

# EMI 測定結果報告

2017.06.29

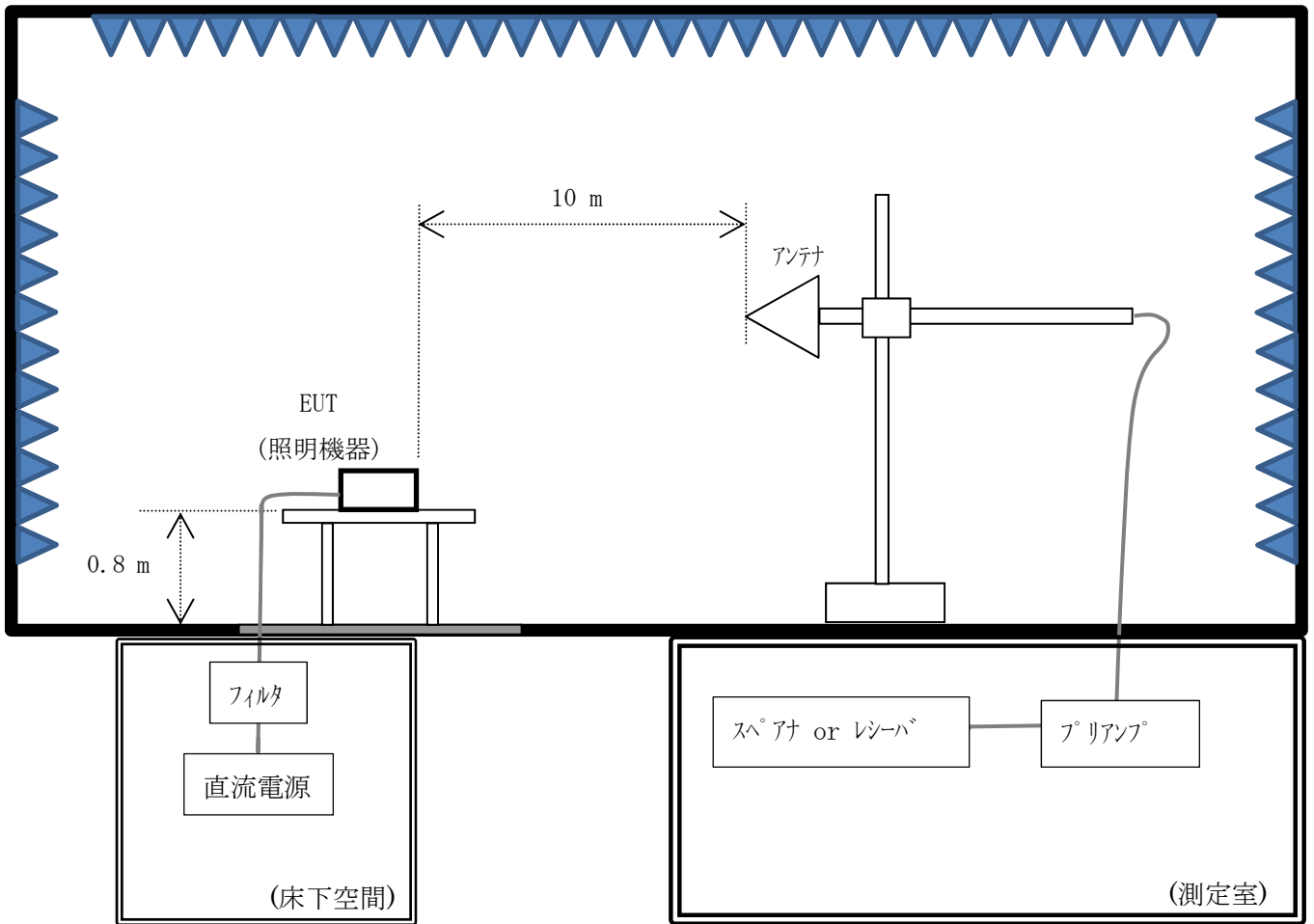
トーキン EMC エンジニアリング 中村

1. 測定日：2017年6月22日
2. 測定場所：トーキン EMC エンジニアリング 川崎計測センター
3. 測定品（モデル名）：
  - 3-1 ダウンライト（ESMD-12-LA）
  - 3-2 ライトバー（ESML-24-LA）
4. 測定項目：以下の通り。4 ページ以降のデータ参照
  - 4-1 RE:0.1485MHz to 30MHz
  - 4-2 RE:30MHz to 1000MHz
  - 4-3 CE:0.15MHz to 30MHz
5. 測定系統図：2 ページ参照
6. 測定機器リスト：3 ページ参照
7. 測定結果：4 ページ以降のデータ参照。ワーストマージンは以下の通り。
  - 7-1 ダウンライト、RE:0.1485MHz to 30MHz : 4.1dB
  - 7-2 ダウンライト、RE:30MHz to 1000MHz : 3.3dB
  - 7-3 ダウンライト、CE:0.15MHz to 30MHz : 34.3dB
  - 7-4 ライトバー、RE:0.1485MHz to 30MHz : 5.0dB
  - 7-5 ライトバー、RE:30MHz to 1000MHz : 10.9dB
  - 7-6 ライトバー、CE:0.15MHz to 30MHz : 40.2dB

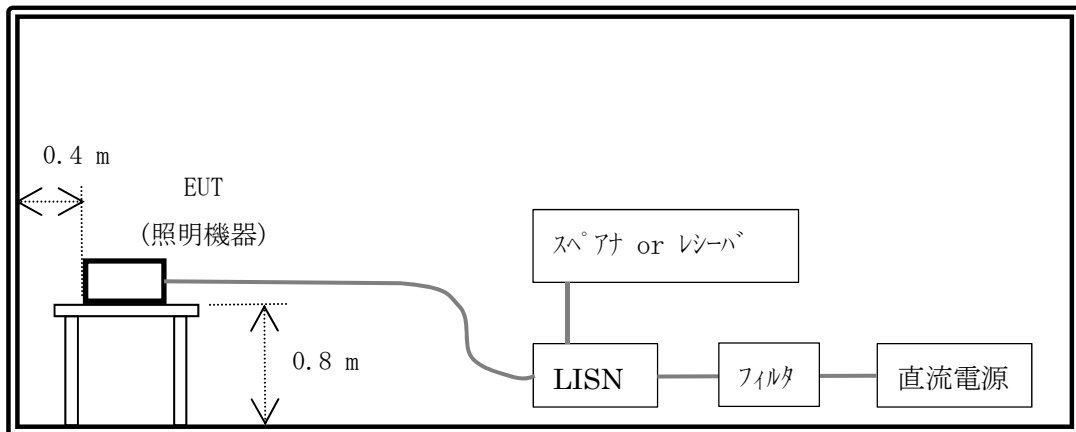
以上

# 測定系統図

## RE 測定：大型暗室



## CE 測定：シールドルーム (兼測定室)



## 測定機器リスト

機器名称..... ( モデル/シリアル No./メーカー/(弊社)管理番号/校正日/有効期限 )

### < RE:30MHz to 1000MHz >

Field Strength Meter ..... ( ESU26/100146/ROHDE & SCHWARZ/RE066/26 Aug.'16/Aug.'17 )  
Spectrum Analyzer..... ( ESU26/100146/ROHDE & SCHWARZ/RE066/26 Aug.'16/Aug.'17 )  
Bi-Log Antenna ..... ( VULB9168/VULB9168-372/Schwarzbeck/TB062/7 Oct. '16/Oct.'17 )  
Attenuator ..... ( 6804-N-50-1/0005/ HUBER+SUHNER/ ME710/7 Oct. '16/Oct.'17 )  
Pre-Amplifier ..... ( 310N/362627/SONOMA/AM063/30 Sep.'16/Sep.'17 )  
Site Establishment Cable..... ( 5D-2W/---/Tokin/DKT15/10 Dec.'16/Dec.'17 )  
Semi Anechoic Chamber..... ( Kawasaki AC/---/Tokin/SA014/11 Dec.'16/Dec.'16 )

