TEST REPORT CONCERNING THE COMPLIANCE OF A SPREAD SPECTRUM TRANSMITTER, BRAND Nedap, MODEL ASSY HH2 RFID WITH 47 CFR PART 15 (10-1-14 Edition), RSS-Gen (Issue 4, November 2014) and RSS-247 (Issue 1, May 2015).

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October 14, 2015

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 HH2 RFID

FCC ID: CGDHH2RFID
IC: 1444A-HH2RFID

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@nl.tuv.com

The data taken for this test and report herein was done in accordance with 47 CFR Part 15 (10-1-14 Edition) and the measurement procedures of ANSI C63.10-2013. 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: October 14, 2015

Signature:

P. de Beer
Technical Manager TÜV Rheinland Nederland B.V.

Test Summary

The device under test does:

- ● fulfill the general approval requirements as identified in this test report
- ○ not fulfill the general approval requirements as identified in this test report

The EUT was tested in accordance with the specifications given in the table below.

Test Standard		Description	Page	Pass / Fail
47 CFR Part 15 (10-1-14 Edition)	**RSS-247 Issue 1, May 15**			
15.207(a)	RSS-Gen(7.2.4)	AC power-line conducted emissions	40 - 43	Pass
15.209 and 15.247(d)	RSS-Gen(4.9 and 7.2.5) and RSS-247 5.5	Radiated emissions	27 – 31	Pass
15.205 and 15.223	RSS-Gen(7.2.2)	Radiated emissions in restricted bands	37 - 39	Pass
15.215(c) and 15.223(a)	RSS-Gen(4.6.1) and RSS-Gen (4.6.2) RSS-247 5.1(3)	Occupied bandwidth and Bandwidth of the emission	15 - 22	Pass
15.247(b)(1)	RSS-247 5.4(1)	Peak Output Power	12 - 15	Pass
15.247(a)	RSS-247 5.1(3)	Hopping characteristics	23 – 26	Pass
15.247(d)	RSS-247 5.5	Conducted Spurious Emissions	32 - 36	Pass

Table : testspecifications

Description of test item

Test item	:	Spread Spectrum Transmitter (DSS)
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand	:	Nedap
Model	:	ASSY HH2 RFID
Serial number	:	026 (radiated tests) and 035 (conducted tests)
	:	

Applicant information

Applicant's representative	:	Mr. J. Hulshof / Mr. R. Hubers
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	:	June 02, 2015
Test(s) completed	:	September 09, 2015
Purpose of test(s)	:	Equipment Authorization (Original grant/certification)
Test specification(s)	:	FCC 47 CFR Part 15, Subpart C, Section 15.247 (10-1-14 Edition) RSS-Gen (Issue 4, November 2014) an RSS-247 (Issue 1, May 2015) ANSI C63.10-2013
Test engineer(s)	:	R. van der Meer 
Report written by	:	R. van der Meer 
Report date	:	October 14, 2015

Table of contents

1 General information.

1.1 Product description.

1.1.1 Introduction.

The brand Nedap model ASSY HH2 RFID, hereafter referred to as EUT, is a Spread Spectrum Transmitter (DSS) and is a hand held RFID reader, especially designed for in-store retail applications. The EUT is factory configured for the 902-928 MHz band. It also contains a pre-certified BlueTooth module
(FCC ID: QOQWT12 IC: 5123A-BGTWT12A).

The device is battery operated only and can be charged by an external power supply (AUX1).

The content of this report and measurement results have not been changed other than the way of presenting the data. The Part 15B/Ices-003 is covered in a separate testreport.

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: CGDHH2RFID and IC: 1444A-HH2RFID.

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.

EUT	:	Spread Spectrum Transmitter (DSS)
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand	:	Nedap
Model	:	ASSY HH2 RFID
Serial number	:	026 (radiated tests) and 035 (conducted tests)
Hardware version	:	1
Firmware version	:	27
Region	:	US
Antenna	:	internal, +1 dBi
Operation frequency	:	902 – 928 MHz
Modulation	:	PR-ASK
Spreading technique	:	FHSS
Clock frequency	:	12 MHz, 18.432 MHz and 24 MHz
Remarks	:	battery operated

Photograph of the EUT.

AUX1	:	Mains Power Supply Adapter
Brand	:	STONTRONICS LTD.
Model	:	DSA-12CA-05 050200
Serial number	:	--
Voltage input rating	:	100-240V-0.3A, 50-60Hz
Voltage output rating	:	5Vdc 2A
Remark	:	power supply for EUT (charging)

AUX2	:	Laptop Computer
Brand	:	HP
Model	:	Elitebook 8440p
Serial number	:	CZC1079LZH
Remark	:	Contains software for programming the EUT

Photograph of AUX1

1.3.1 Description of input and output ports.

Number	Terminal	From	To	Remarks
1	Mains	AUX1	EUT	Used for charging EUT
2	Mains	Mains	AUX2	--
3	USB connection	AUX2	EUT	shielded cable, for programming only

Table 1: Interconnection between EUT and auxiliary equipment

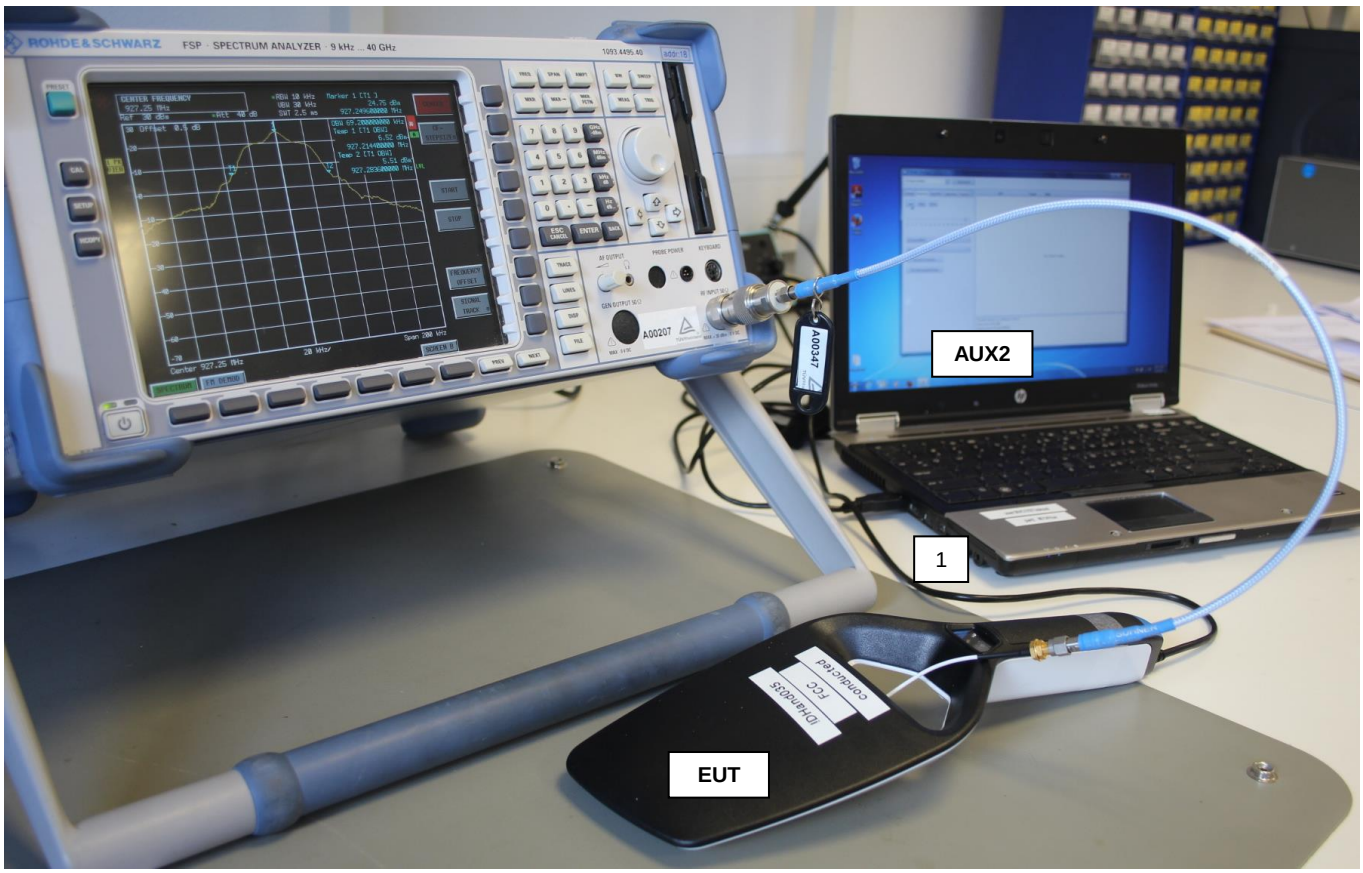


Photo 1: Basic test setup and connections

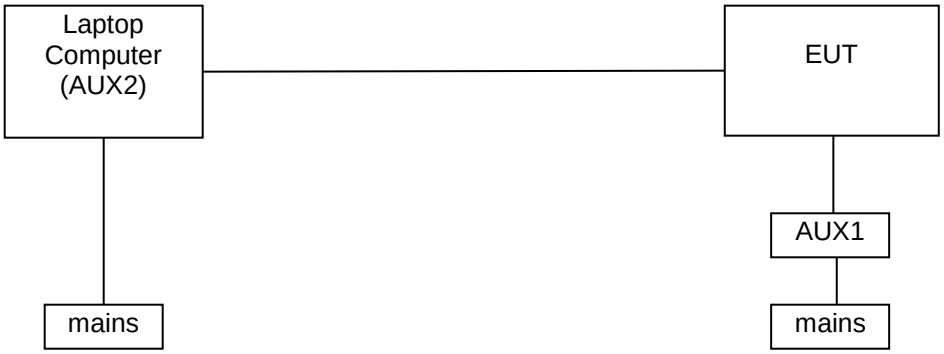


Figure 1. Blockdiagram of the basic test setup and connections

1.4 Test methodology.

The test methodology used is based on the requirements of 47 CFR Part 15 (10-1-14 Edition), sections 15.31, 15.209 and 15.247 and RSS-Gen (Issue 4, November 2014) an RSS-247 (Issue 1, May 2015).

The test methods, which have been used, are based on ANSI C63.10-2013.

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

The receivers are switching automatically to the right bandwidth in accordance with CISPR 16. This is implemented in the receiver. The antenna factors are programmed in the test 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 Measurement Uncertainty

Table 1: Emission Measurement Uncertainty

Measurement Type	Frequency	Uncertainty
Antenna Port Conducted Emission	< 1GHz	±0.5dB
	> 1GHz	±0.7dB
Radiated Emission	150kHz - 30MHz	±5.0dB
	30MHz - 1GHz	±5.0dB
	> 1GHz	±5.5dB
AC Power Line Conducted Emissions	150kHz - 30MHz	±3.5dB

1.6 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.

1.7 Test conditions.

Normal test conditions:

Temperature (*)	: +15°C to +35°C
Relative humidity(*)	: 20 % to 75 %
Supply voltage	: EUT is battery powered and batteries was fully charged 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 fashion (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 ANSI C63.10-2013.

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 MHz Ch 00), at the operating frequency in the middle of the specified frequency band (915.25 MHz Ch 25) and at the highest operating frequency (927.25 MHz Ch 49).

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: !D Reader developer’s tool version 1.4 .

This software was running on a laptop computer (AUX2). 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 in the technical documentation package.

2.7 Schematics of the EUT.

The schematics are available in the technical documentation package.

2.8 Part list of the EUT.

The part list is available in the technical documentation package.

3 Peak output power

Results: Pass

Date of testing: 2015-06-04

Requirements:

FCC 15.247(b)(2) and RSS-247 Section

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:

ANSI C63-10-2013.

