

TEST REPORT

Test report no.: 1-8287/14-01-02



Deutsche
Akkreditierungsstelle
D-PL-12076-01-00

Testing laboratory

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Accredited Testing Laboratory:

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS). The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-00

Applicant

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Fax: +39 049 9 69 84 07
Contact: Andrea Motti
e-mail: A.Motti@avselectronics.it
Phone: +39 049 9 69 84 11

Manufacturer

Same as Applicant

Test standard/s

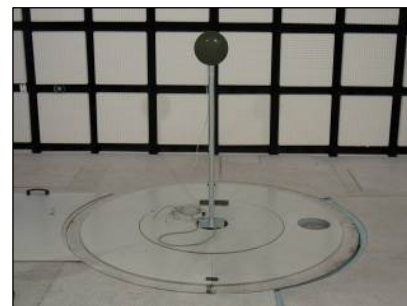
47 CFR Part 15

Title 47 of the Code of Federal Regulations; Chapter I
Part 15 - Radio frequency devices

For further applied test standards please refer to section 3 of this test report.

Test Item

Kind of test item: Microwave barrier for intrusion detection
Model name: BM HP – TX
FCC ID: 2AC9S114115567
IC: -/-
Frequency: 10.500 GHz – 10.550 GHz
Antenna: Internal patch antenna
Power supply: 11.5 V DC – 15.0 V.DC from power supply
(TX: 31mA / RX: 100mA)
Temperature range: -20 °C to +55 °C



Test report authorised:

Meheza Walla
Specialist



Test performed:

Karsten Gerald
Professional

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2 General information

2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

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In no case this test report can be considered as a Letter of Approval.

2.2 Application details

Date of receipt of order:	2014-08-05
Date of receipt of test item:	2014-09-29
Start of test:	2014-09-30
End of test:	2014-10-03
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 15		Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices

4 Test laboratories sub-contracted

None

5 Test environment

Temperature:	T_{nom}	+22 °C during room temperature tests
Relative humidity content:		55 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	12.0 V DC from power supply
	V_{max}	15.0 V DC
	V_{min}	11.5 V DC

6 Test item

Kind of test item	:	Microwave barrier for intrusion detection
Type identification	:	BM HP – TX
S/N serial number	:	None
HW hardware status	:	TX: BMTX MA00397V2/0 RX: BMRX MA00545V3.3
SW software status	:	-/-
Firmware version	:	TX: V0.1 RX: V1.0p3
Frequency band	:	10.500 GHz – 10.550 GHz
Type of modulation	:	OOK (On-Off Keying)
Number of channels	:	1
Antenna	:	Internal patch antenna
Power supply	:	11.5 V DC – 15.0 V.DC from power supply (TX: 31mA / RX: 100mA)
Temperature range	:	+22 °C (tests performed only under normal conditions)

6.1 Additional comments

The transmitter is made of a planar microwave emitting a narrow and directional highly-stable low power beam. A 4 DIP-switch for setting working frequency is on board. Only DIP 0 and DIP 4 were used for the tests.

Test setup- and EUT-photos are included in test report:

1-8287/14-01-02_AnnexA
1-8287/14-01-02_AnnexB
1-8287/14-01-02_AnnexD

7 Summary of measurement results

<input checked="" type="checkbox"/>	No deviations from the technical specifications were ascertained
<input type="checkbox"/>	There were deviations from the technical specifications ascertained

TC identifier	Description	verdict	date	Remark
RF-Testing	47 CFR Part 15	PASS	2014-11-28	-/-

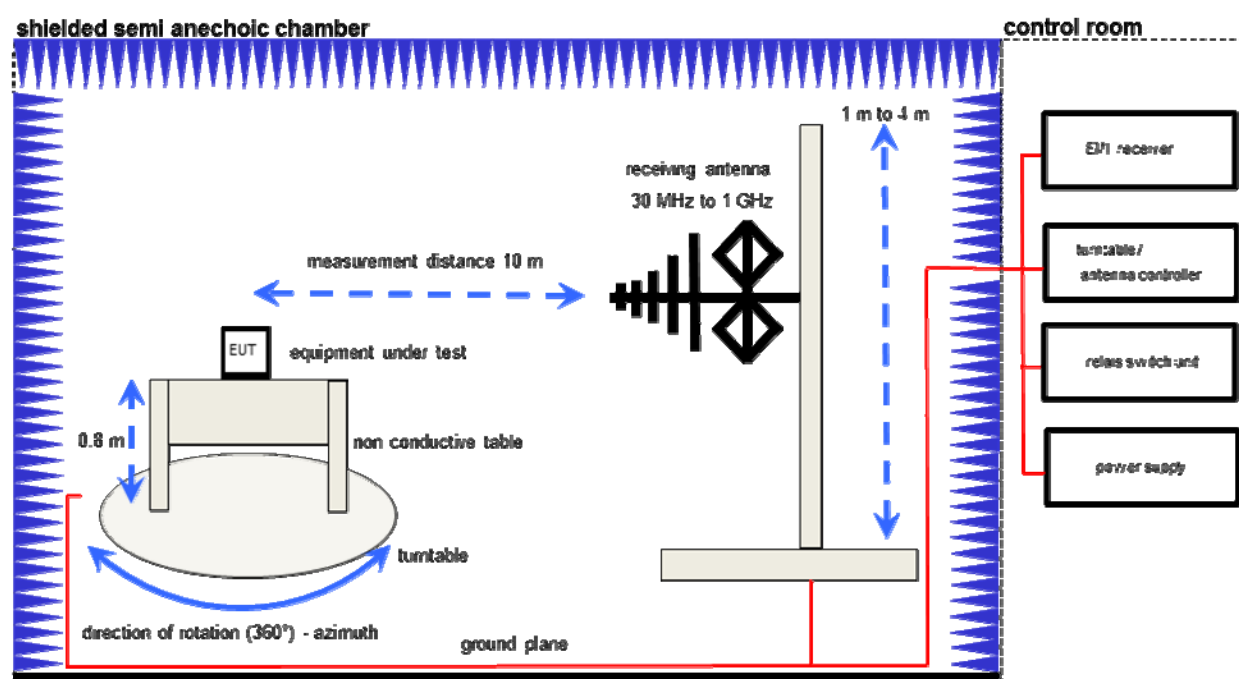
Test specification clause	Test case	Temperature conditions	Power source voltages	Pass	Fail	NA	NP	Results (max.)
§15.35 (c)	Timing of the transmitter	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Peak: 125 dBµV/m RMS: 122 dBµV/m
§15.245 (b)	Field strength of emissions	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Peak: 125 dBµV/m RMS: 122 dBµV/m
§2.1049	Occupied Bandwidth 99%	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.9 MHz
§15.245 (b) (3) §15.209	Field strength of emissions (radiated spurious)	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§15.207(a)	Conducted emissions < 30 MHz	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies

Note: NA = Not Applicable; NP = Not Performed

8 Description of the test setup

8.1 Radiated measurements chamber F

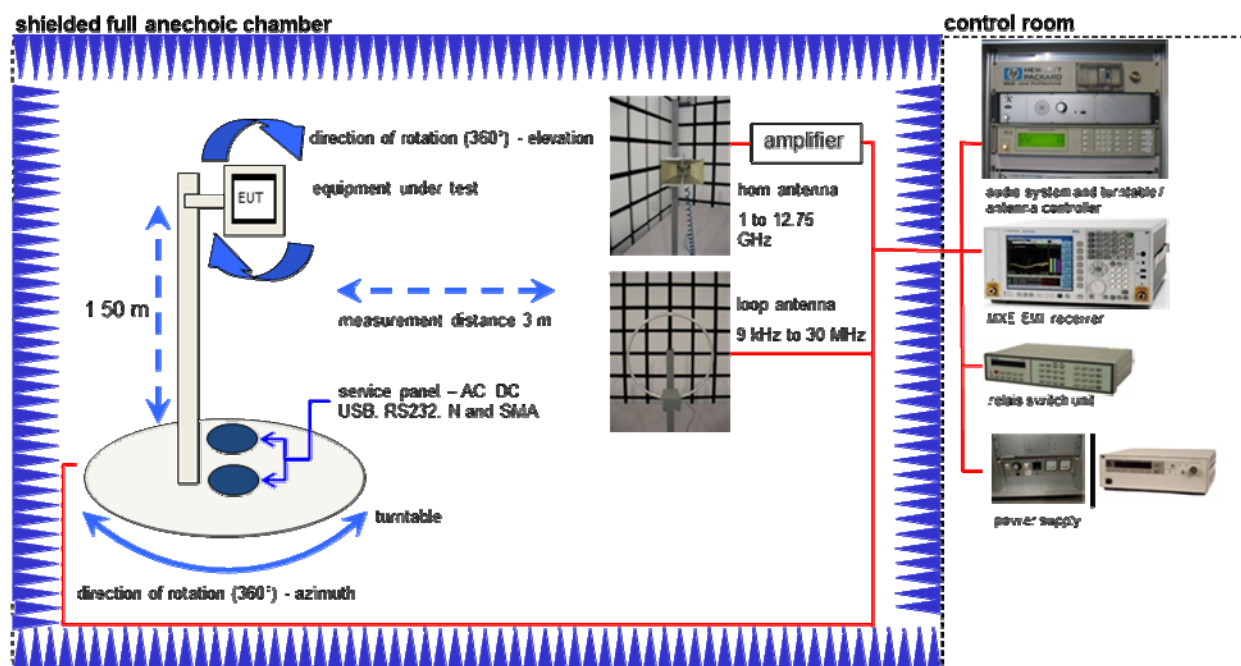
The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 1 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63.



Equipment table:

Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom
Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368
DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580
EMI Test Receiver	ESCI 3	R&S	100083	300003312
Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379
Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745
Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746
Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747
TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787
Test Receiver	ESH2	R&S	871921/095	300002505
Loop Antenna 9 KHz - 30 MHz	HFH2-Z2	R&S	872096/61	300001824
EMI Test Receiver 9 kHz - 3 GHz incl. Preselector	ESPI3	R&S	101713	300004059

8.2 Radiated measurements chamber C

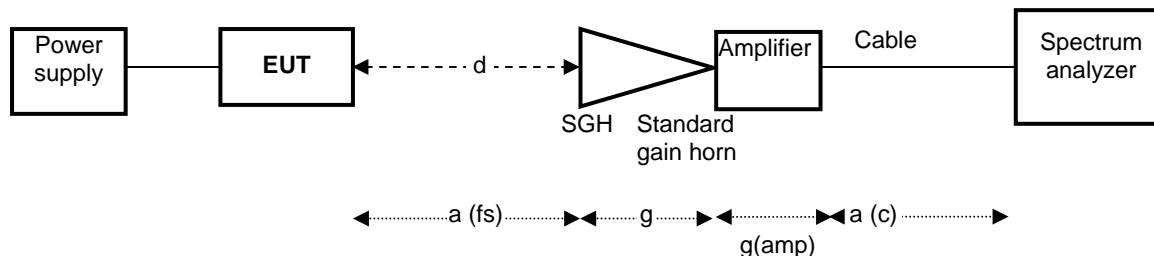


Equipment table:

Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom
MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405
Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789
Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032
Active Loop Antenna	6502	EMCO	8905-2342	300000256
Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996
Switch / Control Unit	3488A	HP Meßtechnik	*	300000199
Switch / Control Unit	3488A	HP Meßtechnik	2719A15013	300001156
Isolating Transformer	MPL IEC625 Bus Regeltrenntravo	ErFi	91350	300001155
Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997
Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143

8.3 Radiated measurements 12 GHz to 50 GHz

Test set-up for the measurement of spurious radiation in the frequency range 12 GHz to 50 GHz:

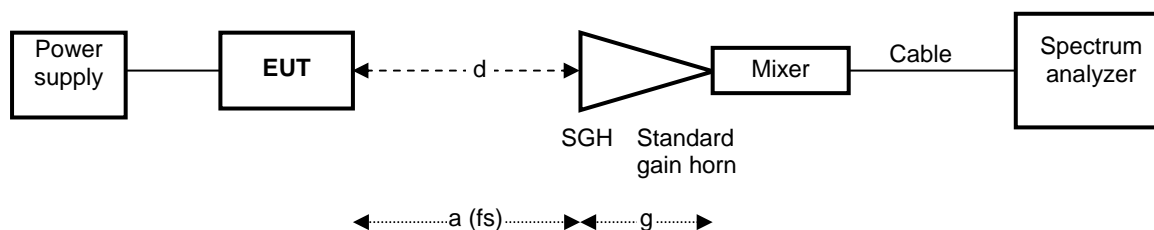


Equipment table:

Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom
Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda	8402	300000787
Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda	8205	300002442
Std. Gain Horn Antenna 26.5-40.0 GHz	V637	Narda	7911	300001751
Std. Gain Horn Antenna 39.3-59.7 GHz	2424-20	Flann	75	300001979
Microwave System Amplifier, 0.5-26.5 GHz	83017A	HP Meßtechnik	00419	300002268
Broadband Low Noise Amplifier 18-50 GHz	CBL19503070-XX	CERNEX	19338	300004273
PXA Signal Analyzer 3 Hz-50 GHz	N9030A	Agilent	US51350267	300004338

8.4 Radiated measurements above 50 GHz

Test set-up for the measurement of spurious radiation and EIRP in the frequency range 50 GHz to 55 GHz:



Equipment table:

Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom
Std. Gain Horn Antenna 49.9-75.8 GHz	2524-20	Flann	*	300001983
Harmonic mixer 50 - 75 GHz for spectrum analyzers	11970V	Agilent	83-00875	300000781
PXA Signal Analyzer 3 Hz-50 GHz	N9030A	Agilent	US51350267	300004338

8.5 Conducted measurements

Not applicable!

9 Measurement results

9.1 Timing of the transmitter

Measurement:

Measurement parameter	
Detector:	Pos-Peak
Sweep time:	see plots
Resolution bandwidth:	8 MHz
Video bandwidth:	50 MHz
Span:	Zero-Span
Trace-Mode:	Max-Hold

Limits:

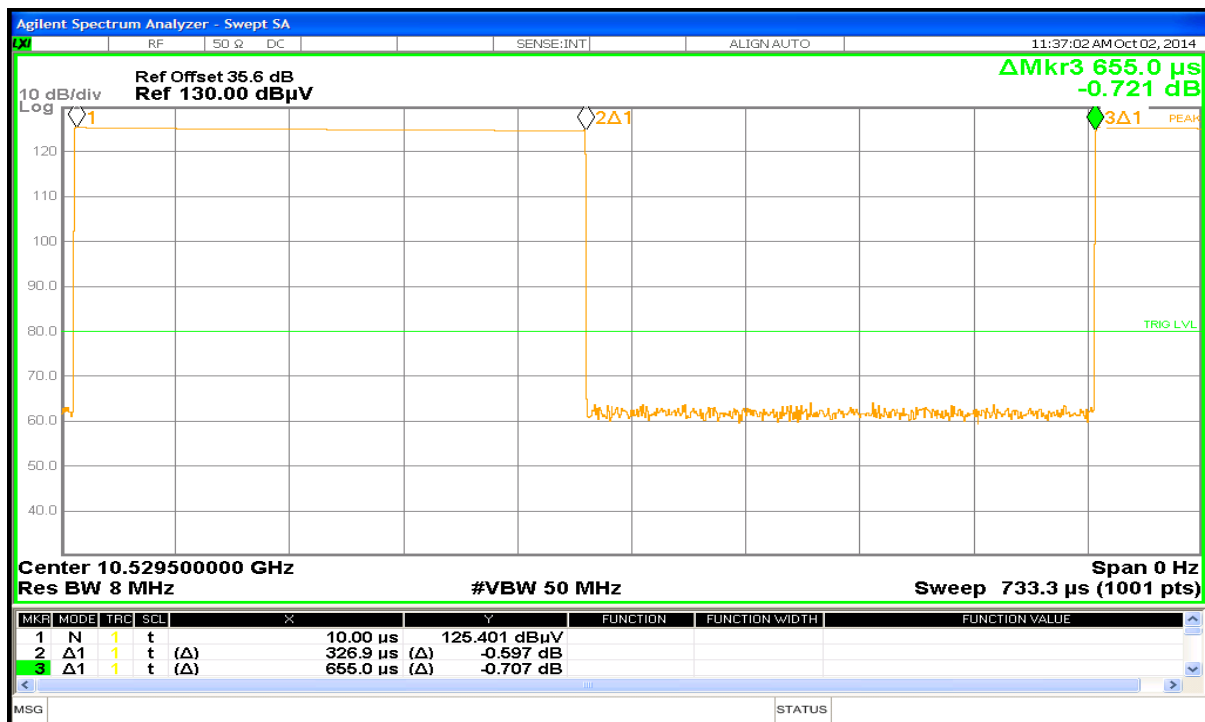
FCC	IC
Timing of the transmitter	
<p>(c) Unless otherwise specified, e.g. Section 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.</p>	

Duty cycle of the sample with test mode:

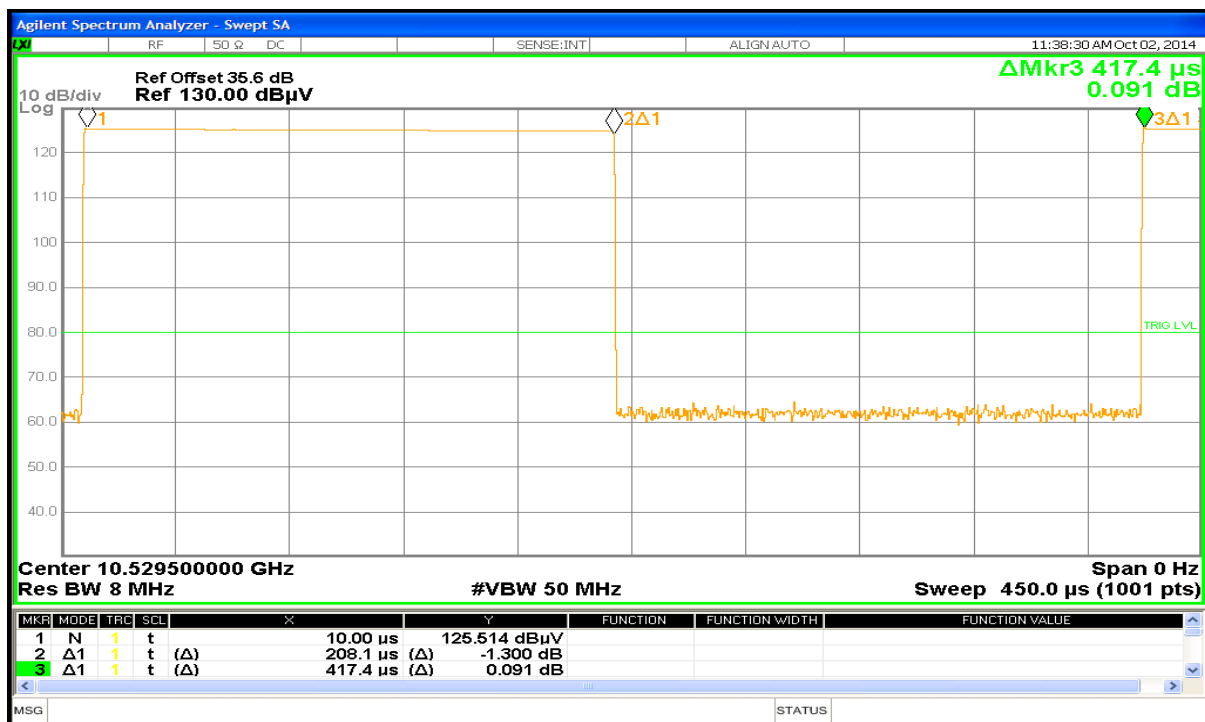
DIP	T _{on}	T _{cycle}	PRF	Duty Cycle
0	326.9 μ s	655.0 μ s	1527 Hz	49.9 %
1	208.1 μ s	417.4 μ s	2396 Hz	49.9 %
2	148.7 μ s	298.3 μ s	3352 Hz	49.8 %
3	119.0 μ s	238.7 μ s	4189 Hz	49.9 %
4	88.99 μ s	178.9 μ s	5590 Hz	49.7 %

Result: Test passed.

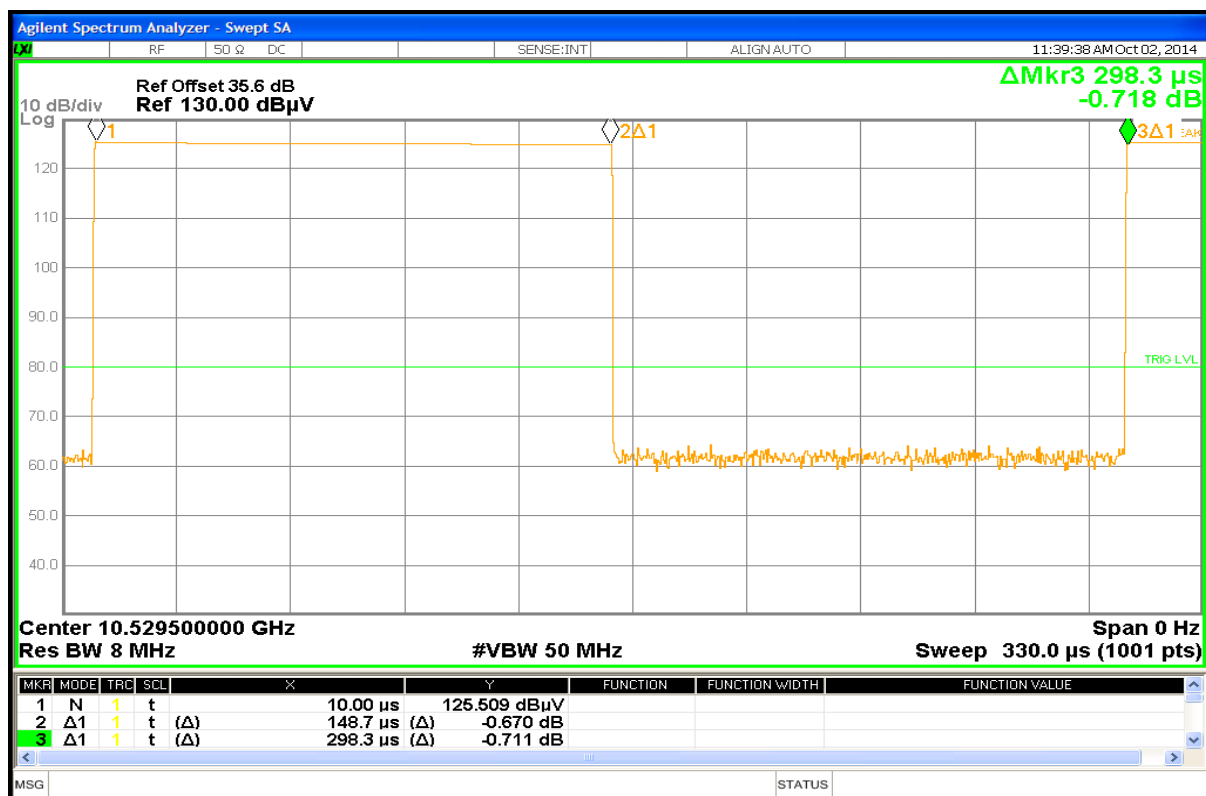
Plot 1: DIP 0



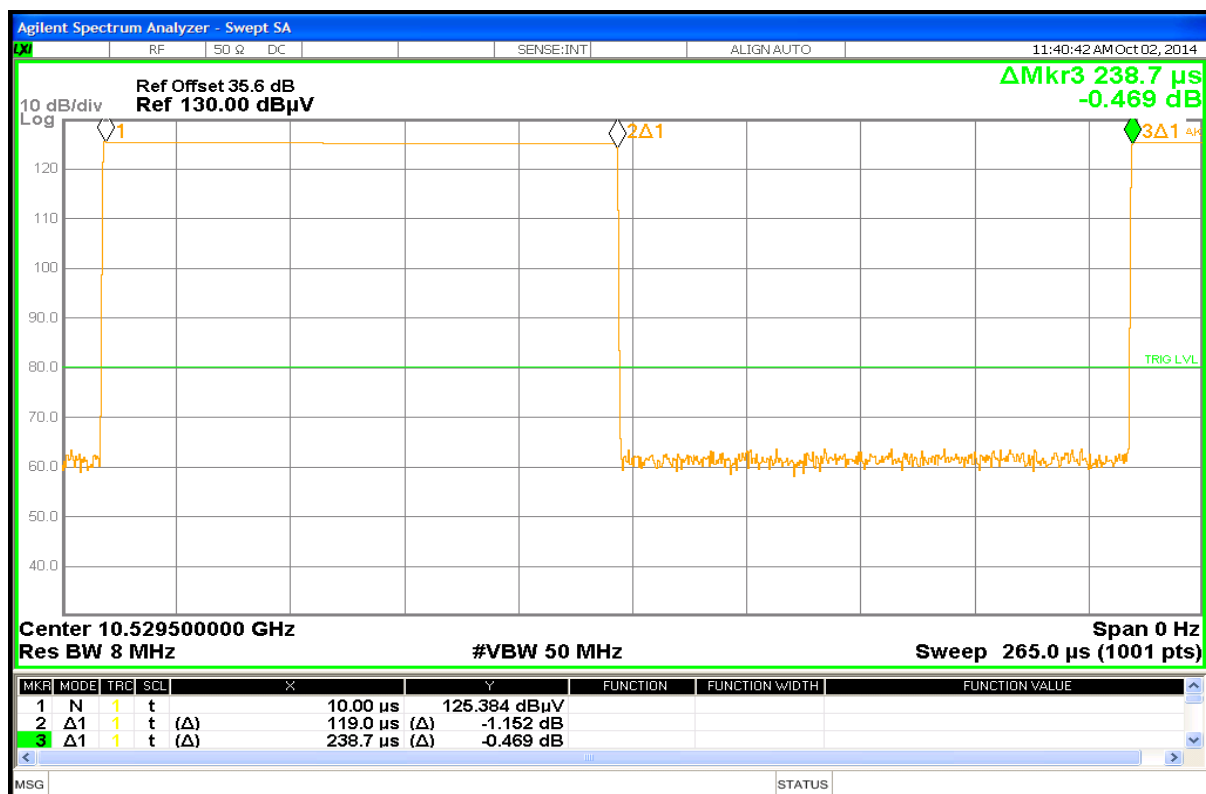
Plot 2: DIP 1



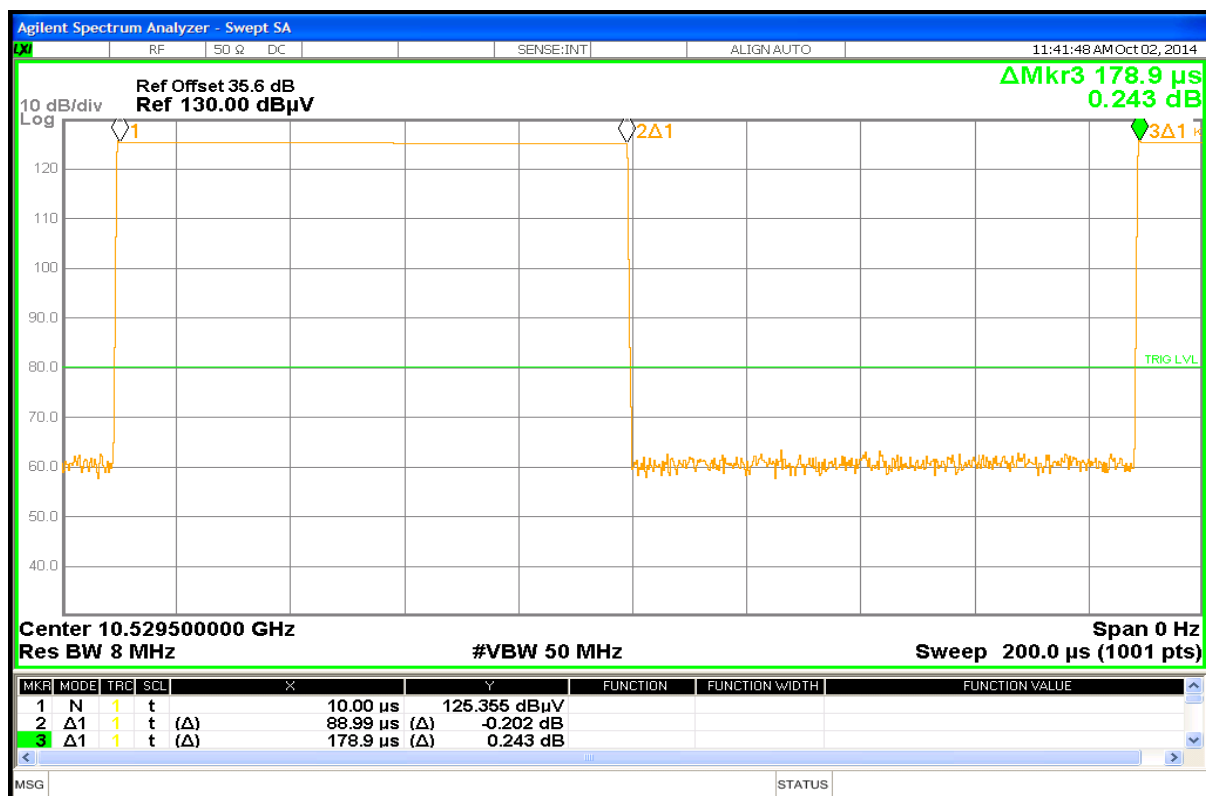
Plot 3: DIP 2



Plot 4: DIP 3



Plot 5: DIP 4



9.2 Field strength of emissions (wanted signal)

Description:

Measurement of the maximum radiated field strength of the wanted signal.

Measurement:

Measurement parameter	
Detector:	Pos-Peak / RMS
Sweep time:	Auto
Video bandwidth:	1 MHz
Resolution bandwidth:	3 MHz
Span:	50 MHz
Trace-Mode:	Max Hold

Result:

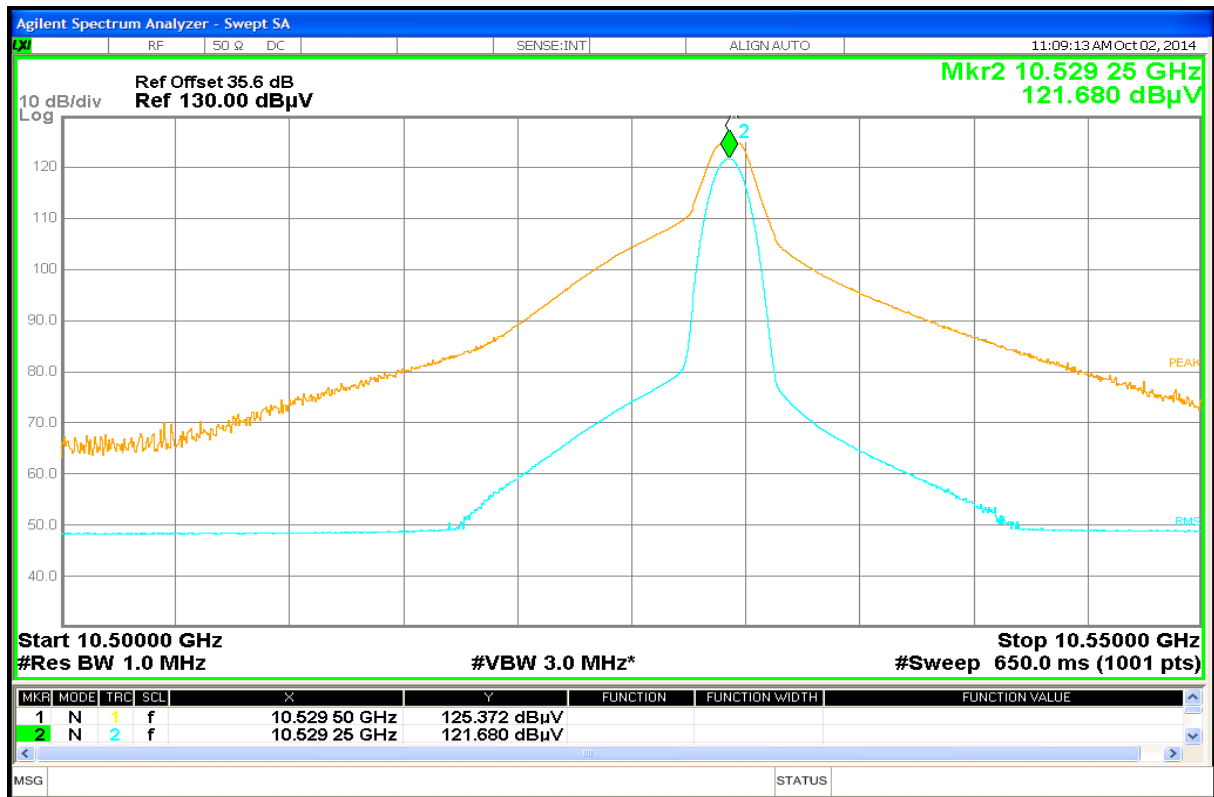
Test condition T_{nom} / V_{nom}	Maximum field strength [Peak detector / dB μ V/m @ 3 m]	Maximum field strength [RMS detector / dB μ V/m @ 3 m]
DIP 0	125.4	121.7
DIP 4	125.3	122.1
Measurement uncertainty	± 3 dB	

Limits:

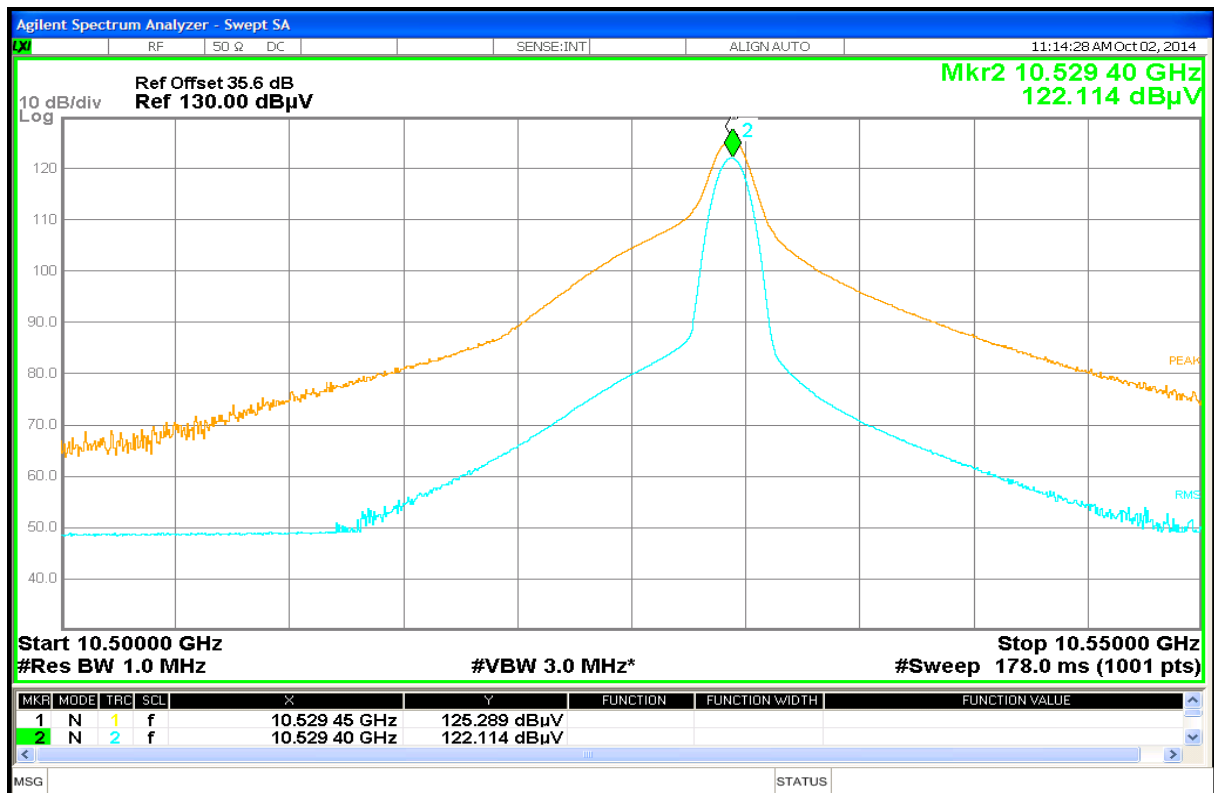
FCC		
CFR Part 15.245(b)		
Field strength of emissions		
The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:		
Frequency [GHz]	Field Strength [dB μ V/m]	Measurement distance
10.500 – 10.550	128	3

Result: Test passed.