### < RE:0.1485MHz to 30MHz >

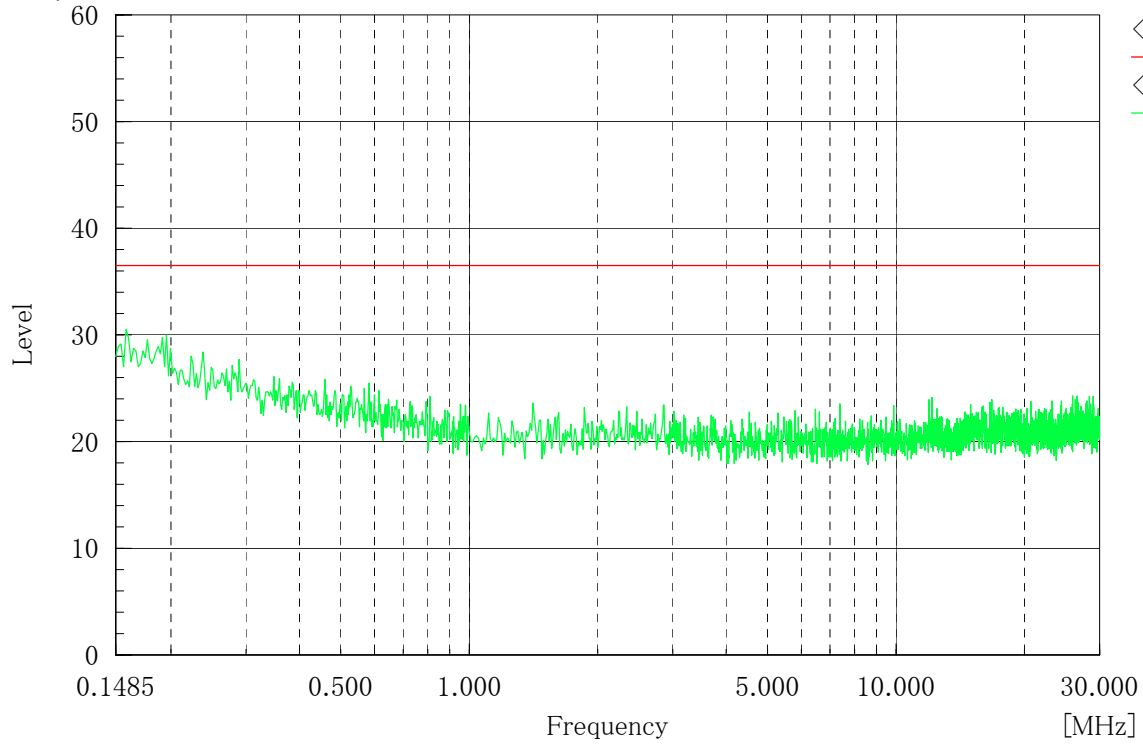
Field Strength Meter ..... ( ESU26/100146/ROHDE & SCHWARZ/RE066/26 Aug.'16/Aug.'17 )  
Spectrum Analyzer..... ( ESU26/100146/ROHDE & SCHWARZ/RE066/26 Aug.'16/Aug.'17 )  
Loop Antenna..... ( HFH2-Z2/100184/Rohde&Schwarz/AN051/16 Dec.'16/Dec.'17 )  
Site Establishment Cable .... ( 5D-2W/---/Tokin/DKT15/10 Dec.'16/Dec.'17 )  
Semi Anechoic Chamber..... ( Kawasaki AC/---/Tokin/SA014/11 Dec.'16/Dec.'16 )

### < CE:0.15MHz to 30MHz >

Field Strength Meter ..... ( ESU26/100146/ROHDE & SCHWARZ/RE066/26 Aug.'16/Aug.'17 )  
Spectrum Analyzer..... ( ESU26/100146/ROHDE & SCHWARZ/RE066/26 Aug.'16/Aug.'17 )  
LISN..... ( KNW-408/8-612-5/Kyoritsu/LI032/3 Oct. '16/Oct.'17 )  
Attenuator ..... ( CFAS01ABPJ-10/None/TAMAGAWA/ME630/3 Oct. '16/Oct.'17 )  
Coaxial Cable..... ( 3D-2W/None/Tokin/DK291/10 Dec.'16/Dec.'17 )  
Highpass filter ..... ( KFL-007D/8-2283-6/Kyoritsu/ME658/16 Sep.'16/Sep.'17 )  
Shielded Room ..... ( Kawasaki No.1-S/---/Tokin/SA020/---/--- )

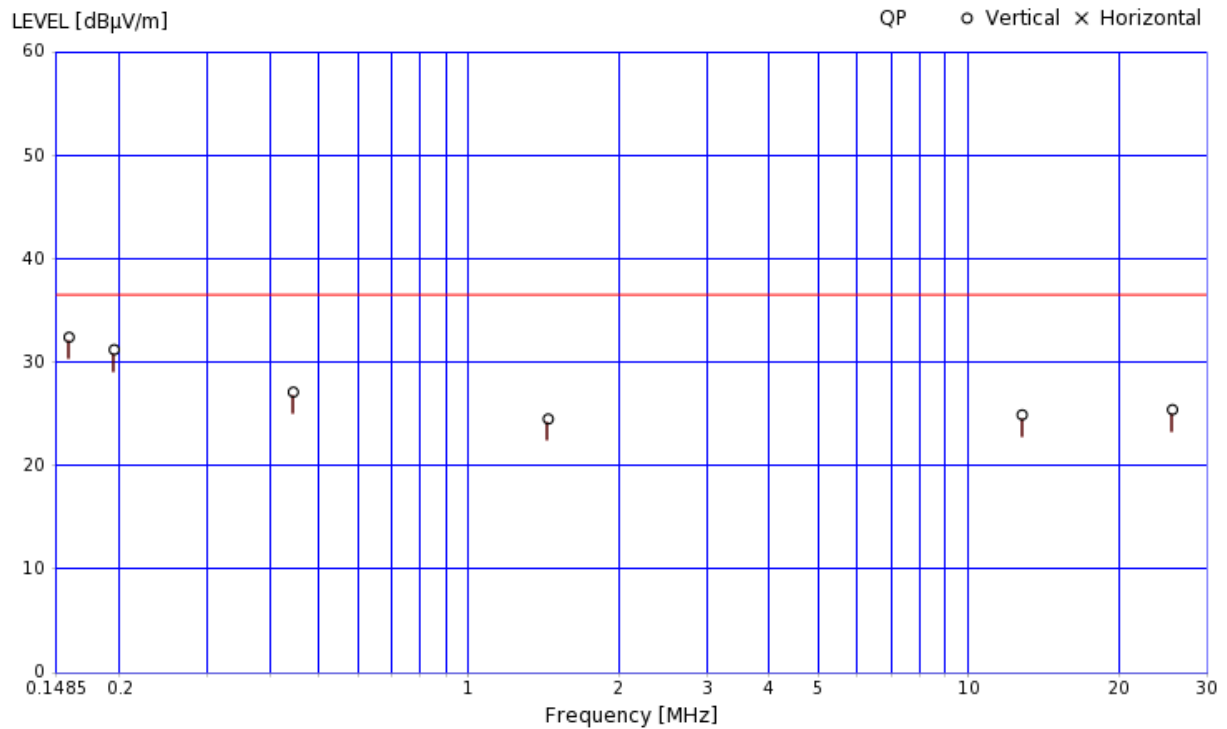
Model No. : ESMD-12-LA (8個)  
Serial No. : None  
Operator : T.Nakamura  
Power su : AC100V 50Hz (直流電源供給)  
Temp.Hum : 24°C 57% 1005hPa

限度値 : ETSI EN300 330-1  
Mode : 全点灯

[dB( $\mu$  V/m)]

Report Title:	Radiated Emission		
E.U.T:	ダウンライト	Report No.:	K17618 loop001
Model Name:	ESMD-12-LA	Meas. Date:	June 22, 2017
	(8個)	Meas. Detector:	QP
Serial No.:	None	Test Distance:	10 m
Regulation/Class:	EN300 330	Operation Mode:	全点灯
Test Location:	Kawasaki Big Chamber		
Test Condition:	AC100V, 50Hz (直流電源供給)	Engineer:	Takanori Nakamura
Power Supply:	AC100 V	50 Hz	A
Temperature:	24 °C	Humidity:	57 %

