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Test report

Number:	**T251-0864/16**	Project file:	C20161862
		Date:	2017-03-16
		Pages:	84
Product:	**Customer Evaluation Board CLRC663**		
Type reference:	**CLEV6630B**		
Ratings:	USB: 5 VDC 5%/ 500 mA; External 7,0-13,5 VDC / 500 mA Operating clock frequency: 13,56 MHz Protection class: III		
Trademark:	NXP		
Applicant:	**NXP SEMICONDUCTORS GmbH** **Mikron - Weg 1, AT-8101 Gratkorn, Austria**		
Manufacturer:	Četrta pot, d.o.o., Kranj Planina 3, SI-4000 Kranj, Slovenia		
Place of manufacture:	Četrta pot, d.o.o., Kranj Planina 3, SI-4000 Kranj, Slovenia		

Summary of testing

Testing method:	FCC 47 CFR Part 15, Subpart C
Testing location:	SIQ Ljubljana, Trpinčeva ulica 37 A, SI-1000 Ljubljana, Slovenia
Remarks:	Date of receipt of test items: 2016-07-07 Number of items tested: 1 Date of performance of tests: 2017-01-06 - 2017-01-27 The test results presented in this report relate only to the items tested. The product complies with the requirements of the testing methods. /

Tested by: Andrej Škof

Approved by: Marjan Mak

The report shall not be reproduced except in full.

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CONTENTS page

1 GENERAL

History sheet			
Date	Report No.	Change	Revision
2017-03-16	T251-0864/16	Initial Test Report issued.	--

Environmental conditions:
Ambient temperature: 15°C to 35°C
Relative humidity: 30% to 60%
Atmospheric pressure: 860 mbar to 1060 mbar

1.1 Equipment under test

Customer Evaluation Board CLRC663
Type: CLEV6630B

Tested SIQ sample number:
S20168226 – CLEV6630B V2.0
S20168225 – AC/DC adapter

Picture of EUT

1.1.1 General product information

CLRC663 Customer Evaluation Board, CLEV6630B, is an example of implementation of ISO/IEC 14443A and ISO/IEC 14443B reader/writer and NFC reader/writer (P2P passive initiator mode) on the same printed board. Middle size antenna, implemented on the same pcb (reader and antenna can be broken into separate parts), permits reading/writing on distance up to 50 mm (RFID card or other NFC device). The onboard USB connector permits direct connection and communication with personal computer.
Power supply is via usb port or via SELV rated and limited power source (7.0-13.5 V / 500 mA).
Card reading/writing distance: from 30 mm up to 50 mm
Antenna: PCB type, 65 mm x 65 mm

Product	CLRC663 Customer Evaluation Board
Type / Model	CLEV6630B
Supply voltage of transmitter	5 VDC via USB or 7,0 – 13,5 VDC External
Operating frequency	13,56 MHz
Antenna type	PCB type, 65 x 65 mm
Modulation type:	Load modulation, Manchester coding
Hardware version:	2.0
Software version:	1.2
Card reading/Writing distance	30-50 mm

1.1.2 Auxiliary equipment used during testing

AC/DC Adapter, PHIHONG, Model: PSA15R-120P; Input: 100-240 V, 50/60 Hz, Output: 12 VDC, 0,5 A
Laptop: HP ProBook 4540S, SN 2CE2511DPZ
USB cable, length: 115 cm

2 TEST SUMMARY

STANDARD	Tested yes	Tested no	Sample pass	Sample not pass
ANSI C63.10-2013; FCC 47 CFR Part 15, Subpart C	☑	☐	☑	☐

Test (FCC 47 CFR Part 15, Subpart C)	Section within the report	Conclusion
§15.203 Antenna requirements	4.1	PASS
§15.205 Restricted bands of operation	4.2	PASS
§15.207 Conducted emission	4.3	PASS
§15.209 Radiated emission – general requirements	4.4	PASS
§15.215 20 dB Bandwidth	4.5	PASS
§15.225 (a-d) Operation within the band 13.110-14.010 MHz	4.6	PASS
§15.225 (e) Carrirer Frequency stability	4.7	PASS

2.1 Operating voltages/frequencies used for testing

Test	Operating conditions
§15.203 Antenna requirements	/
§15.205 Restricted bands of operation	5 VDC via USB 12 VDC via External PS AC/DC adapter or PC: 120 V, 60 Hz
§15.207 Conducted emission	5 VDC via USB 12 VDC via External PS AC/DC adapter or PC: 120 V, 60 Hz
§15.209 Radiated emission – general requirements	5 VDC via USB 12 VDC via External PS AC/DC adapter or PC: 120 V, 60 Hz
§15.215 20 dB Bandwidth	5 VDC via USB 12 VDC via External PS AC/DC adapter or PC: 120 V, 60 Hz
§15.225 (a-d) Operation within the band 13.110-14.010 MHz	5 VDC via USB 12 VDC via External PS AC/DC adapter or PC: 120 V, 60 Hz
§15.225 (e) Carrirer Frequency stability	4.25 VDC - 5.75 VDC 5.95 VDC – 15.53 VDC

3 CONVERSION FACTORS AND ALL OTHER FORMULAS

Unit	Conversion unit	Formula of conversion
dBμV	dBμV/m	dBμV/m = dBμV + AF
μV/m	dBμV/m	dBμV/m = 20log(X(μV/m)/1μV)

Test distance stated in standard	Test distance of measurement	Conversion factor
3 m	3 m	/
10 m	3 m	20dB/decade (over 30 MHz)
		40dB/decade (under 30 MHz)

4 EMISSION TESTS

4.1 Antenna requirements (§15.203)

Requirement
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Conclusion:
PASS; EUT has PCB antenna which is not detachable

4.2 Restricted bands of operation (§15.205)

4.2.1 Requirement

Except as shown in paragraph (d) of §15.205 only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2]Above 38.6

4.2.2 Test results

See Radiated emission results under 4.4 Radiated emission and 4.6 Spectrum mask.

4.3 Conducted emission measurement (§15.207)

4.3.1 Requirement

Frequency Range (MHz)	Limits (dBµV)	
	Quasi-peak	Average
0.15 to 0.5	66 – 56*	56 – 46*
0.5 to 5.0	56	46
5.0 to 30.0	60	50

* Decreases with the logarithm of the frequency.

The shown limits in table shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

- For carrier current systems containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.
- For all other carrier current systems: 1000 µV within the frequency band 535-1705 kHz, as measured using a 50 µH/50 ohms LISN.
- Carrier current systems operating below 30 MHz are also subject to the radiated emission limits as appropriate.

4.3.2 Test procedure

- As per clause 6.2 from ANSI C63.10-2013.
- The EUT is placed on a non-conductive 0.8 meters high table, 0.4 meters from the vertical conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). LISN provide 50 Ohm / 50 µH + 5 Ohm of coupling impedance for the measuring instrument.
- Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition.
- AC power lines of EUT are checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz is searched using PEAK, QUASI-PEAK and AVERAGE function of the receiver to determine compliance with Section 15.207 limits outside the transmitter's fundamental emission band. Bandwidth is set to 9 kHz.
- Measurement is repeated with a dummy load in lieu of the antenna to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band.

4.3.3 Test results

Device passed the requirements stated in FCC Part 15, Section 15.207

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C20161862

12.Jan 17 16:04

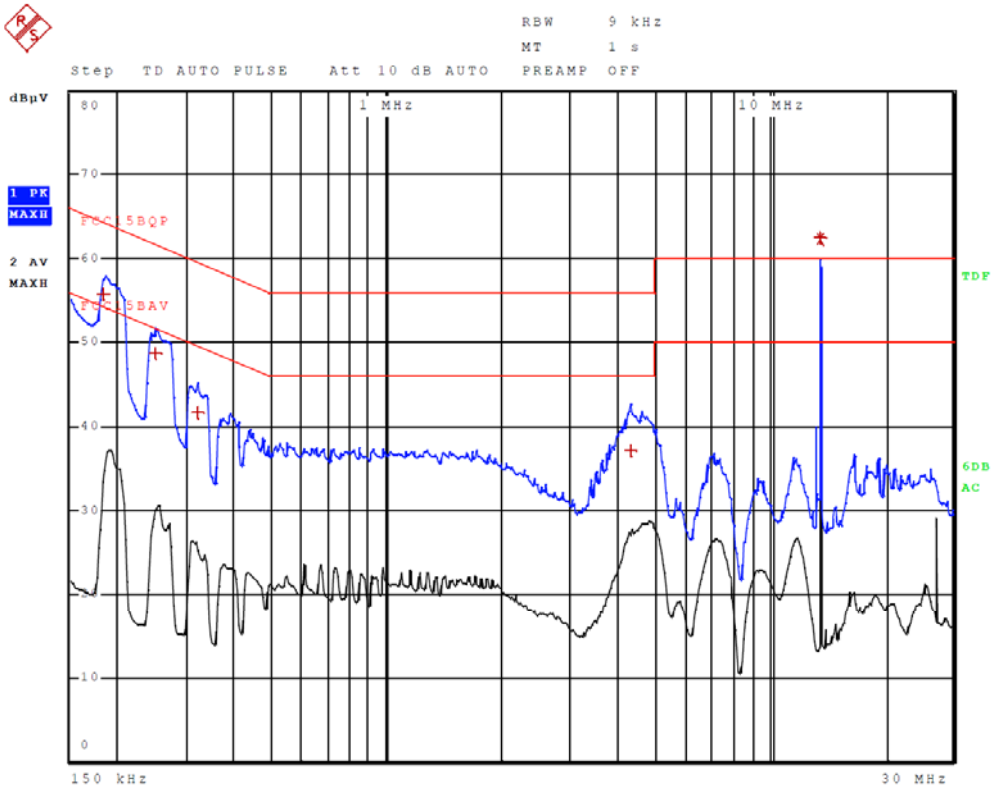
Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz, USB; WAITING
Operator	ANDREJ SKOF