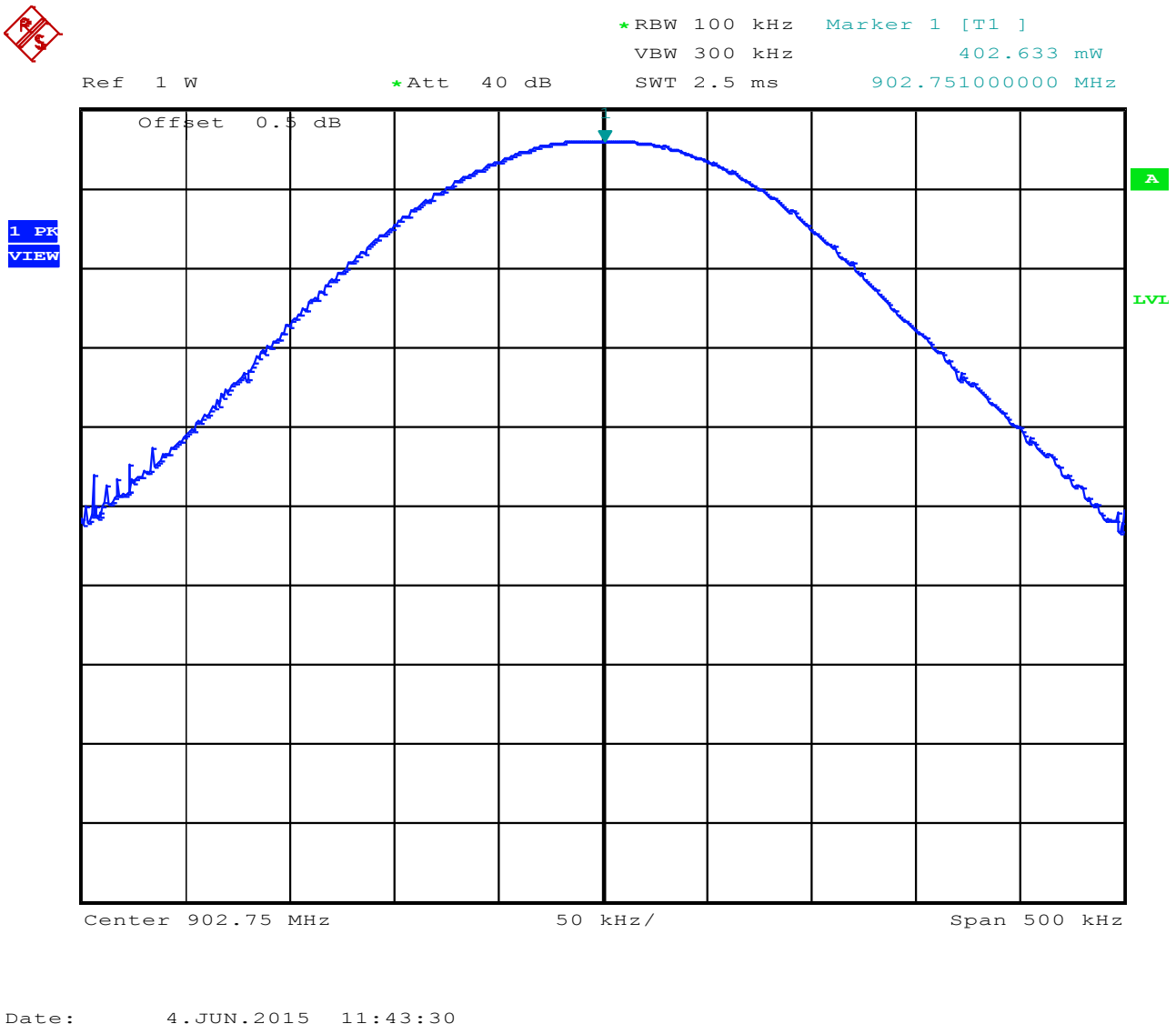
The testresults are obtained by conducted measurements using a spectrum analyzer.

Frequency (MHz)	Measured Peak Output Power (W)	Limit (W)
902.75	0.403	1
915.25	0.380	1
927.25	0.286	1

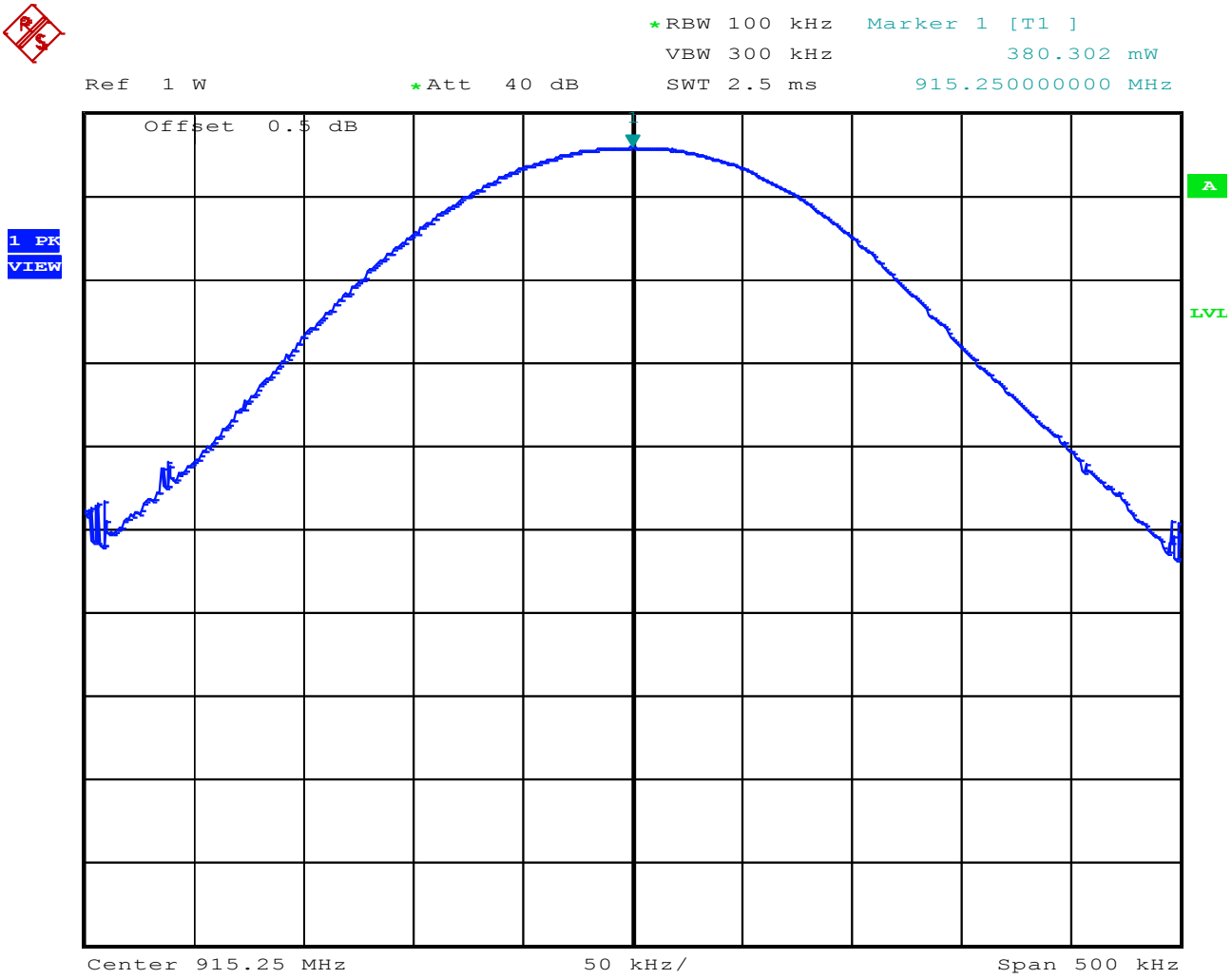
Table 2 Peak output power

Notes:

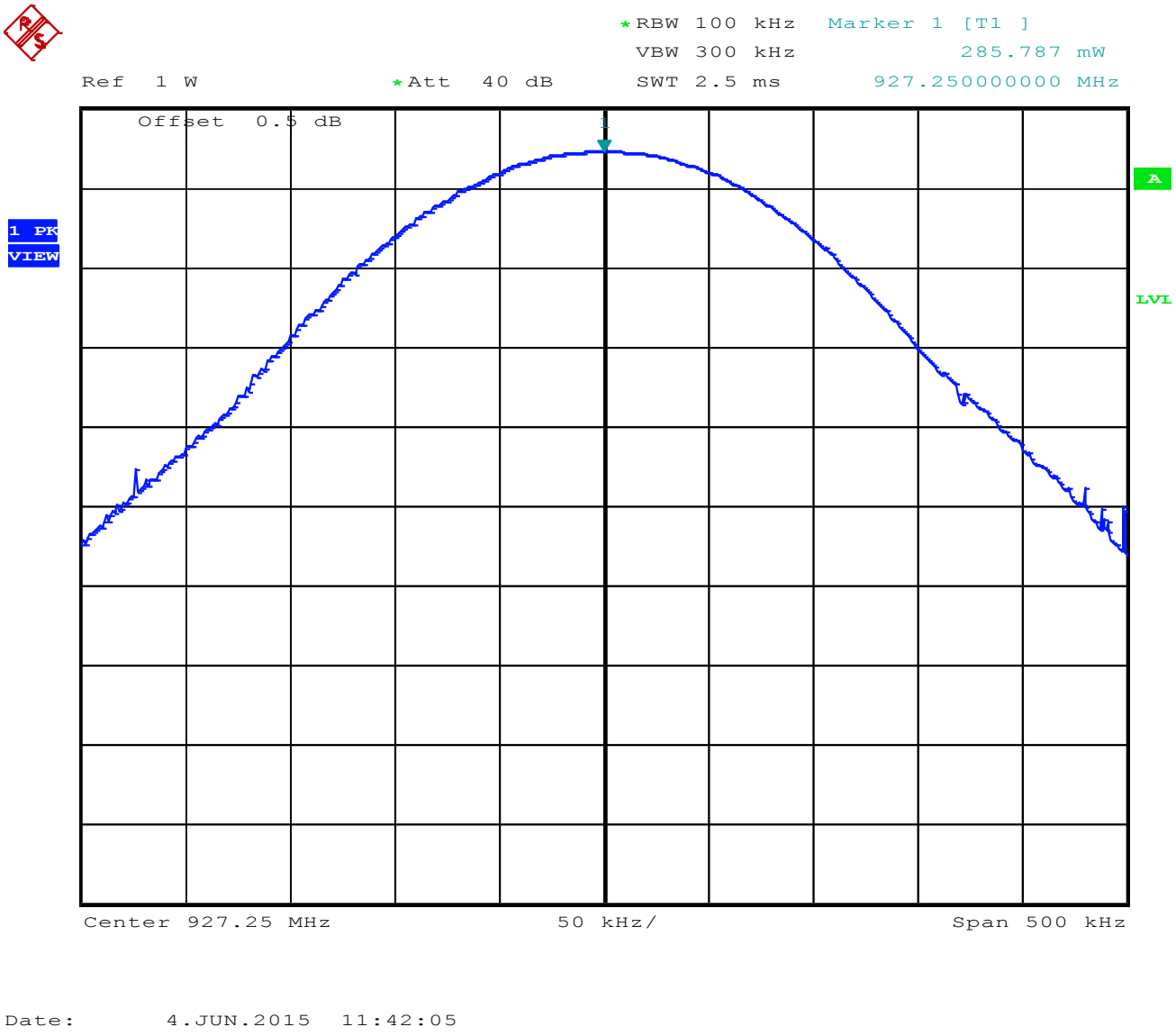
1. Measured value includes correction factor for cable loss (0.5 dB).
2. See plots on the next pages.



Plot 1: Peak Output Power (902.75 MHz)



Plot 2: Peak Output Power (915.25 MHz)



Plot 3: Peak Output Power (927.25 MHz)

4 Occupied bandwidth and 99% bandwidth

Results: Pass

Date of testing: 2015-06-04

Requirements:

FCC 15.247(a)(1)(i) and RSS-247 Section 5.1(3).

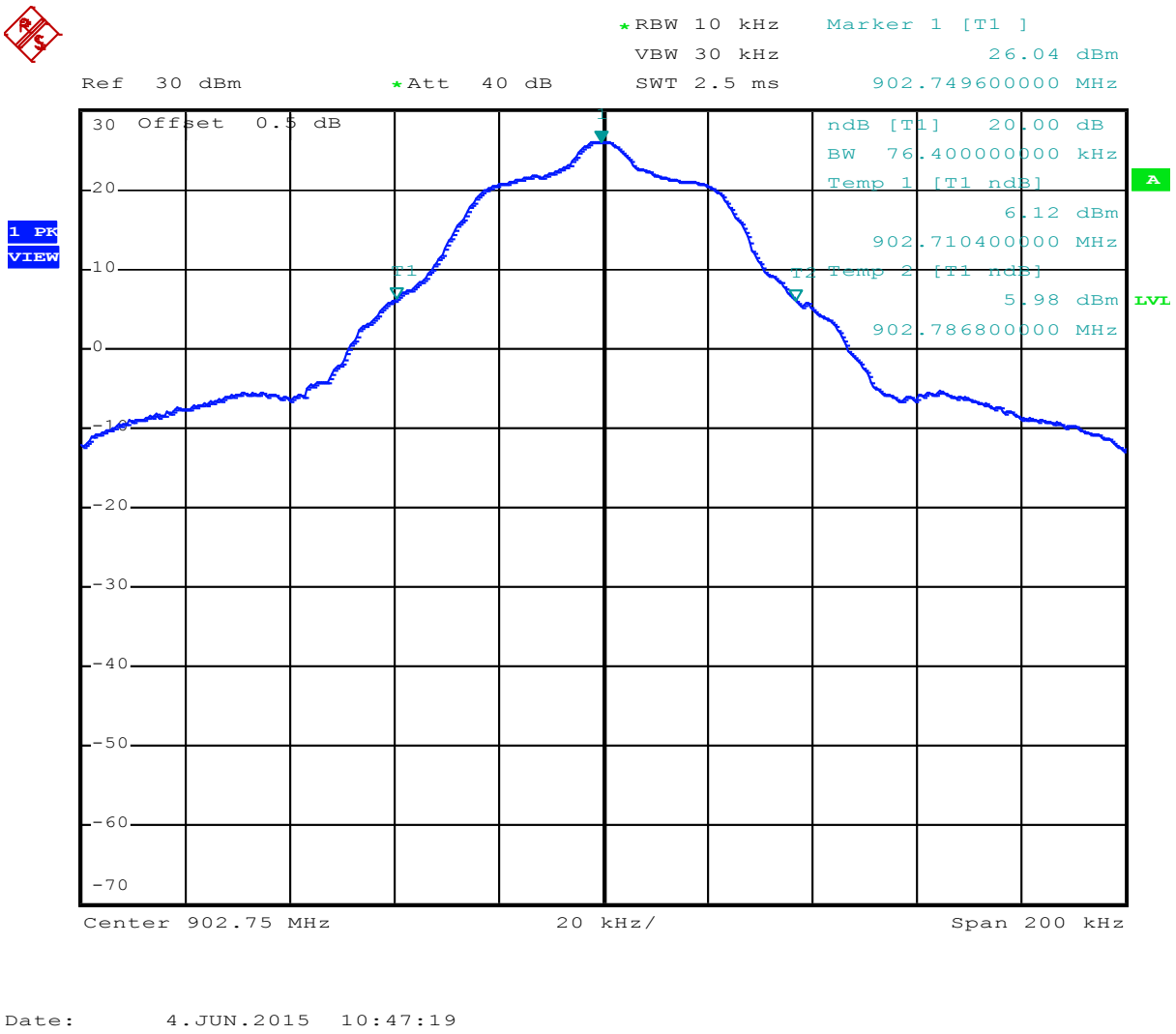
For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall have at least have 50 hopping channels and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period;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