Frequency (MHz)	Level (dBμV)	Cable Loss (dB)	Amp. Gain (dB)	Ant. Factor (dB/m)	Result (dBμV/m)	10m Limit (dBμV/m)	Margin (dB)
0.1584	12.6	0.1	0.0	19.7	32.4	36.5	4.1
0.1951	11.4	0.1	0.0	19.7	31.2	36.5	5.3
0.4455	7.2	0.1	0.0	19.8	27.1	36.5	9.4
1.4435	4.3	0.2	0.0	20.0	24.5	36.5	12.0
12.8334	3.7	0.6	0.0	20.6	24.9	36.5	11.6
25.6650	3.0	0.8	0.0	21.6	25.4	36.5	11.1



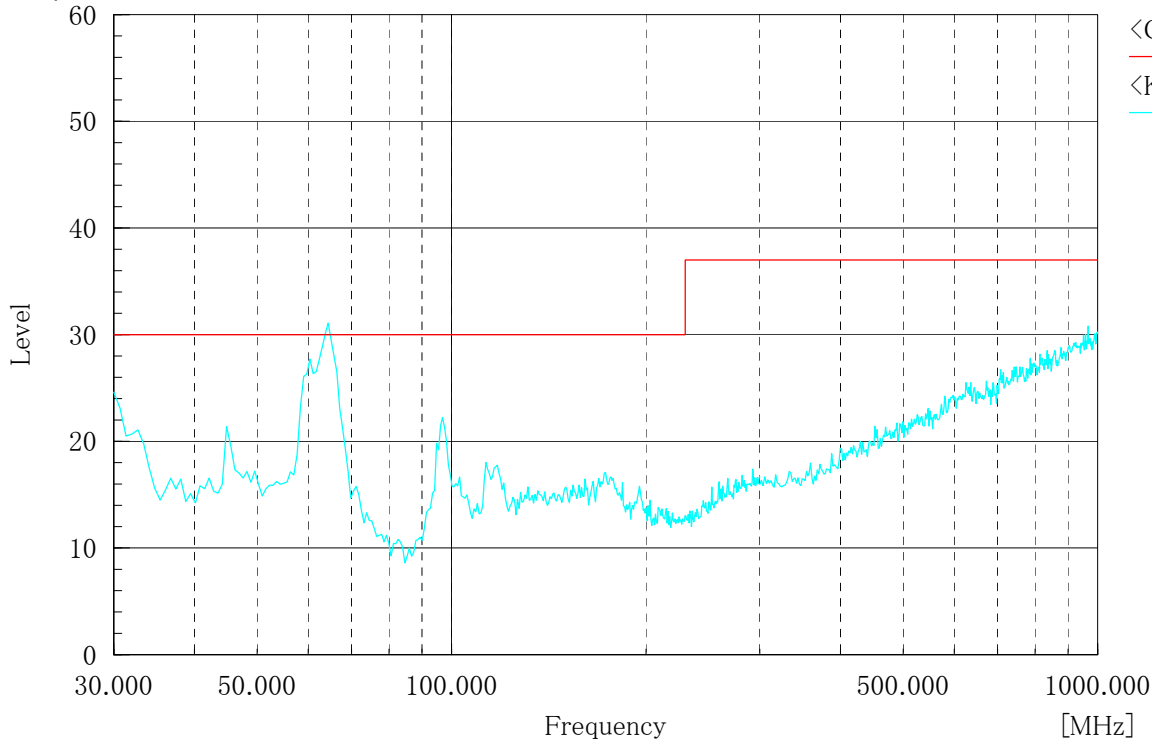
Model No. : ESMD-12-LA (8個)  
Serial No. : None  
Operator : T.Nakamura  
Power su : AC100V, 50Hz (直流電源供給)  
Temp.Hum : 24°C 57% 1005hPa

限度値 : CISPR11 Group1 Class B 10m  
Mode : 全点灯

[dB( $\mu$  V/m)]

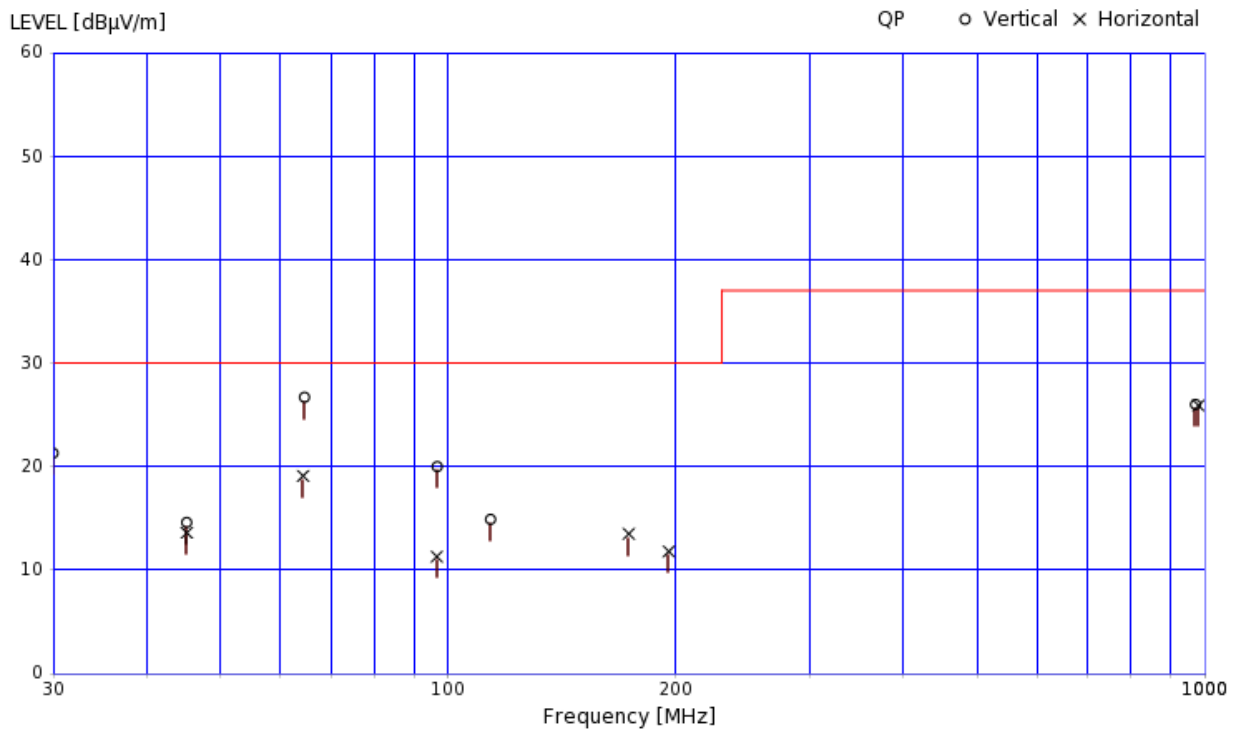
Model No. : ESMD-12-LA (8個)  
Serial No. : None  
Operator : T.Nakamura  
Power su : AC100V, 50Hz (直流電源供給)  
Temp.Hum : 24°C 57% 1005hPa

限度値 : CISPR11 Group1 Class B 10m  
Mode : 全点灯

[dB( $\mu$  V/m)]

Report Title: Radiated Emission  
 E.U.T: ダウンライト  
 Model Name: ESMD-12-LA (8個)  
 Serial No.: None  
 Regulation/Class: CISPR 11 G1 Class B  
 Test Location: Kawasaki Big Chamber  
 Test Condition: AC100V, 50Hz (直流電源供給)  
 Report No.: K17618 REMHz004  
 Meas. Date: June 22, 2017  
 Meas. Detector: QP  
 Test Distance: 10 m  
 Operation Mode: 全点灯  
 Engineer: Takanori Nakamura  
 Power Supply: AC100 V 50 Hz A  
 Temperature: 24 °C Humidity: 57 %