Test Spec
PHASE

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ESH2-Z5

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	0 dB	INPUT2



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12.Jan 17 16:04

Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz, USB; WAITING
Operator	ANDREJ SKOF

Test Spec
PHASE

Final Measurement

Meas Time: 1 s
Margin: 15 dB
Peaks: 6

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	13.560000000 MHz	62.35	CISPR Averag	12.35
1	13.560000000 MHz	62.36	Quasi Peak	2.36
1	183.750000000 kHz	55.75	Quasi Peak	-8.56
1	246.750000000 kHz	48.60	Quasi Peak	-13.27
1	321.000000000 kHz	41.65	Quasi Peak	-18.03
1	4.319250000 MHz	37.09	Quasi Peak	-18.91

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12.Jan 17 16:05

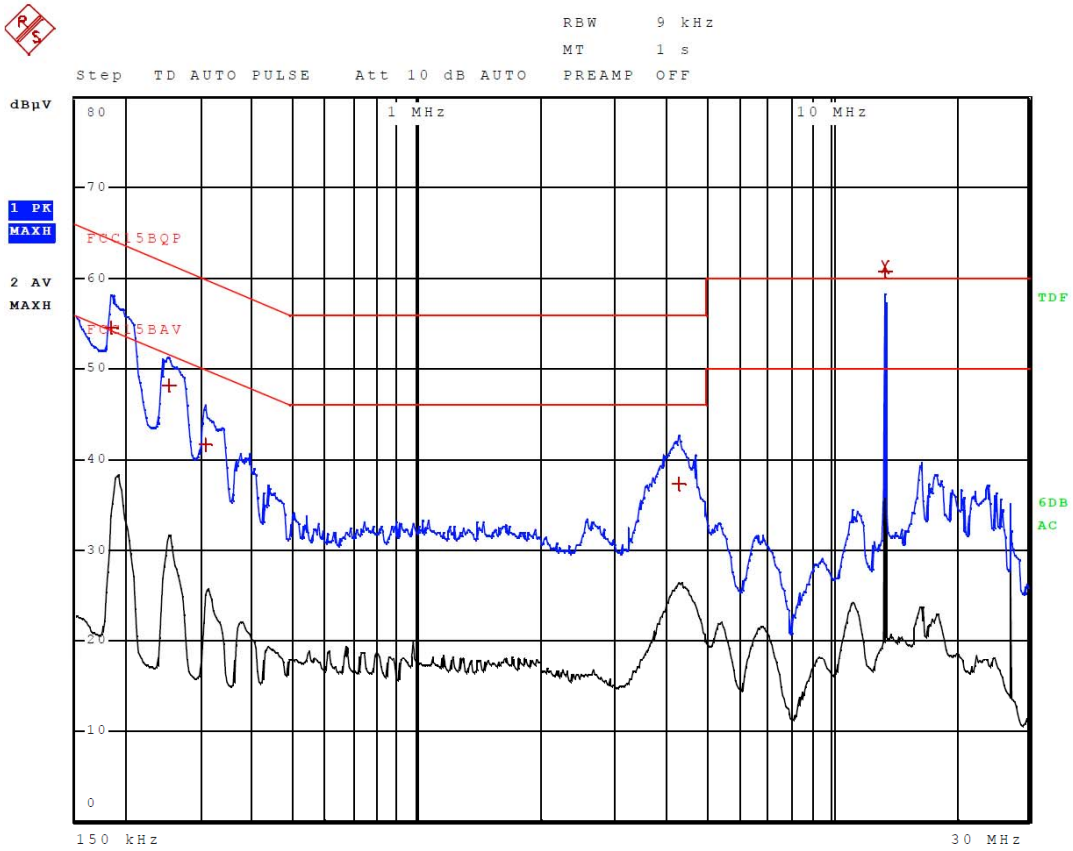
Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz, USB; WAITING
Operator	ANDREJ SKOF

Test Spec
NEUTRAL

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ESH2-Z5

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	0 dB	INPUT2



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12.Jan 17 16:05

Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz, USB; WAITING
Operator	ANDREJ SKOF

Test Spec
NEUTRAL

Final Measurement

Meas Time: 1 s
Margin: 15 dB
Peaks: 6

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	13.560000000 MHz	61.21	CISPR Averag	11.21
1	13.560000000 MHz	60.81	Quasi Peak	0.81
1	181.500000000 kHz	54.46	Quasi Peak	-9.96
1	249.000000000 kHz	48.18	Quasi Peak	-13.61
1	307.500000000 kHz	41.65	Quasi Peak	-18.39
1	4.285500000 MHz	37.27	Quasi Peak	-18.73

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12.Jan 17 16:02

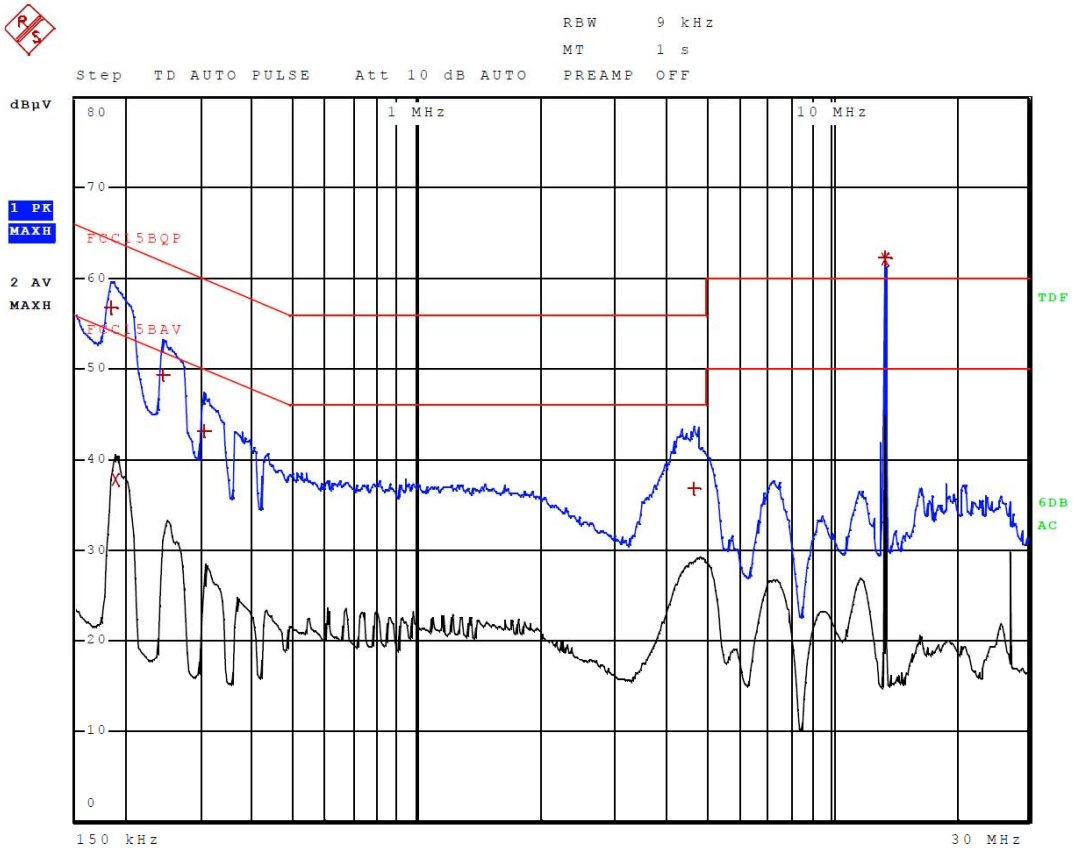
Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz, USB; READING
Operator	ANDREJ SKOF

Test Spec
PHASE

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ESH2-Z5

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	0 dB	INPUT2



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12.Jan 17 16:02

Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz, USB; READING
Operator	ANDREJ SKOF