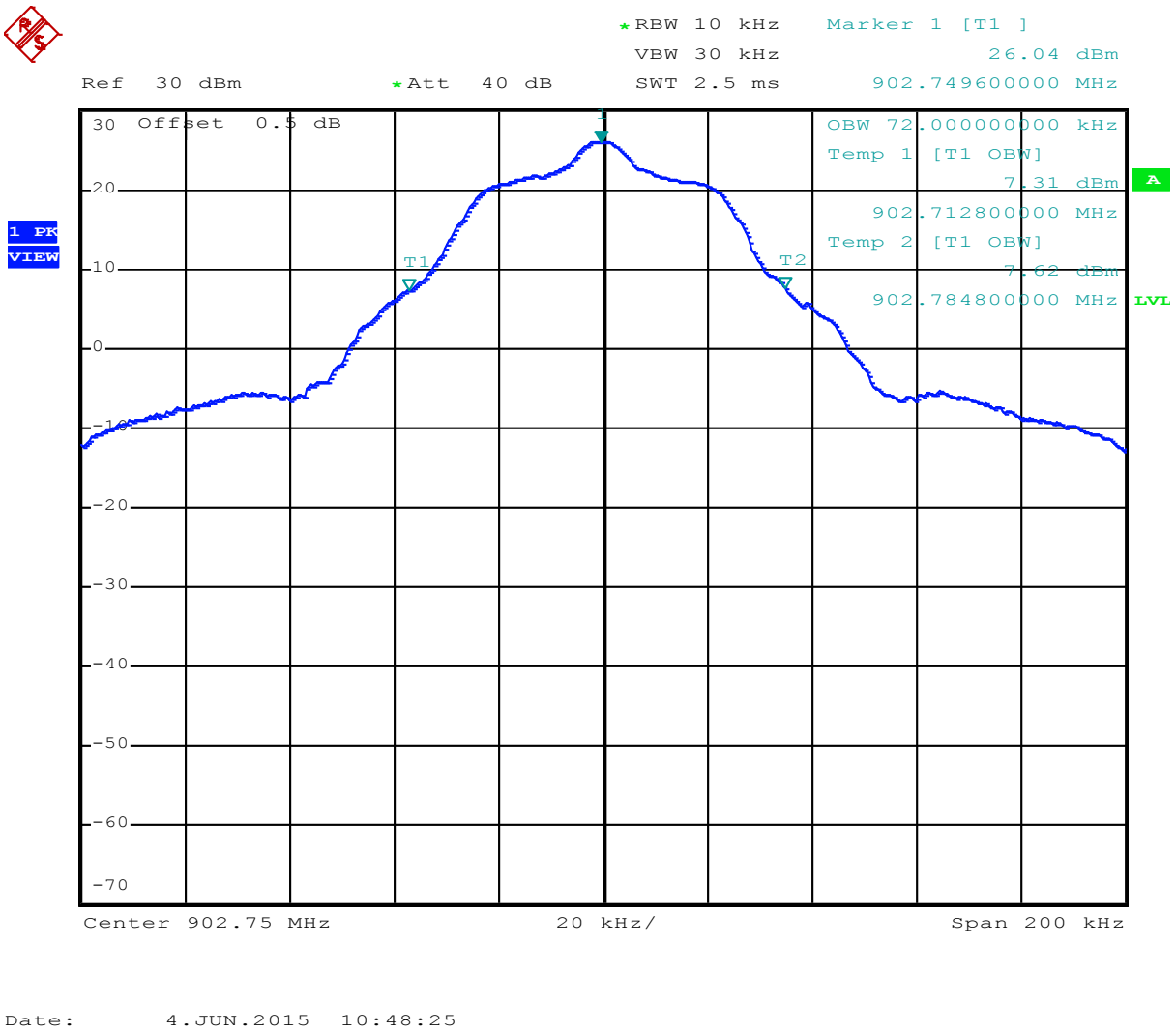
ANSI C63.10-2013

The Occupied bandwidth/99 % 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.

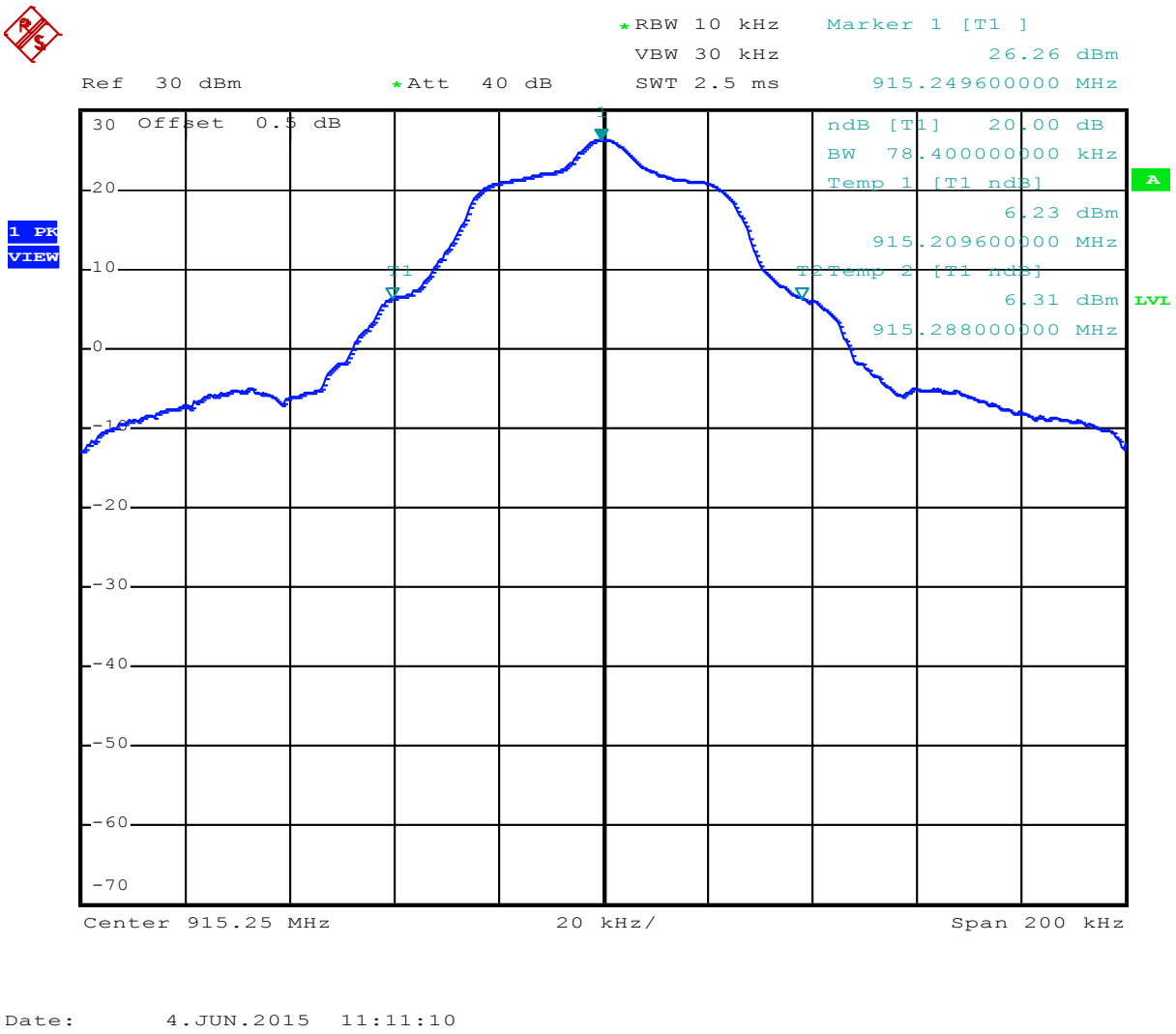
The EUT's 20 dB bandwidth was less than 250 kHz. See plots on the next pages.



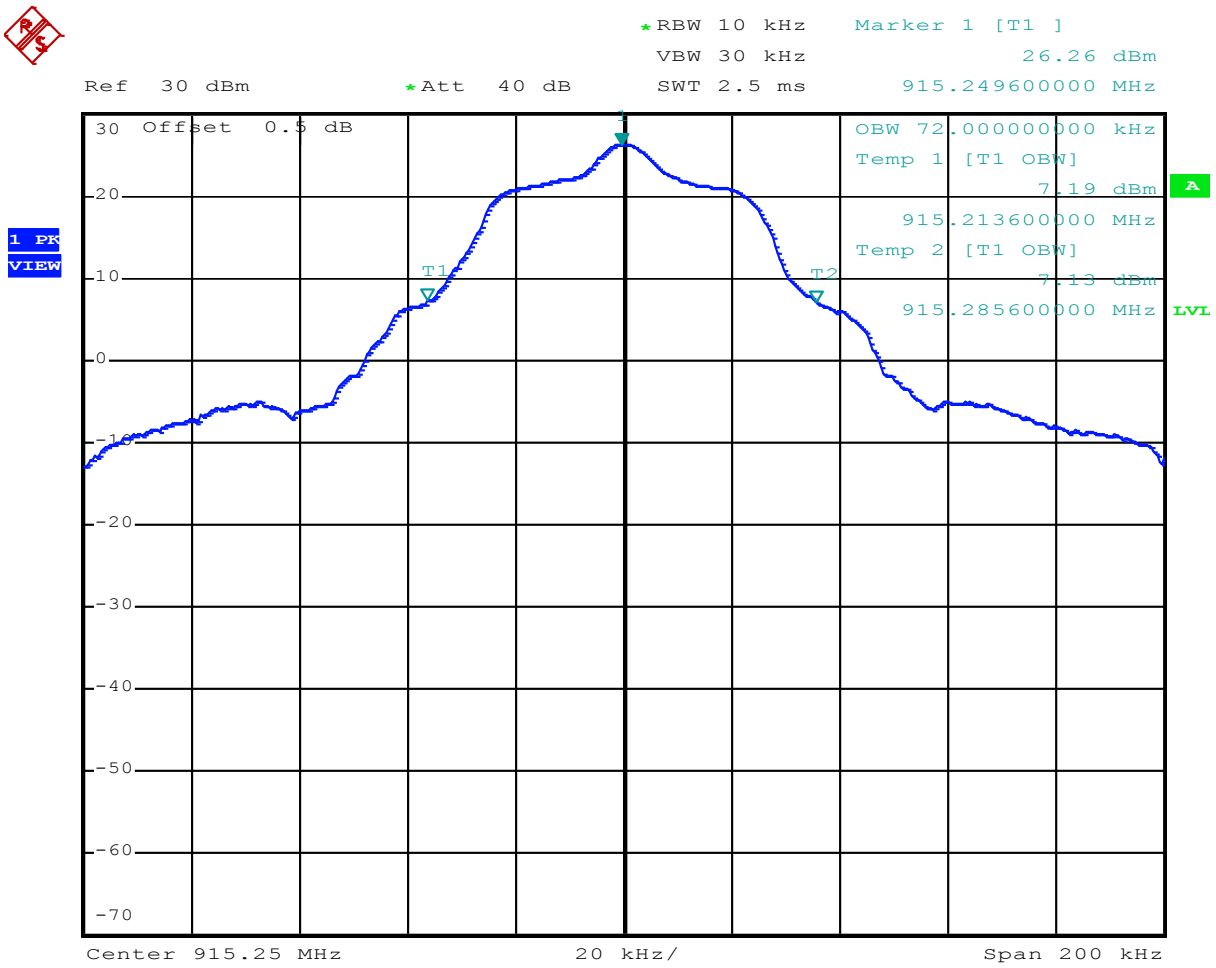
Plot 4a: Occupied 20dB Bandwidth (= 76.4 kHz) of the EUT transmitting at 902.75 MHz