Frequency (MHz)	Level		Cable Loss (dB)	Amp. Gain (dB)	Ant. Factor (dB/m)	Result		10m Limit (dBμV/m)	Margin	
	Ver. (dBμV)	Hor.				Ver. (dBμV/m)	Hor.		Ver. (dB)	Hor.
30.00	36.1		0.9	-32.3	16.6	21.3		30.0	8.7	
45.07	28.0		1.1	-32.3	17.8	14.6		30.0	15.4	
45.09		27.0	1.1	-32.3	17.8		13.6	30.0		16.4
64.26		33.6	1.3	-32.3	16.5		19.1	30.0		10.9
64.53	41.2		1.3	-32.3	16.5	26.7		30.0	3.3	
96.56		29.3	1.6	-32.3	12.7		11.3	30.0		18.7
96.68	38.0		1.6	-32.3	12.7	20.0		30.0	10.0	
113.73	30.8		1.8	-32.3	14.6	14.9		30.0	15.1	
173.27		27.1	2.3	-32.2	16.3		13.5	30.0		16.5
195.75		27.3	2.4	-32.2	14.3		11.8	30.0		18.2
973.64	23.1		6.0	-31.1	28.0	26.0		37.0	11.0	
982.49		22.9	6.0	-31.0	28.0		25.9	37.0		11.1

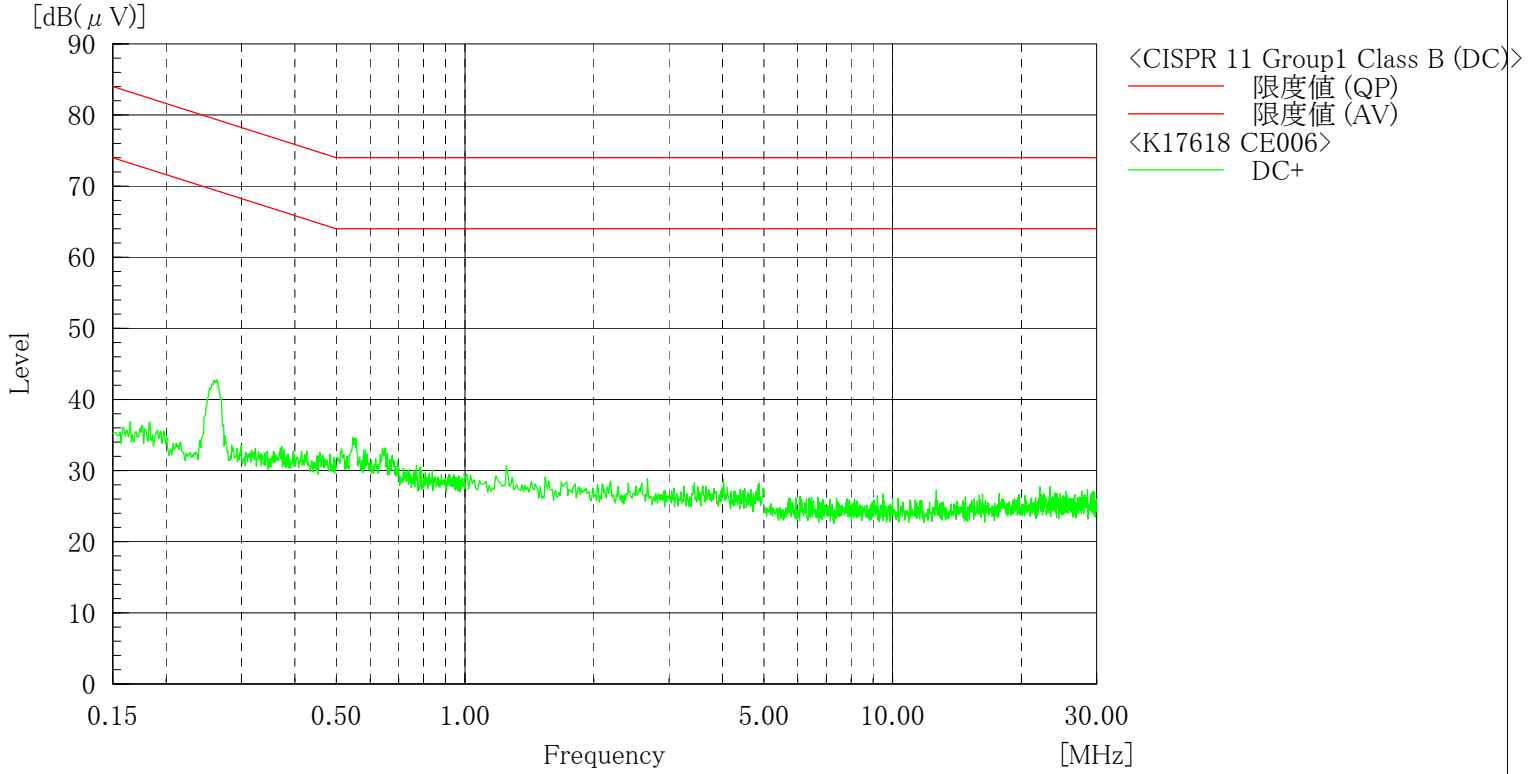


<<Conducted Emission>>

22 June,2017 14:51  
K17618 CE006.dat

Model No. : ESMD-12-LA (8個)  
Serial No. : None  
Operator : T.Nakamura  
Power Supply : AC100V, 50Hz (直流電源供給)  
Hum / Temp : 24°C 57% 1005hPa

限度値 : CISPR 11 Group1 Class B (DC)  
Mode : 全点灯  
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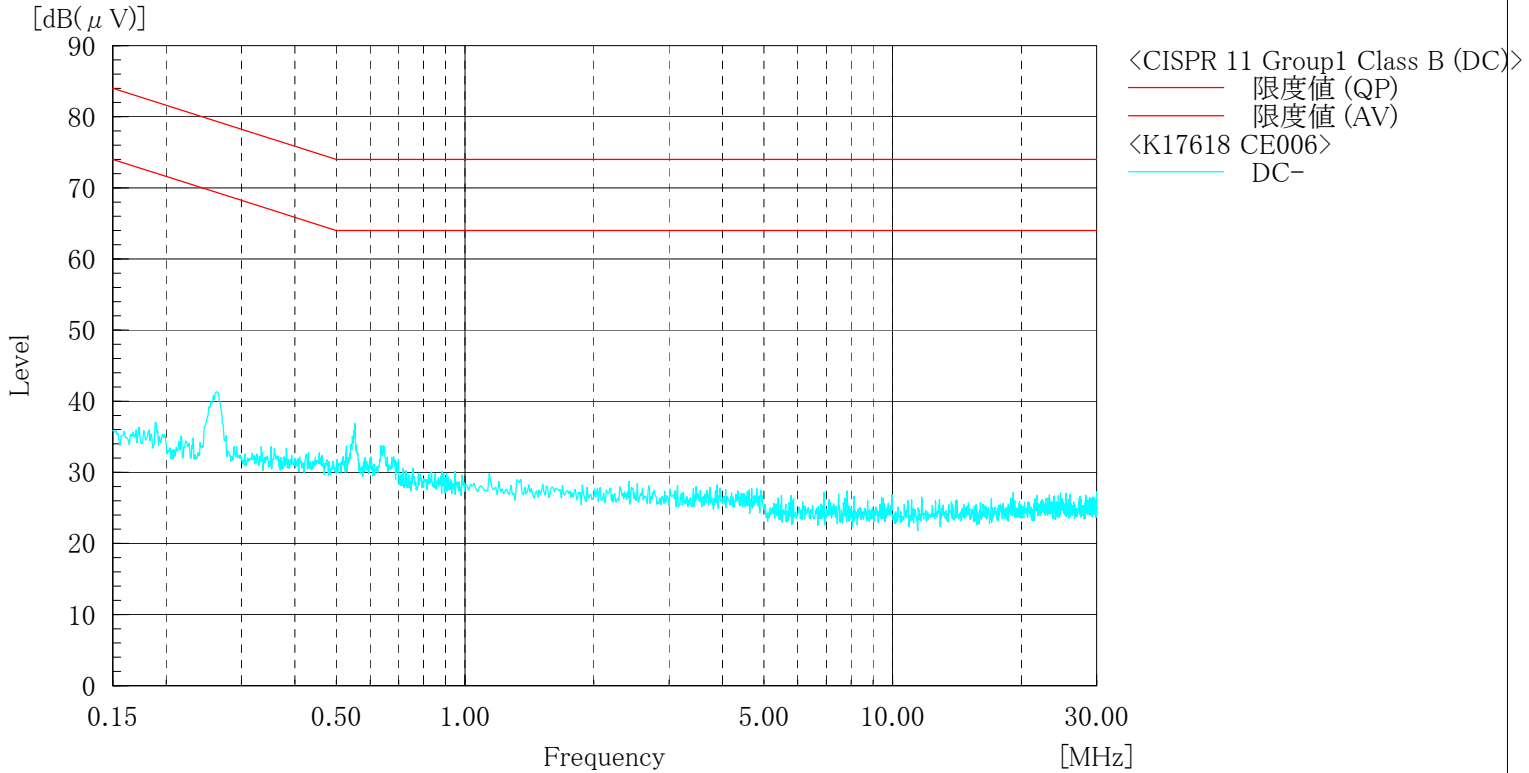