Test Spec
PHASE

Final Measurement

Meas Time: 1 s
Margin: 15 dB
Peaks: 7

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	13.560000000 MHz	62.13	CISPR Averag	12.13
1	13.560000000 MHz	62.27	Quasi Peak	2.27
1	183.750000000 kHz	56.77	Quasi Peak	-7.55
1	242.250000000 kHz	49.26	Quasi Peak	-12.76
2	186.000000000 kHz	37.77	CISPR Averag	-16.44
1	303.000000000 kHz	43.03	Quasi Peak	-17.13
1	4.668000000 MHz	36.77	Quasi Peak	-19.23

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12.Jan 17 16:01

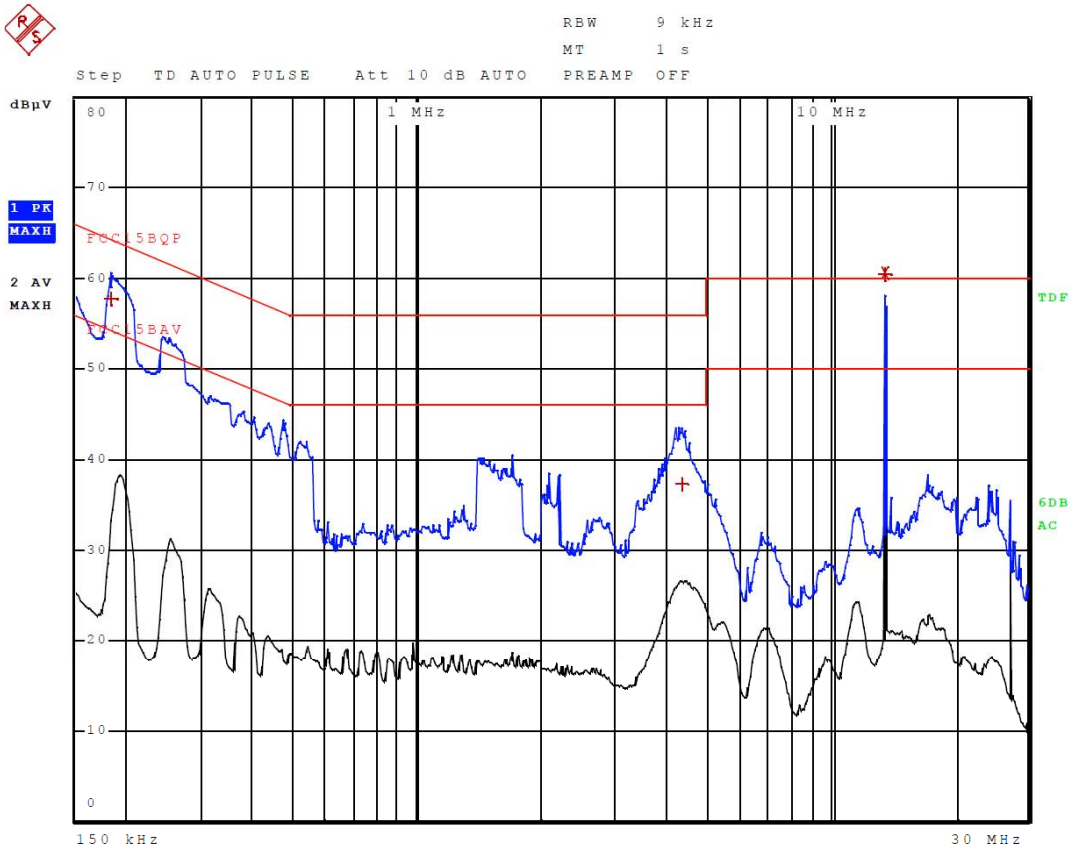
Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz, USB; READING
Operator	ANDREJ SKOF

Test Spec
NEUTRAL

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ESH2-Z5

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	0 dB	INPUT2



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12.Jan 17 16:01

Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz, USB; READING
Operator	ANDREJ SKOF

Test Spec
NEUTRAL

Final Measurement

Meas Time:	1 s
Margin:	15 dB
Peaks:	4

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	13.560000000 MHz	60.51	CISPR Averag	10.51
1	13.560000000 MHz	60.44	Quasi Peak	0.44
1	181.500000000 kHz	57.69	Quasi Peak	-6.72
1	4.359750000 MHz	37.25	Quasi Peak	-18.75

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C20161862

27.Jan 17 09:12

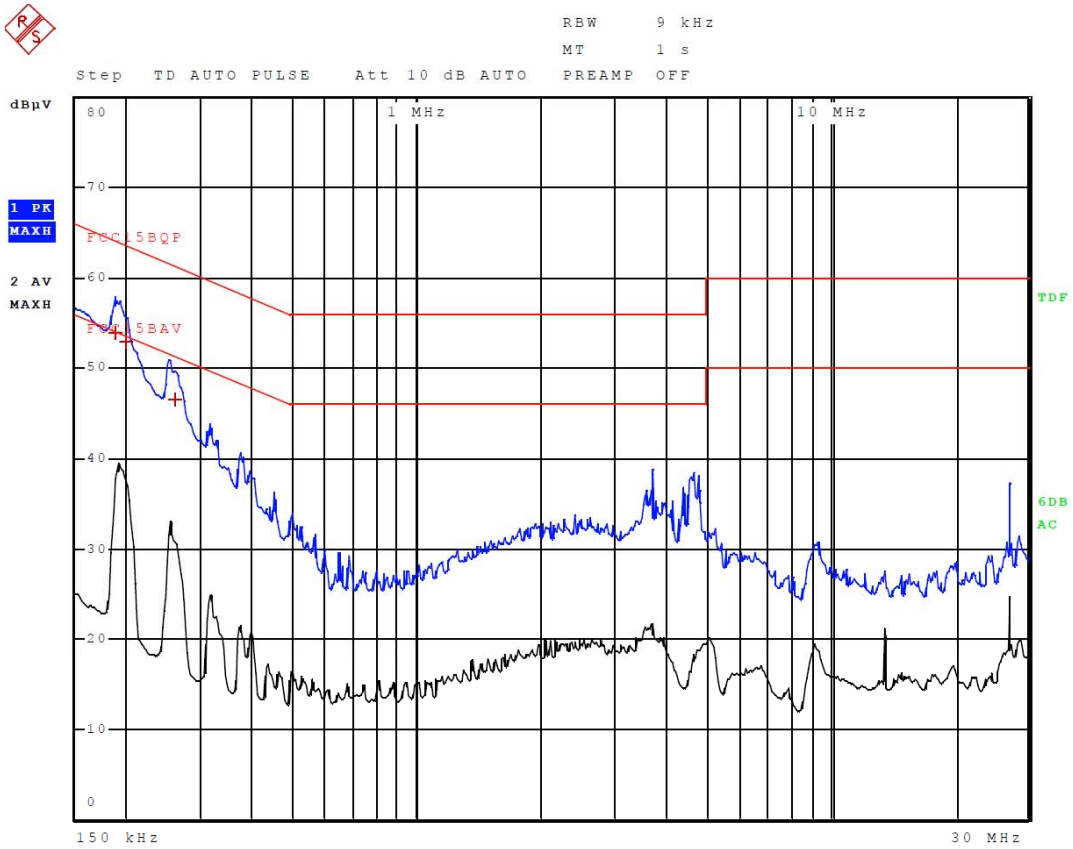
Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz; with Dummy load; USB power supply
Operator	Andrej Skof

Test Spec
PHASE

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ESH2-Z5

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	20 ms	Auto	0 dB	INPUT2



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27.Jan 17 09:12

Meas Type CONDUCTED EMISSION
Equipment under Test CLEV6630B V2.0
Manufacturer NXP SEMICONDUCTORS GmbH
OP Condition Uin: 120 V, 60 Hz; with Dummy load; USB power supply
Operator Andrej Skof
Test Spec
PHASE

Final Measurement

Meas Time: 1 s
Margin: 12 dB
Subranges: 3

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	186.000000000 kHz	53.91	Quasi Peak	-10.31
1	197.250000000 kHz	52.86	Quasi Peak	-10.87
1	258.000000000 kHz	46.45	Quasi Peak	-15.05