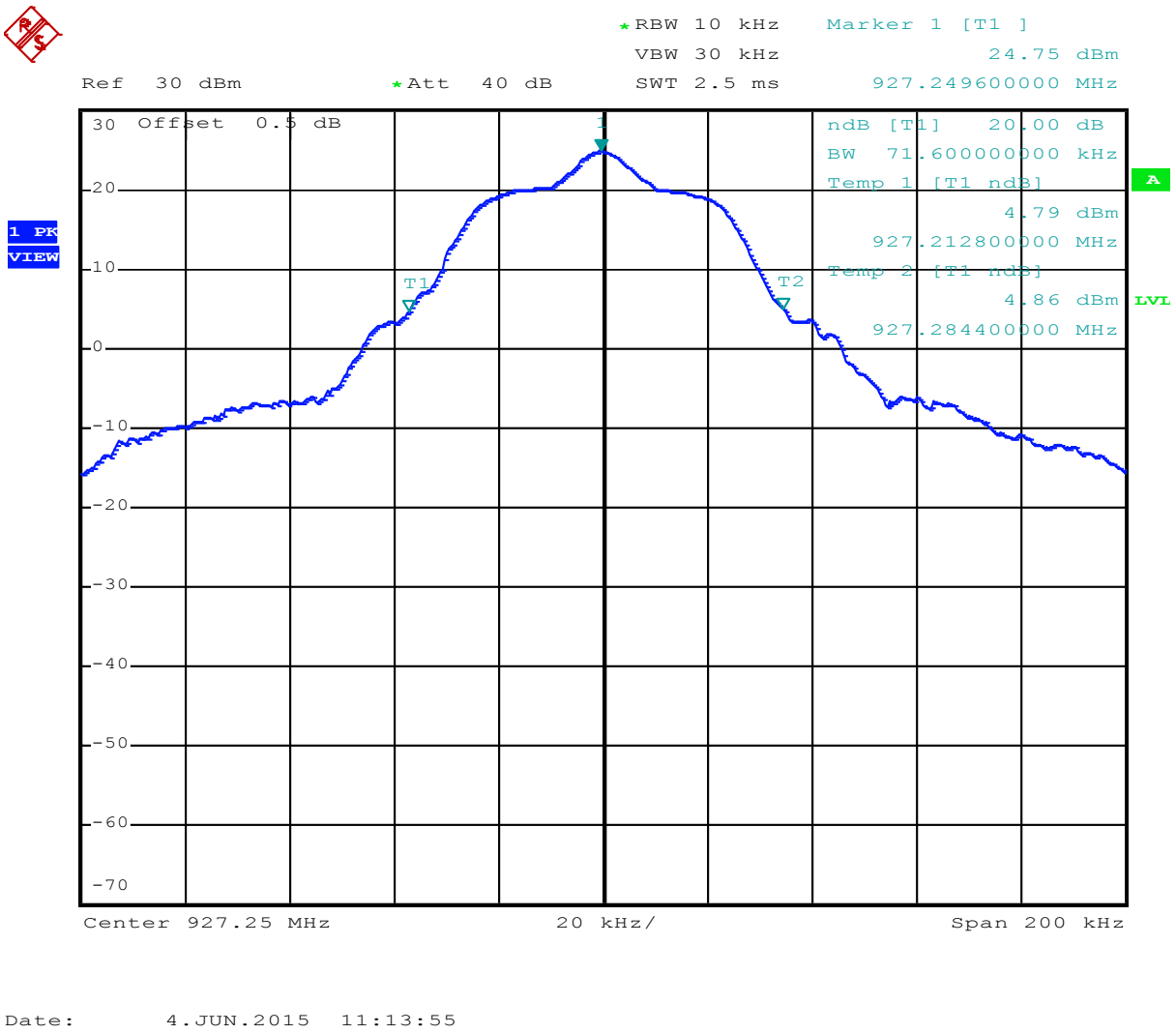
Plot 4b: 99% Bandwidth (= 72.0 kHz) of the EUT transmitting at 902.75 MHz



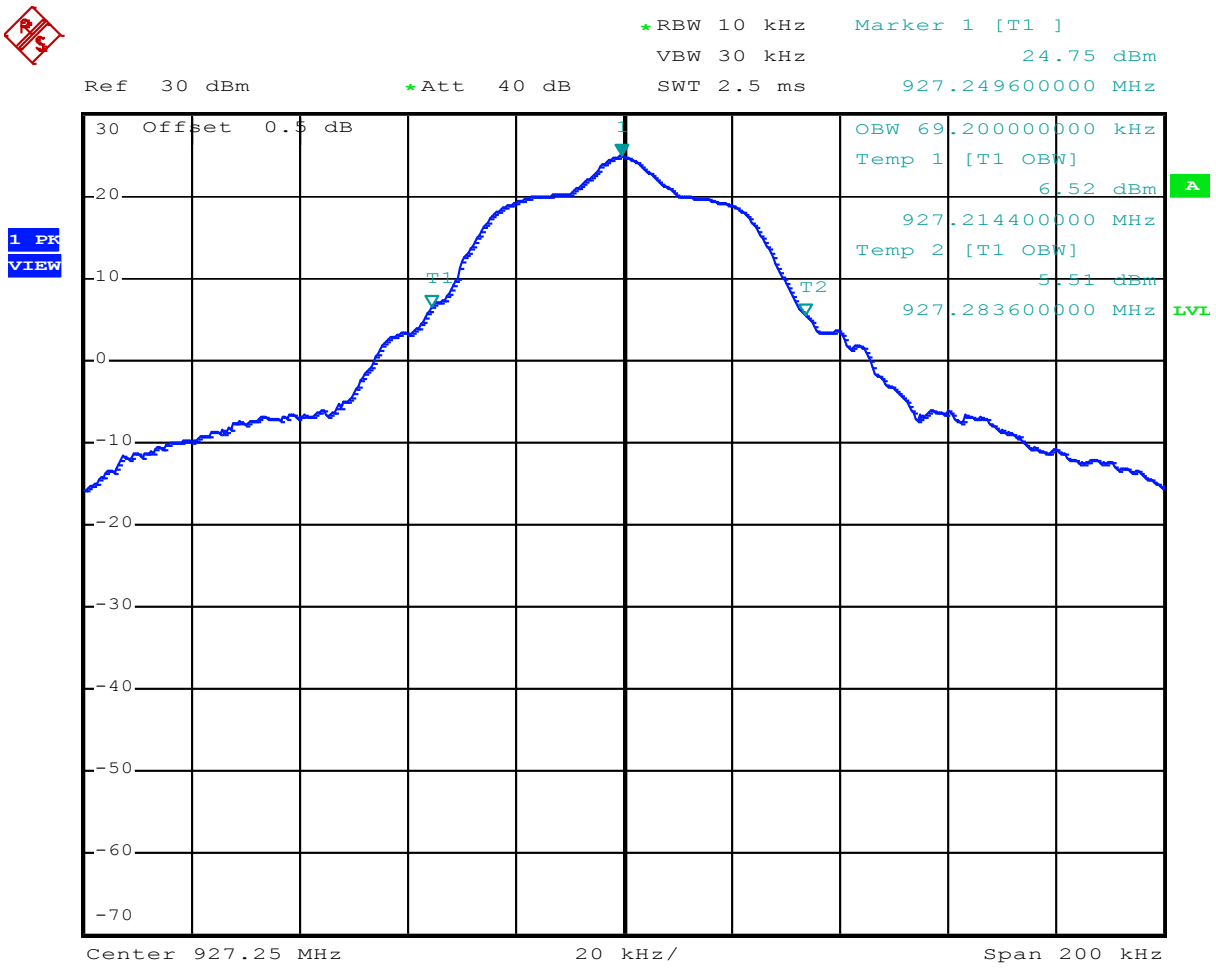
Plot 5a: Occupied 20dB Bandwidth (= 78.4 kHz) of the EUT transmitting at 915.25 MHz



Plot 5b: 99% Bandwidth (= 72.0 kHz) of the EUT transmitting at 915.25 MHz



Plot 6a: Occupied 20dB Bandwidth (= 71.6 kHz) of the EUT transmitting at 927.25 MHz



Plot 6b: 99% Bandwidth (= 69.2 kHz) of the EUT transmitting at 927.25 MHz

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

RESULT: PASS

Date of testing: 2015-06-04

Requirements:

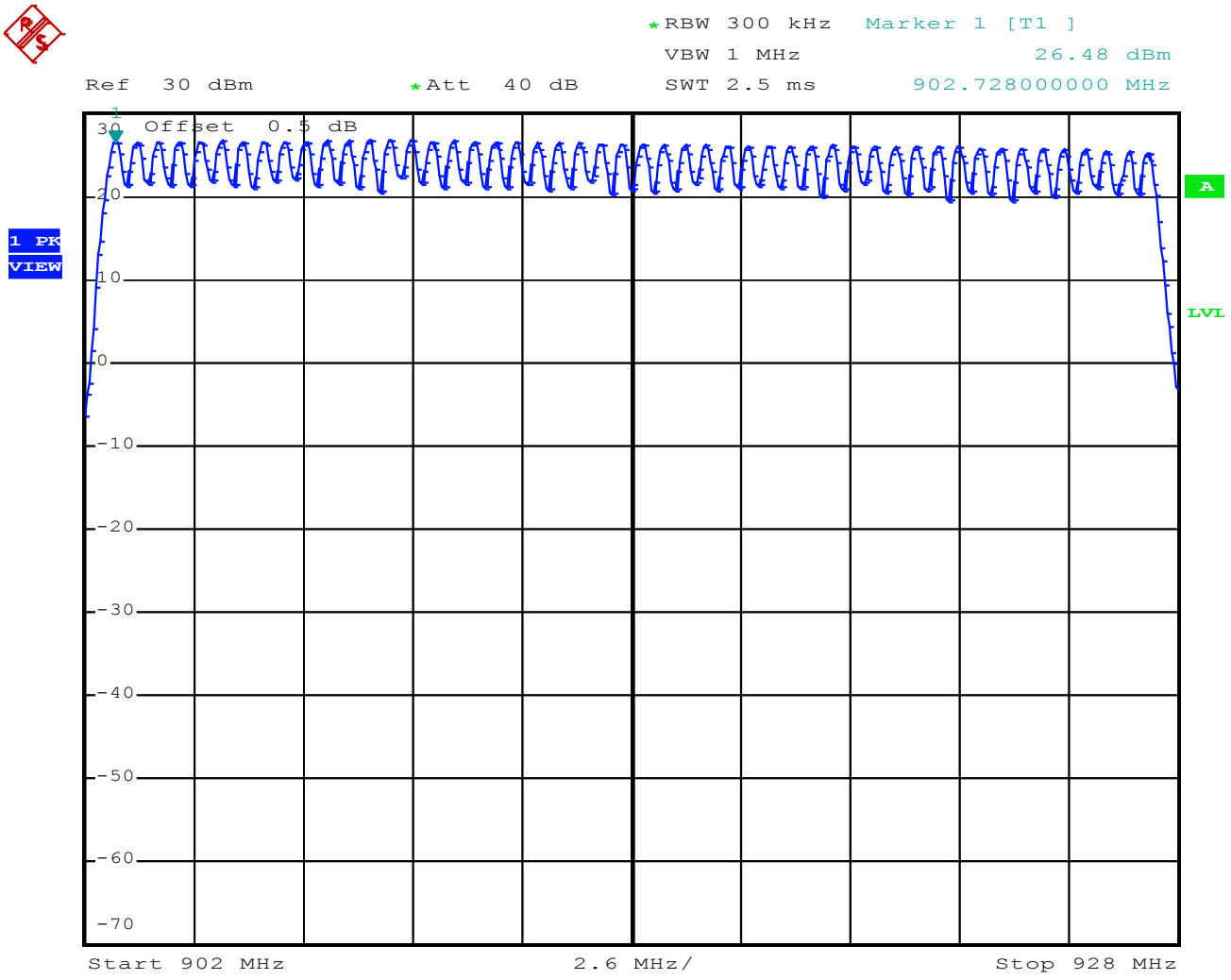
FCC 15.247(a)(1)(i) and RSS-247 Section 5.1(3) .

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.