Plot 6: EIRP (Peak and RMS detector), T_{nom} / V_{nom} , DIP 0



Plot 7: EIRP (Peak and RMS detector), T_{nom} / V_{nom} , DIP 4



9.3 Occupied bandwidth (99% bandwidth)

Description:

Measurement of the 99% bandwidth of the wanted signal.

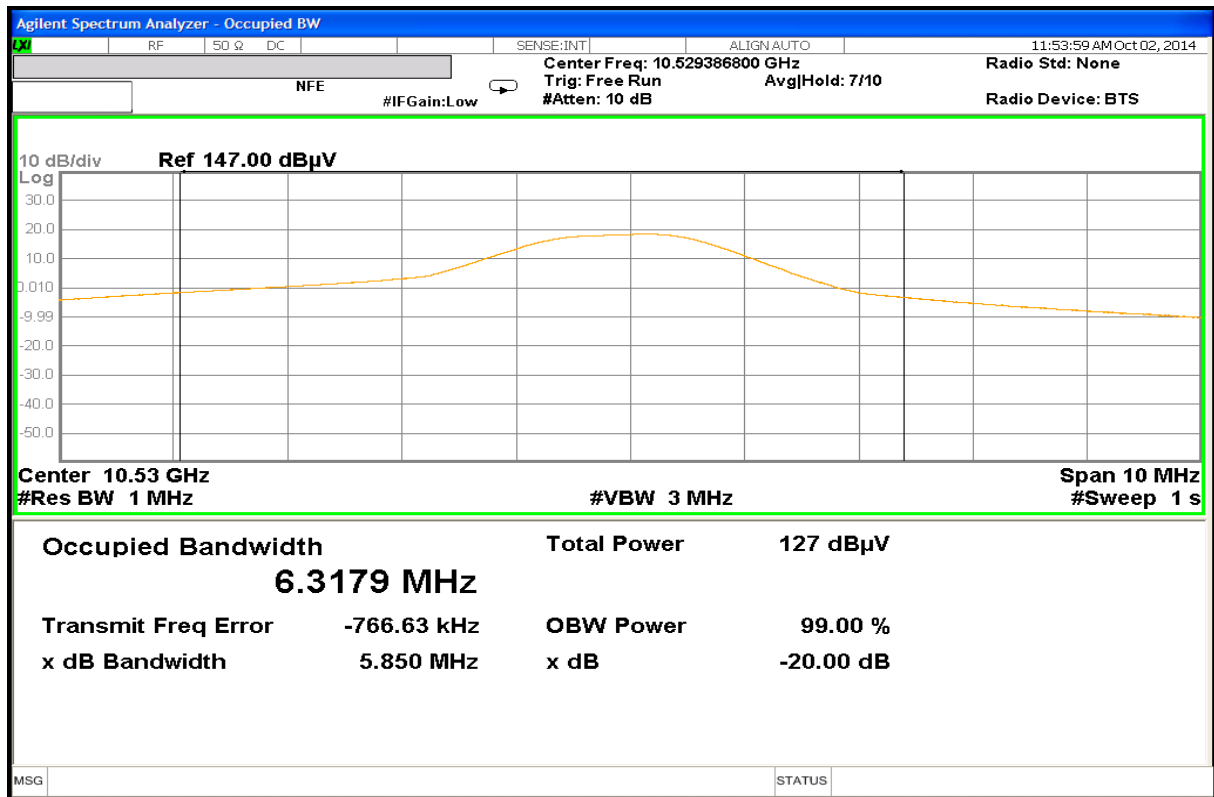
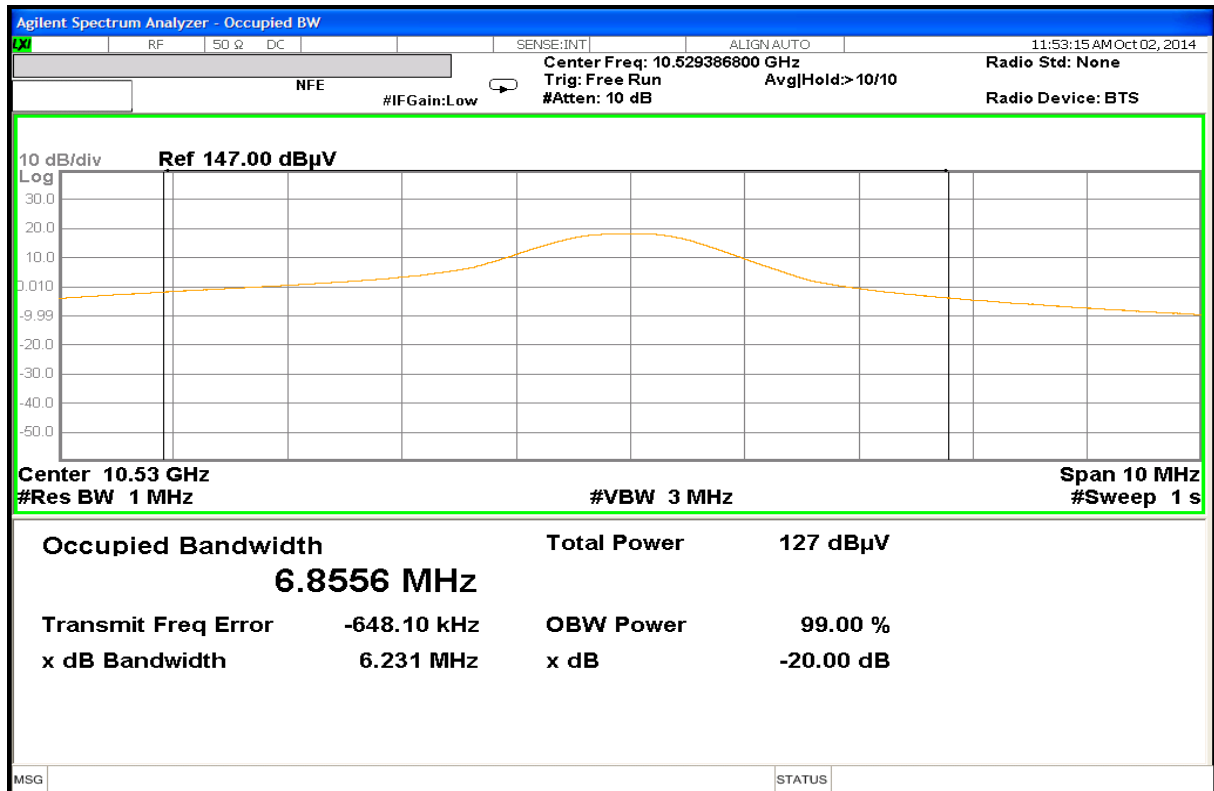
Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Video bandwidth:	1 MHz
Resolution bandwidth:	3 MHz
Span:	10 MHz
Trace-Mode:	Max Hold

Result:

Test condition T_{nom} / V_{nom}	99 % Occupied Bandwidth [MHz]
DIP 0	6.32
DIP 4	6.86
Measurement uncertainty	$\pm \text{span}/1000$

Result: Test passed.

Plot 8: 99% Bandwidth, T_{nom} / V_{nom} , DIPPlot 9: 99% Bandwidth, T_{nom} / V_{nom} , DIP 4

9.4 Field strength of emissions (radiated spurious)

Description:

Measurement of the radiated spurious emissions in transmit mode and receive mode.

Measurement:

Measurement parameter	
Detector:	F < 1 GHz: Peak / Quasi Peak F > 1 GHz: Average
Sweep time:	Auto
Video bandwidth:	Auto
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Frequency range:	TX: 30 MHz to 50 GHz RX: 30 MHz to 40 GHz
Trace-Mode:	Max Hold

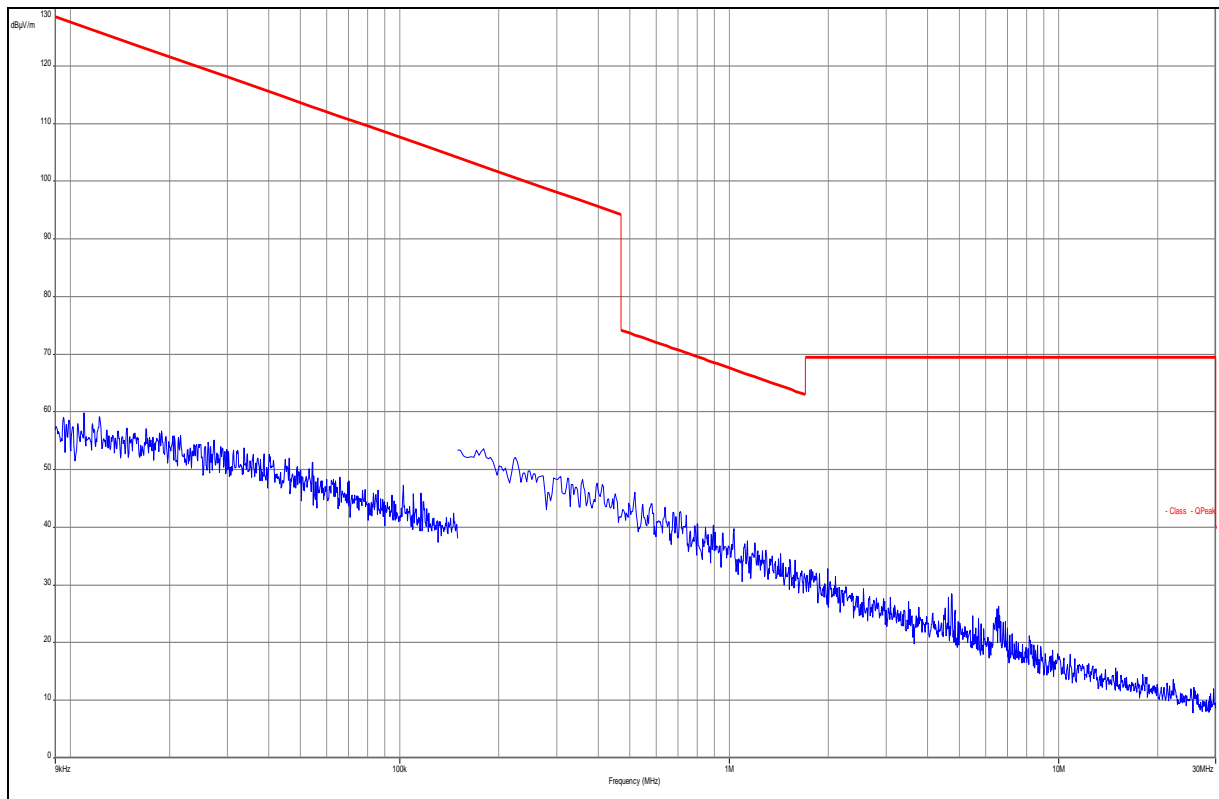
Limits:

FCC		
CFR Part 15.245 (b) (3) / CFR Part 15.209 (a)		
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.		
Frequency (MHz)	Field Strength (dBμV/m)	Measurement distance
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

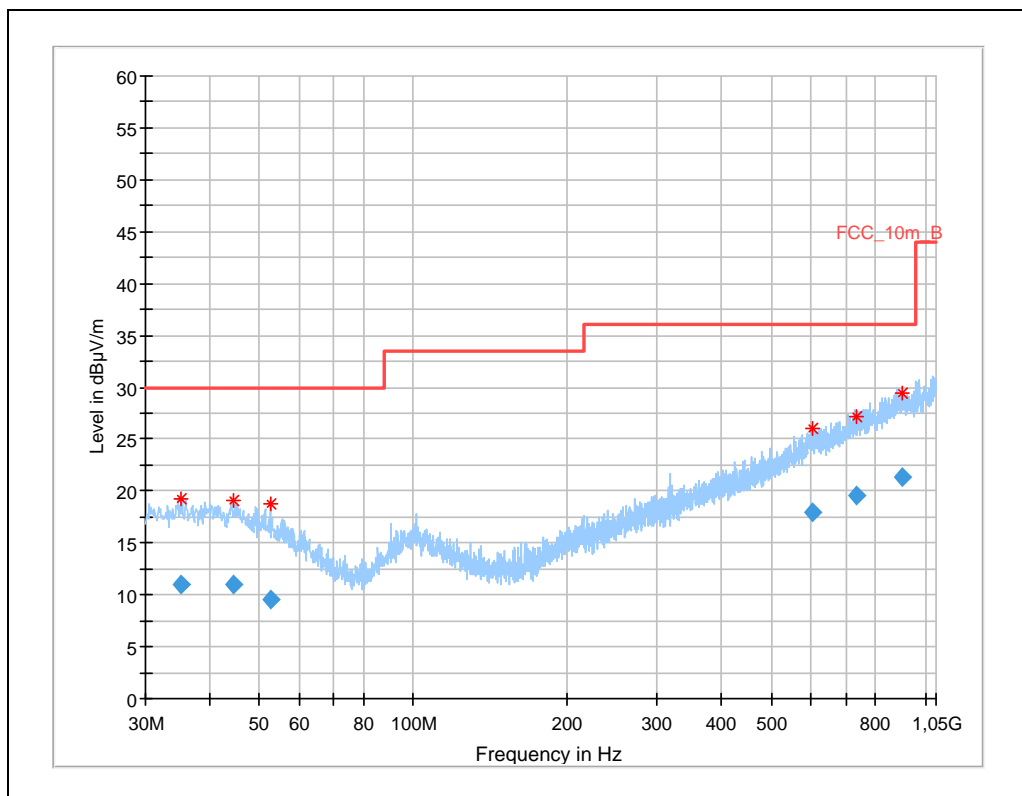
Note: Harmonics shall not exceed 25.0 millivolts/meter (88.0 dBμV/m)

Result: Test passed.