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27.Jan 17 09:14

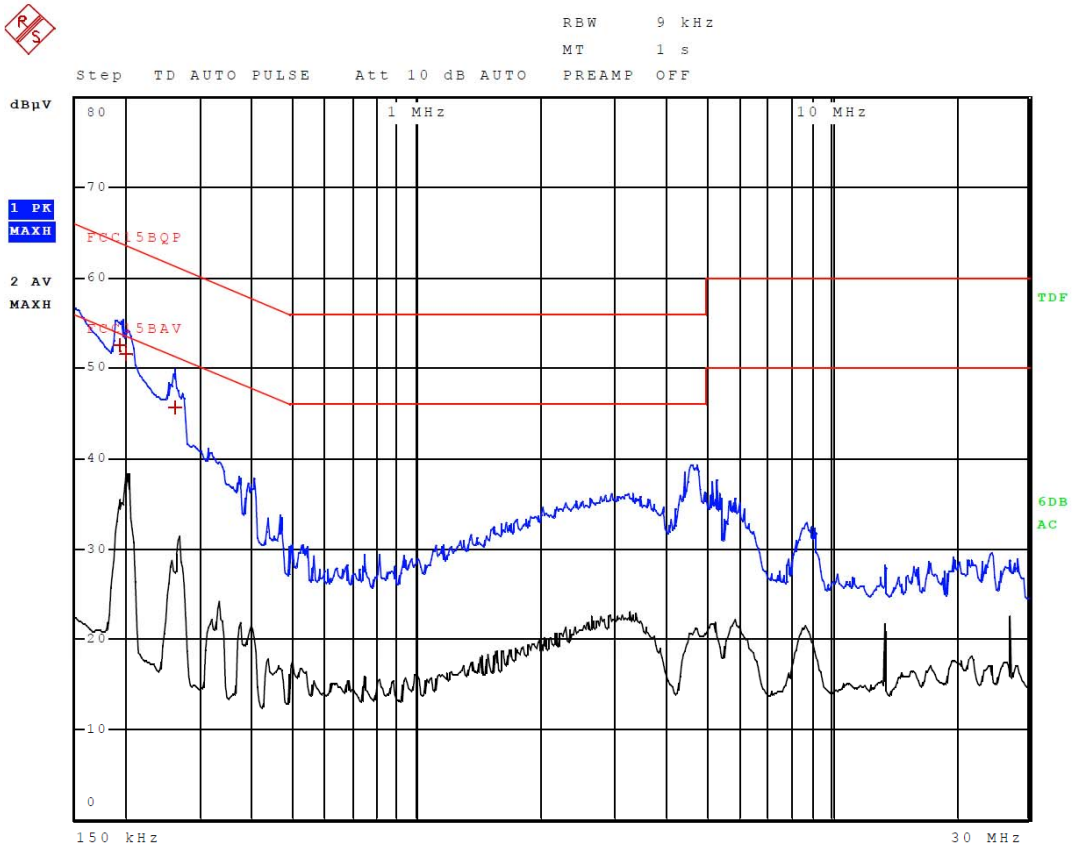
Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz; with Dummy load; USB power supply
Operator	Andrej Skof

Test Spec
NEUTRAL

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ESH2-Z5

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	20 ms	Auto	0 dB	INPUT2



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27.Jan 17 09:14

Meas Type CONDUCTED EMISSION
Equipment under Test CLEV6630B V2.0
Manufacturer NXP SEMICONDUCTORS GmbH
OP Condition Uin: 120 V, 60 Hz; with Dummy load; USB power supply
Operator Andrej Skof
Test Spec
NEUTRAL

Final Measurement

Meas Time: 1 s
Margin: 12 dB
Subranges: 3

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	192.750000000 kHz	52.45	Quasi Peak	-11.47
1	199.500000000 kHz	51.58	Quasi Peak	-12.05
1	258.000000000 kHz	45.63	Quasi Peak	-15.86

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C20161862

12.Jan 17 15:50

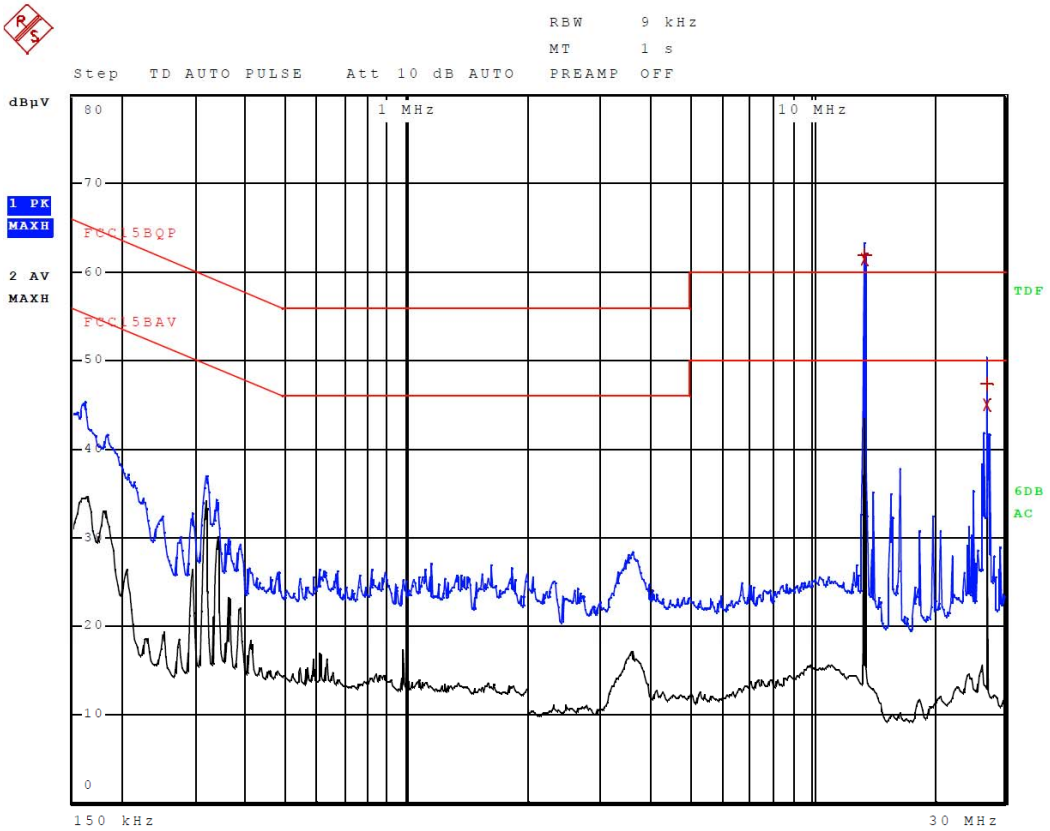
Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz, EXT PS; WAITING
Operator	ANDREJ SKOF

Test Spec
PHASE

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ESH2-Z5

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	0 dB	INPUT2



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12.Jan 17 15:50

Meas Type CONDUCTED EMISSION
Equipment under Test CLEV6630B V2.0
Manufacturer NXP SEMICONDUCTORS GmbH
OP Condition Uin: 120 V, 60 Hz, EXT PS; WAITING
Operator ANDREJ SKOF
Test Spec
PHASE

Final Measurement

Meas Time: 1 s
Margin: 15 dB
Peaks: 4

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	13.560000000 MHz	61.42	CISPR Averag	11.42
1	13.560000000 MHz	61.88	Quasi Peak	1.88
2	27.120750000 MHz	45.02	CISPR Averag	-4.98
1	27.120750000 MHz	47.37	Quasi Peak	-12.63

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C20161862

12.Jan 17 15:49

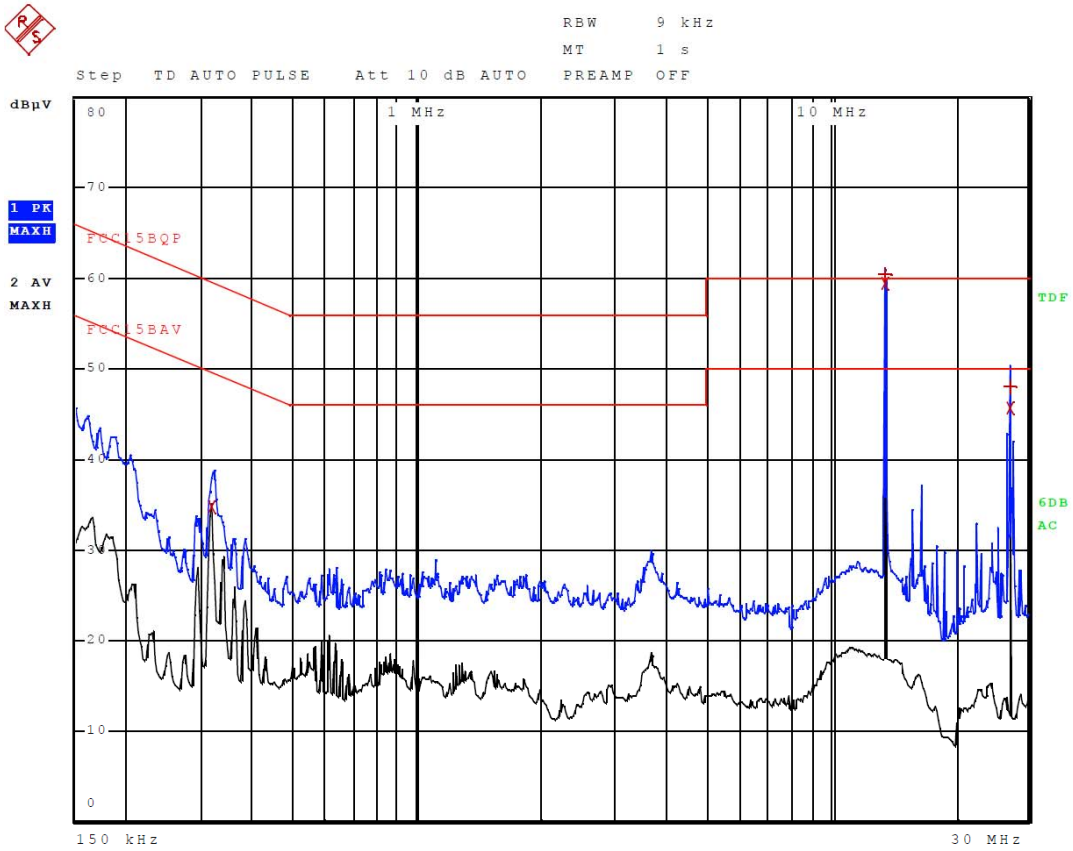
Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz, EXT PS; WAITING
Operator	ANDREJ SKOF