<<Conducted Emission>>

22 June,2017 14:51  
K17618 CE006.dat

Model No. : ESMD-12-LA (8個)  
Serial No. : None  
Operator : T.Nakamura  
Power Supply : AC100V, 50Hz (直流電源供給)  
Hum / Temp : 24°C 57% 1005hPa

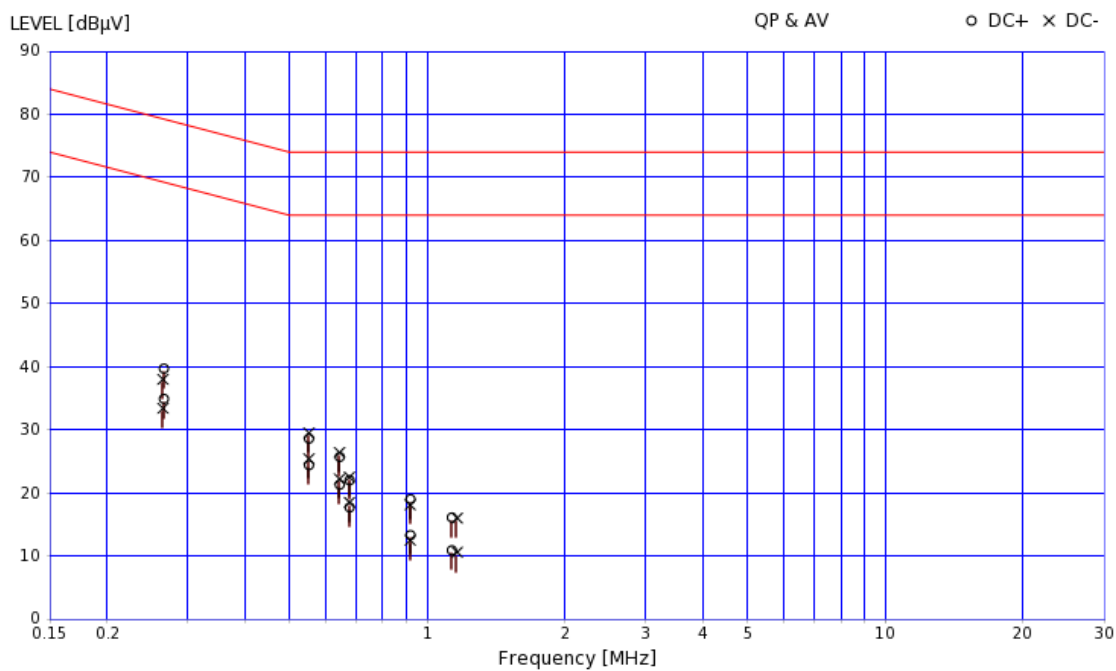
限度値 : CISPR 11 Group1 Class B (DC)  
Mode : 全点灯  
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:





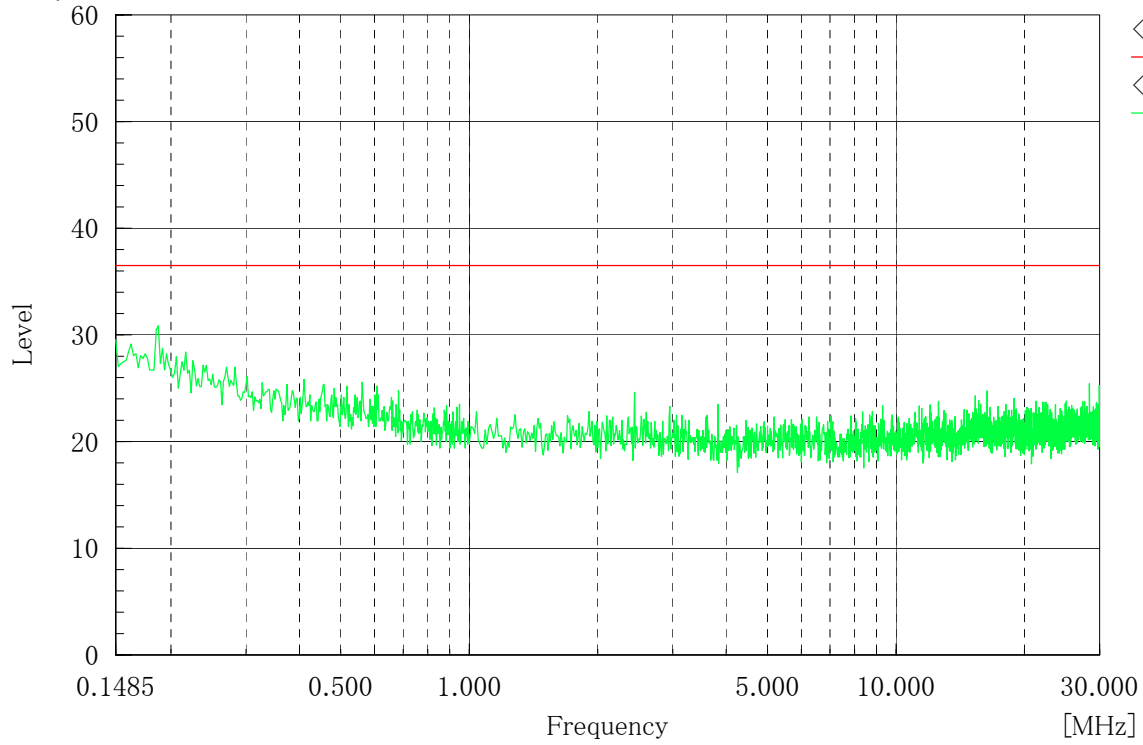
Report Title: Conducted Emission  
 E.U.T: ダウンライト  
 Model Name: ESMD-12-LA (8個)  
 Serial No.: None  
 Regulation/Class: CISPR 11 G1 Class B  
 Test Location: Kawasaki Shielded Room  
 Test Condition: AC100V, 50Hz (直流電源供給)  
 Report No.: K17618 CE006  
 Meas. Date: June 22, 2017  
 Meas. Detector: QP AV  
 Test Distance: m  
 Operation Mode: 全点灯  
 Engineer: Takanori Nakamura  
 Power Supply: AC100 V 50 Hz A  
 Temperature: 24 °C Humidity: 57 %

