

Test Report No.50135963 001

Appendix D: Radiated and Mains Spurious Emission Data

(File: 50135963AppendixD)

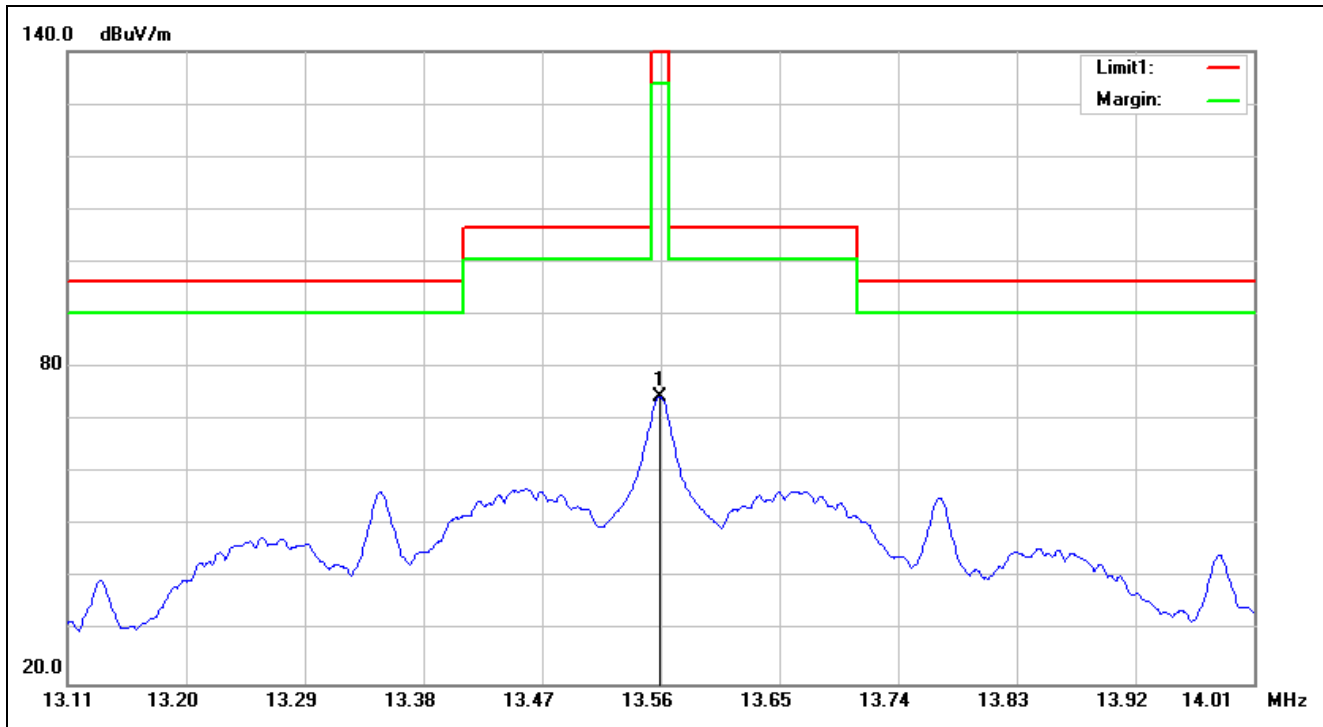
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Emissions, Fundamental



TUV Rheinland Taiwan Ltd.
 11F., No.758, Sec.4 Bade Road. Songshan Dist, Taipei City 105
 Tel:+886-2172-7000 fax:+886-2528-0018



Service No.:	114074050(MACE READER SMART)_FCC	Test Distance:	1.2m
Test Standard:	FCC 15.225_Fundamental_1.2m(dBuV/m)	Ant. Polarization:	
Test item:	Radiation Emission	Test Time:	2018/3/23 18:52:54
Applicant:	Nedap	Test Rating:	DC 24V
Product:	Reader for 13.56MHz NFC cards and BT	Temp.(°C)/Hum.(%):	20(°C)/50%
Model No.:	MACE READER SMART	Test Engineer:	Curry Chen
Test Mode:	13.56-TX+RX		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	13.5591	20.85	53.70	74.55	139.90	-65.35	QP	100	181	