Test Spec
NEUTRAL

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ESH2-Z5

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	0 dB	INPUT2



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C20161862

12.Jan 17 15:49

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Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz, EXT PS; WAITING
Operator	ANDREJ SKOF

Test Spec
NEUTRAL

Final Measurement

Meas Time: 1 s
Margin: 15 dB
Peaks: 5

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	13.560000000 MHz	59.49	CISPR Averag	9.49
1	13.560000000 MHz	60.39	Quasi Peak	0.39
2	27.120750000 MHz	45.69	CISPR Averag	-4.31
1	27.120750000 MHz	47.99	Quasi Peak	-12.01
2	316.500000000 kHz	34.73	CISPR Averag	-15.07

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C20161862

12.Jan 17 15:52

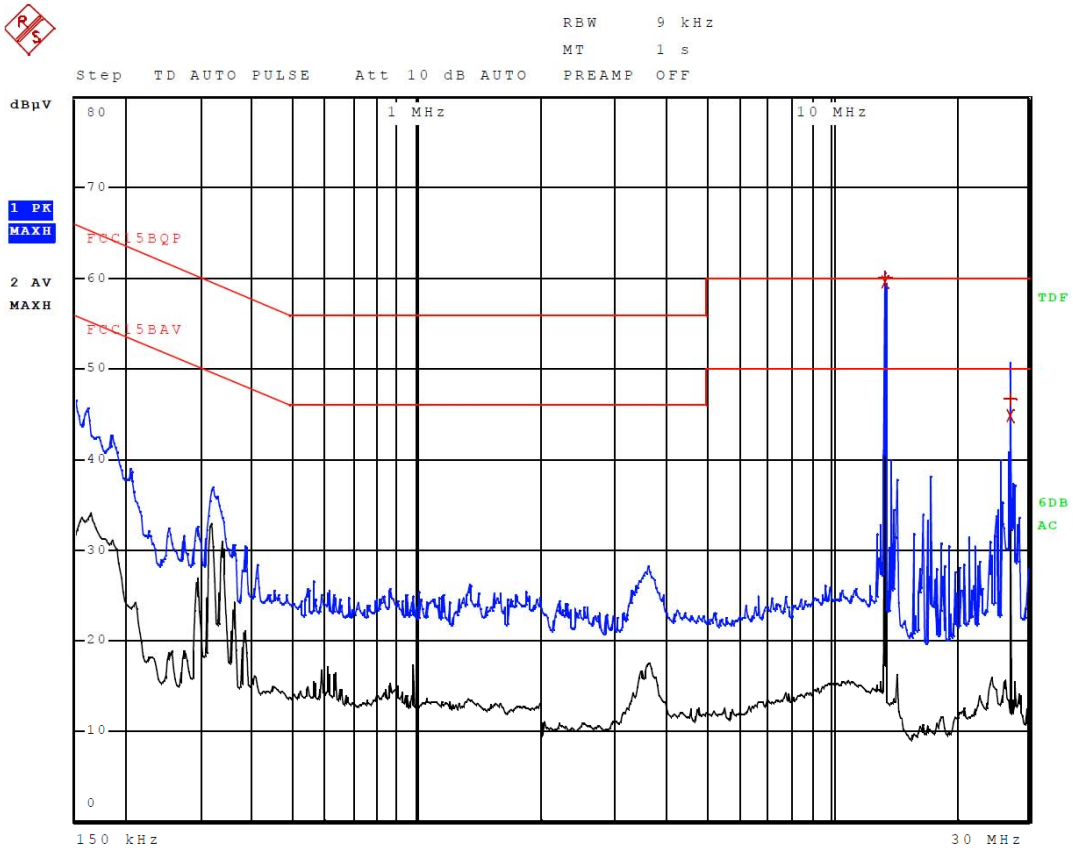
Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz, EXT PS; READING
Operator	ANDREJ SKOF

Test Spec
PHASE

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ESH2-Z5

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	0 dB	INPUT2



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C20161862

12.Jan 17 15:52

Meas Type CONDUCTED EMISSION
Equipment under Test CLEV6630B V2.0
Manufacturer NXP SEMICONDUCTORS GmbH
OP Condition Uin: 120 V, 60 Hz, EXT PS; READING
Operator ANDREJ SKOF
Test Spec
PHASE

Final Measurement

Meas Time: 1 s
Margin: 15 dB
Peaks: 4

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	13.560000000 MHz	59.61	CISPR Averag	9.61
1	13.560000000 MHz	60.12	Quasi Peak	0.12
2	27.120750000 MHz	44.78	CISPR Averag	-5.22
1	27.120750000 MHz	46.59	Quasi Peak	-13.41

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C20161862

12.Jan 17 15:53

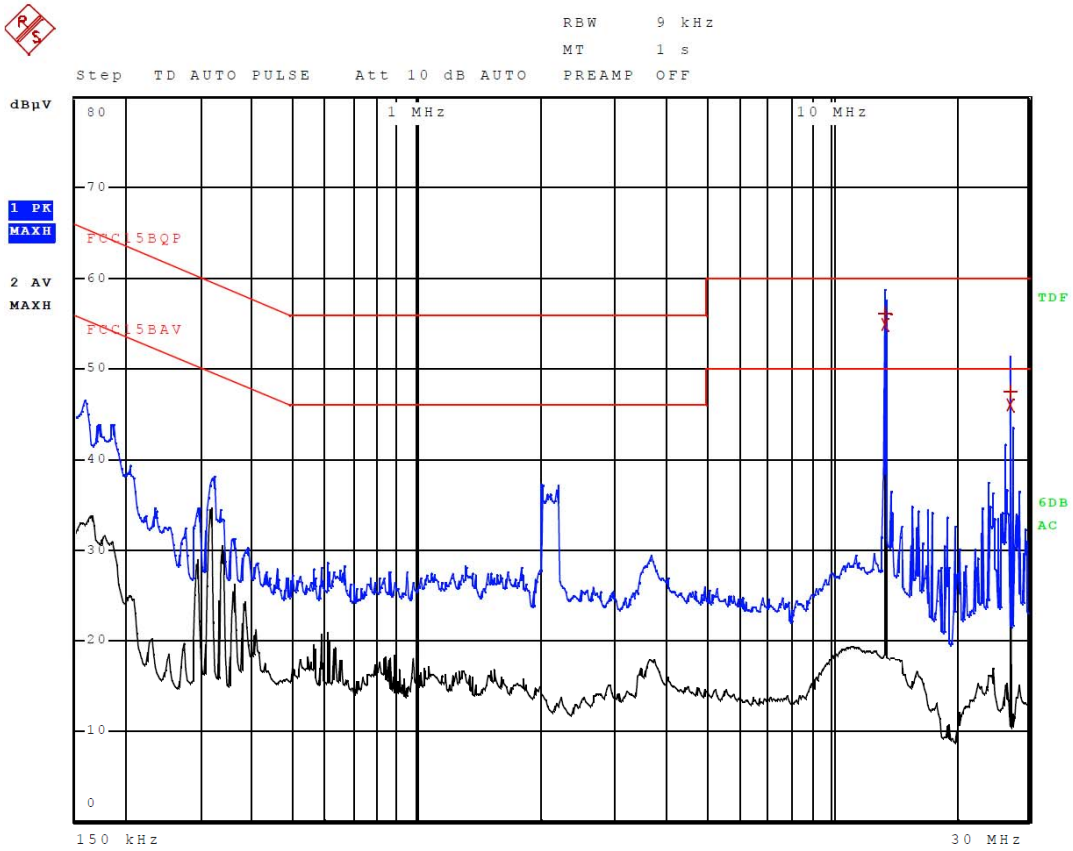
Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz, EXT PS; READING
Operator	ANDREJ SKOF