	Frequency (MHz)	Level (dBμV)		Total Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dB)	
		QP	AV		QP	AV	QP	AV	QP	AV
DC+	0.267	29.6	24.8	10.1	39.7	34.9	79.2	69.2	39.5	34.3
	0.552	18.6	14.4	10.0	28.6	24.4	74.0	64.0	45.4	39.6
	0.645	15.7	11.3	10.0	25.7	21.3	74.0	64.0	48.3	42.7
	0.678	12.0	7.7	10.0	22.0	17.7	74.0	64.0	52.0	46.3
	0.920	8.9	3.2	10.1	19.0	13.3	74.0	64.0	55.0	50.7
	1.133	6.0	0.8	10.1	16.1	10.9	74.0	64.0	57.9	53.1
	DC-	0.265	27.9	23.3	10.1	38.0	33.4	79.3	69.3	41.3
0.552		19.5	15.4	10.0	29.5	25.4	74.0	64.0	44.5	38.6
0.644		16.4	12.2	10.0	26.4	22.2	74.0	64.0	47.6	41.8
0.677		12.5	8.5	10.0	22.5	18.5	74.0	64.0	51.5	45.5
0.919		8.0	2.4	10.1	18.1	12.5	74.0	64.0	55.9	51.5
1.164		5.9	0.5	10.1	16.0	10.6	74.0	64.0	58.0	53.4



Model No. : ESML-24-LA  
Serial No. : None  
Operator : T.Nakamura  
Power su : AC100V 50Hz (直流電源供給)  
Temp.Hum : 24°C 57% 1005hPa

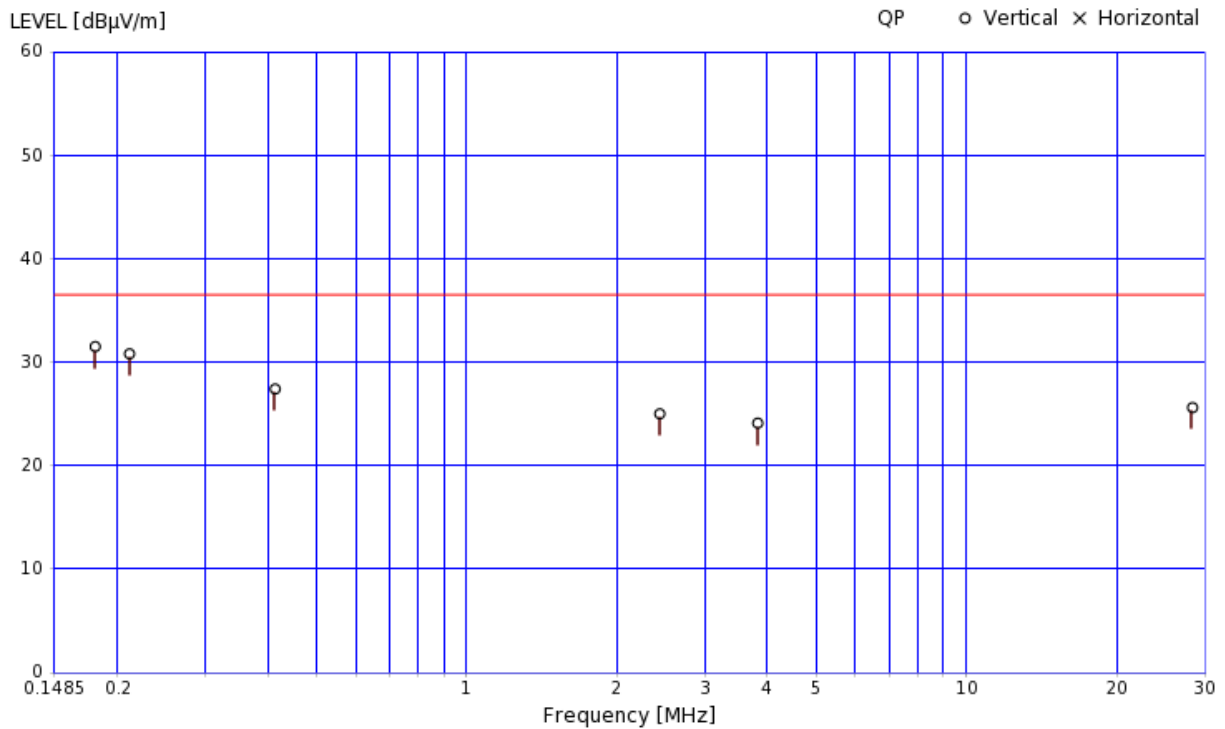
限度値 : ETSI EN300 330-1  
Mode : 全点灯

[dB( $\mu$  V/m)]

<ETSI EN300 330-1>  
— 限度値(QP)  
<K17618 loop002>  
— レンジ(H,PK)

Report Title:	Radiated Emission	Report No.:	K17618 loop002
E.U.T.:	ライトバー	Meas. Date:	June 22, 2017
Model Name:	ESML-24-LA	Meas. Detector:	QP
Serial No.:	None	Test Distance:	10 m
Regulation/Class:	EN300 330	Operation Mode:	全点灯
Test Location:	Kawasaki Big Chamber	Engineer:	Takanori Nakamura
Test Condition:	AC100V, 50Hz (直流電源供給)		
Power Supply:	AC100 V	50 Hz	A
Temperature:	24 °C	Humidity:	57 %

Frequency (MHz)	Level (dBμV)	Cable Loss (dB)	Amp. Gain (dB)	Ant. Factor (dB/m)	Result (dBμV/m)	10m Limit (dBμV/m)	Margin (dB)
0.1804	11.7	0.1	0.0	19.7	31.5	36.5	5.0
0.2113	11.0	0.1	0.0	19.7	30.8	36.5	5.7
0.4136	7.5	0.1	0.0	19.8	27.4	36.5	9.1
2.4362	4.5	0.3	0.0	20.2	25.0	36.5	11.5
3.8277	3.4	0.3	0.0	20.4	24.1	36.5	12.4
28.4175	3.2	0.9	0.0	21.5	25.6	36.5	10.9



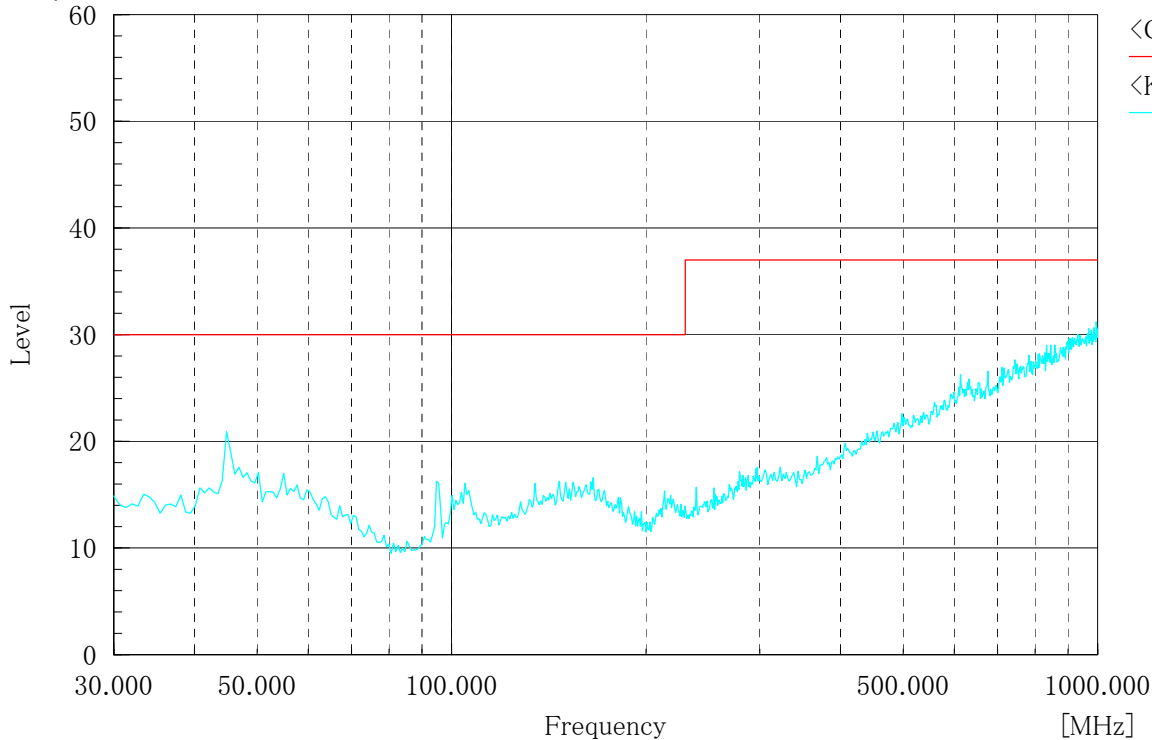
Model No. : ESML-24-LA  
Serial No. : None  
Operator : T.Nakamura  
Power su : AC100V, 50Hz (直流電源供給)  
Temp.Hum : 24°C 57% 1005hPa