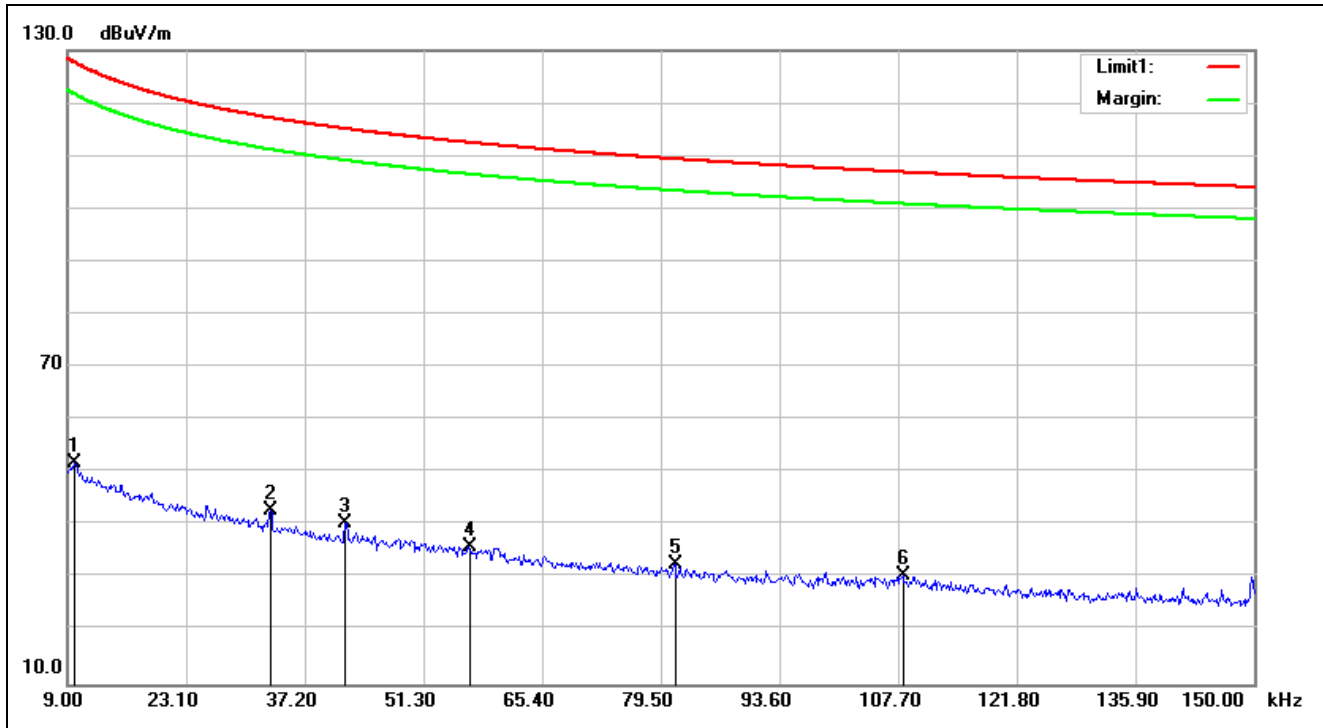
Spurious Emissions, TX Mode, 9-150 kHz



TUV Rheinland Taiwan Ltd.

11F., No.758, Sec.4 Bade Road. Songshan Dist, Taipei City 105

Tel:+886-2172-7000 fax:+886-2528-0018



Service No.:	114074050(MACE READER SMART)_FCC	Test Distance:	3m
Test Standard:	FCC 15.225_9k-30M_3m(dBuV/m)	Ant. Polarization:	
Test item:	Radiation Emission	Test Time:	2018/3/23 18:58:36
Applicant:	Nedap	Test Rating:	DC 24V
Product:	Reader for 13.56MHz NFC cards and BT	Temp.(°C)/Hum.(%):	20(°C)/50%
Model No.:	MACE READER SMART	Test Engineer:	Curry Chen
Test Mode:	13.56-TX+RX		
Remark:			