Test Spec
NEUTRAL

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ESH2-Z5

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	0 dB	INPUT2



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C20161862

12.Jan 17 15:53

Meas Type CONDUCTED EMISSION
Equipment under Test CLEV6630B V2.0
Manufacturer NXP SEMICONDUCTORS GmbH
OP Condition Uin: 120 V, 60 Hz, EXT PS; READING
Operator ANDREJ SKOF
Test Spec
NEUTRAL

Final Measurement

Meas Time: 1 s
Margin: 15 dB
Peaks: 4

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	13.560000000 MHz	54.89	CISPR Averag	4.89
1	13.560000000 MHz	56.12	Quasi Peak	-3.88
2	27.120750000 MHz	45.99	CISPR Averag	-4.01
1	27.120750000 MHz	47.54	Quasi Peak	-12.46

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C20161862

27.Jan 17 09:06

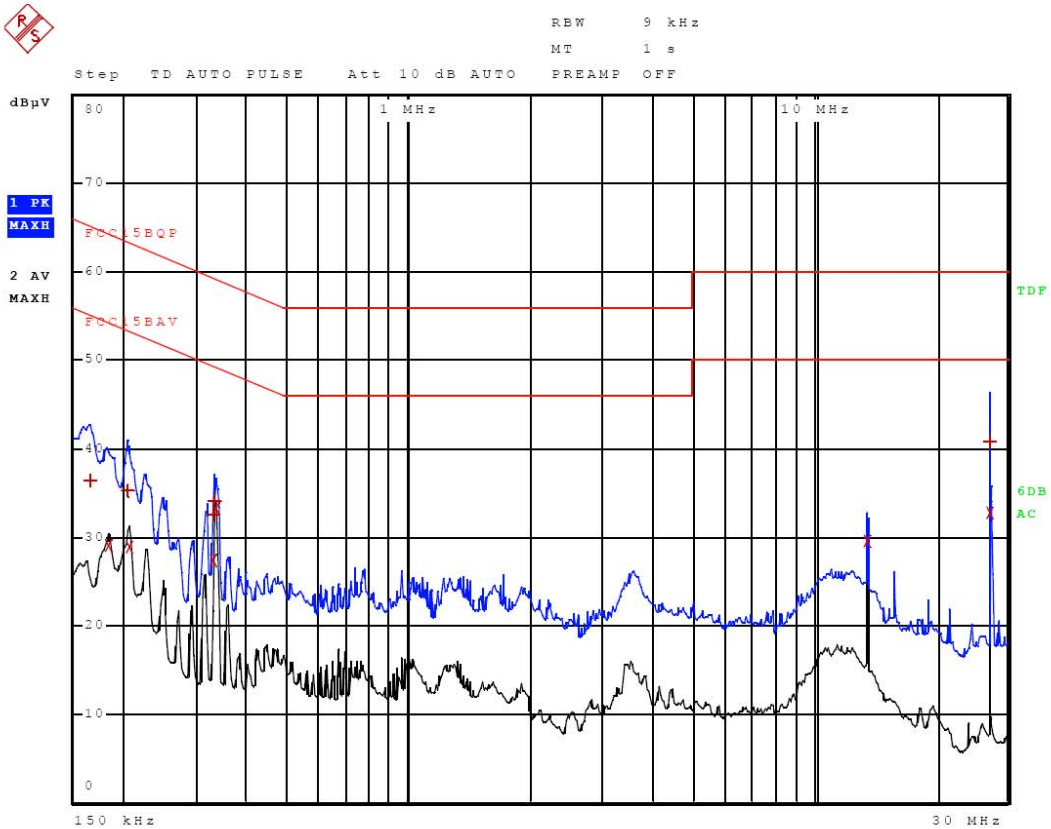
Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz; with Dummy load; EXT PS
Operator	Andrej Skof

Test Spec
PHASE

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ESH2-Z5

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	20 ms	Auto	0 dB	INPUT2



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C20161862

27.Jan 17 09:06

Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz; with Dummy load; EXT PS
Operator	Andrej Skof

Test Spec
PHASE

Final Measurement

Meas Time: 1 s
Margin: 25 dB
Subranges: 11

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	334.500000000 kHz	33.18	CISPR Averag	-16.16
2	27.120750000 MHz	32.61	CISPR Averag	-17.39
1	27.120750000 MHz	40.74	Quasi Peak	-19.26
2	13.560000000 MHz	29.43	CISPR Averag	-20.57
2	330.000000000 kHz	27.30	CISPR Averag	-22.15
2	204.000000000 kHz	28.84	CISPR Averag	-24.61
2	181.500000000 kHz	29.04	CISPR Averag	-25.38
1	332.250000000 kHz	33.98	Quasi Peak	-25.41
1	330.000000000 kHz	32.55	Quasi Peak	-26.90
1	201.750000000 kHz	35.25	Quasi Peak	-28.29
1	163.500000000 kHz	36.39	Quasi Peak	-28.90

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C20161862

27.Jan 17 09:02

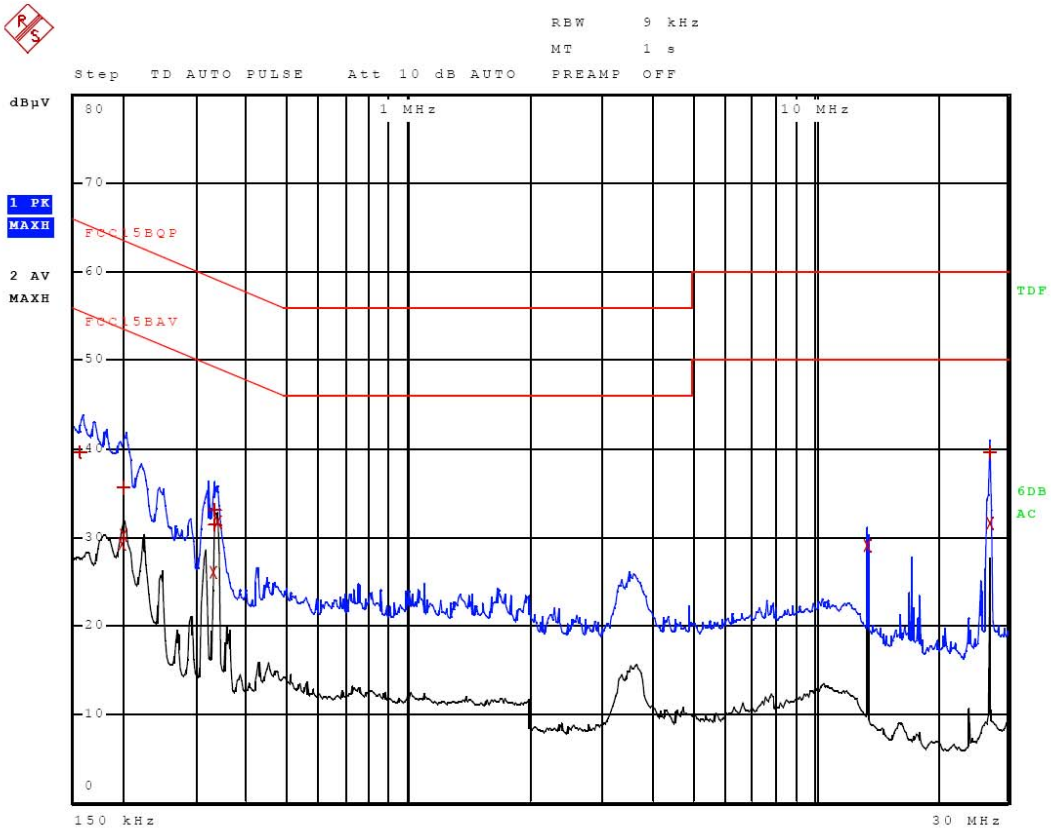
Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz; with Dummy load; EXT PS
Operator	Andrej Skof

Test Spec
NEUTRAL

Time Domain Scan (1 Range)

Scan Start: 150 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK Trace 2: Average
Transducer: ESH2-Z5

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	20 ms	Auto	0 dB	INPUT2



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C20161862

27.Jan 17 09:02

Meas Type	CONDUCTED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Uin: 120 V, 60 Hz; with Dummy load; EXT PS
Operator	Andrej Skof

Test Spec
NEUTRAL

Final Measurement

Meas Time:	1 s
Margin:	25 dB
Subranges:	11

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
2	336.750000000 kHz	31.65	CISPR Averag	-17.63
2	27.120750000 MHz	31.44	CISPR Averag	-18.56
1	27.120750000 MHz	39.54	Quasi Peak	-20.46
2	13.560000000 MHz	28.98	CISPR Averag	-21.02
2	330.000000000 kHz	26.05	CISPR Averag	-23.40
2	197.250000000 kHz	30.25	CISPR Averag	-23.48
2	195.000000000 kHz	29.17	CISPR Averag	-24.65
1	156.750000000 kHz	39.66	Quasi Peak	-25.98
1	332.250000000 kHz	33.06	Quasi Peak	-26.34
1	330.000000000 kHz	31.39	Quasi Peak	-28.06
1	199.500000000 kHz	35.54	Quasi Peak	-28.09