限度値 : CISPR11 Group1 Class B 10m  
Mode : 全点灯

[dB( $\mu$  V/m)]

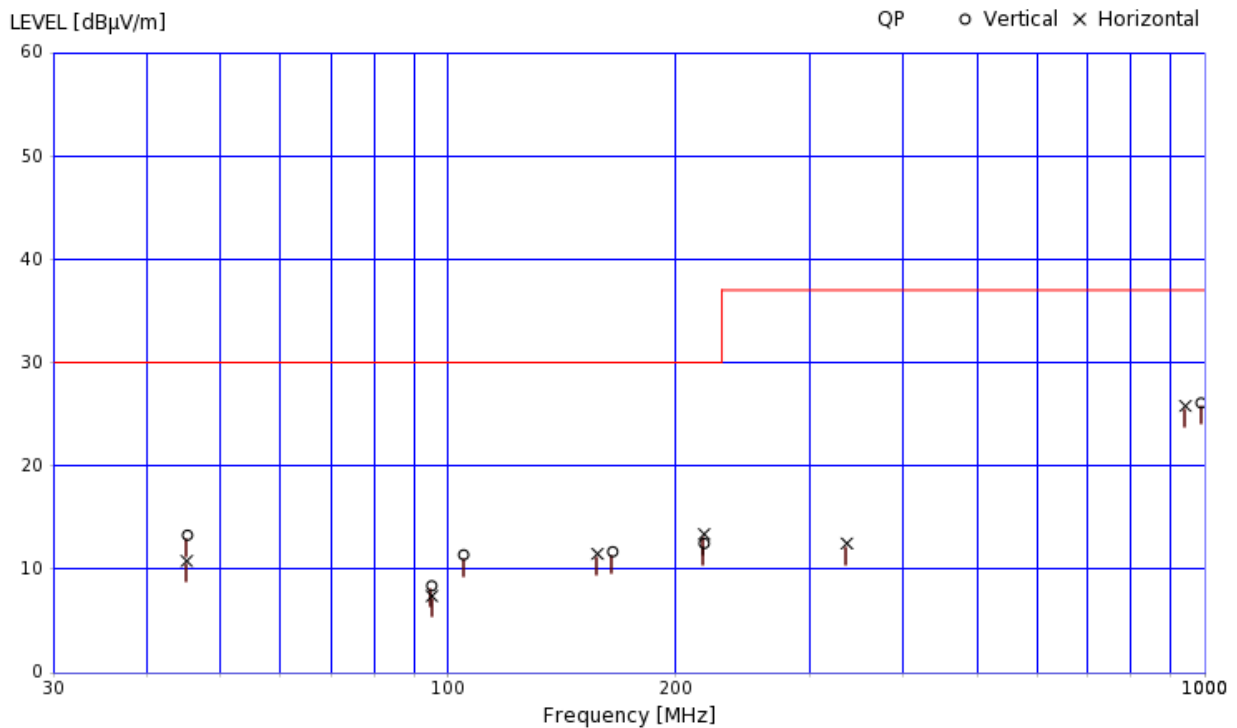
Model No. : ESML-24-LA  
Serial No. : None  
Operator : T.Nakamura  
Power su : AC100V, 50Hz (直流電源供給)  
Temp.Hum : 24°C 57% 1005hPa

限度値 : CISPR11 Group1 Class B 10m  
Mode : 全点灯

[dB( $\mu$  V/m)]

Report Title: Radiated Emission  
 E.U.T: ライトバー  
 Model Name: ESML-24-LA  
 Serial No.: None  
 Regulation/Class: CISPR 11 G1 Class B  
 Test Location: Kawasaki Big Chamber  
 Test Condition: AC100V, 50Hz (直流電源供給)  
 Report No.: K17618 REMHz003  
 Meas. Date: June 22, 2017  
 Meas. Detector: QP  
 Test Distance: 10 m  
 Operation Mode: 全点灯  
 Engineer: Takanori Nakamura  
 Power Supply: AC100 V 50 Hz A  
 Temperature: 24 °C Humidity: 57 %

Frequency (MHz)	Level (dB $\mu$ V)		Cable Loss (dB)	Amp. Gain (dB)	Ant. Factor (dB/m)	Result (dB $\mu$ V/m)		10m Limit (dB $\mu$ V/m)	Margin (dB)	
	Ver.	Hor.				Ver.	Hor.		Ver.	Hor.
45.09		24.2	1.1	-32.3	17.8		10.8	30.0		19.2
45.19	26.7		1.1	-32.3	17.8	13.3		30.0	16.7	
95.07	26.6		1.6	-32.3	12.5	8.4		30.0	21.6	
95.12		25.6	1.6	-32.3	12.5		7.4	30.0		22.6
104.78	28.3		1.7	-32.3	13.7	11.4		30.0	18.6	
157.50		24.3	2.1	-32.3	17.4		11.5	30.0		18.5
164.99	24.8		2.2	-32.3	17.0	11.7		30.0	18.3	
218.00	27.6	28.5	2.6	-32.2	14.5	12.5	13.4	30.0	17.5	16.6
336.70		23.4	3.3	-32.2	18.0		12.5	37.0		24.5
943.99		23.3	5.9	-31.3	27.9		25.8	37.0		11.2
990.25	23.0		6.0	-31.0	28.1	26.1		37.0	10.9	