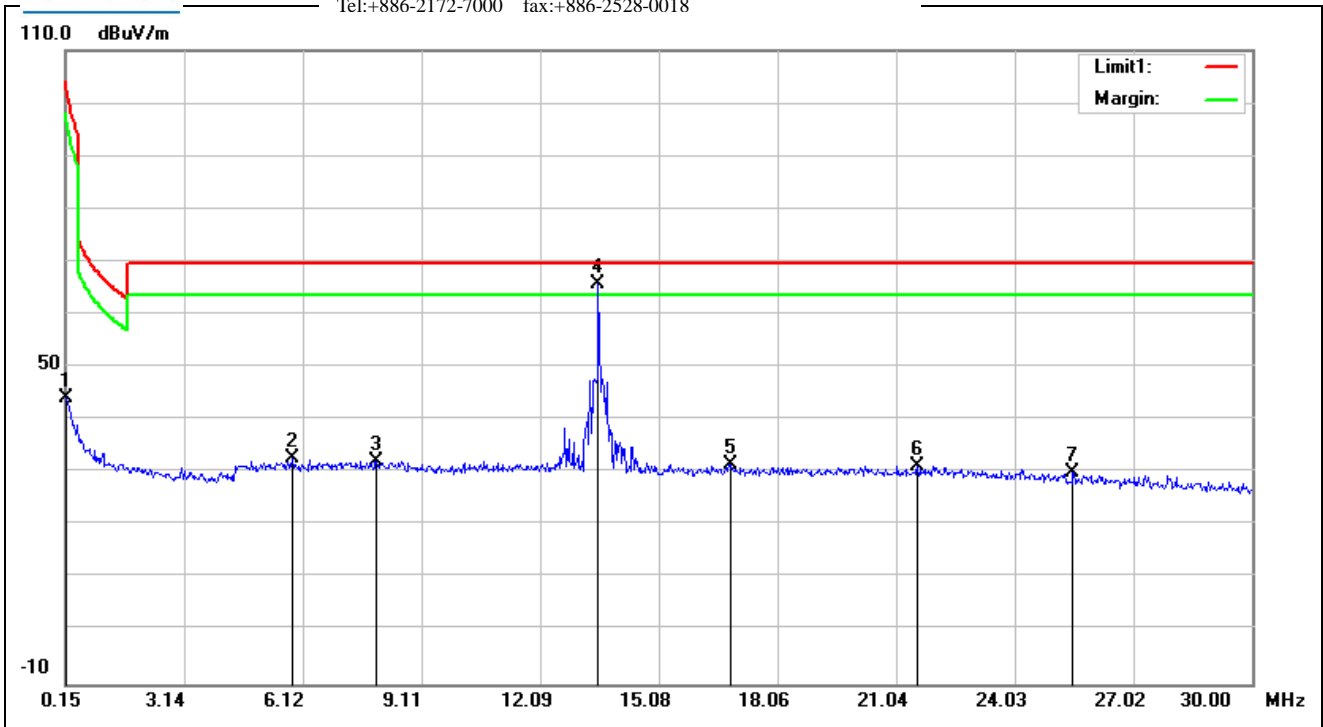
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	0.0098	19.85	31.86	51.71	127.78	-76.07	QP	100	279	
2	0.0331	20.02	22.93	42.95	117.21	-74.26	QP	100	249	
3	0.0420	19.71	20.83	40.54	115.14	-74.60	QP	100	279	
4	0.0567	19.39	16.49	35.88	112.53	-76.65	QP	100	41	
5	0.0811	19.24	13.29	32.53	109.42	-76.89	QP	100	251	
6	0.1083	19.12	11.48	30.60	106.91	-76.31	QP	100	261	

Spurious Emissions, TX Mode 150 kHz -30MHz

Spurious Emissions, TX Mode, 150 kHz -30MHz



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 11F., No.758, Sec.4 Bade Road. Songshan Dist, Taipei City 105
 Tel:+886-2172-7000 fax:+886-2528-0018



Service No.:	114074050(MACE READER SMART)_FCC	Test Distance:	3m
Test Standard:	FCC 15.225_9k-30M_3m(dBuV/m)	Ant. Polarization:	
Test item:	Radiation Emission	Test Time:	2018/3/23 19:00:05
Applicant:	Nedap	Test Rating:	DC 24V
Product:	Reader for 13.56MHz NFC cards and BT	Temp.(°C)/Hum.(%):	20(°C)/50%
Model No.:	MACE READER SMART	Test Engineer:	Curry Chen
Test Mode:	13.56-TX+RX		
Remark:			