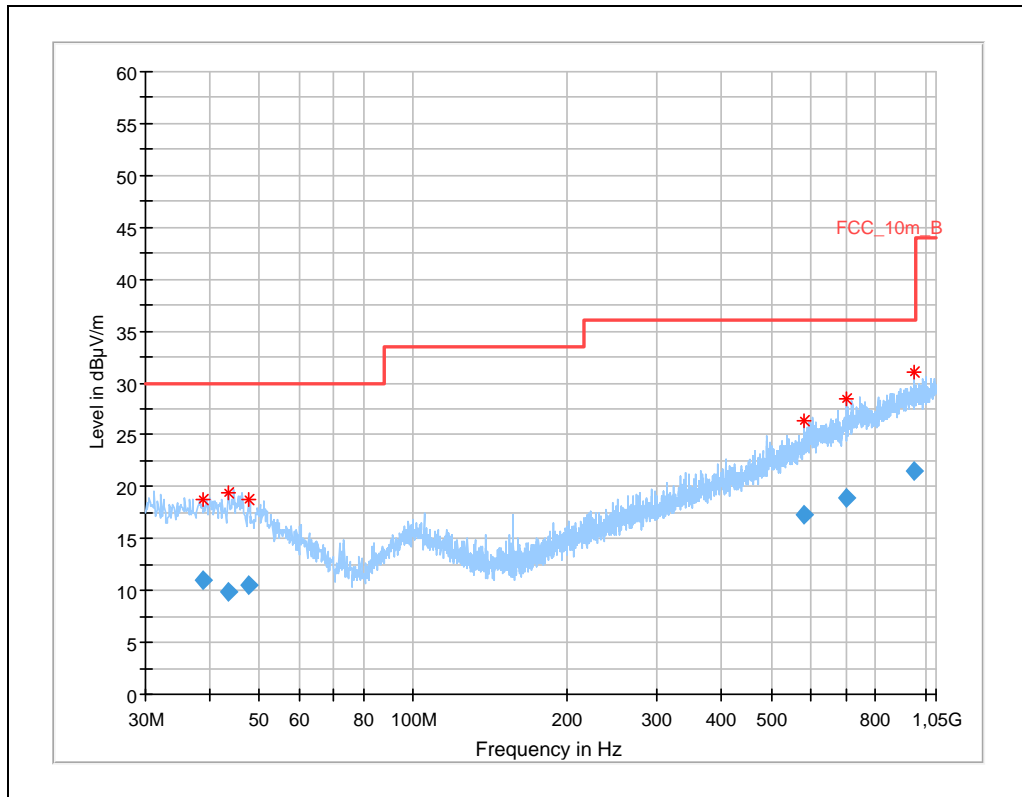
Plot 10: 9 kHz – 30 MHz, magnetic loop antenna, TX-Mode, valid for DIP 0 and DIP 4



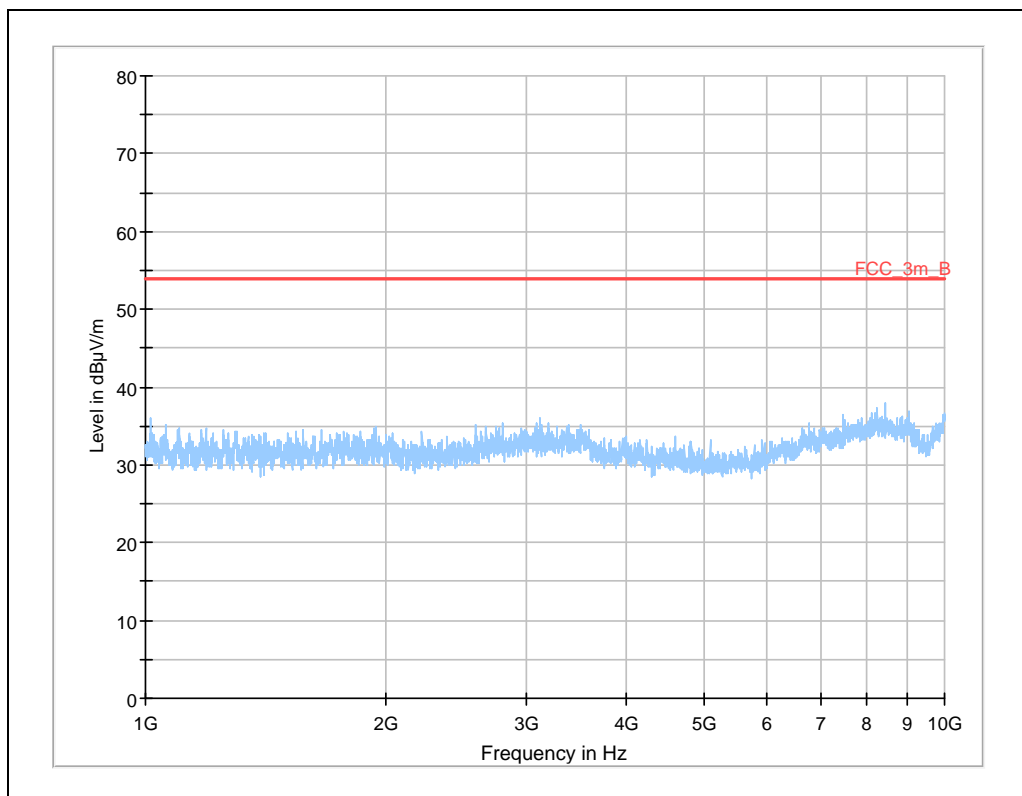
Plot 11: 30 MHz – 1 GHz, TX-Mode, antenna horizontal / vertical, DIP 0



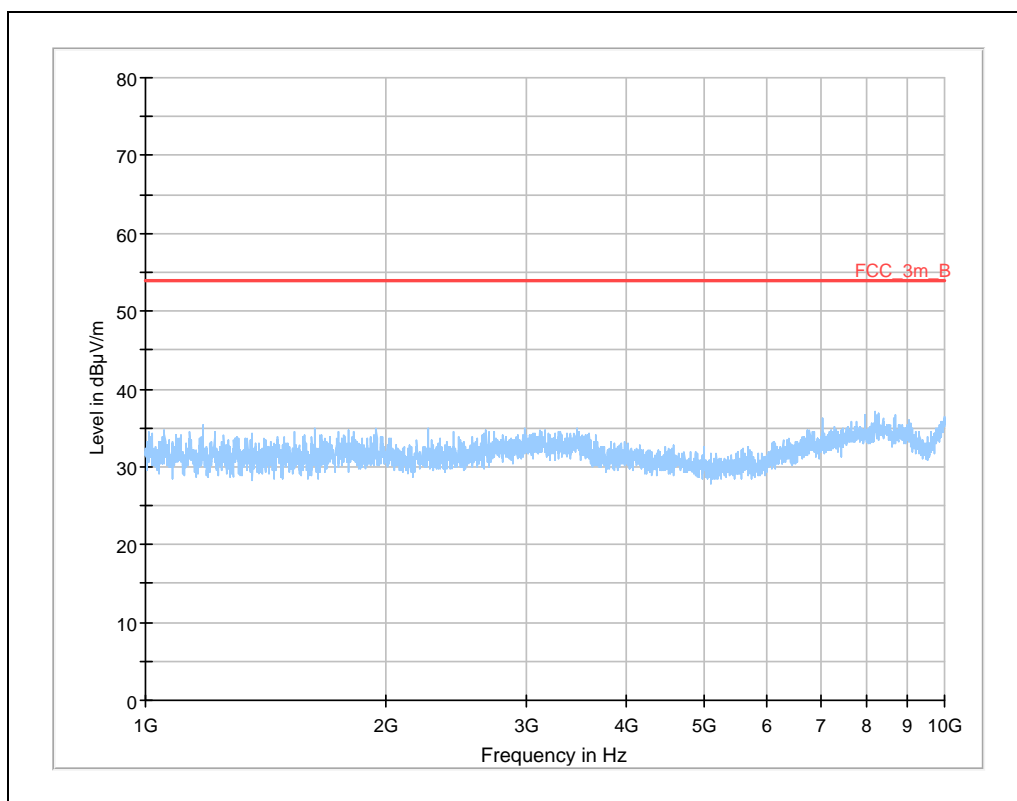
Plot 12: 30 MHz – 1 GHz, TX-Mode, antenna horizontal / vertical, DIP 4



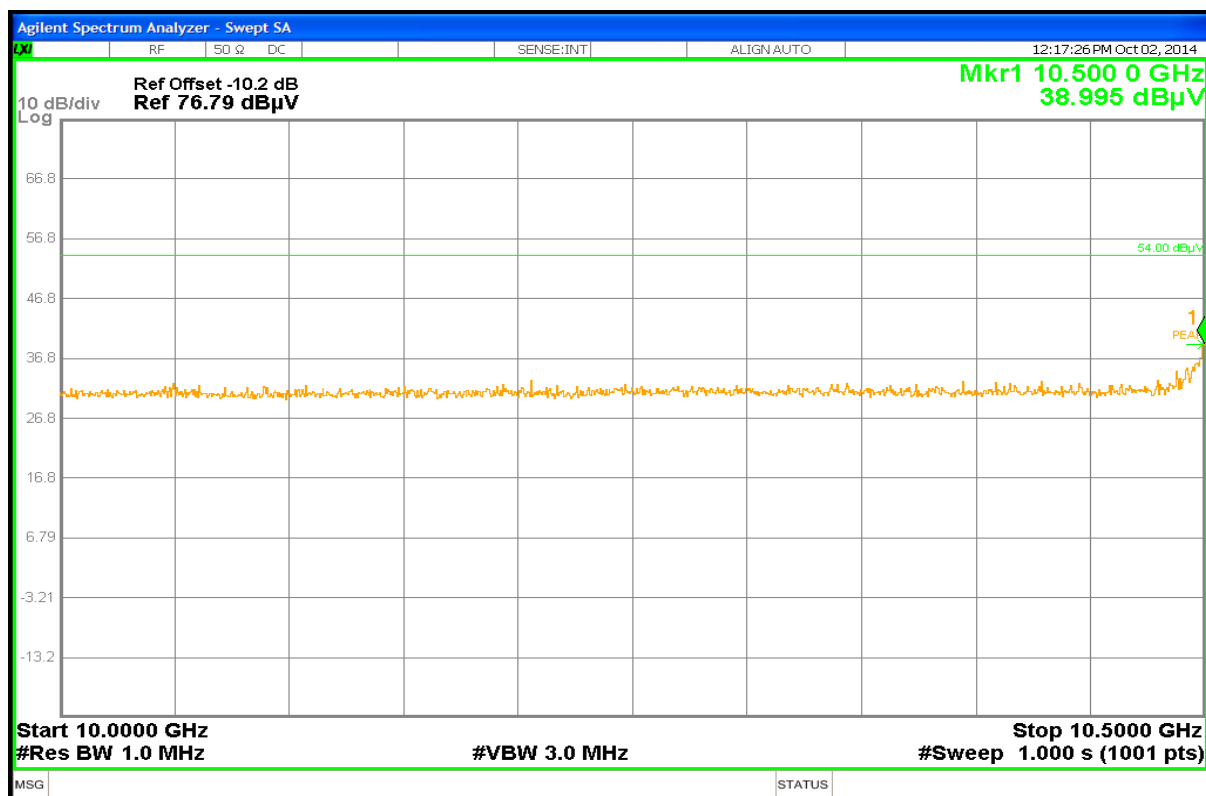
Plot 13: 1 GHz – 10 GHz, TX-Mode, antenna horizontal / vertical, DIP 0



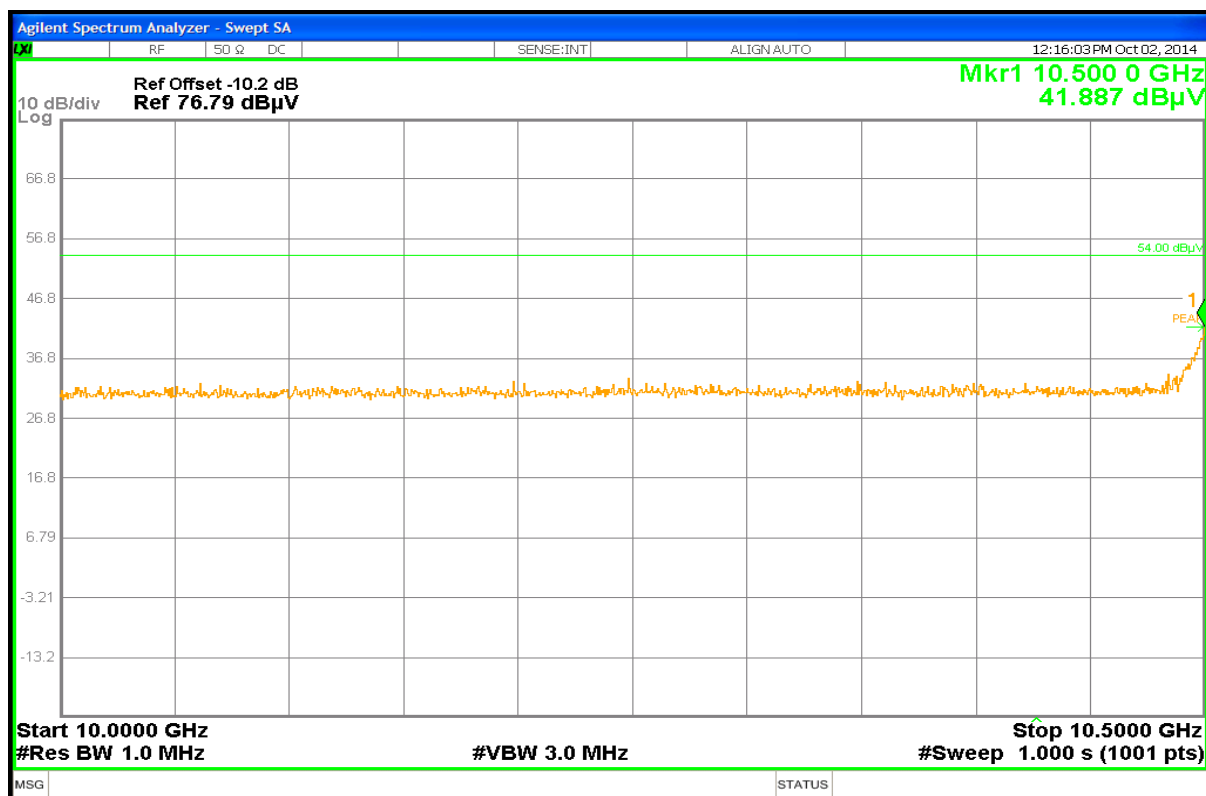
Plot 14: 1 GHz – 10 GHz, TX-Mode, antenna horizontal / vertical, DIP 4



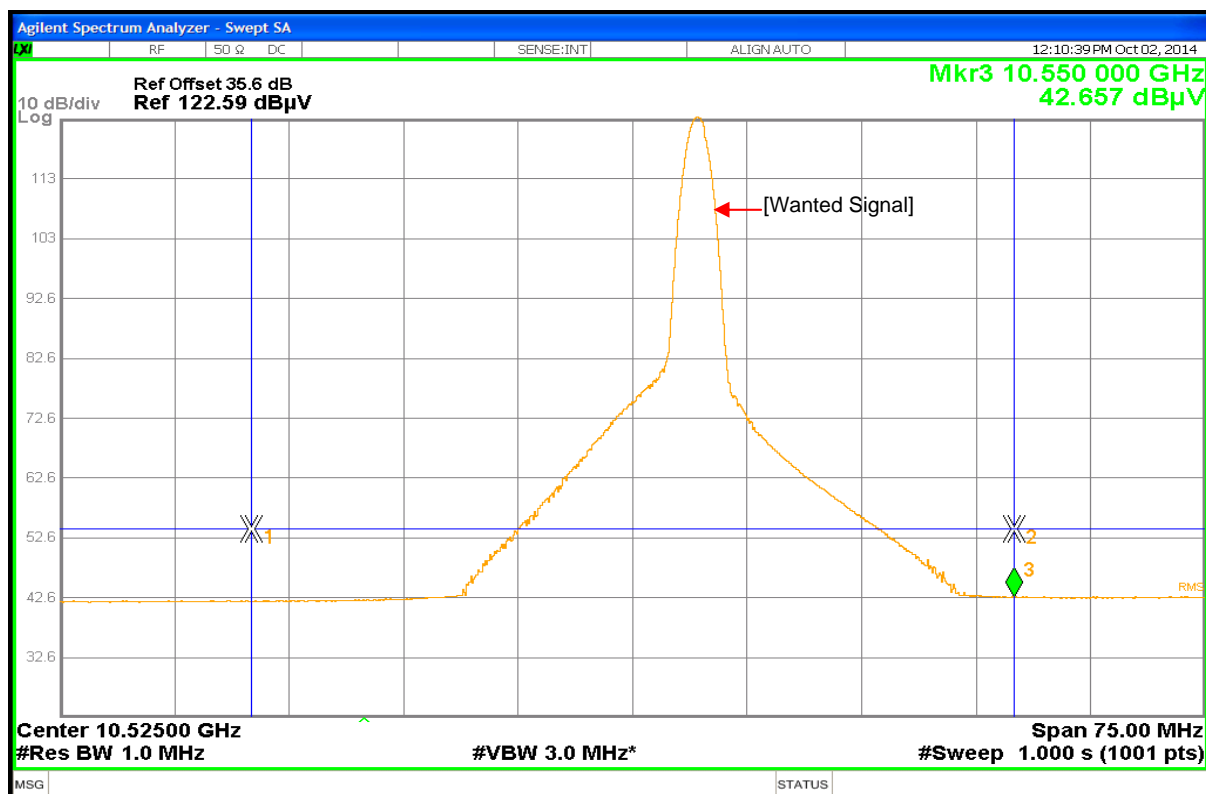
Plot 15: 10 GHz – 10.5 GHz, TX-Mode, antenna horizontal / vertical, DIP 0