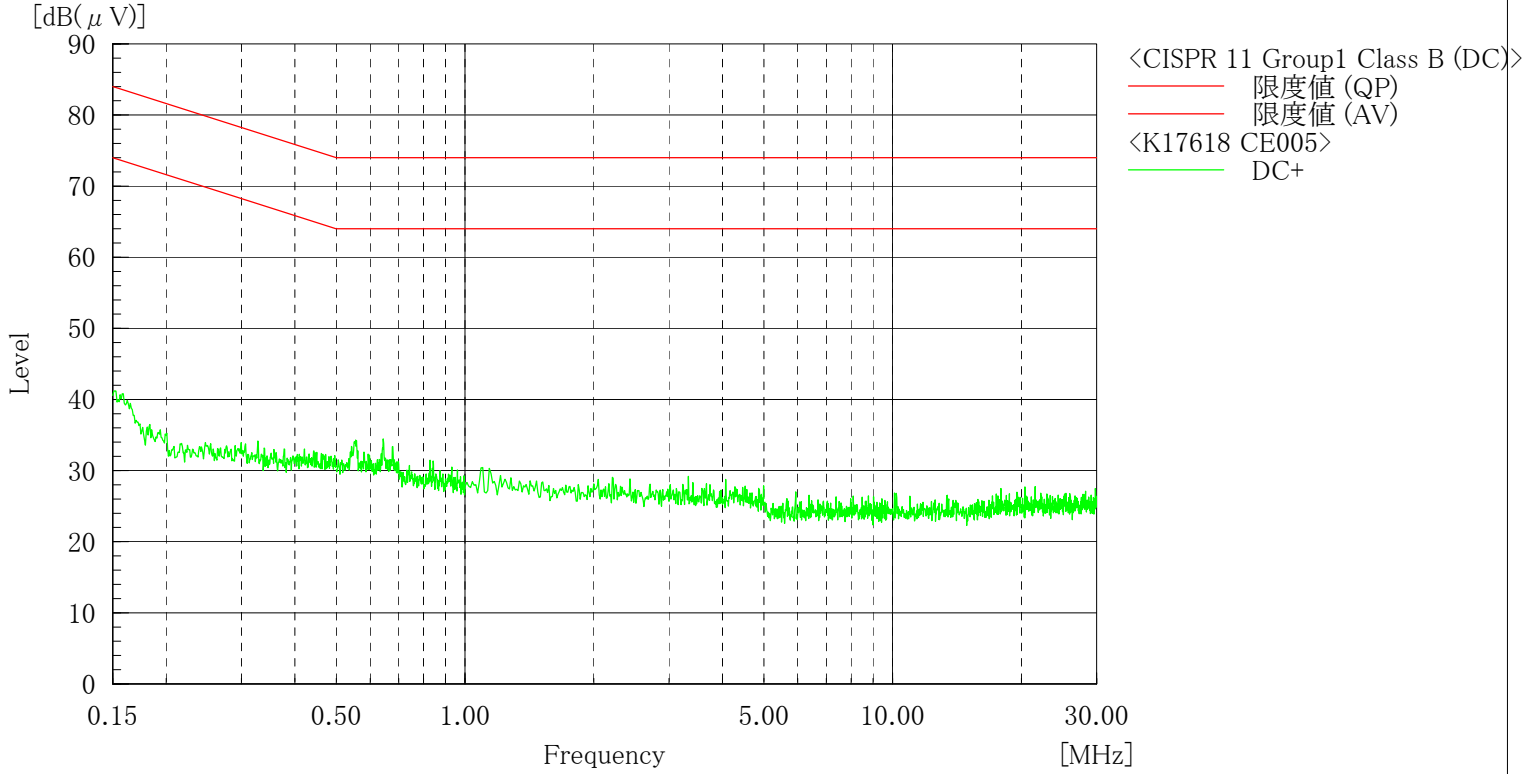


<<Conducted Emission>>

22 June,2017 14:10  
K17618 CE005.dat

Model No. : ESML-24-LA  
Serial No. : None  
Operator : T.Nakamura  
Power Supply : AC100V, 50Hz (直流電源供給)  
Hum / Temp : 24°C 57% 1005hPa

限度値 : CISPR 11 Group1 Class B (DC)  
Mode : 全点灯  
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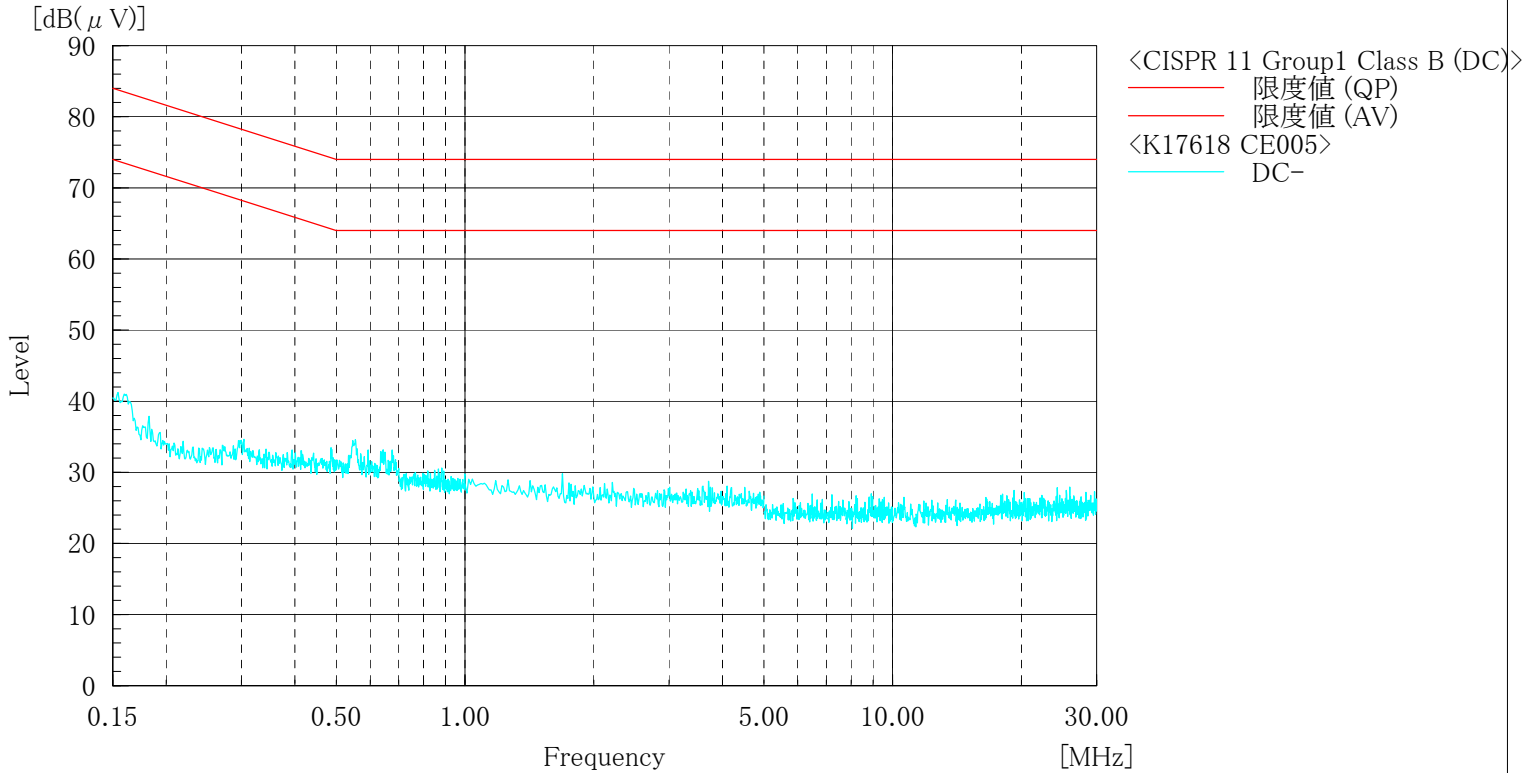


<<Conducted Emission>>

22 June,2017 14:10  
K17618 CE005.dat

Model No. : ESML-24-LA  
Serial No. : None  
Operator : T.Nakamura  
Power Supply : AC100V, 50Hz (直流電源供給)  
Hum / Temp : 24°C 57% 1005hPa

限度値 : CISPR 11 Group1 Class B (DC)  
Mode : 全点灯  
:  
:  
:



Report Title: Conducted Emission  
 E.U.T: ライトバー  
 Model Name: ESML-24-LA  
 Serial No.: None  
 Regulation/Class: CISPR 11 G1 Class B  
 Test Location: Kawasaki Shielded Room  
 Test Condition: AC100V, 50Hz (直流電源供給)  
 Report No.: K17618 CE005  
 Meas. Date: June 22, 2017  
 Meas. Detector: QP AV  
 Test Distance: m  
 Operation Mode: 全点灯  
 Engineer: Takanori Nakamura  
 Power Supply: AC100 V 50 Hz A  
 Temperature: 24 °C Humidity: 57 %

	Frequency (MHz)	Level (dBμV)		Total Factor (dB)	Result (dBμV)		Limit (dBμV)		Margin (dB)	
		QP	AV		QP	AV	QP	AV	QP	AV
DC+	0.162	23.8	17.1	10.2	34.0	27.3	83.4	73.4	49.4	46.1
	0.305	12.3	6.1	10.1	22.4	16.2	78.1	68.1	55.7	51.9
	0.467	15.1	10.6	10.0	25.1	20.6	74.6	64.6	49.5	44.0
	0.552	17.9	13.7	10.0	27.9	23.7	74.0	64.0	46.1	40.3
	0.831	7.9	2.3	10.1	18.0	12.4	74.0	64.0	56.0	51.6
	25.912	1.1	0.1	11.7	12.8	11.8	74.0	64.0	61.2	52.2
DC-	0.162	24.6	17.5	10.2	34.8	27.7	83.4	73.4	48.6	45.7
	0.299	14.8	7.6	10.1	24.9	17.7	78.3	68.3	53.4	50.6
	0.553	18.0	13.8	10.0	28.0	23.8	74.0	64.0	46.0	40.2
	0.665	14.9	10.5	10.0	24.9	20.5	74.0	64.0	49.1	43.5
	0.837	7.1	1.4	10.1	17.2	11.5	74.0	64.0	56.8	52.5
	25.859	1.0	0.1	11.6	12.6	11.7	74.0	64.0	61.4	52.3