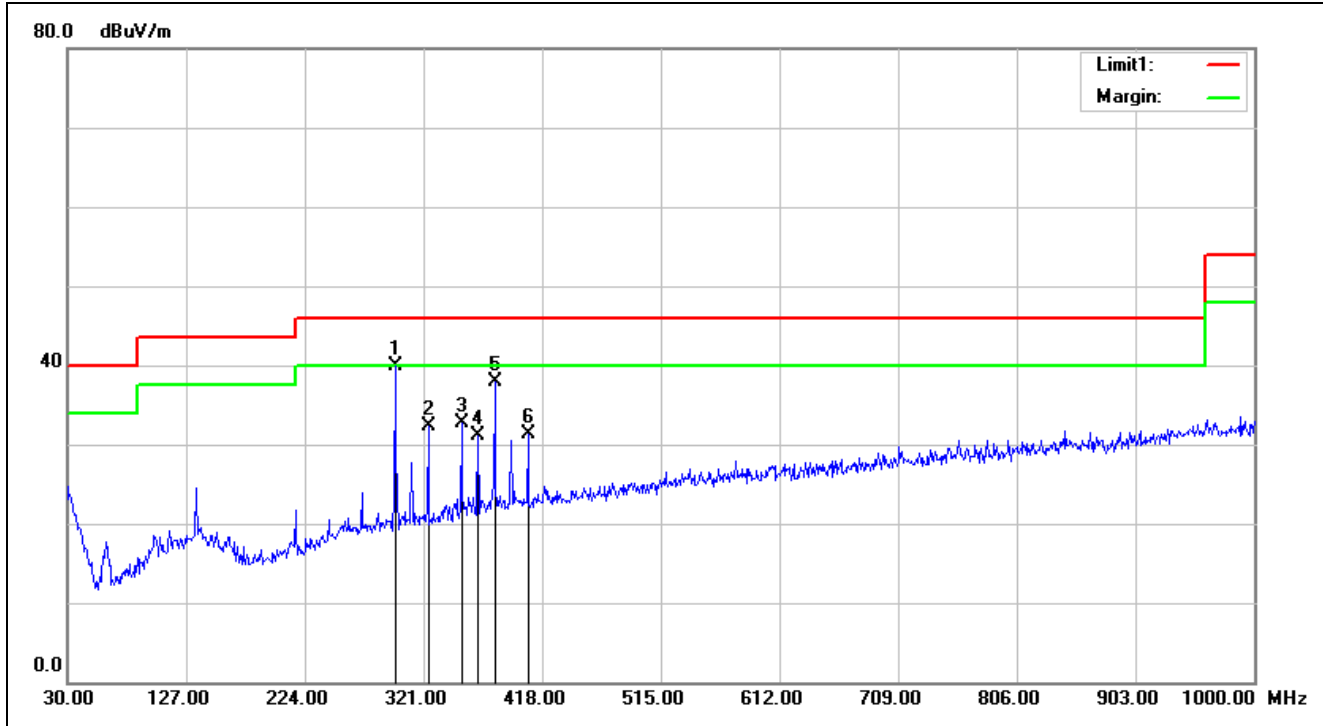
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	0.1799	19.06	25.23	44.29	102.50	-58.21	QP	100	334	
2	5.8514	19.84	12.92	32.76	69.54	-36.78	QP	100	45	
3	7.9707	20.04	12.16	32.20	69.54	-37.34	QP	100	168	
4	13.5600	20.85	44.84	65.69	69.54	-3.85	QP	100	0	Fundamental
5	16.8660	21.43	10.20	31.63	69.54	-37.91	QP	100	12	
6	21.5823	22.09	9.20	31.29	69.54	-38.25	QP	100	340	
7	25.4927	22.35	7.70	30.05	69.54	-39.49	QP	100	147	