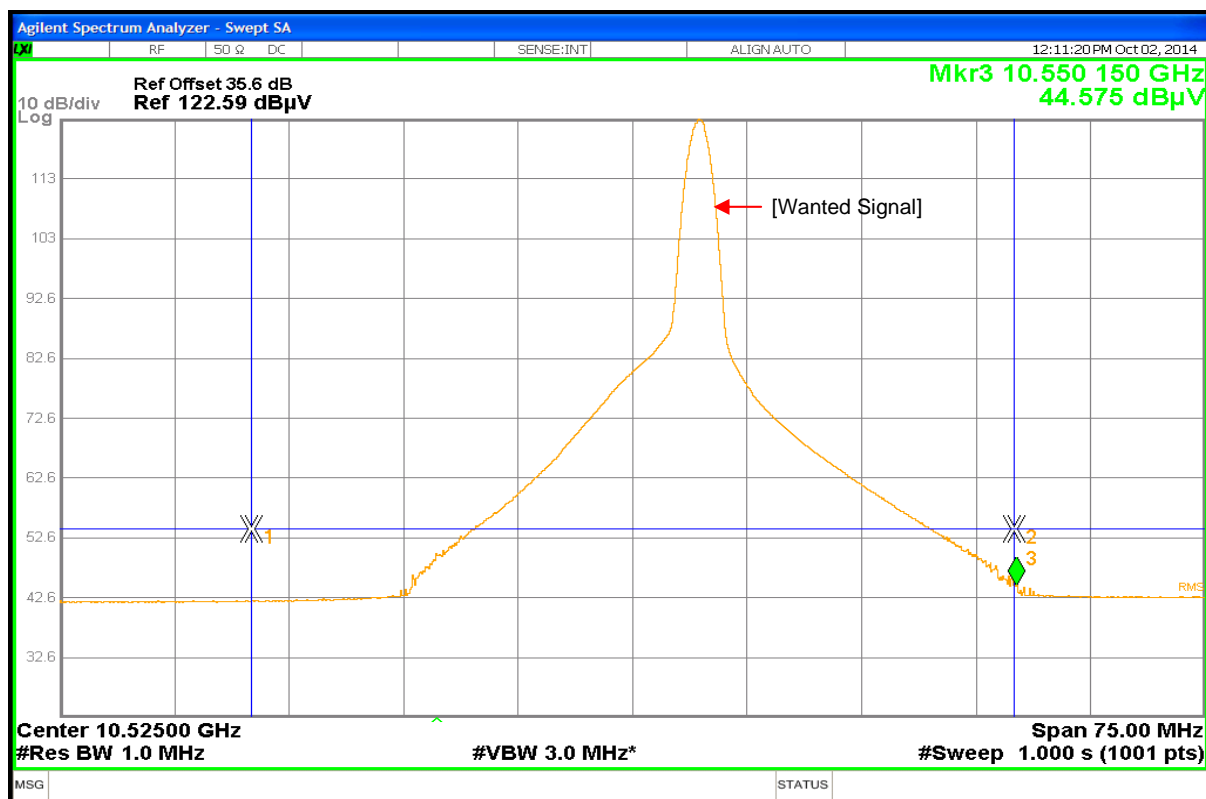
Plot 16: 10 GHz – 10.5 GHz, TX-Mode, antenna horizontal / vertical, DIP 4



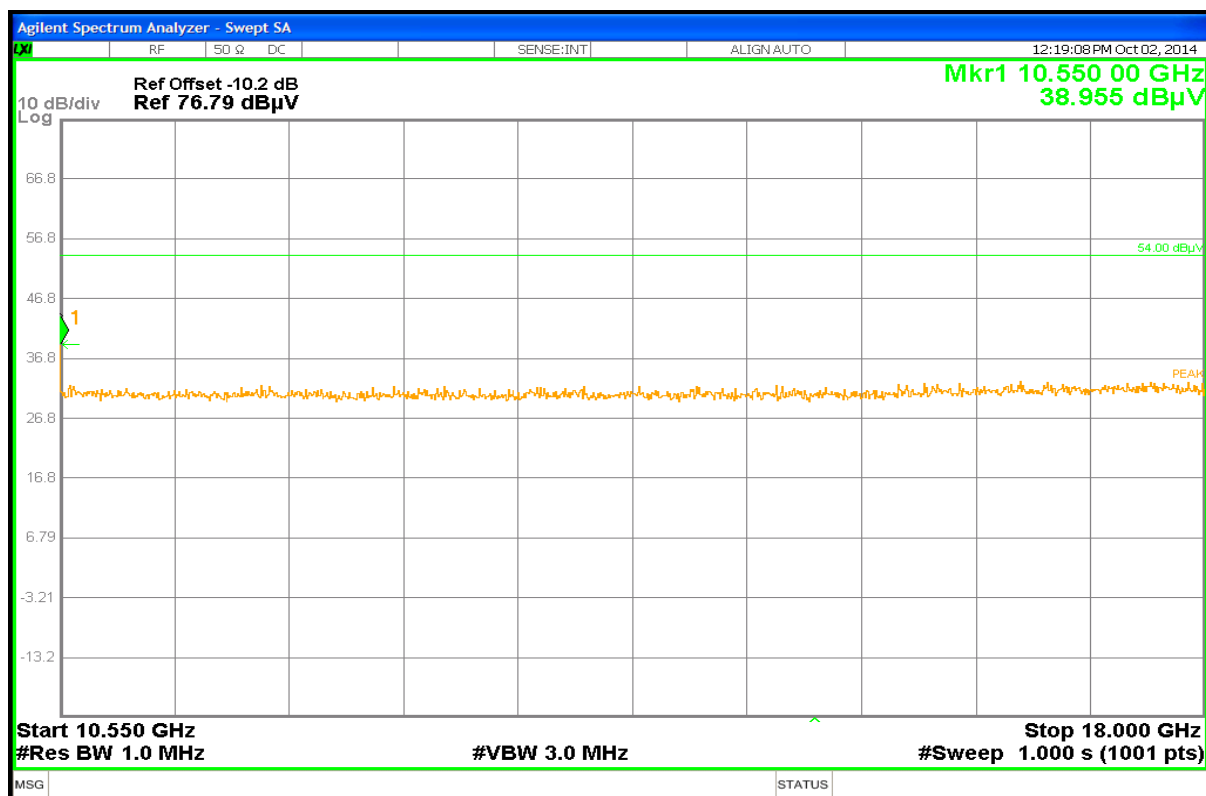
Plot 17: 10.5 GHz – 10.55 GHz, Band edge compliance, TX-Mode, antenna horizontal / vertical, DIP 0



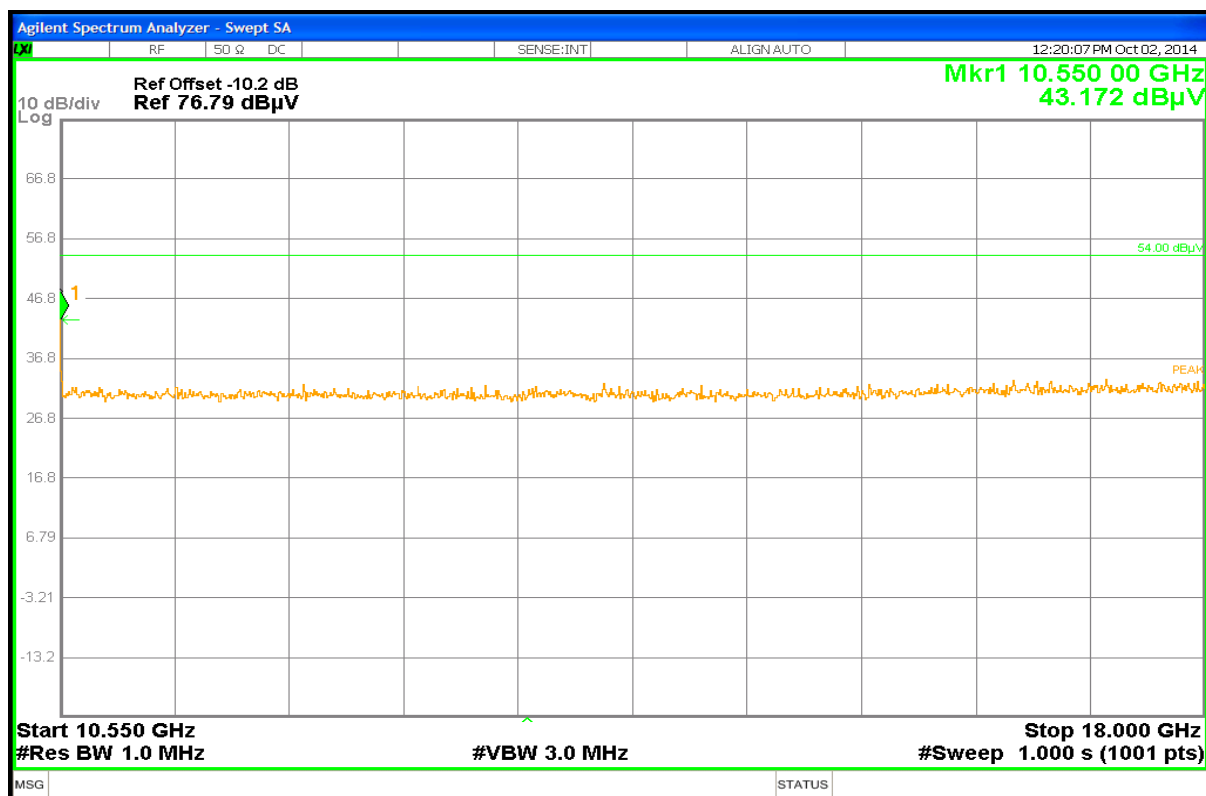
Plot 18: 10.5 GHz – 10.55 GHz, Band edge compliance, TX-Mode, antenna horizontal / vertical, DIP 4



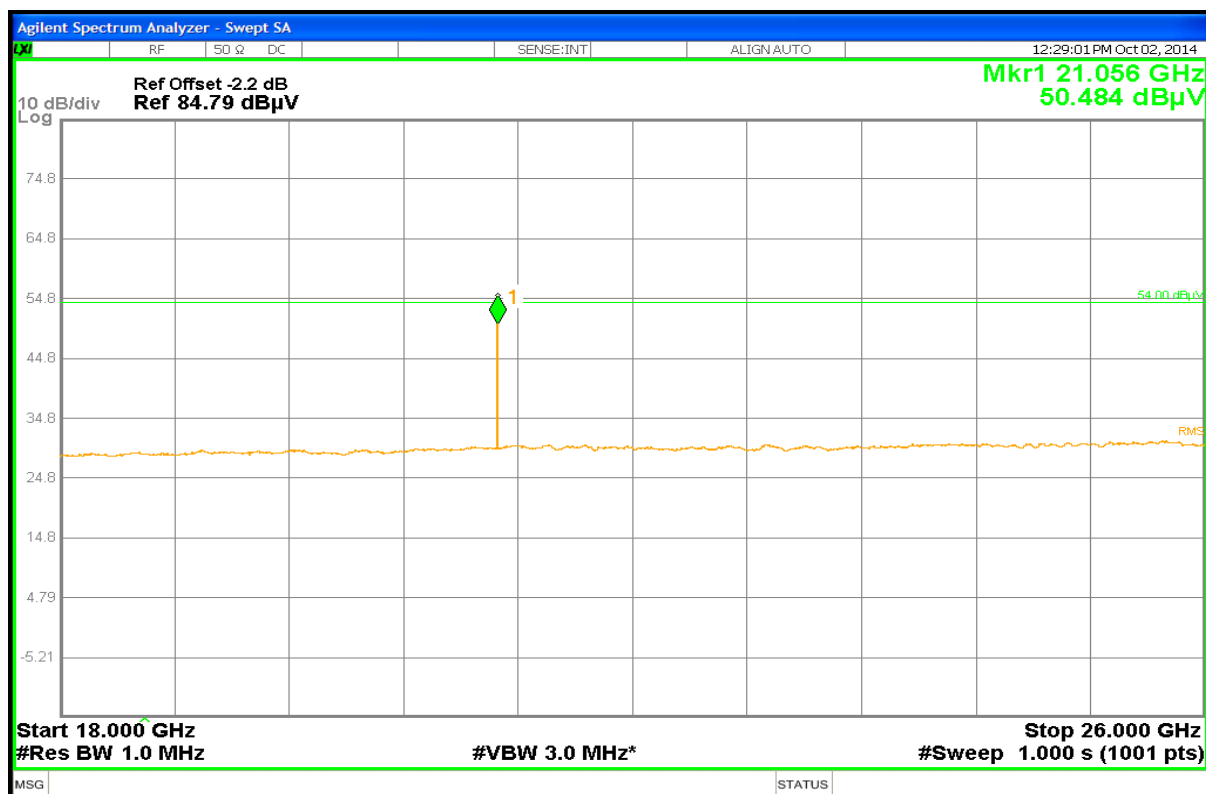
Plot 19: 10.55 GHz – 18 GHz, TX-Mode, antenna horizontal / vertical, DIP 0



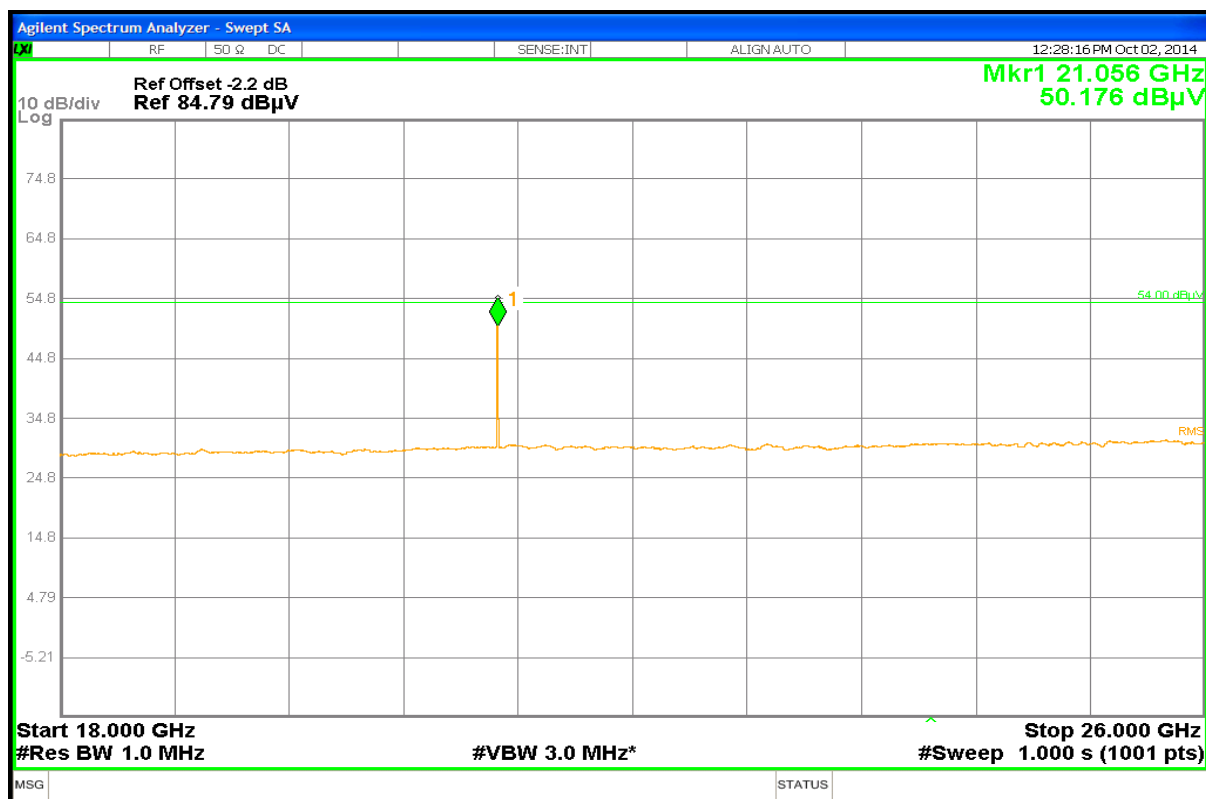
Plot 20: 10.55 GHz – 18 GHz, TX-Mode, antenna horizontal / vertical, DIP 4



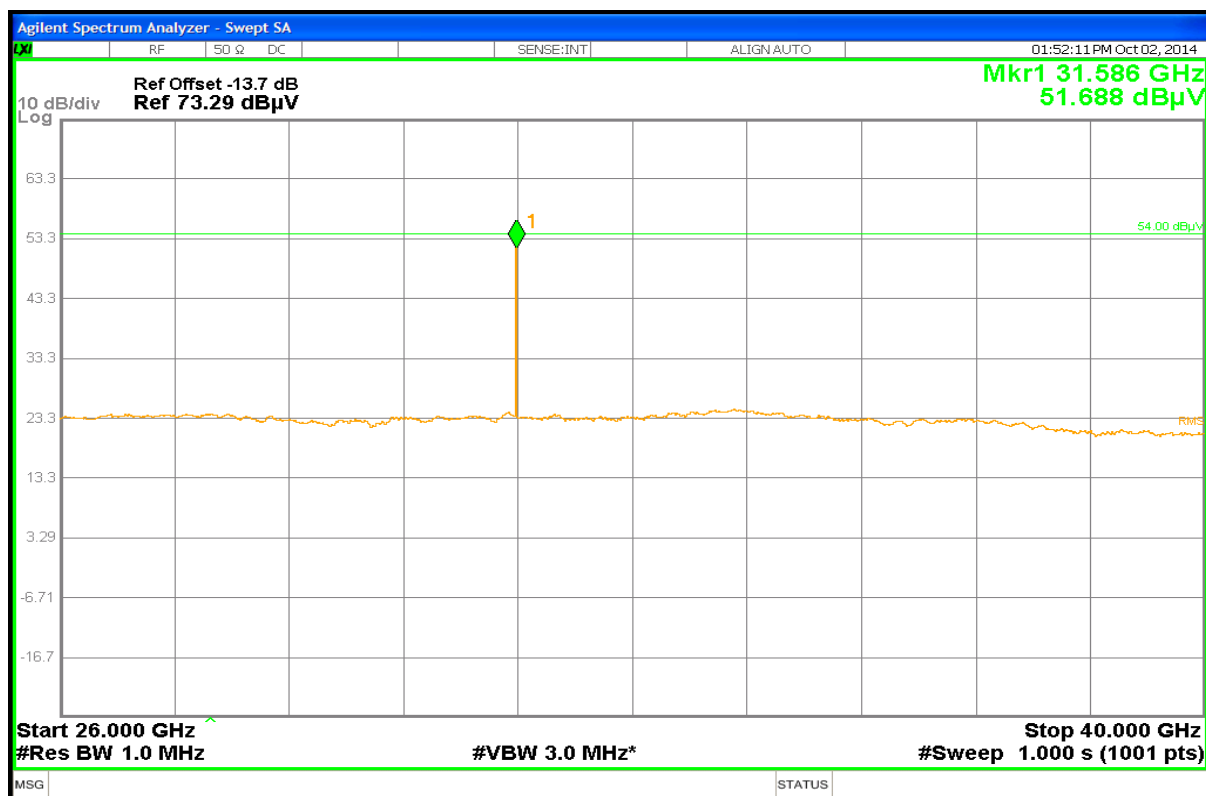
Plot 21: 18 GHz – 26 GHz, TX-Mode, antenna horizontal / vertical, DIP 0