4.4 Radiated emission measurement (§15.209)

4.4.1 Requirement

Frequency Range (MHz)	Limits (dBµV/m)	Test distance (m)
0.009 to 0.490	20*log(2400/F(kHz))	300
0.490 to 1.705	20*log(24000/F(kHz))	30
1.705 to 30.0	30	30
30 to 88	40**	3
88 to 216	43.5**	3
216 to 960	46**	3
Above 960	54	3

** Except as provided in paragraph below, fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz.

Perimeter protection systems may operate in the 54-72 MHz and 76-88 MHz bands under the provisions of this section. The use of such perimeter protection systems is limited to industrial, business and commercial applications

4.4.2 Test procedure

Measurements from 9 kHz to 30 MHz

1. As per clause 6.4 from ANSI C63.10-2013
2. Radiated emission in the frequency range 9 kHz to 30 MHz are measured Active loop Antenna.
3. First preliminary measurements were performed in Semi-anechoic chamber at a distance of 3 m using active loop antenna.
4. The EUT was placed on the top of a rotating table 0.8 meters above the ground in an Anechoic Chamber. The table and antenna was rotated 360 degrees to determine the position of the highest radiation.
5. Final measurements were done at a distance of 10 m at Open Area Test Site due to low emissions measured during preliminary measurements acc. to the clauses from Part 15, Sections 15.31(d) and 15.31(f)(2). Test results were extrapolated by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Measurements from 30 MHz to 1 GHz

6. As per clause 6.5 from ANSI C63.10-2013
7. The EUT was placed on the top of a rotating table 0.8 meters above the ground in an Anechoic Chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
8. The EUT was set 3 m away from the interference-receiving antenna, which was mounted on the top of variable-height antenna tower.
9. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
10. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.
11. The test-receiver system was set to PEAK and QUAS-PEAK Detect Function and Specified Bandwidth with Maximum Hold Mode.
12. The highest points would be re-tested one by one using the quasi-peak method.

4.4.3 Test results

Device passed the requirements stated in FCC Part 15, Section 15.209
Preliminary measurements at 3 m:

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C20161862

06.Jan 17 08:02

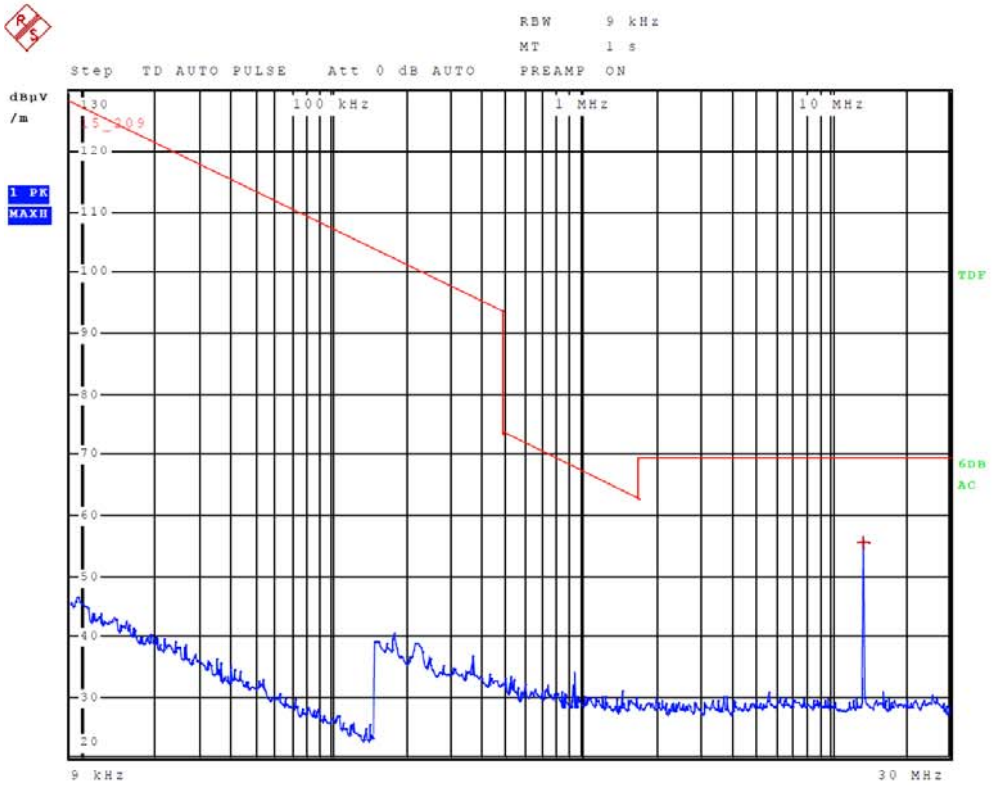
Meas Type	RADIATED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Waiting for a Card, USB PS
Operator	Andrej Skof
Test Spec	

Antenna: 0 deg, Sample: 0 deg

Time Domain Scan (2 Ranges)

Scan Start: 9 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK
Transducer: HFH2-Z2V

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
9.000000 kHz	149.950000 kHz	50.00 Hz	200.00 Hz	300 ms	Auto	20 dB	INPUT2
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	20 dB	INPUT2



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C20161862

06.Jan 17 08:02

Meas Type	RADIATED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Waiting for a Card, USB PS
Operator	Andrej Skof

Test Spec

Antenna: 0 deg, Sample: 0 deg

Final Measurement

Meas Time:	1 s
Margin:	15 dB
Peaks:	1

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	13.560000000 MHz	55.36	Quasi Peak	-14.14

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C20161862

06.Jan 17 08:03

Meas Type	RADIATED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Reading a Card, USB PS
Operator	Andrej Skof

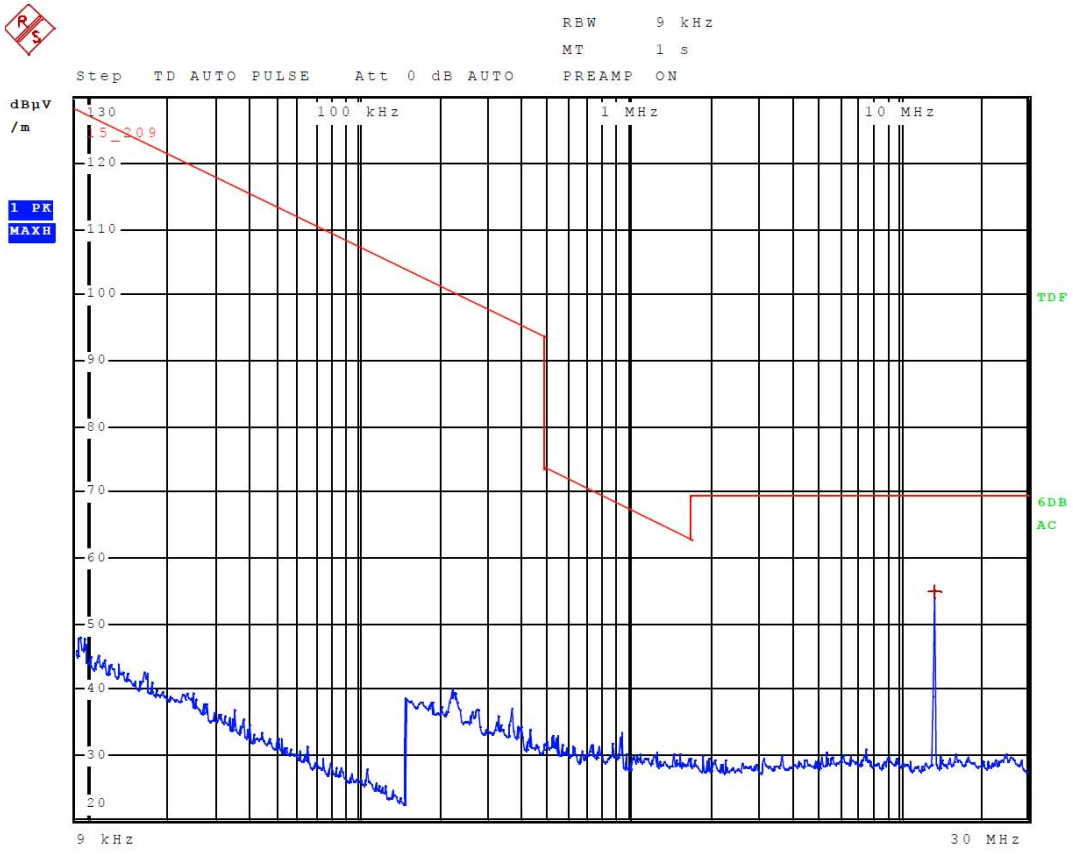
Test Spec

Antenna: 0 deg, Sample: 0 deg

Time Domain Scan (2 Ranges)