Spurious Emissions, TX Mode 150 kHz -30MHz

Spurious Emissions, TX Mode, 30MHz-1GHz



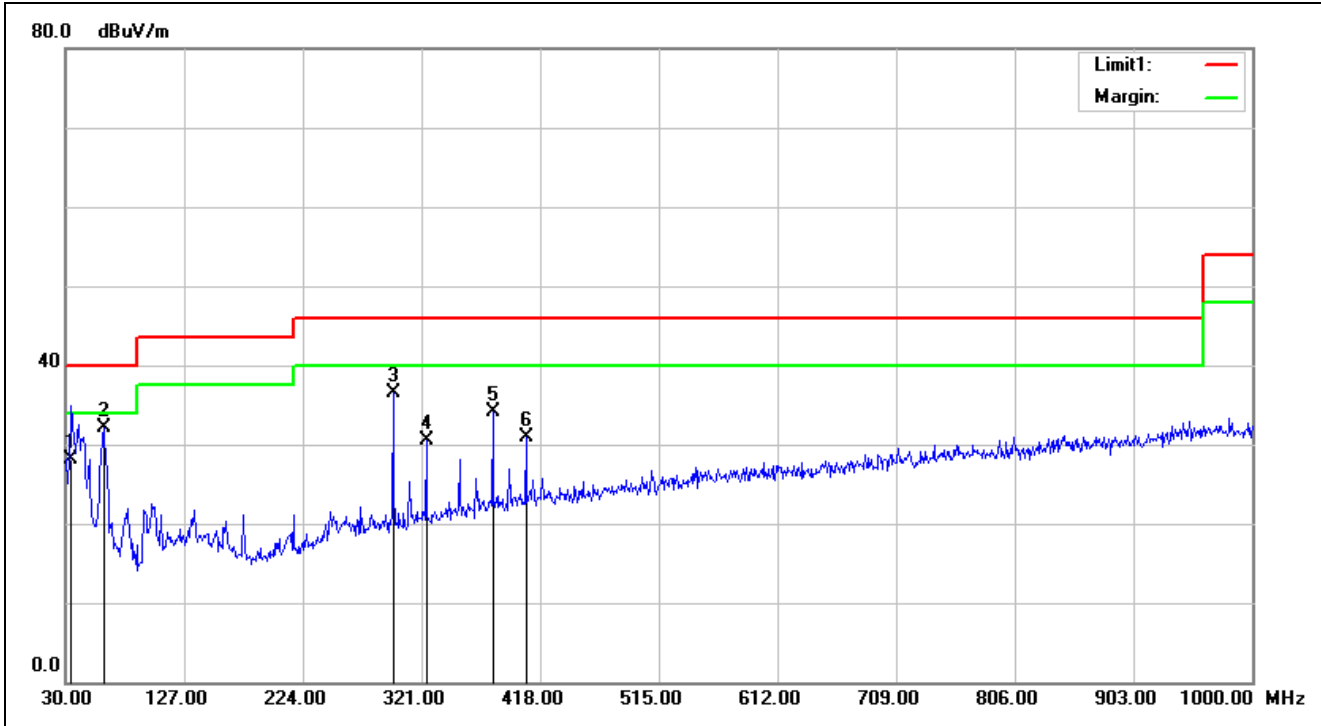
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 11F., No.758, Sec.4 Bade Road. Songshan Dist, Taipei City 105
 Tel:+886-2172-7000 fax:+886-2528-0018



Service No.:	114074050(MACE READER SMART)_FCC	Test Distance:	3m
Test Standard:	FCC Class B 3M Radiation	Ant. Polarization:	Horizontal
Test item:	Radiation Emission	Test Time:	2018/3/26 18:54:56
Applicant:	Nedap	Test Rating:	DC 24V
Product:	Reader for 13.56MHz NFC cards and BT	Temp.(°C)/Hum.(%):	21(°C)/60%
Model No.:	MACE READER SMART	Test Engineer:	Curry Chen
Test Mode:	13.56-TX+RX		
Remark:			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	297.7200	-4.62	44.53	39.91	46.00	-6.09	QP	100	139	
2	324.8800	-3.95	36.35	32.40	46.00	-13.60	QP	100	132	
3	352.0400	-3.31	36.03	32.72	46.00	-13.28	QP	100	144	
4	365.6200	-3.06	34.19	31.13	46.00	-14.87	QP	100	132	
5	379.2000	-2.81	40.77	37.96	46.00	-8.04	QP	100	132	
6	406.3600	-2.37	33.69	31.32	46.00	-14.68	QP	100	139	