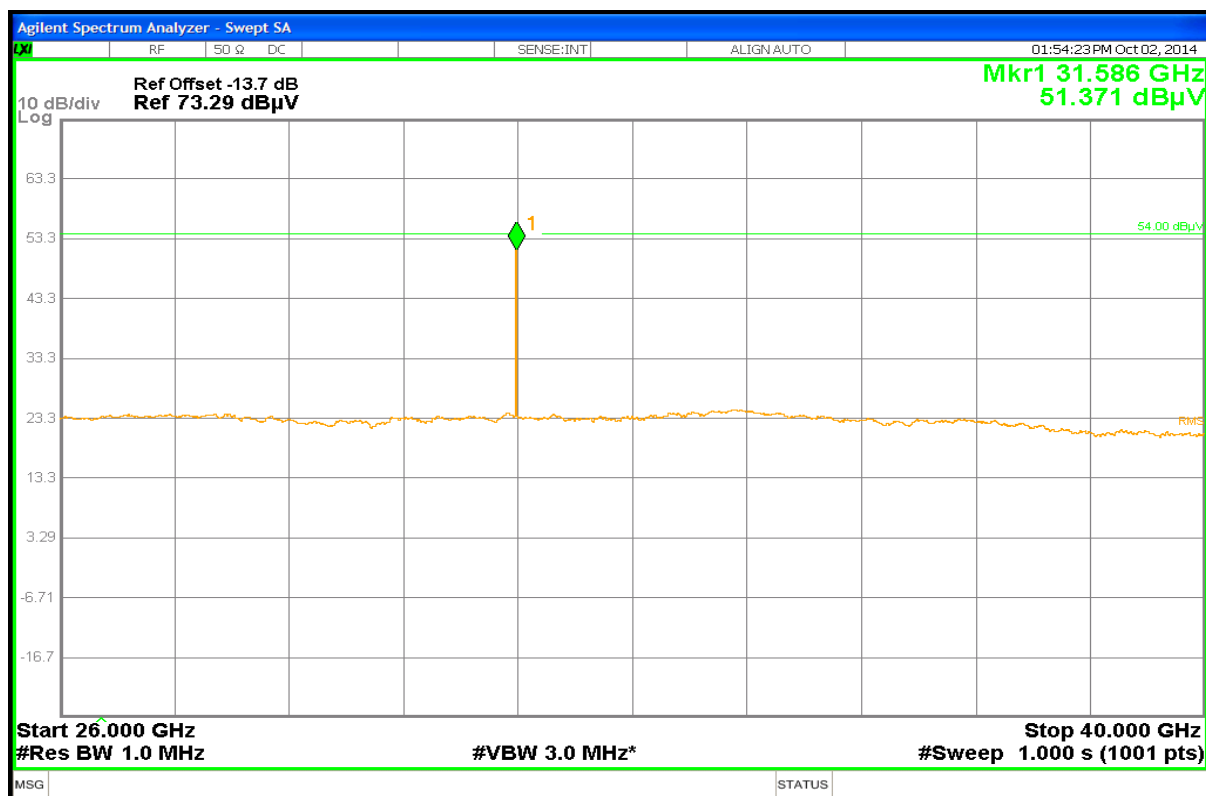
Plot 22: 18 GHz – 26 GHz, TX-Mode, antenna horizontal / vertical, DIP 4



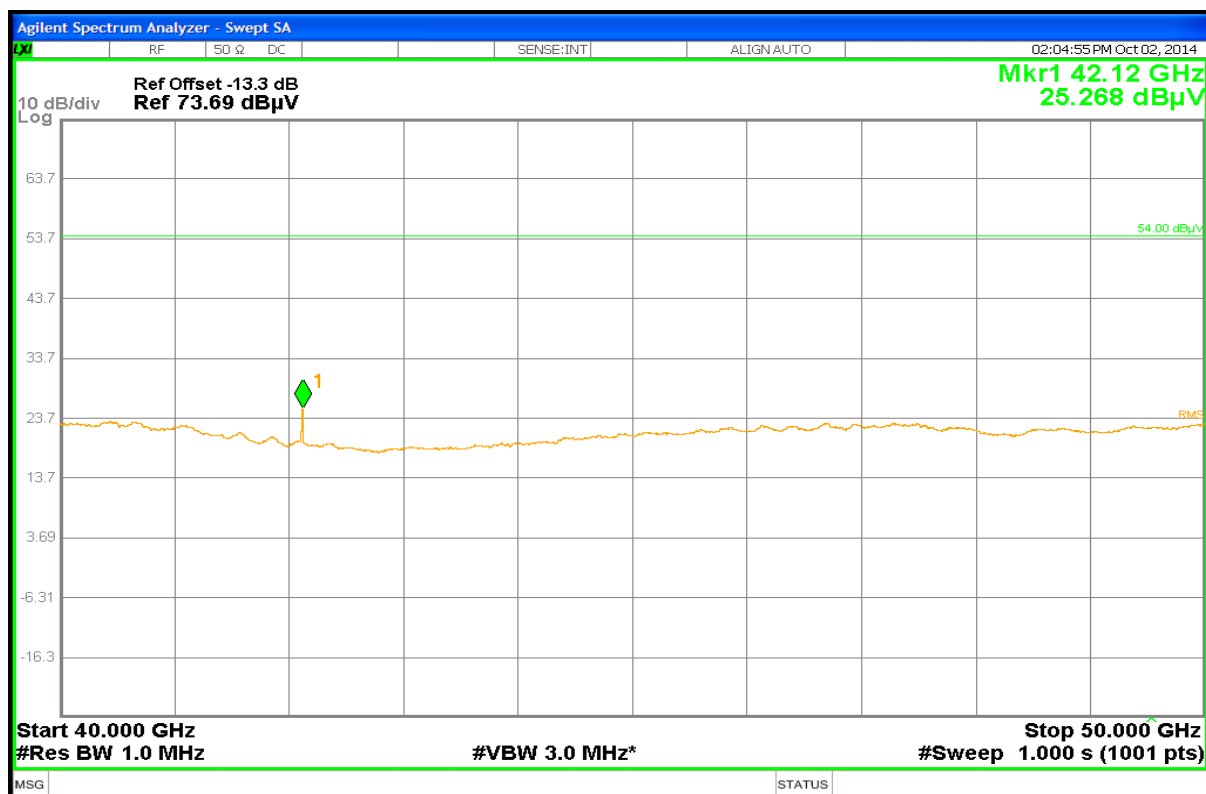
Plot 23: 26 GHz – 40 GHz, TX-Mode, antenna horizontal / vertical, DIP 0



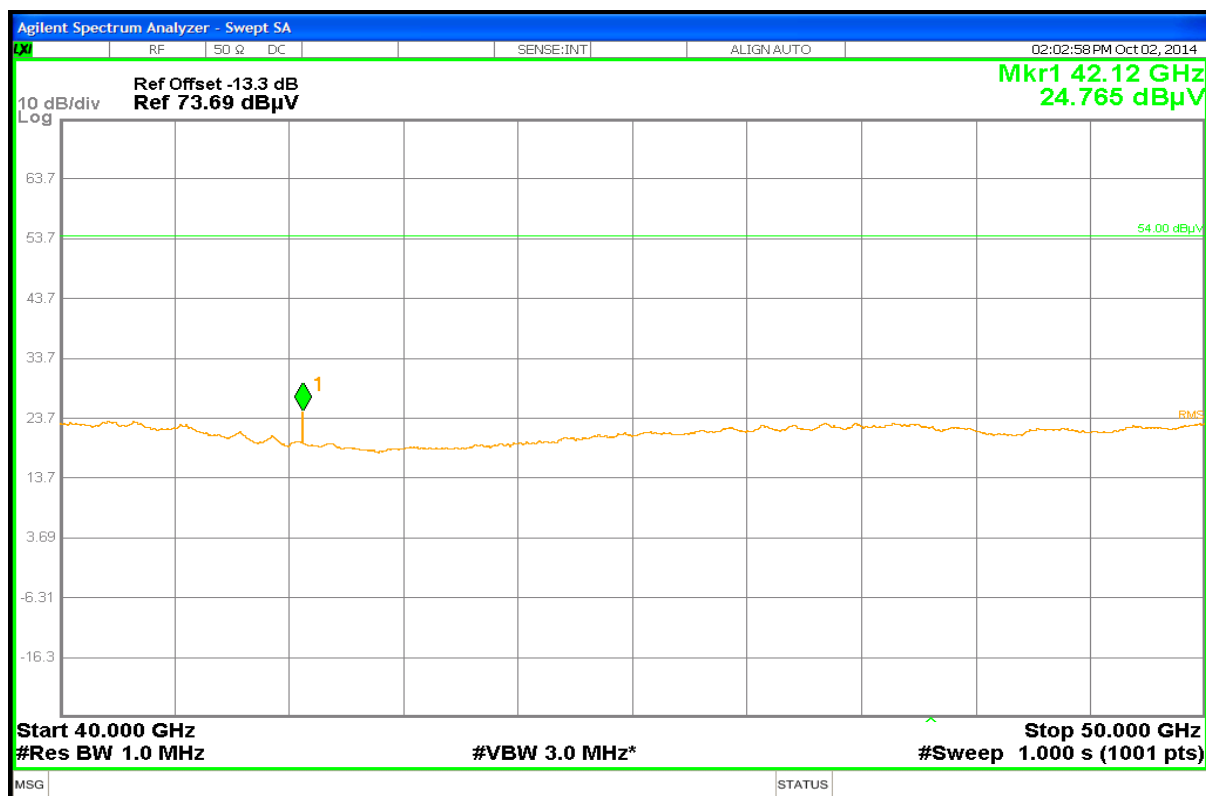
Plot 24: 26 GHz – 40 GHz, TX-Mode, antenna horizontal / vertical, DIP 4



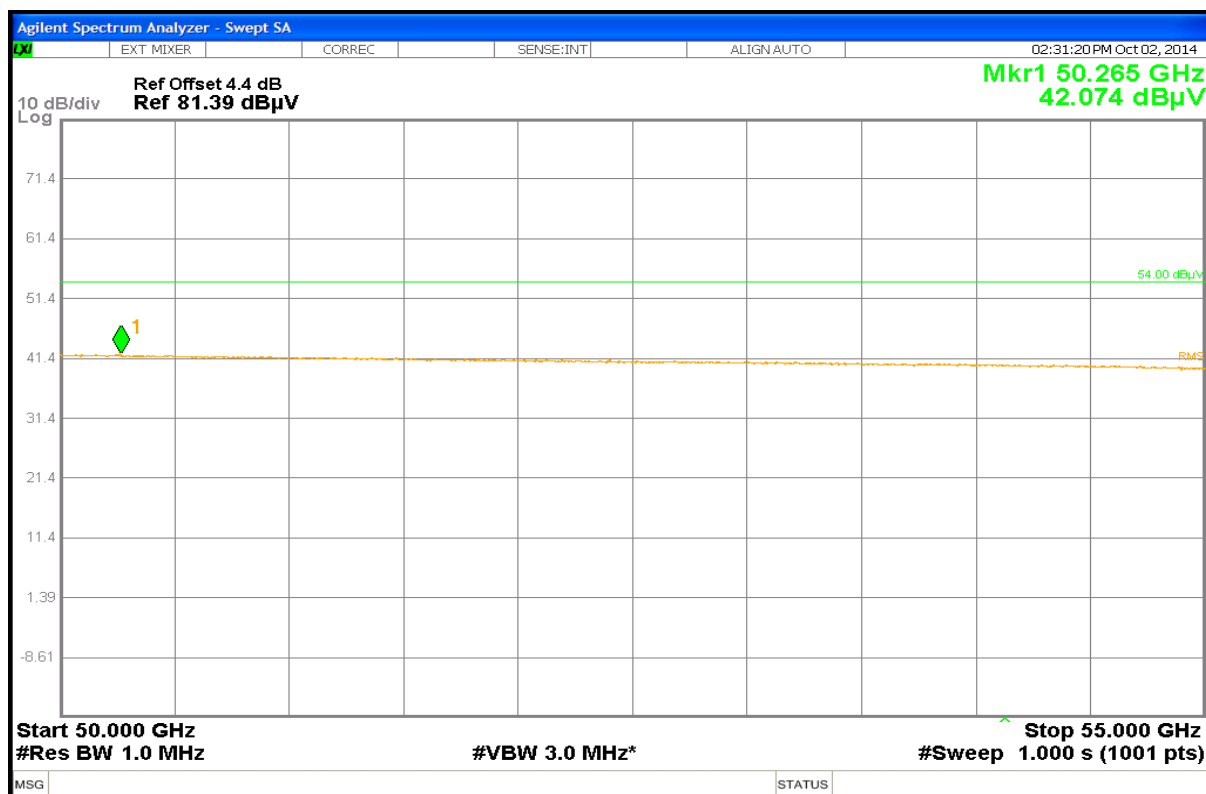
Plot 25: 40 GHz – 50 GHz, TX-Mode, antenna horizontal / vertical, DIP 0



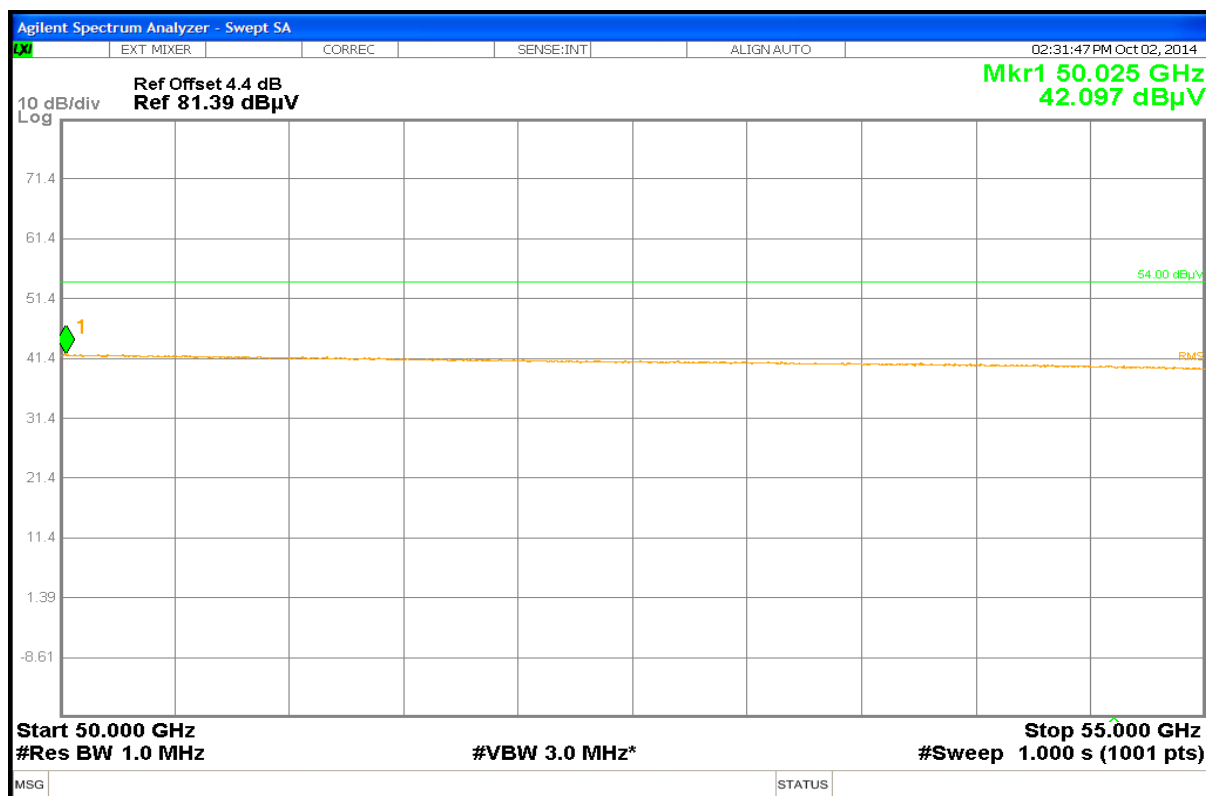
Plot 26: 40 GHz – 50 GHz, TX-Mode, antenna horizontal / vertical, DIP 4



