Test fascility	Comtest	FCC listed: 90828 IC: 2932G-2	99580	02/2012	02/2015
Spectrum Analyzer	Rohde & Schwarz	FSP	99538	11/2014	11/2015
Controller	EMCS	DOC202	99608	N/A	N/A
Antenna mast	EMCS	AP-4702C	99609	N/A	N/A
Temperature-Humiditymeter	Extech	SD500	99855	02/2014	02/2015
Guidehorn 1-18 GHz	EMCO	3115	12484	04/2014	04/2015
Filter section	Reactel	--	99606	10/2013	10/2014
Biconilog Testantenna	Teseq	CBL 6111D	99877	06/2014	06/2015
Filter 2-3 GHz BP	BSC Filters	MH1630	13578	NA	NA

NA= Not Applicable

Conformance of the used measurement and test equipment with the requirements of ISO/IEC 17025:2005 has been confirmed before testing.