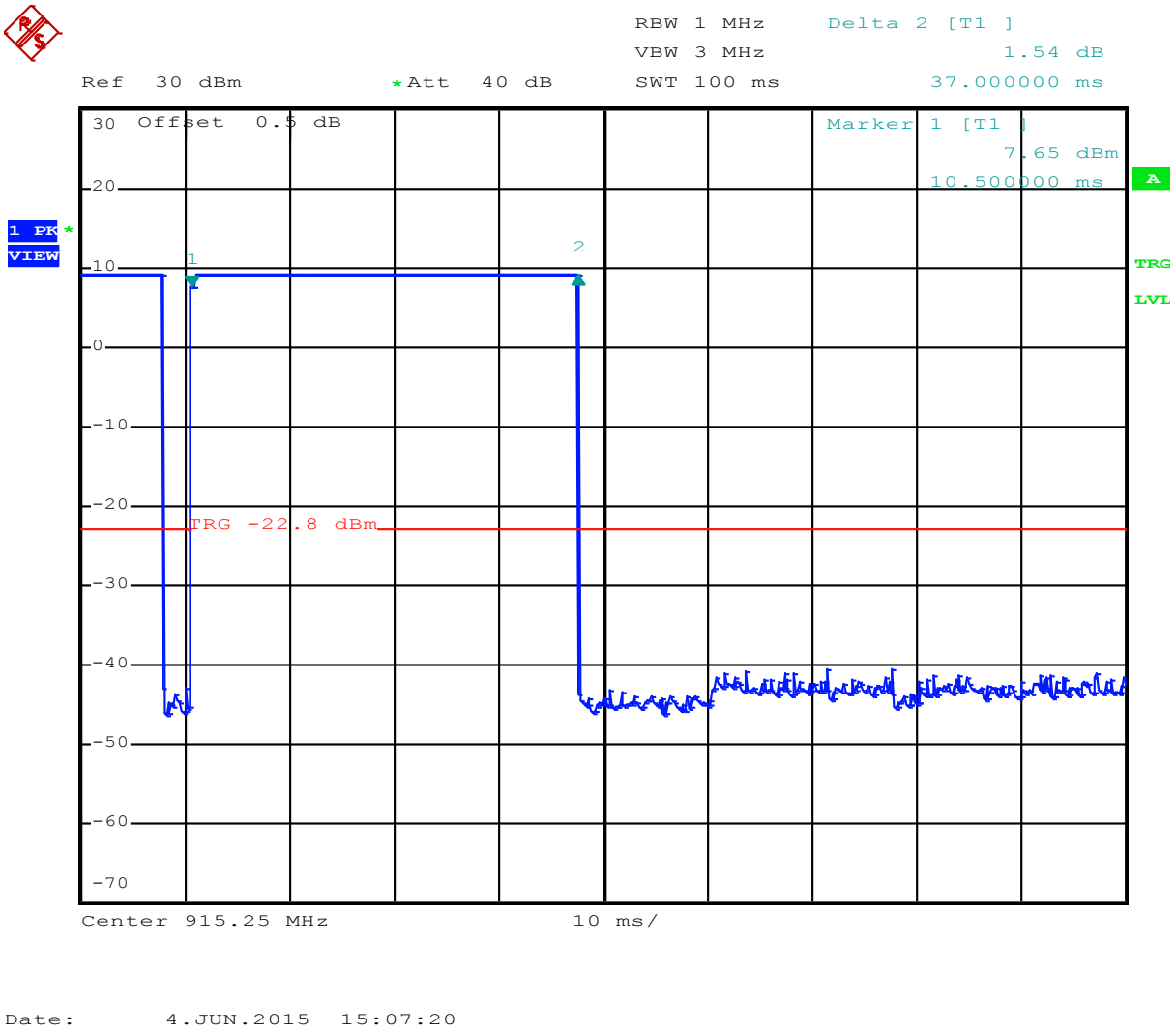
Test procedure:

ANSI C63.10-2013

The tests were done with the conducted test setup. See plots on the next pages.

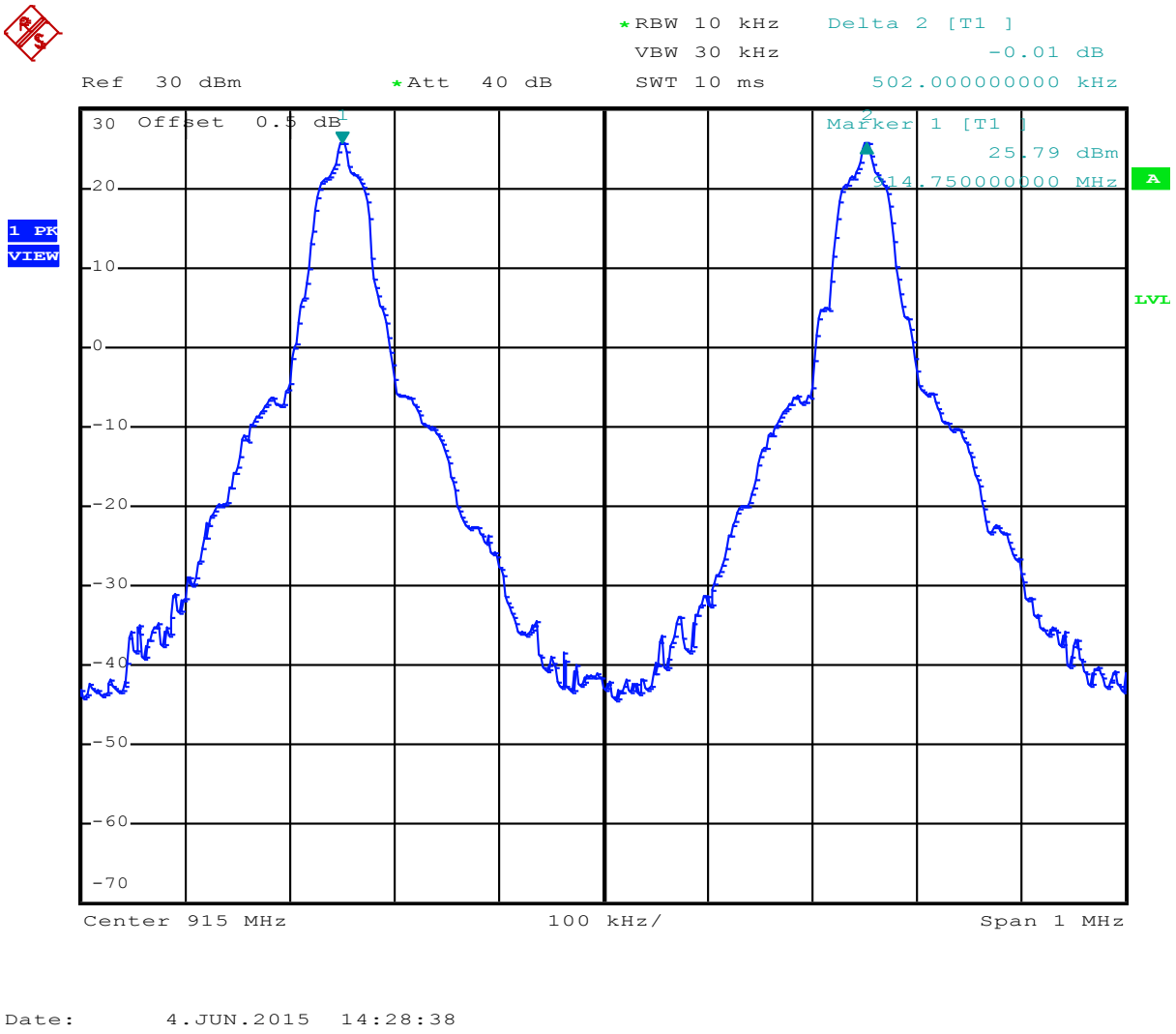


Plot 7: at least 50 (actual = 50) hopping frequencies as required by section 15.247 (a)(1)(i) , as measured on a spectrum analyzer



Plot 8: showing Average time of occupancy of 1 hop

Average time of occupancy (Dwell time) as measured on a spectrum analyzer. Plot 8 shows a hoplenght of 37.70 ms for 1 channel. The EUT has 50 channels for which each channel can transmit once per 1885 ms period (50 * 37.70 ms). During an observation of 20 seconds, the channel may there for transmit 10.61 times. The average time of occupancy would therefore be 10.61 * 37.70 ms = 399.997 ms, which is below the 400 ms limit.



Plot 9: showing approximately 502 kHz spacing between channels as measured on a spectrum analyzer

6 Band edge compliance

RESULT: Pass

Date of testing: 2015-06-04

Requirements:

FCC 15.205, FCC 15.209, FCC 15.247(d) and RSS-247 section 5.5.

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.

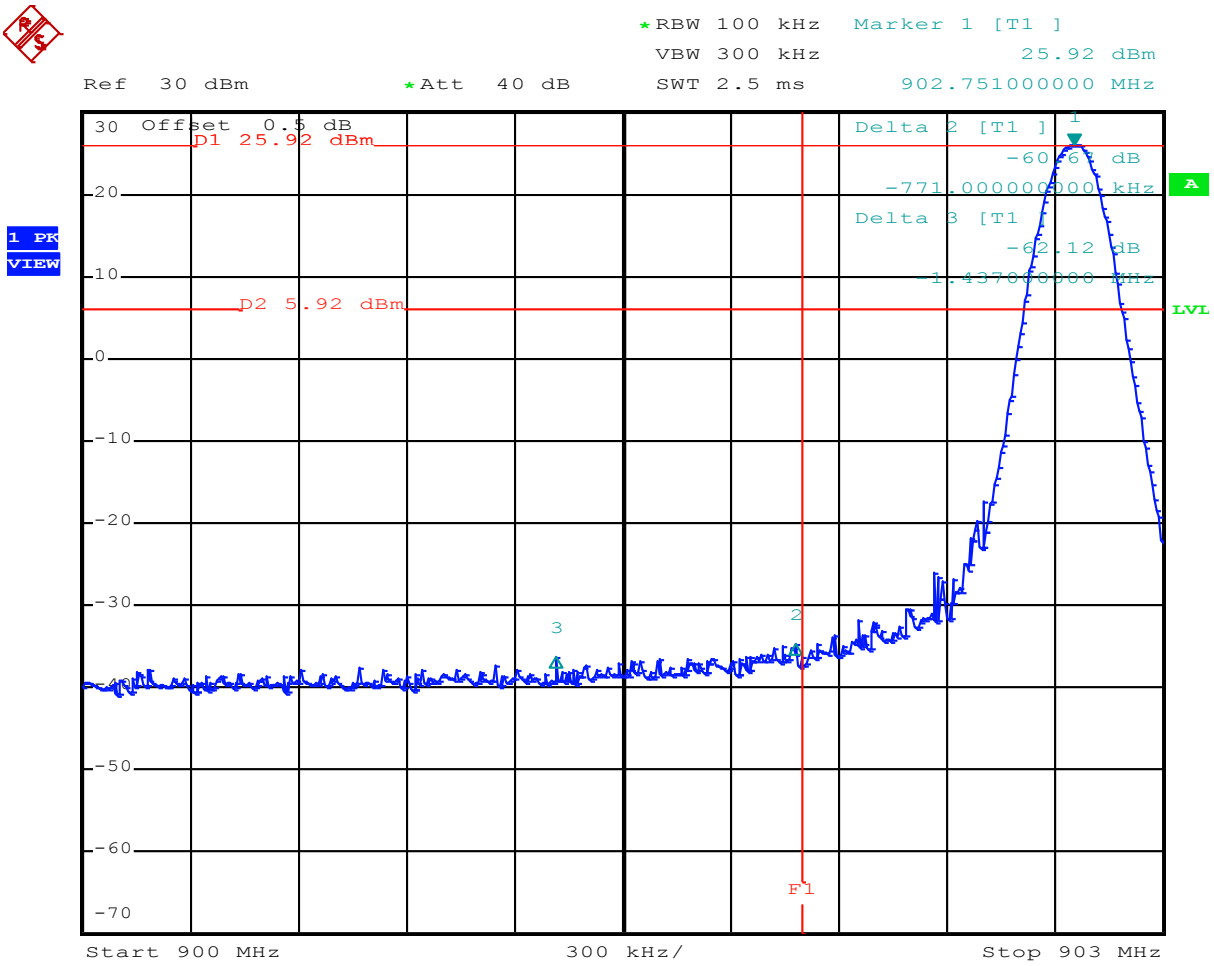
Test procedure:

ANSI C63.10-2013.

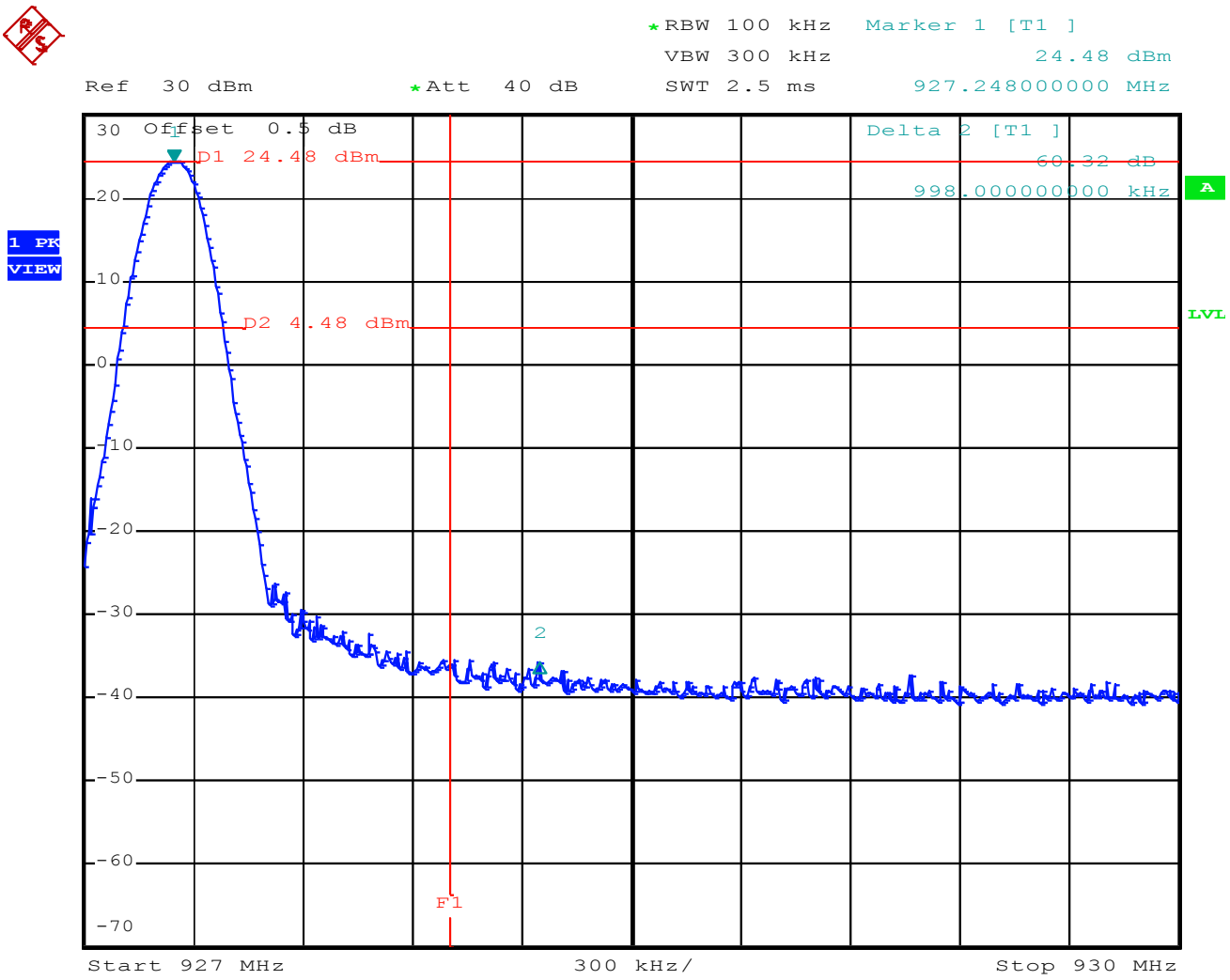
Measurements were performed with the conducted test setup using a spectrum analyzer with a suitable span to encompass the peak of the fundamental and using the following settings:
RBW = 100kHz, VBW = 100kHz.