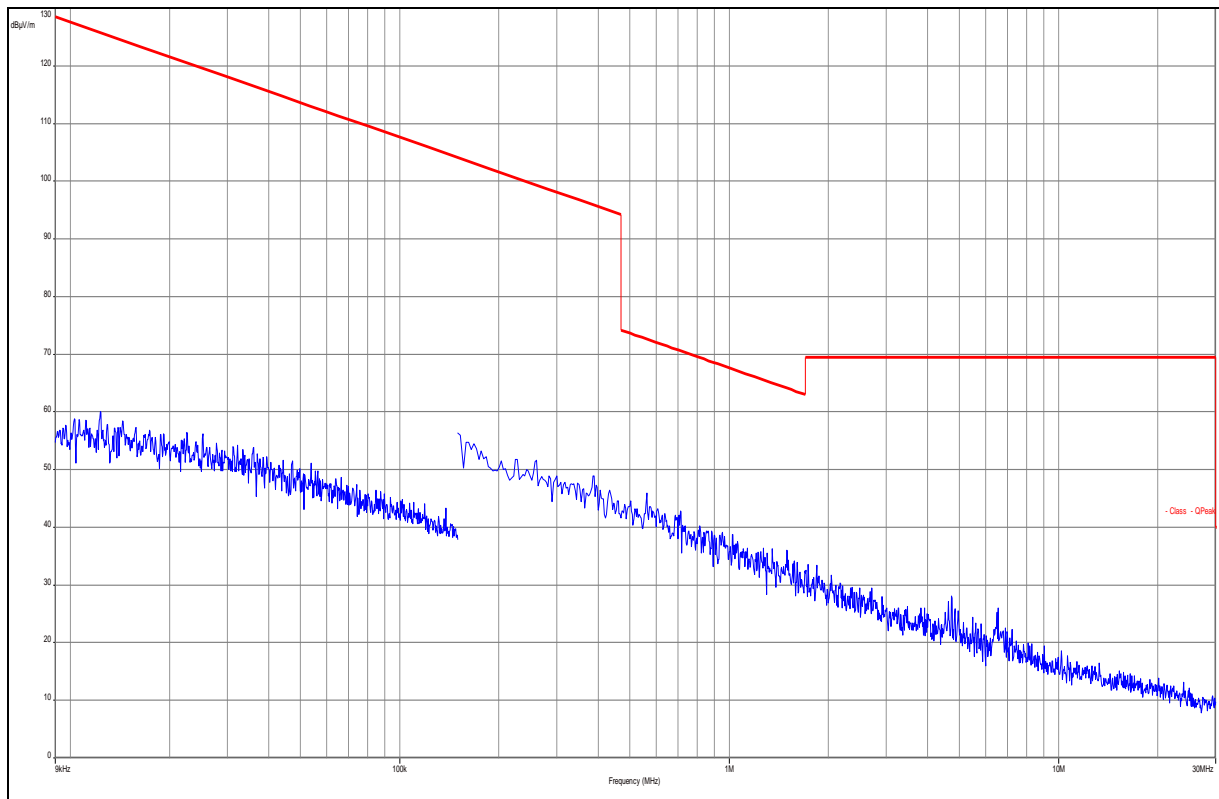
Plot 27: 50 GHz – 55 GHz, TX-Mode, antenna horizontal / vertical, DIP 0



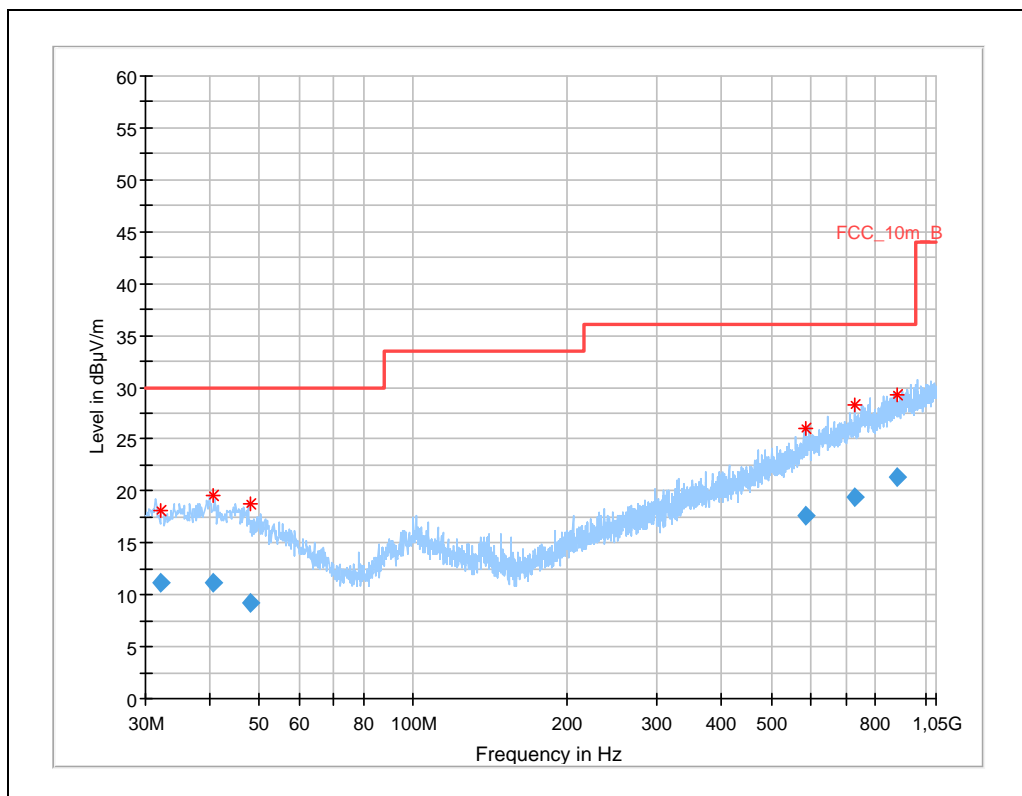
Plot 28: 50 GHz – 55 GHz, TX-Mode, antenna horizontal / vertical, DIP 4



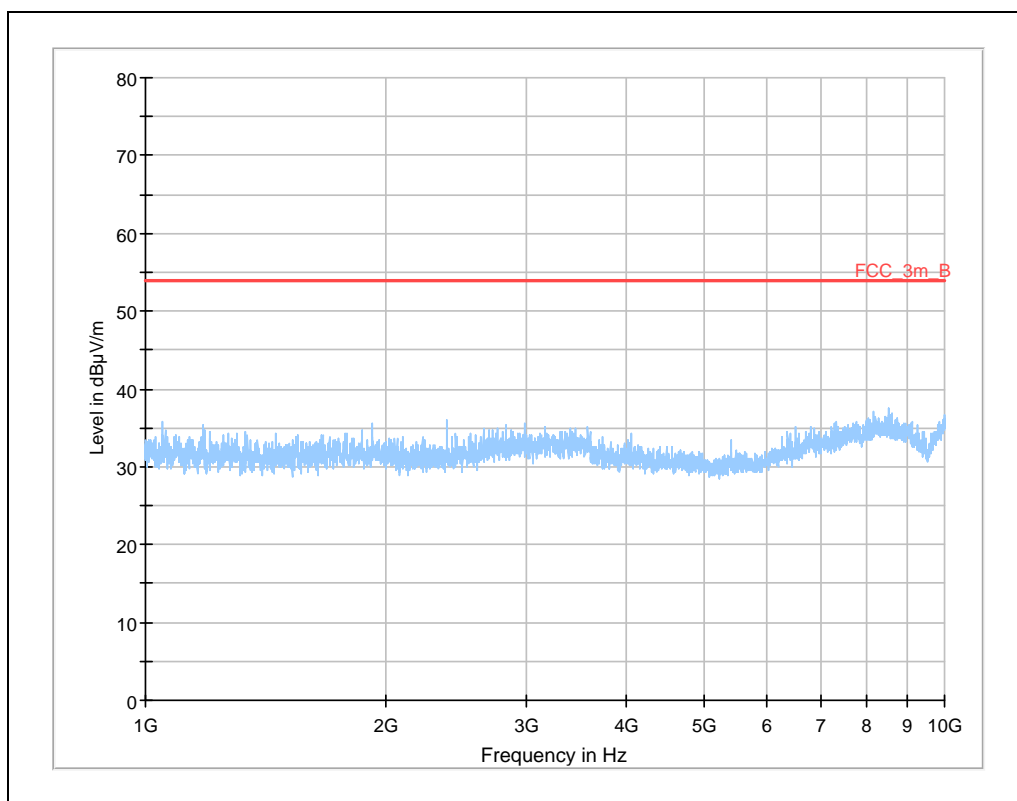
Plot 29: 9 kHz – 30 MHz, magnetic loop antenna, RX-Mode



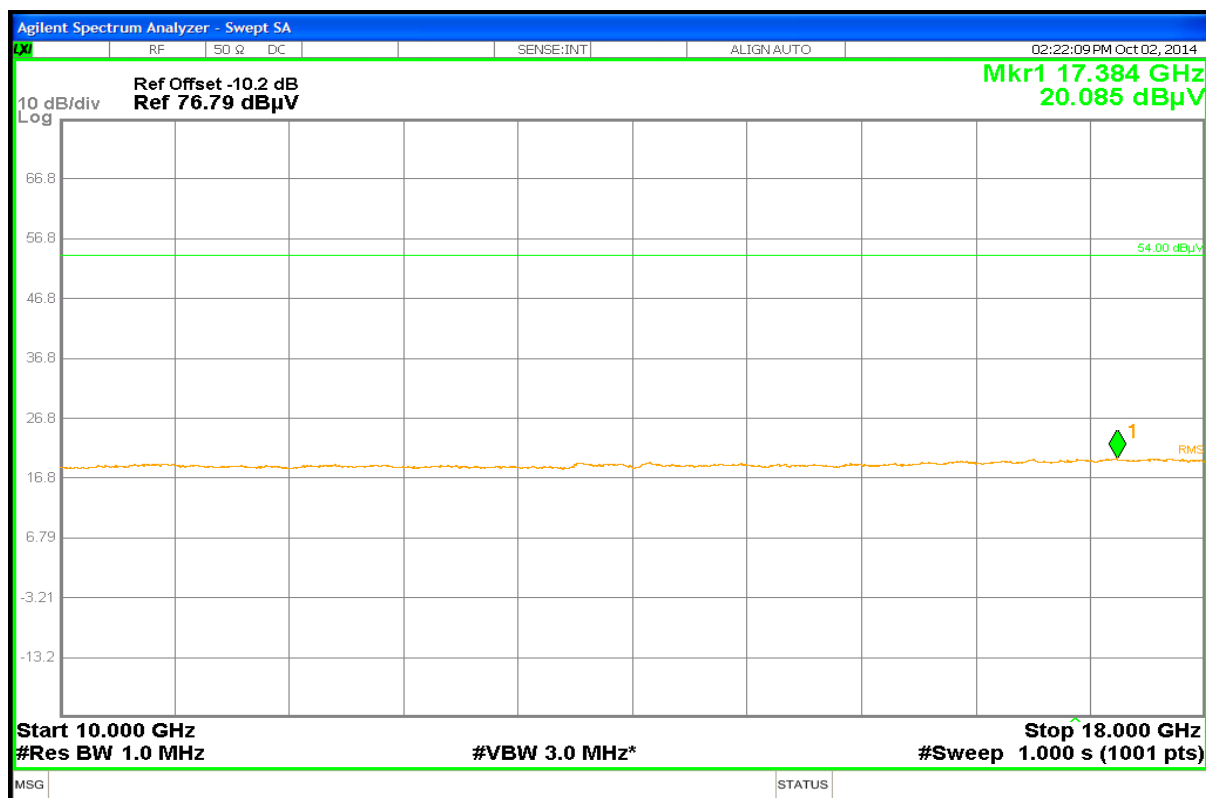
Plot 30: 30 MHz – 1 GHz, RX-Mode, antenna horizontal / vertical



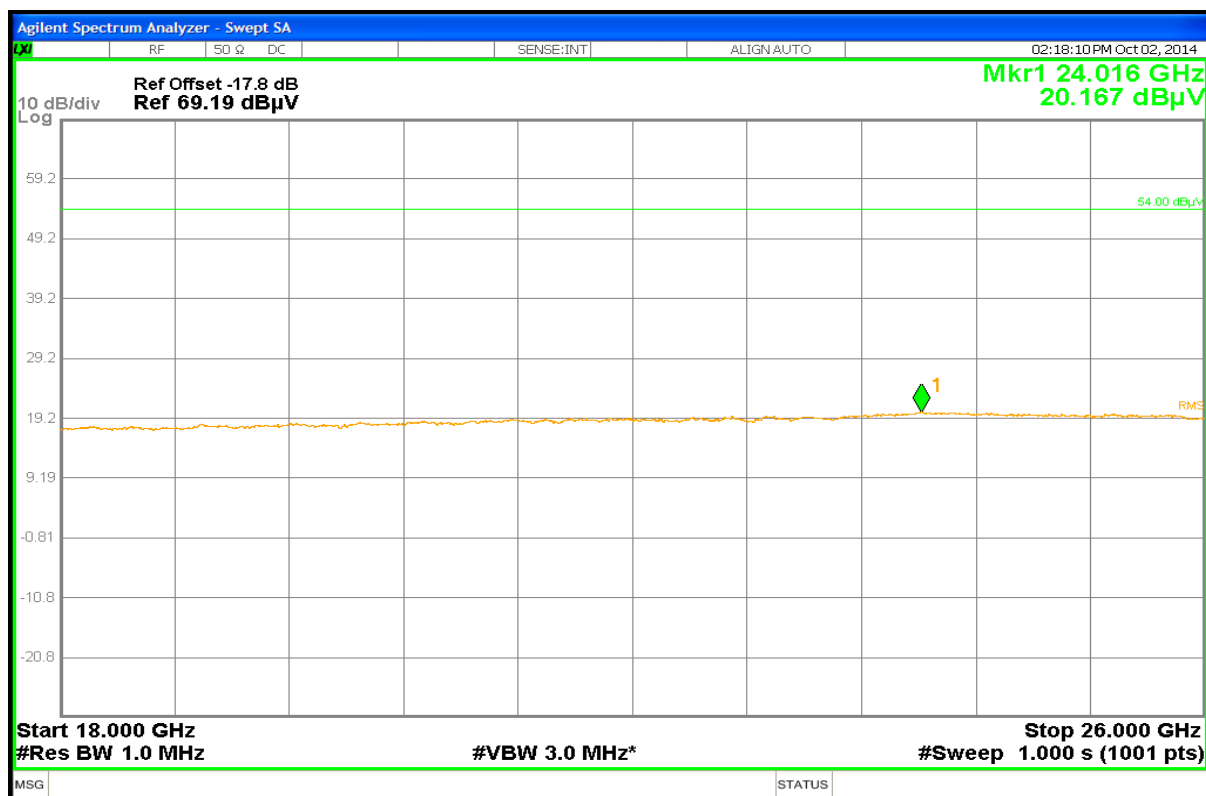
Plot 31: 1 GHz – 10 GHz, RX-Mode, antenna horizontal / vertical



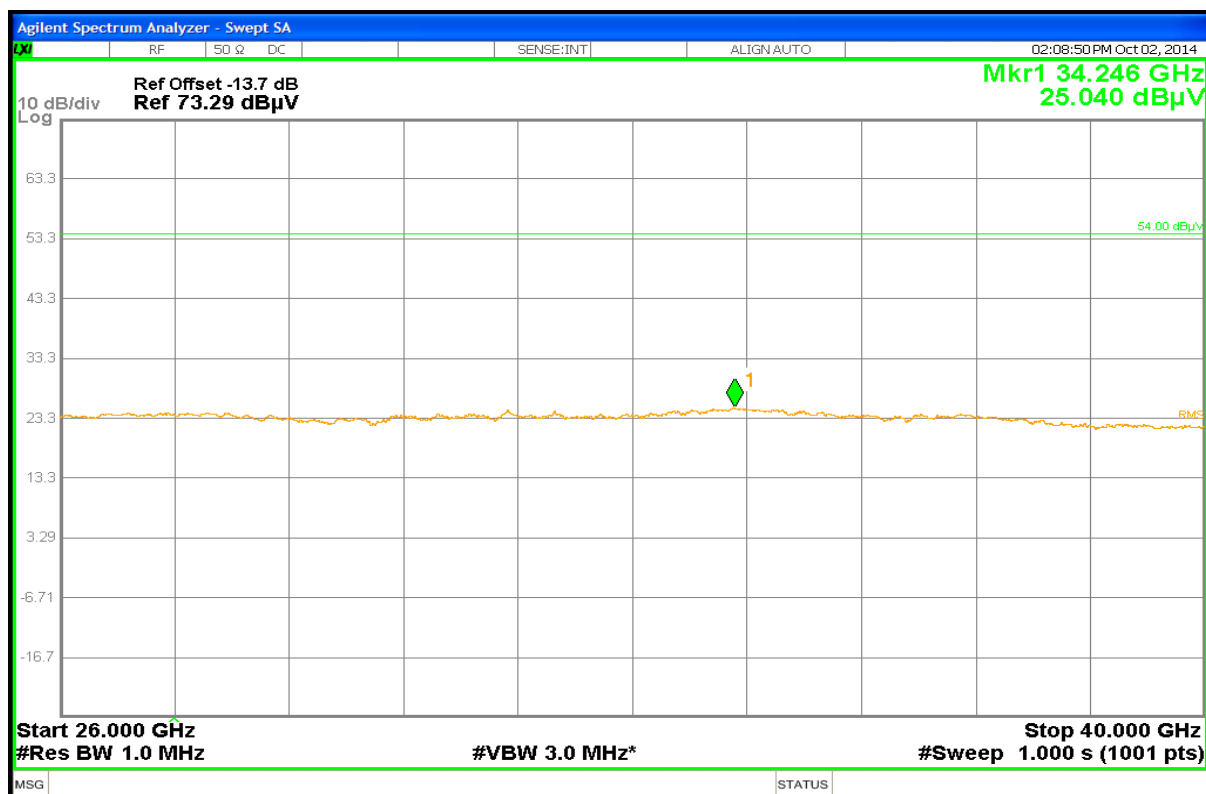
Plot 32: 10 GHz – 18 GHz, RX-Mode, antenna horizontal / vertical



Plot 33: 18 GHz – 26 GHz, RX-Mode, antenna horizontal / vertical



Plot 34: 26 GHz – 40 GHz, RX-Mode, antenna horizontal / vertical



Results:

Spurious Emissions Radiated [dBμV/m]								
TX – Mode / DIP 0			TX – Mode / DIP 4			RX – Mode		
F [GHz]	Detector	Level [dBμV/m]	F [GHz]	Detector	Level [dBμV/m]	F [GHz]	Detector	Level [dBμV/m]
21.056	Average	50.48	21.056	Average	50.18	No critical peaks found!		
31.586	Average	51.69	31.586	Average	51.37			
Measurement uncertainty			± 3 dB					

Limits:

FCC		
CFR Part 15.245 (b) (3) / CFR Part 15.209 (a)		
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.		
Frequency (MHz)	Field Strength (dBμV/m)	Measurement distance
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

Note: Harmonics shall not exceed 25.0 millivolts/meter (88.0 dBμV/m)

Result: Test passed.