Spurious Emissions, Mains, 150kHz - 30MHz



Service No.:	114074050(MACE READER SMART)_FCC	Test Distance:	3m
Test Standard:	FCC Class B 3M Radiation	Ant. Polarization:	Vertical
Test item:	Radiation Emission	Test Time:	2018/3/26 18:55:53
Applicant:	Nedap	Test Rating:	DC 24V
Product:	Reader for 13.56MHz NFC cards and BT	Temp.(°C)/Hum.(%):	21(°C)/60%
Model No.:	MACE READER SMART	Test Engineer:	Curry Chen
Test Mode:	13.56-TX+RX		
Remark:			

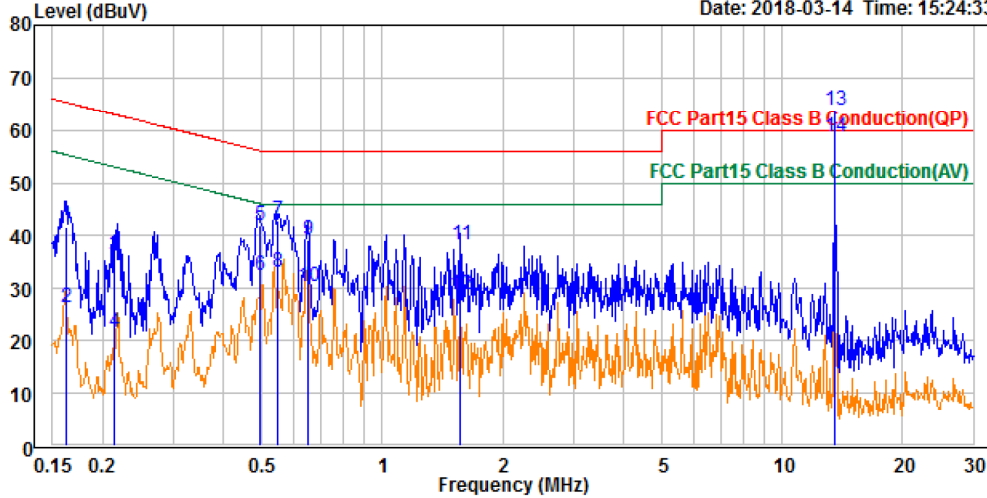
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (°)	Remark
1	34.8500	-3.01	31.21	28.20	40.00	-11.80	QP	100	357	
2	61.0400	-13.72	45.73	32.01	40.00	-7.99	QP	100	117	
3	297.7200	-4.62	41.22	36.60	46.00	-9.40	QP	100	219	
4	324.8800	-3.95	34.54	30.59	46.00	-15.41	QP	100	207	
5	379.2000	-2.81	36.87	34.06	46.00	-11.94	QP	100	69	
6	406.3600	-2.37	33.19	30.82	46.00	-15.18	QP	100	204	

Spurious Emissions, Mains, 150kHz - 30MHz

Mains Spurious Emissions

File: C:\EMC\Report\2018\Nedap\114074050(XXX)\1_00001.EMI

Date: 2018-03-14 Time: 15:24:33



Trace: 1
 Site : Conduction room
 Condition : FCC Part15 Class B Conduction(QP) line1
 Test Engineer: George Yang
 Applicant : Nedap
 Product : Mace reader smart
 Model No. : Mace reader smart
 Test Rating : 24Vdc
 Tmp/Hum : 21.3 °C / 44 %
 Memo : RFID + BT link