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.



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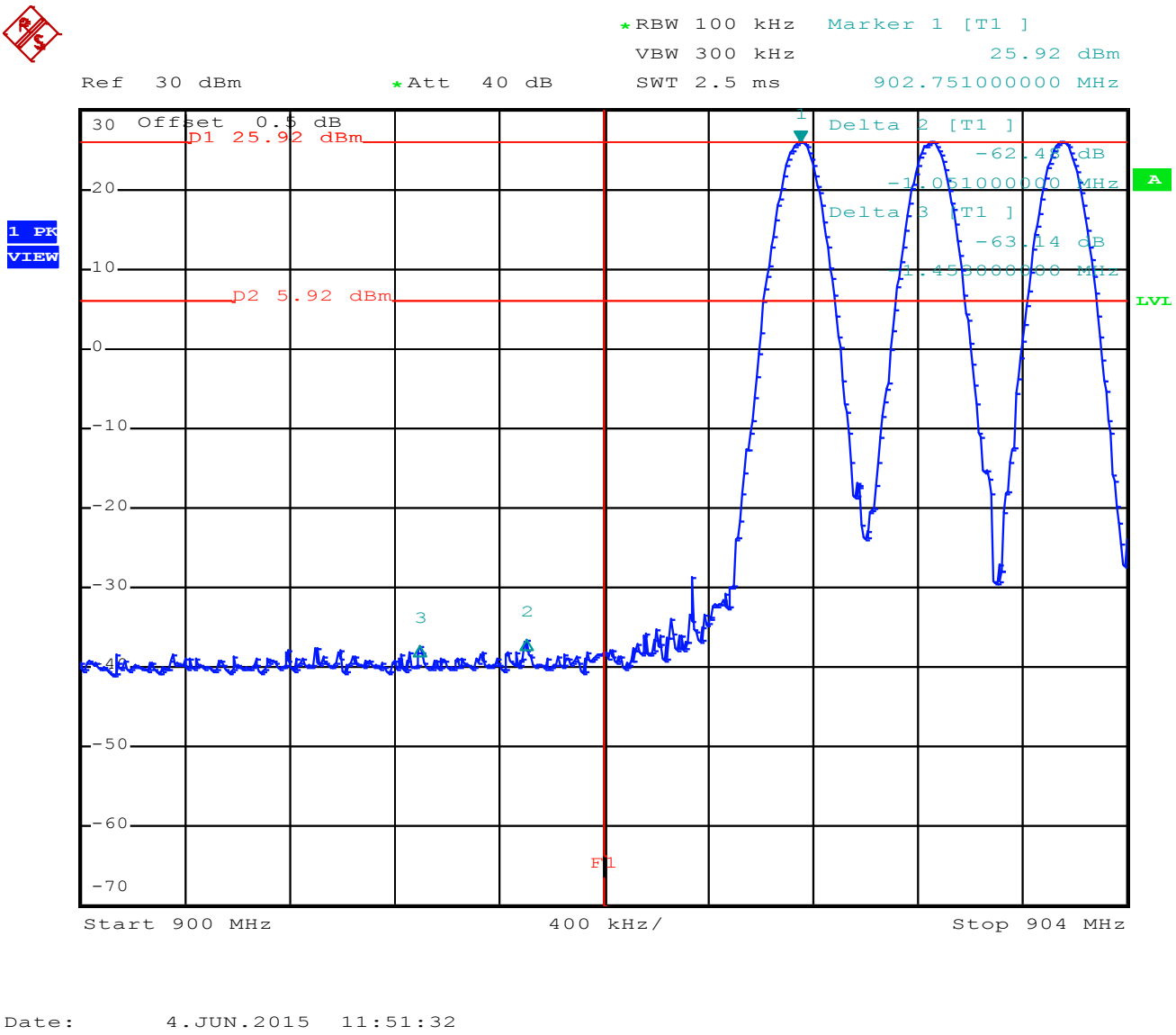
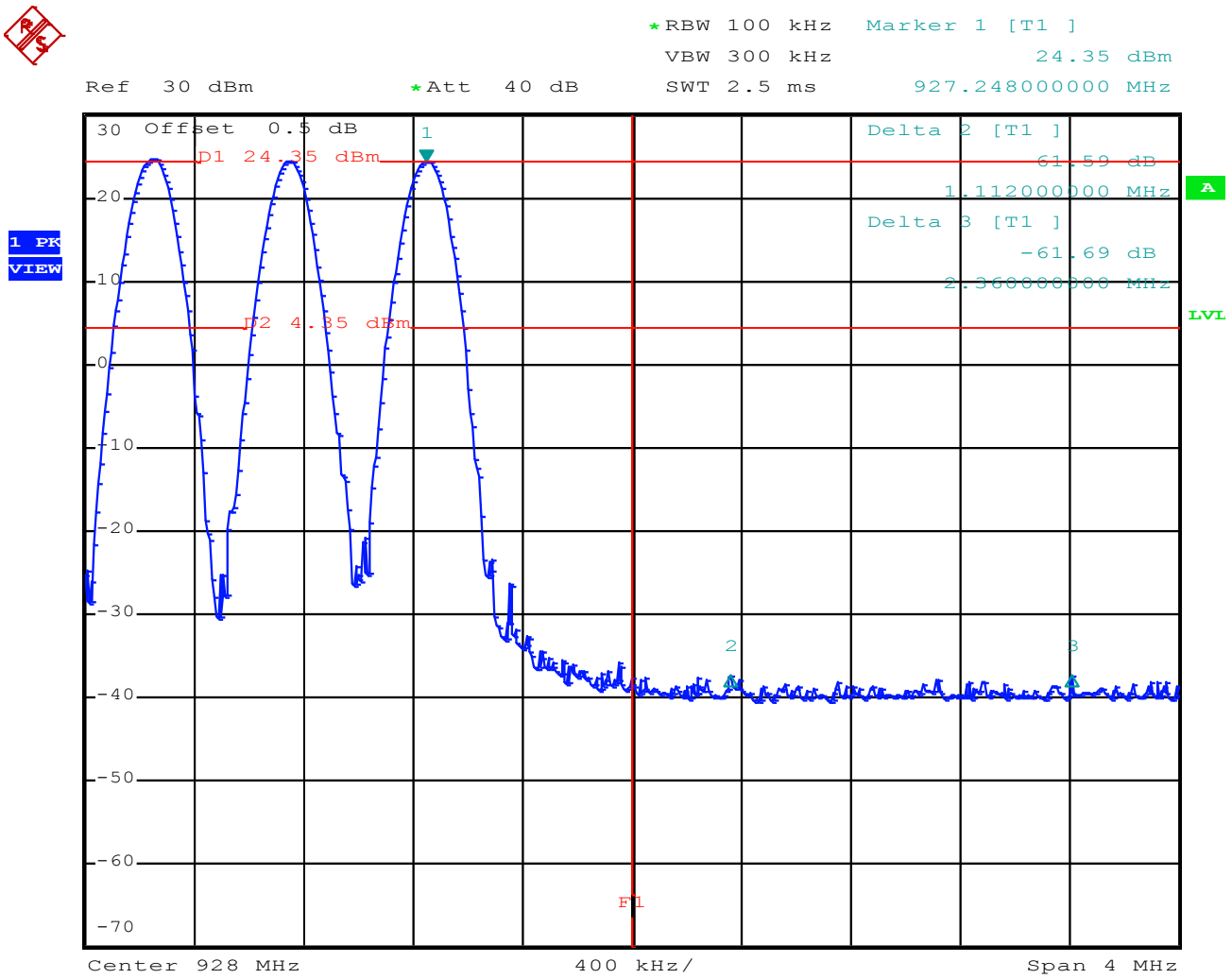
Plot 11. showing more than 20 dB band edge attenuation, EUT continues modulated carrier at 927.25 MHz F1 shows the band edge frequency of 928 MHz.



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: 2015-06-04

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:

ANSI C63.10-2013.

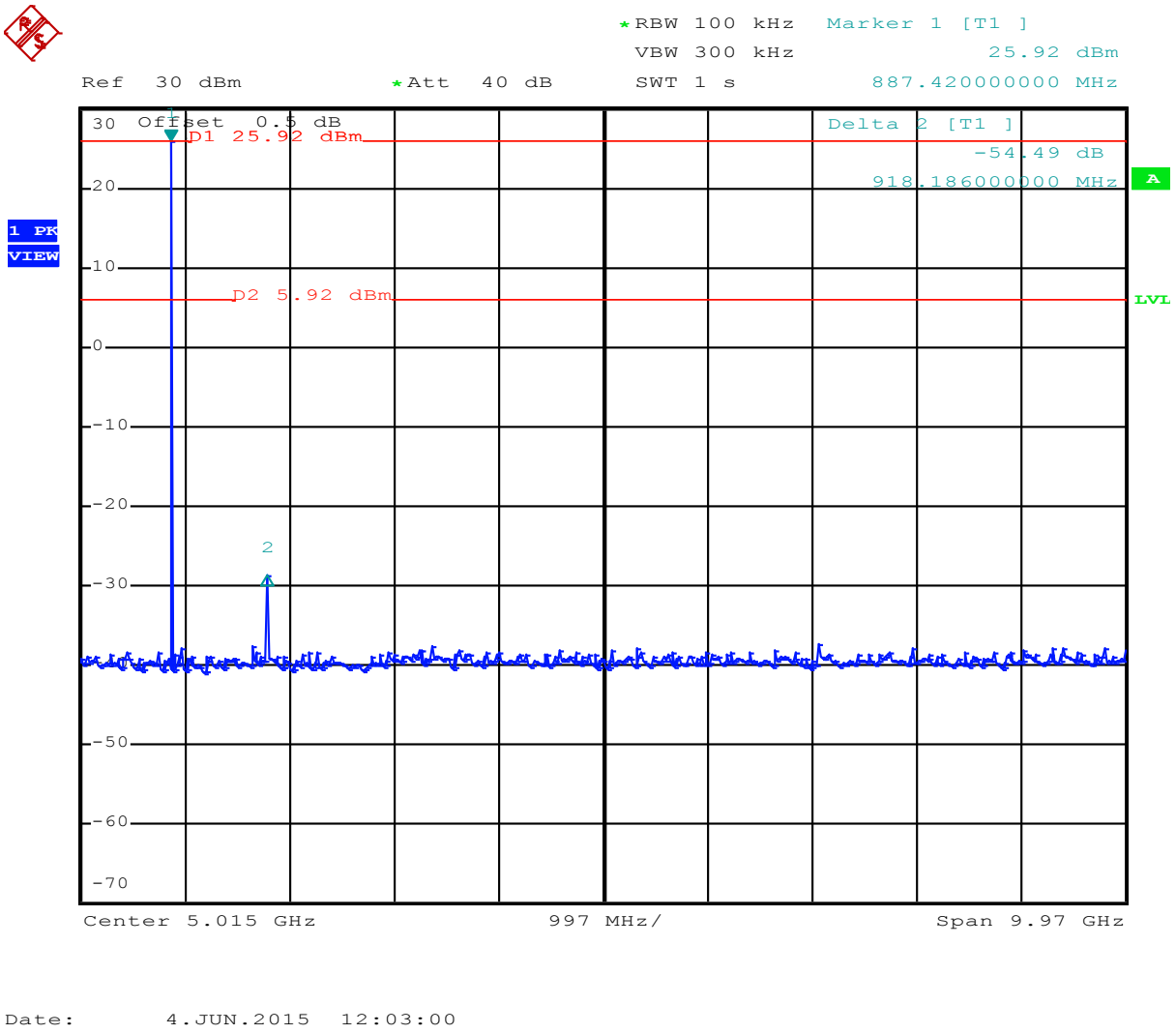
The tests were performed by RF conducted measurement by connecting a spectrum analyzer to the temporary SMA RF Output connector.