9.5 Conducted spurious emissions < 30 MHz

Description:

Measurement of the conducted spurious emissions in transmit mode below 30 MHz. Both power lines, phase and neutral line, are measured. Found peaks are re-measured with average and quasi peak detection to show compliance to the limits.

Measurement:

Measurement parameter	
Detector:	Peak - Quasi Peak / Average
Sweep time:	Auto
Video bandwidth:	F < 150 kHz: 200 Hz F > 150 kHz: 9 kHz
Resolution bandwidth:	F < 150 kHz: 1 kHz F > 150 kHz: 100 kHz
Span:	9 kHz to 30 MHz
Trace-Mode:	Max Hold

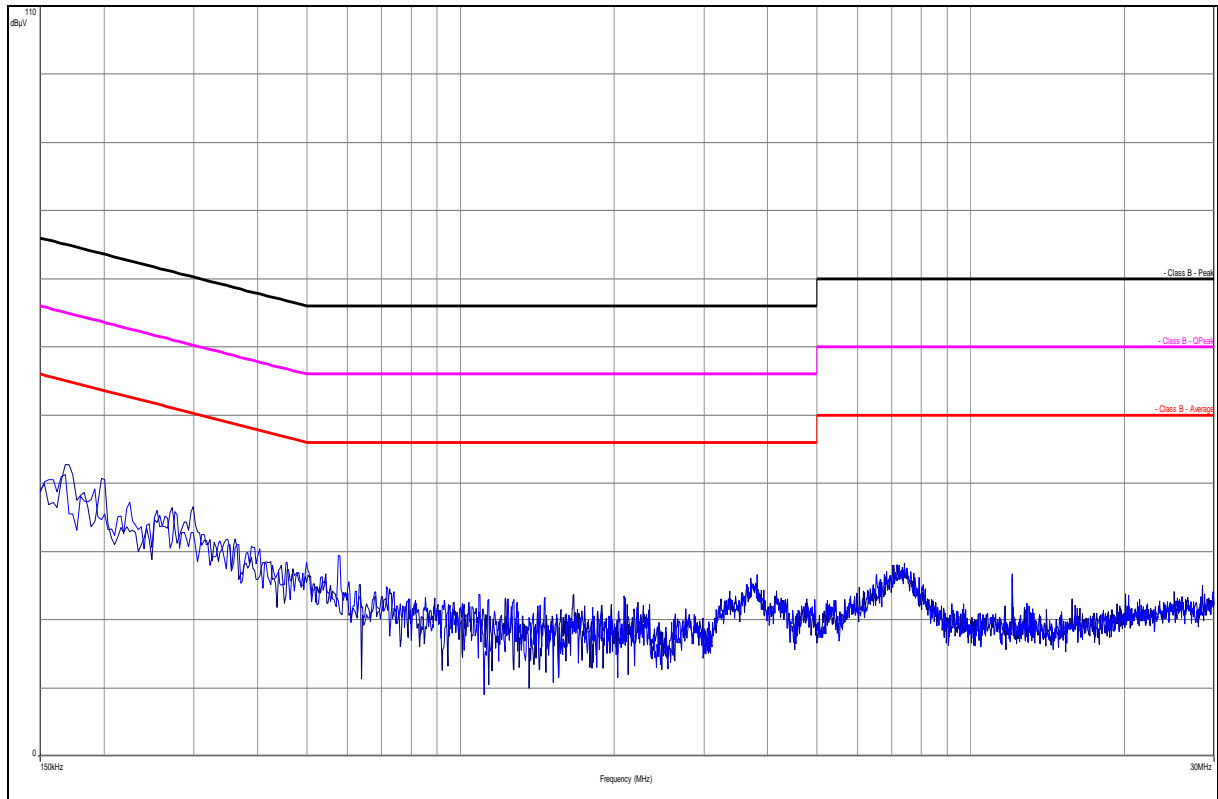
Limits:

FCC		
CFR Part 15.207(a)		
Conducted Spurious Emissions < 30 MHz		
Frequency (MHz)	Quasi-Peak (dBμV/m)	Average (dBμV/m)
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30.0	60	50

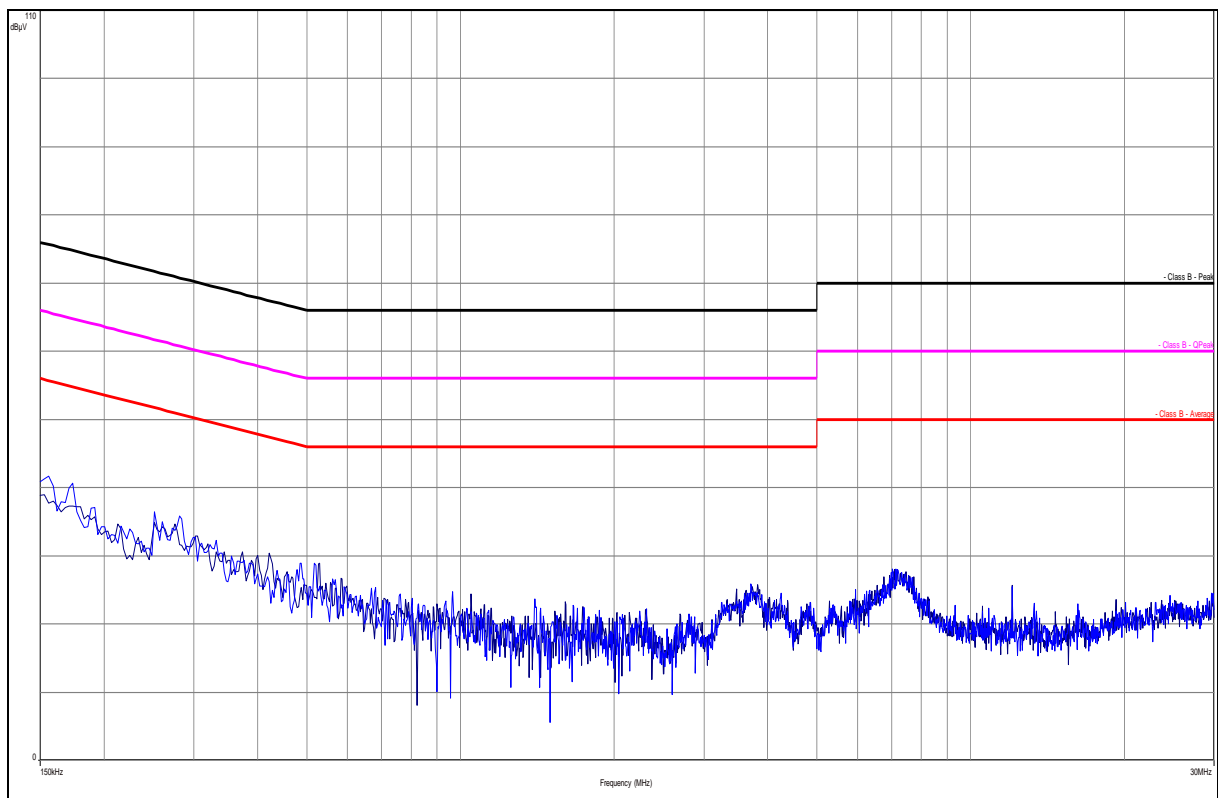
*Decreases with the logarithm of the frequency

Result: Test passed.

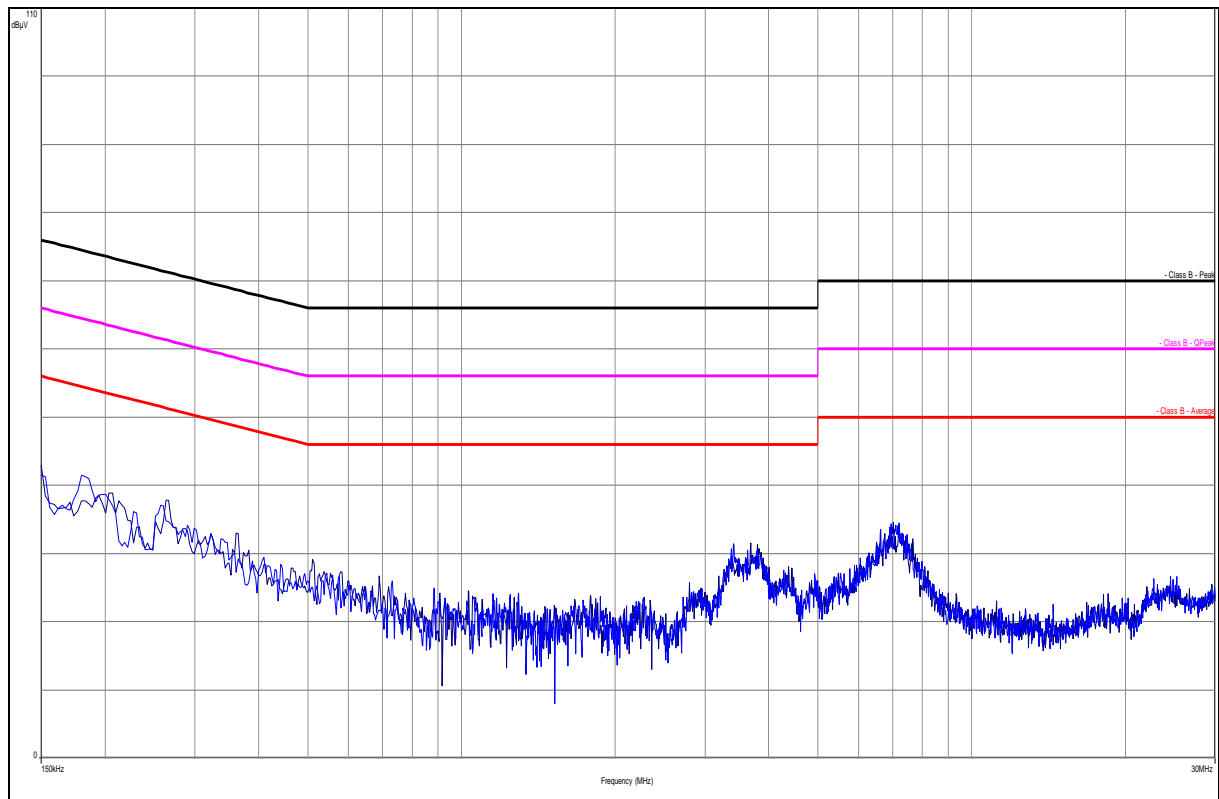
Plot 35: TX-Mode, DIP 0, phase line / neutral line



Plot 36: TX-Mode, DIP 4, phase line / neutral line



Plot 37: RX-Mode, phase line / neutral line



10 Test equipment and ancillaries used for tests

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Labor/Item).

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	12.01.2012	12.01.2015
2	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vIKI!	08.05.2013	08.05.2015
3	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
4	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	*	300000199	ne		
5	9	Artificial Mains 9 kHz to 30 MHz	ESH3-Z5	R&S	828576/020	300001210	Ve	30.01.2014	30.01.2016
6	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	2719A15013	300001156	ne		
7	9	Isolating Transformer	MPL IEC625 Bus Regeltrenntravo	Erft	91350	300001155	ne		
8	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
9	90	Active Loop Antenna 10 kHz to 30 MHz	6502	Kontron Psychotech	8905-2342	300000256	k	13.06.2013	13.06.2015
10	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
11	n. a.	Band Reject filter	WRCG1855/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
12	n. a.	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
13	n. a.	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
14	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vIKI!	14.10.2011	14.10.2014
15	n. a.	MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405	k	13.03.2014	13.03.2015
16	CR 79	Std. Gain Horn Antenna 26.5-40.0 GHz	V637	Narda	7911	300001751	ne		
17	11b	Microwave System Amplifier, 0.5-26.5 GHz	83017A	HP Meßtechnik	00419	300002268	ev		
18	n. a.	Broadband Low Noise Amplifier 18-50 GHz	CBL19503070-XX	CERNEX	19338	300004273	ne		
19	A022	Std. Gain Horn Antenna 26.4-40.1 GHz	2224-20	Flann	235	300001976	ne		
20	A023	Std. Gain Horn Antenna 39.3-59.7 GHz	2424-20	Flann	75	300001979	ne		
21	A025	Std. Gain Horn Antenna 49.9-75.8 GHz	2524-20	Flann	*	300001983	ne		
22	A028	Std. Gain Horn Antenna 73.8-112 GHz	2724-20	Flann	*	300001991	ne		
23	A026	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda	8402	300000787	k	22.07.2013	22.07.2015
24	A029	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda	8205	300002442	k	19.07.2013	19.07.2015
25	8	DC Power Supply, 60V, 10A	6038A	HP Meßtechnik	3122A11097	300001204	Ve	10.01.2012	10.01.2015

26	n. a.	PXA Signal Analyzer 3 Hz-50 GHz	N9030A	Agilent	US51350267	300004338	k	09.01.2014	09.01.2015
27	n. a.	Harmonic mixer 50 - 75 GHz for spectrum analyzers	11970V	Agilent	83-00875	300000781	k	13.03.2014	13.03.2015
28	n. a.	4U RF Switch Platform	L4491A	Agilent Technologies	MY50000037	300004509	ne		
29	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
30	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	ne		
31	n. a.	EMI Test Receiver	ESCI 3	R&S	100083	300003312	k	27.01.2014	27.01.2015
32	n. a.	Funkstörmesempfänger 20Hz- 26.5GHz	ESU26	R&S	100037	300003555	k	28.02.2014	28.02.2015
33	n. a.	Antenna Tower	Model 2175	ETS- LINDGREN	64762	300003745	izw		
34	n. a.	Positioning Controller	Model 2090	ETS- LINDGREN	64672	300003746	izw		
35	n. a.	Turntable Interface-Box	Model 105637	ETS- LINDGREN	44583	300003747	izw		
36	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	22.04.2014	22.04.2016

Agenda: Kind of Calibration

k	calibration / calibrated		EK	limited calibration
ne	not required (k, ev, izw, zw not required)		zw	cyclical maintenance (external cyclical maintenance)
ev	periodic self-verification		izw	internal cyclical maintenance
Ve	long-term stability recognized		g	blocked for accredited testing
vkI!	Attention: extended calibration interval			
NK!	Attention: not calibrated		*)	next calibration ordered / currently in progress

11 Observations

No observations except those reported with the single test cases have been made.

12 Document history

Version	Applied changes	Date of release
1.0	Initial release	2014-11-28

13 Further information

Glossary

AVG	-	Average
DUT	-	Device under test
EMC	-	Electromagnetic Compatibility
EN	-	European Standard
EUT	-	Equipment under test
ETSI	-	European Telecommunications Standard Institute
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	Not applicable
PP	-	Positive peak
QP	-	Quasi peak
S/N	-	Serial number
SW	-	Software

14 Accreditation Certificate

Front side of certificate

Back side of certificate



Deutsche Akkreditierungsstelle GmbH

Befähigung gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleG8V
 Unterzeichnerin der Multilateralen Abkommen
 von EA, ILAC und IAF zur gegenseitigen Anerkennung

Akkreditierung



Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Prüflaboratorium

CETECOM ICT Services GmbH
 Untertürkheimer Straße 6-10, 66117 Saarbrücken

die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Prüfungen in folgenden Bereichen durchzuführen:

Drahtgebundene Kommunikation einschließlich xDSL
 VoIP und DECT
 Akustik
 Funk einschließlich WLAN
 Short Range Devices (SRD)
 RFID
 WiMax und Richtfunk
 Mobilfunk (GSM / DCS, Over the Air (OTA) Performance)
 Elektromagnetische Verträglichkeit (EMV) einschließlich Automotive
 Produktsicherheit
 SAR und Hearing Aid Compatibility (HAC)
 Umweltsimulation
 Smart Card Terminals
 Bluetooth
 Wi-Fi Services

Die Akkreditierungsurkunde gilt nur in Verbindung mit dem Bescheid vom 07.03.2014 mit der
 Akkreditierungsnummer D-PL-12076-01 und ist gültig 17.01.2018. Sie besteht aus diesem Deckblatt, der
 Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 77 Seiten.

Registrierungsnummer der Urkunde: D-PL-12076-01-00

Frankfurt am Main, 07.03.2014

Zurücksendung an die Deutsche

Im Auftrag (D-PL-12076-01-00) vollzogen
 Akkreditierungsstelle

Deutsche Akkreditierungsstelle GmbH

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 10117 Berlin

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 60504 Frankfurt am Main

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 38116 Braunschweig

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 und des Rates vom 9. Juli 2008 über die Verschaffung für die Akkreditierung und Marktüberwachung
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Note:

The current certificate including annex is published on our website (see link below) or may be received
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