Scan Start: 9 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK
Transducer: HFH2-Z2V

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
9.000000 kHz	149.950000 kHz	50.00 Hz	200.00 Hz	300 ms	Auto	20 dB	INPUT2
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	20 dB	INPUT2



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C20161862

06.Jan 17 08:03

Meas Type	RADIATED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Reading a Card, USB PS
Operator	Andrej Skof

Test Spec

Antenna: 0 deg, Sample: 0 deg

Final Measurement

Meas Time:	1 s
Margin:	15 dB
Peaks:	1

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	13.560000000 MHz	54.73	Quasi Peak	-14.77

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C20161862

06.Jan 17 08:01

Meas Type	RADIATED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Waiting for a Card, USB PS
Operator	Andrej Skof

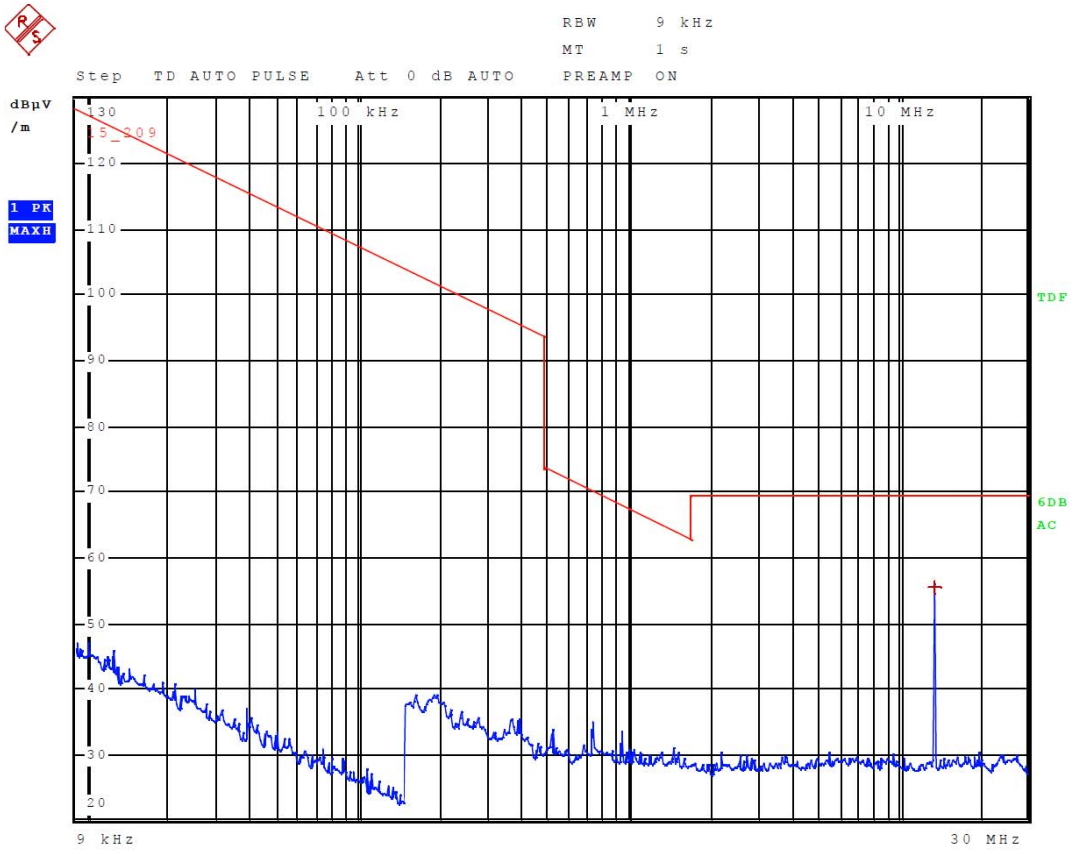
Test Spec

Antenna: 350 deg, Sample: 15 deg

Time Domain Scan (2 Ranges)

Scan Start: 9 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK
Transducer: HFH2-Z2V

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
9.000000 kHz	149.950000 kHz	50.00 Hz	200.00 Hz	300 ms	Auto	20 dB	INPUT2
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	20 dB	INPUT2



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C20161862

06.Jan 17 08:01

Meas Type	RADIATED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Waiting for a Card, USB PS
Operator	Andrej Skof

Test Spec
Antenna: 350 deg, Sample: 15 deg

Final Measurement

Meas Time:	1 s
Margin:	15 dB
Peaks:	1

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	13.560000000 MHz	55.56	Quasi Peak	-13.94

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C20161862

06.Jan 17 07:59

Meas Type	RADIATED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Reading a Card, USB PS
Operator	Andrej Skof

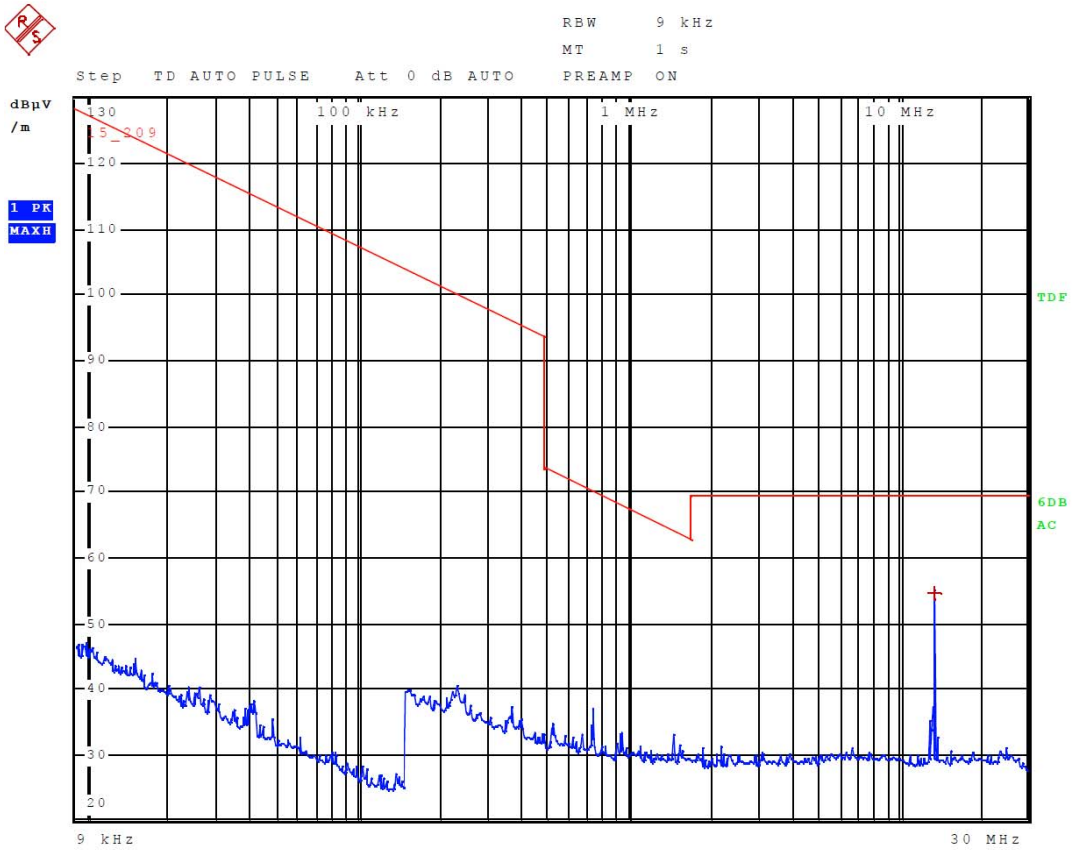
Test Spec

Antenna: 350 deg, Sample: 15 deg

Time Domain Scan (2 Ranges)

Scan Start: 9 kHz
Scan Stop: 30 MHz
Detector: Trace 1: MAX PEAK
Transducer: HFH2-Z2V

Start Frequency	Stop Frequency	Step Size	Res BW	Meas Time	RF Atten	Preamp	Input
9.000000 kHz	149.950000 kHz	50.00 Hz	200.00 Hz	300 ms	Auto	20 dB	INPUT2
150.000000 kHz	30.000000 MHz	2.25 kHz	9.00 kHz	30 ms	Auto	20 dB	INPUT2



ROHDE&SCHWARZ

C20161862

06.Jan 17 07:59

Meas Type	RADIATED EMISSION
Equipment under Test	CLEV6630B V2.0
Manufacturer	NXP SEMICONDUCTORS GmbH
OP Condition	Reading a Card, USB PS
Operator	Andrej Skof

Test Spec

Antenna: 350 deg, Sample: 15 deg

Final Measurement

Meas Time:	1 s
Margin:	15 dB
Peaks:	1

Trace	Frequency	Level (dBµV/m)	Detector	Delta Limit/dB
1	13.560000000 MHz	54.58	Quasi Peak	-14.92