Use the following spectrum analyzer settings:

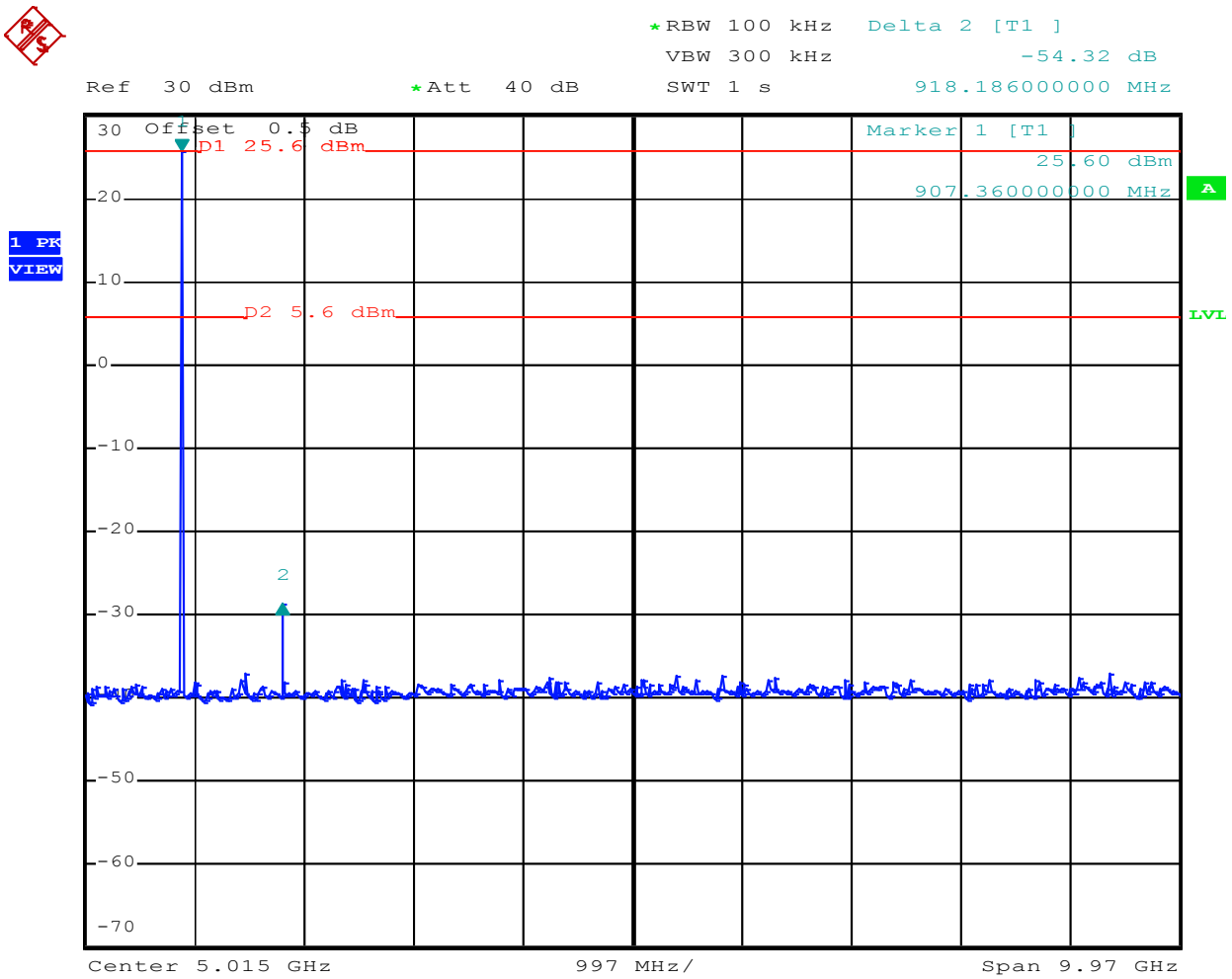
Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

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

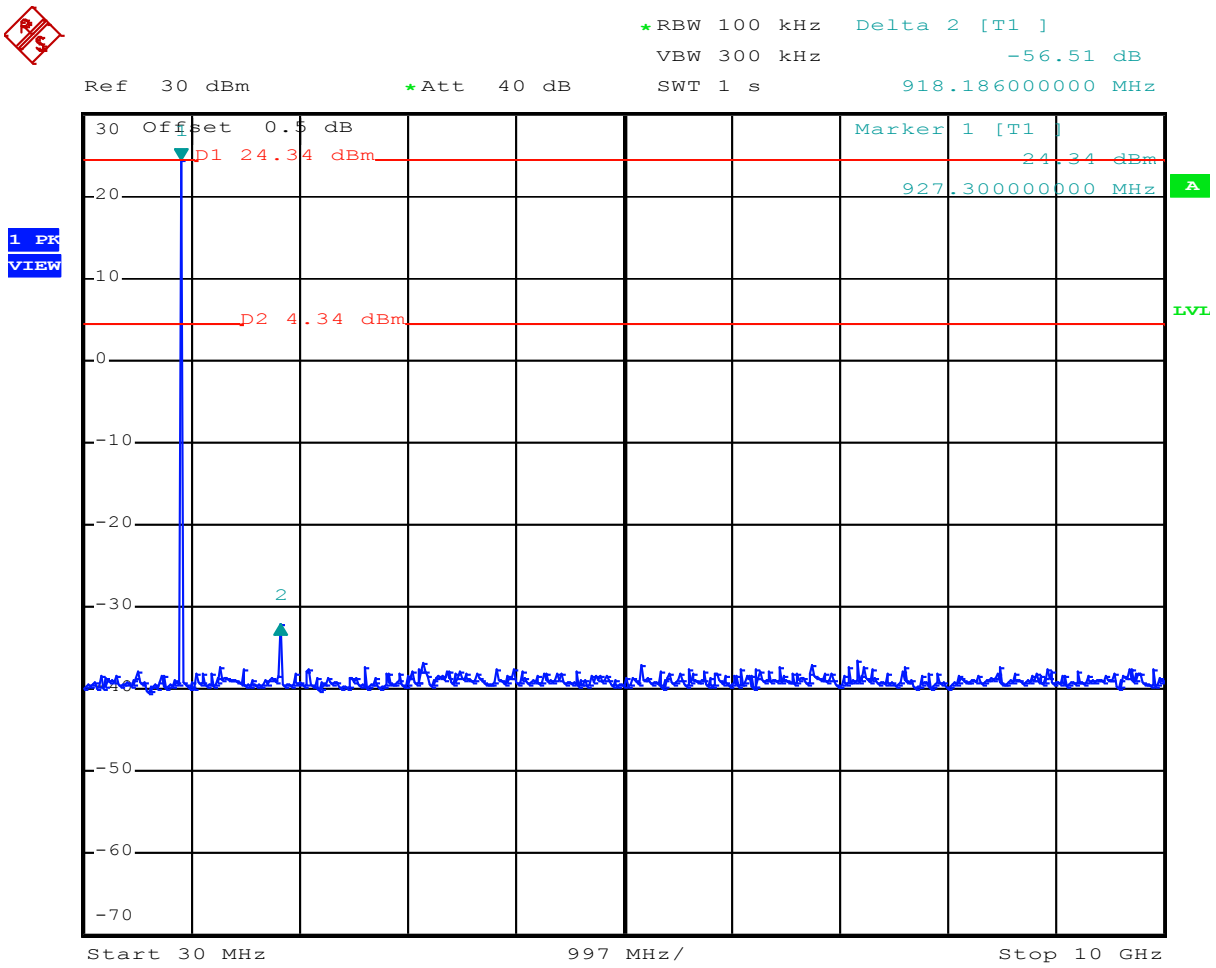
Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section. See the plots on the next pages.



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



Plot 15 of the conducted spurious emission, EUT frequency 915.25 MHz Constant modulated carrier.



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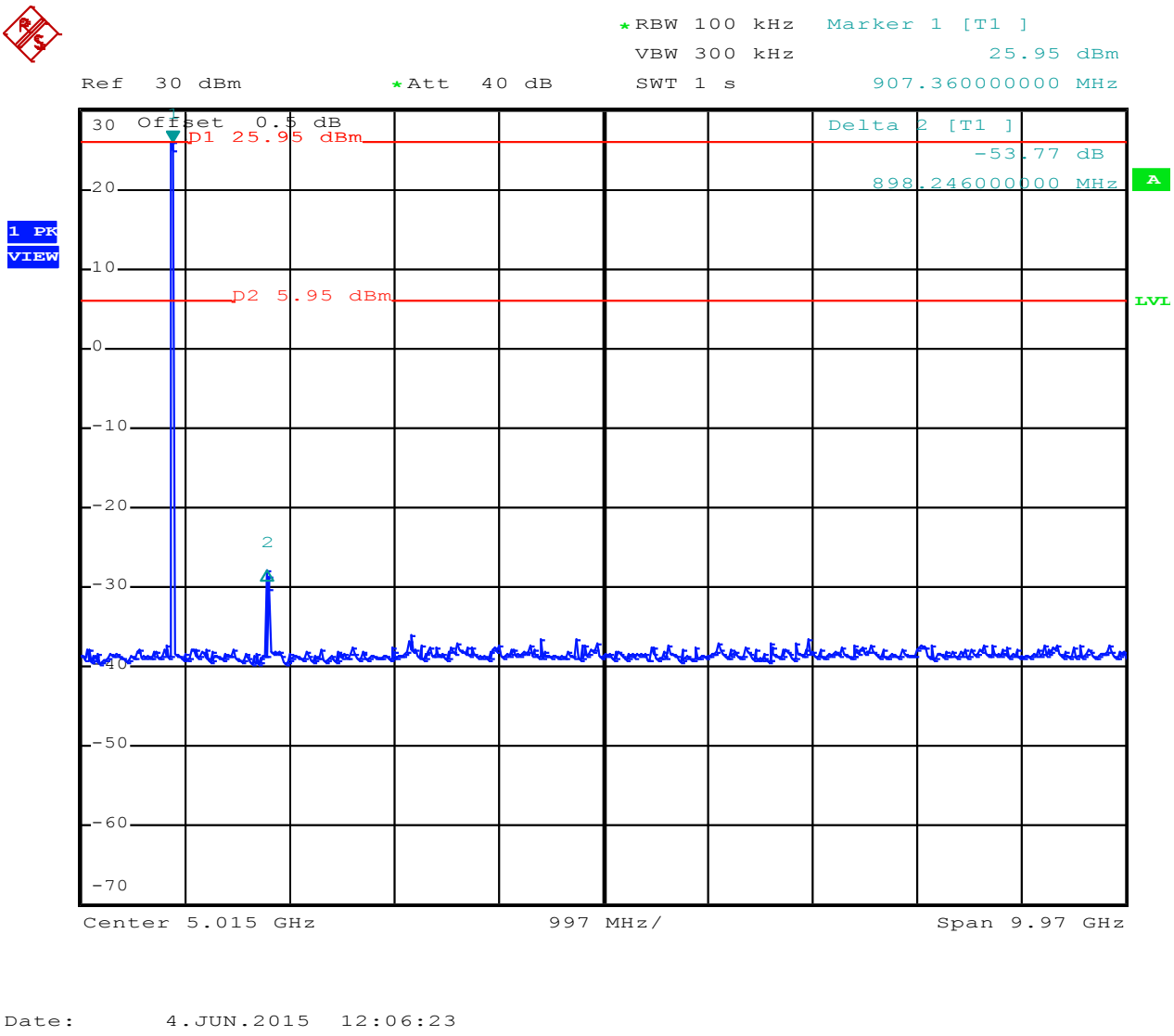
Plot 16 of the conducted spurious emission, EUT frequency 927.25 MHz Constant modulated carrier.



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: 2015-06-26

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:

ANSI C63.10-2013.

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 (with and without AUX1 power supply charger-hardly any difference observed) 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.

Frequency [MHz]	Antenna Orientation	Detector	Level [dBm]	Limit [dBm]
3602.0	Horizontal	Pk	-65.6	-41.2 Av / -21.2 Pk
4918.0	Vertical	Pk	-45.0	-41.2 Av / -21.2 Pk
9454.0	Horizontal	Pk	-58.7	-41.2 Av / -21.2 Pk

Table 3a Radiated spurious emissions of the EUT at 902.75 MHz

Frequency [MHz]	Antenna Orientation	Detector	Level [dBm]	Limit [dBm]
4232.0	Horizontal	Pk	-65.8	-41.2 Av / -21.2 Pk
4904.0	Horizontal	Pk	-65.4	-41.2 Av / -21.2 Pk
7312.0	Vertical	Pk	-64.0	-41.2 Av / -21.2 Pk

Table 3b Radiated spurious emissions of the EUT at 915.00 MHz

Frequency [MHz]	Antenna Orientation	Detector	Level [dBm]	Limit [dBm]
3826.0	Horizontal	Pk	-67.2	-41.2 Av / -21.2 Pk
4232.0	Horizontal	Pk	-66.2	-41.2 Av / -21.2 Pk
4904.0	Vertical	Pk	-65.0	-41.2 Av / -21.2 Pk

Table 3c Radiated spurious emissions of the EUT at 927.25 MHz

Frequency [MHz]	Antenna Orientation	Detector	Level [dBm]	Limit [dBm]
284.14	Horizontal	Qp	20.9 dBµV/m	46.0 dBµV/m
4238.0	Horizontal	Pk	-66.2	-41.2 Av / -21.2 Pk
4912.0	Horizontal	Pk	-63.9	-41.2 Av / -21.2 Pk

Table 3d Radiated spurious emissions of the EUT in normal mode (hopping)

The results of the radiated emission tests in the range 30 MHz – 10 GHz, with the system operating in transmit mode are depicted in Table 3a through 3d.