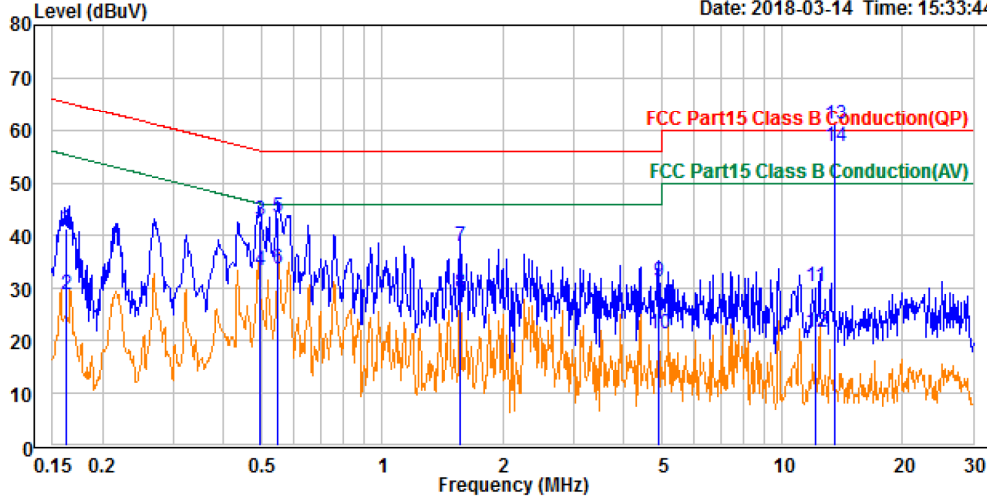
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.162	32.01	9.65	41.66	65.38	-23.72	QP
2	0.162	16.87	9.65	26.52	55.38	-28.86	Average
3	0.214	26.40	9.65	36.05	63.05	-27.00	QP
4	0.214	11.80	9.65	21.45	53.05	-31.60	Average
5	0.493	32.21	9.66	41.87	56.11	-14.24	QP
6	0.493	23.01	9.66	32.67	46.11	-13.44	Average
7	0.547	33.26	9.66	42.92	56.00	-13.08	QP
8	0.547	23.49	9.66	33.15	46.00	-12.85	Average
9	0.652	29.56	9.66	39.22	56.00	-16.78	QP
10	0.652	20.82	9.66	30.48	46.00	-15.52	Average
11	1.569	28.54	9.68	38.22	56.00	-17.78	QP
12	1.569	19.30	9.68	28.98	46.00	-17.02	Average
13 *	13.559	54.01	9.81	63.82	60.00	3.82	QP
14 *	13.559	48.99	9.81	58.80	50.00	8.80	Average

Note: The frequency 13.56MHz is coming from RFID function, so it's not requested by this standard.
 (Requested by EN 300 330)

Spurious Emissions, Mains, 150kHz - 30MHz

File: C:\EMC\Report\2018\Nedap\114074050(XXX)\1_00003.EMI

Date: 2018-03-14 Time: 15:33:44



Trace: 1
 Site : Conduction room
 Condition : FCC Part15 Class B Conduction(QP) neutral
 Test Engineer: George Yang
 Applicant : Nedap
 Product : Mace reader smart
 Model No. : Mace reader smart
 Test Rating : 24Vdc
 Tmp/Hum : 21.3 °C / 44 %
 Memo : RFID + BT link

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.163	31.74	9.66	41.40	65.32	-23.92	QP
2	0.163	19.11	9.66	28.77	55.32	-26.55	Average
3	0.495	33.10	9.66	42.76	56.08	-13.32	QP
4	0.495	23.73	9.66	33.39	46.08	-12.69	Average
5	0.547	33.93	9.66	43.59	56.00	-12.41	QP
6	0.547	24.11	9.66	33.77	46.00	-12.23	Average
7	1.570	28.27	9.69	37.96	56.00	-18.04	QP
8	1.570	19.40	9.69	29.09	46.00	-16.91	Average
9	4.927	21.57	9.74	31.31	56.00	-24.69	QP
10	4.927	11.44	9.74	21.18	46.00	-24.82	Average
11	12.072	20.66	9.83	30.49	60.00	-29.51	QP
12	12.072	11.62	9.83	21.45	50.00	-28.55	Average
13 *	13.560	51.40	9.84	61.24	60.00	1.24	QP
14 *	13.560	46.99	9.84	56.83	50.00	6.83	Average

Note: The frequency 13.56MHz is coming from RFID function, so it's not requested by this standard.
 (Requested by EN 300 330)

Spurious Emissions, Mains, 150kHz - 30MHz