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. The UHF (902-928 MHz) RFID transceiver and Bluetooth (2402-2480 MHz) transmitter transmit simultaneously.

9 AC Power Line Conducted Emission Data.

9.1 AC Power Line Conducted Emission data of the EUT

RESULT: Pass

Date of testing: 2015-09-09

Requirements:

Except when the requirements applicable to a given device state otherwise, for any license-exempt radio communication device equipped to operate from the public utility AC power supply, either directly or indirectly, the radio frequency voltage that is conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in the following table. The tighter limit applies at the frequency range boundaries.

Frequency of Emission (MHz)	Conducted Limit (dBµV) Quasi-Peak	Conducted Limit (dBµV) Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 - 30	46	50

*Decreases with the logarithm of the frequency.

Test procedure:

ANSI C63.10-2013.

Each phase and neutral of the AC power line were measured with respect to ground. Measurements were performed using a 50 µH / 50 Ω LISN. The frequency range from 150kHz to 30MHz was searched. The six highest EUT emissions relative to the limit were noted. The EUT is considered a floor-standing device. The EUT is placed on a non-conductive plate of 5mm thick above the ground plane, so to isolate it from the ground plane because the EUT normally does not make electrical contact with a ground plane. The EUT was positioned at least 80cm from the LISN. The power cable was routed over the non-conductive plate to the LISN.

9.1.1 Testresults

Frequency (MHz)	Measurement results (dBµV) L1		Measurement results (dBµV) L2/Neutral		Limits (dBµV)		Verdict (Pass/Fail)
	QP	AV	QP	AV	QP	AV	
0.16953	53.0	32.0	50.1	Note 3	65.0	55.0	Pass
0.22813	43.2	Note 3	41.3	Note 3	62.4	52.4	Pass
0.28281	36.9	Note 3	38.7	Note 3	60.8	50.8	Pass
0.91953	38.8	Note 3	32.4	Note 3	56.0	46.0	Pass
1.97813	35.0	Note 3	33.5	Note 3	60.0	50.0	Pass
3.06797	31.6	Note 3	32.3	Note 3	60.0	50.0	Pass

Table 4 AC Power Line Conducted Emissions of the EUT

The results of the conducted emission tests, carried out in accordance with 47 CFR Part 15 section 15.207(a) and RSS-Gen section 8.8, at the 120 Volts/ 60 Hz AC mains connection terminals of the AUX1 that connects to the EUTEUT, are depicted in the Table 4 above.

Notes:

1. The resolution bandwidth used was 9 kHz.
2. Tested in the normal operation mode wherein both DTS transmitter and Bluetooth were operational. Worst case values noted.
3. Qp values already within Av limits, therefor Av not tested.
4. Plots are provided on the next pages.

Used test equipment and ancillaries:

A00022	A00051	A00171	A00437	A00444	A00726	

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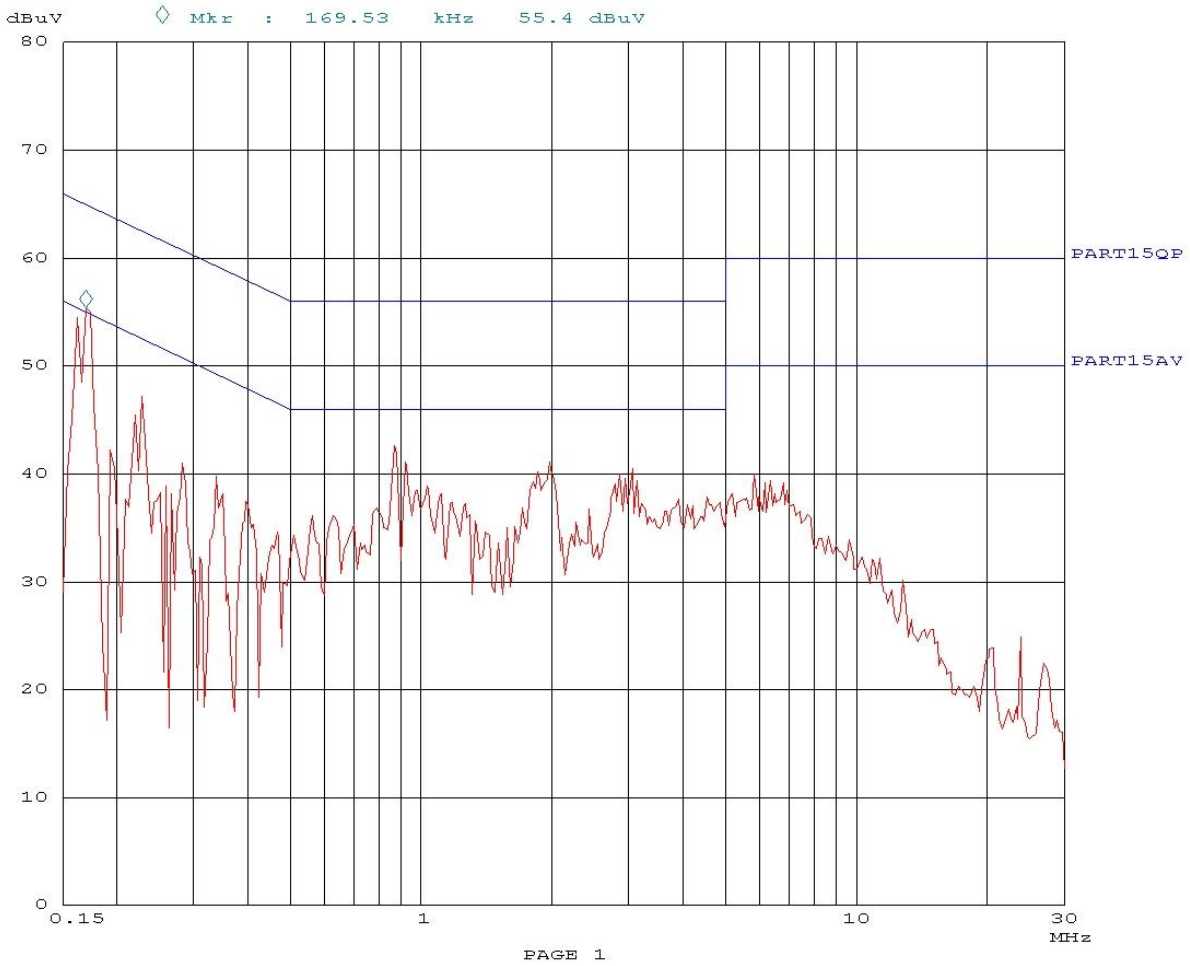
Overview Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	3.9k	9k	PK	0.10ms	0dBLN	OFF

Final Measurement: x QP
Meas Time: 1 s
Subranges: 25
Acc Margin: 6dB

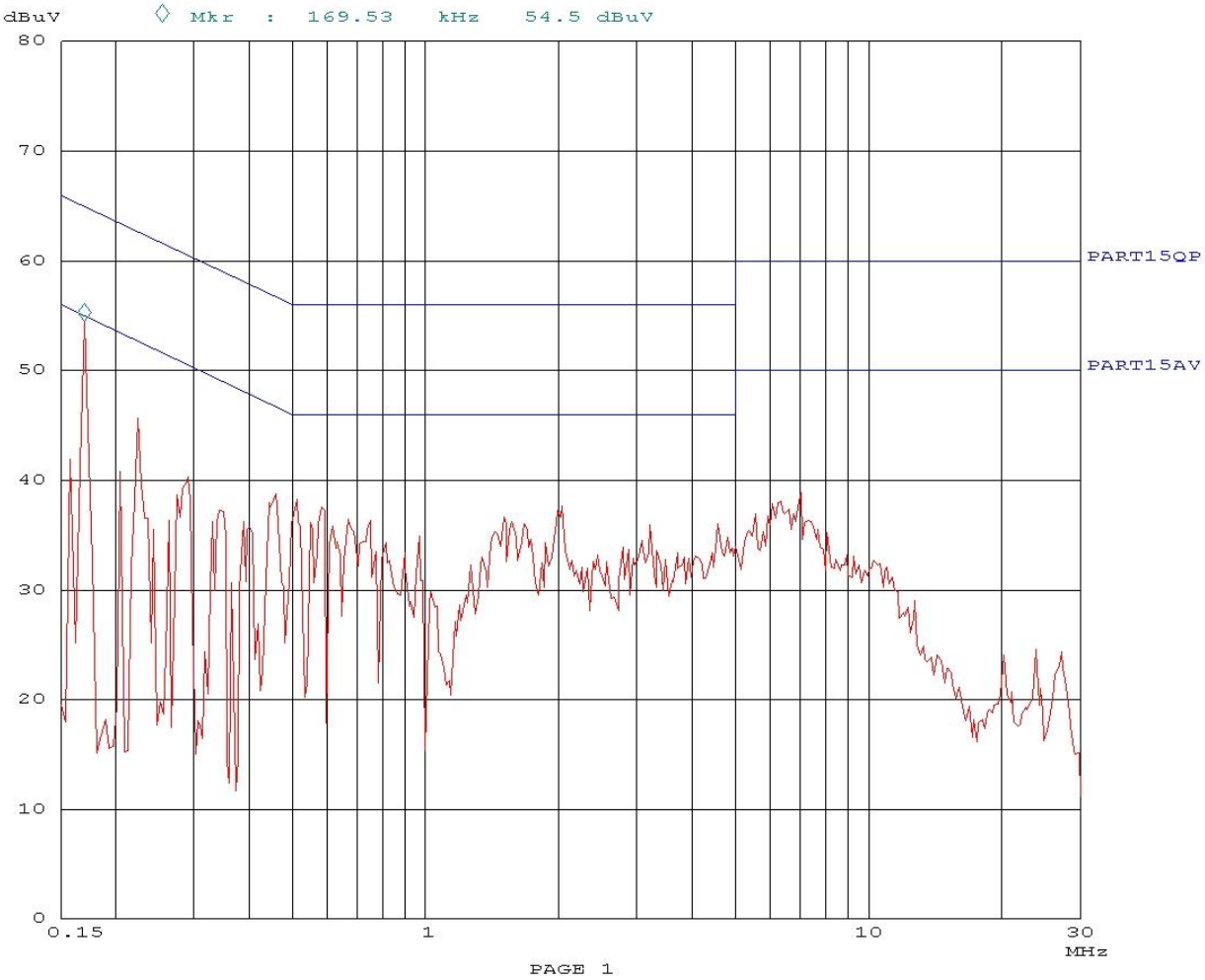


Plot 18 AC Power Line Conducted Emissions on L1

09. Sep 15 11:36

```
Overview Scan Settings (1 Range)
|--------- Frequencies ------------||--------- Receiver Settings ----------|
   Start        Stop         Step       IF BW  Detector  M-Time   Atten Preamp
 150k          30M          3.9k         9k       PK      0.10ms    0dBLN   OFF

Final Measurement: x QP
                   Meas Time:     1 s
                   Subranges:    25
                   Acc Margin:    6dB
```



Plot 19 AC Power Line Conducted Emissions on L2

10 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 Emissions					
Temperature-Humiditymeter	Extech	SD500	A00446	03/2015	03/2016
Spectrum Analyzer	Rohde & Schwarz	FSV	A00337	08/2014	08/2015
RF Cable	H+S	Secuflex	A00347	04/2015	04/2016
For Radiated Emissions					
Measurement Receiver	Rohde & Schwarz	ESCI	A00314	03/2015	03/2016
RF Cable S-AR	Gigalink	APG0500	A00447	01/2015	01/2016
Controller	Maturo	SCU/088/ 8090811	A00450	N/A	N/A
Controller	EMCS	DOC202	A00257	N/A	N/A
Test facility	Comtest	FCC listed: 90828 IC: 2932G-2	A00235	04/2014	04/2017
Spectrum Analyzer	Rohde & Schwarz	FSV	A00337	08/2014	08/2015
Antenna mast	EMCS	AP-4702C	A00258	N/A	N/A
Temperature-Humiditymeter	Extech	SD500	A00444	03/2015	03/2016
Guidehorn 1-18 GHz	EMCO	3115	A00009	04/2015	04/2016
Guidehorn 18-40 GHz	EMCO	RA42-K-F-4B-C	A00012	04/2015	04/2016
Biconilog Testantenna	Teseq	CBL 6111D	A00466	06-11/2014	06-11/2015
2.4 GHz bandreject filter	BSC	XN-1783	A00065	N/A	N/A
Bandpass filter 4-10 GHz	Reactel	7AS-7G-6G-511	A00131	N/A	N/A
Bandpass filter 10-26 GHz	Reactel	9HS-10G/26.5G-S11	A00151	N/A	N/A
Preamplifier 0.5 - 18 GHz	Miteq	AMF-5D-005180-28-13p	A00247	N/A	N/A
Filterbox	EMCS	RFS06S	A00255	08/2014	08/2015
For AC Power Line	**Conducted**	**Emissions**			
Pulse limiter	R&S	ESH3-Z2	A00051	01/2015	01/2016
Variac	RFT	LSS020	A00171	NA	NA
LISN	EMCO	3625/2	A00022	01/2014	01/2016
Measurement Receiver	Rohde & Schwarz	ESCS30	A00726	09-30/2014	09-30/2015
Shielded room for Conducted emissions	--	--	A00437	NA	NA
Temperature-Humiditymeter	Extech	SD500	A00444	03/2015	03/2016

NA= Not Applicable

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