JVCKENWOOD

Ref. No.: EUCE18013-01

EMC TEST REPORT

(Date of issue)
発行日 : 04 / Mar / 2019

			Approved 承認	Checked 照査	Issued by 担当
Brand/Model No.	KENWOOD	DNX5190DABS	岩田 2019/3/5 Iwata	Safety EMC '19/03/05 AISO	EMC SAFETY 4.Mar.'19 KURIHARA
Serial No.	PE-X0002				
Version	E				
Test Result	PASS				
Reference Standard	EN50498:2010				

Testing item 検査項目	Quantity	Judgment (minimum margin)	Test site	Page
Ⅰ. Emission/ Active (電磁波妨害輻射)				
1. Disturbance Voltage at Antenna Terminal アンテナ端子雑音電圧	–	–		–
2. Disturbance Radiation (3m) 電界強度 (3m法)	–	–		–
3. Conducted Emission at Antenna port 伝導エミッション(アンテナポート)	–	–		–
4. Transient Emission 電圧過渡エミッション	1	PASS	A-1F Transient EMC Shield at Hachioji	13 – 20
5. Disturbance Radiation (1m) 電界強度(1m法)	1	＞5dB	A-1F 1m Anechoic Chamber at Hachioji	3 – 12
Ⅱ. Immunity/Passive(電磁波妨害耐性)				
1. Input Immunity (S1) アンテナ入力端子妨害耐性(S1)	–	–		–
2. Conducted Voltages(S2a) 流入妨害耐性 電圧印加法(S2a)	–	–		–
3. Conducted Currents(S2b) 流入妨害耐性 電圧印加法(S2b)	–	–		–
4. Radiated Fields(S3) 入射妨害耐性(S3)	–	–		–
5. Electrostatic Discharge 静電気放電耐性	–	–		–
6. Transient Immunity 過渡イミュニティ	1	PASS	A-1F Transient EMC Shield at Hachioji	21 – 30

Peripherals connected to the EUT(使用周辺機器)

Testing item	mode	Maker	Product No.	Model No.	
Disturbance Radiation (1m)	USB	Bestrunner	USB2.0/128M		No.7
	CAR Play	Apple	iPhone5	MD297J/A	C39KWKE6DTWD
	HDMI				

Remarks

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Automotive
2967-3 Ishikawa-mach, Hachioji-shi, Tokyo, 192-8525 Japan Tel:+81-42-646-5525 Fax:+81-42-646-7801

TEST FACILITY LIST

Test site: A-1F 1m Anechoic Chamber at Hachioji

<Disturbance Radiation(1m)>

	Instrumentation	Type no.	Manufacturer	Expiration date of calibration
■	TEST RECEIVER (TRE02)	ESR7	Rohde & Schwarz	2019/6/30
■	RF RELAY MATRIX(RRM01)	RFM-E131	TSJ	-
■	PRI AMPLIFIRE (AMP01)	INSTRUMENT 310	SONOMA	-
□	PRI AMPLIFIRE (AMP06)	MLA-0120-A02-34	TSJ	2019/6/30
■	Biconical Antenna + Balun (BC-A01)	BBA9106/VHBB912	SCHWARZBECK	2019/6/30
■	Log Periodic Antenna (LP-A01)	VULP9118A	SCHWARZBECK	
□	BROAD-BAND HORN Antenna (H-A01)	BBHA 9120 D	SCHWARZBECK	2019/6/30
□	LOD Antenna (L-A01)	3301C	ETS-Lindgren	2019/6/30
■	L.I.S.N. (AMN06)	NNBM 8124	SCHWARZBECK	2019/6/30
■	L.I.S.N. (AMN07)	NNBM 8124	SCHWARZBECK	2019/6/30
■	COAXIAL CABLE	CA09		-
■	COAXIAL CABLE	CA06		-
■	COAXIAL CABLE	CA05		-
□	COAXIAL CABLE	CA08		-
□	COAXIAL CABLE	CA07		-
□	COAXIAL CABLE	CA57		-
■	COAXIAL CABLE	CA58		-
□	COAXIAL CABLE	CA59		-
□	COAXIAL CABLE	CA43		-
□	COAXIAL CABLE	CA60		-
□	COAXIAL CABLE	CA03		-
■	ATTENUATOR(ATT06)	50Ω6dB		-

Test site: A-F Transient EMC Shield at Hachioji

<Transient Emission>

	Instrumentation	Type no.	Manufacturer	Expiration date of calibration
■	DIGITAL PHOSPHOR OSCILLOSCOPE (OSC01	RTO2022	ROHDE & SCHWARZ	2020/1/31
□	Mechanical Switch	BSM200N100	AMETEC CTS	-
■	Electoronical Switch	SM200N100	AMETEC CTS	-
■	L.I.S.N. (AMN12)	AN200N100	AMETEC CTS	2020/1/31
■	Resister Box (REG01)	RS-Box	AMETEC CTS	-

<Transient Immunity>

■	Voltage Drop Simulator	VDS200Q25	AMETEC CTS	2020/1/31
■	Ultra Compact Simulator	UCS200N50	AMETEC CTS	2020/1/31
□	Load Damp Generator	LD200N	AMETEC CTS	2020/1/31
□	Arbitary Generator	Auto Wave	AMETEC CTS	2020/1/31

Radiated Emission Test

Date of test:	February-28-2019
Tester:	K.Kurihara
EUT:	DNX5190DABS
Standard:	EN 50498 (2010)
Application:	12 V system
Ambient Temperature:	See data
Humidity:	See data

Test Result	
Result:	Test passed!

EUT Information	
Brand Name:	KENWOOD
Model Name:	DNX5190DABS
Type:	GPS NAVIGATION SYSTEM
Serial Number:	PE-X0002
Operation Mode:	See data
Description:	Colorbar, 1kHz, 1/8Po

Test Configuration

EUT was placed on a non-conductive pallet height of 50 mm above the ground plane as shown in Fig.1.

A ground plane was placed on a wooden table height of 900 mm.

EUT is in the operation condition specified.

Using Test receiver, sweeps of frequency bands (30-1000MHz) are made to verify the emission level.

Biconical antenna is used in 30 - 300 MHz, Log-periodic antenna is used in 300 - 1000 MHz.

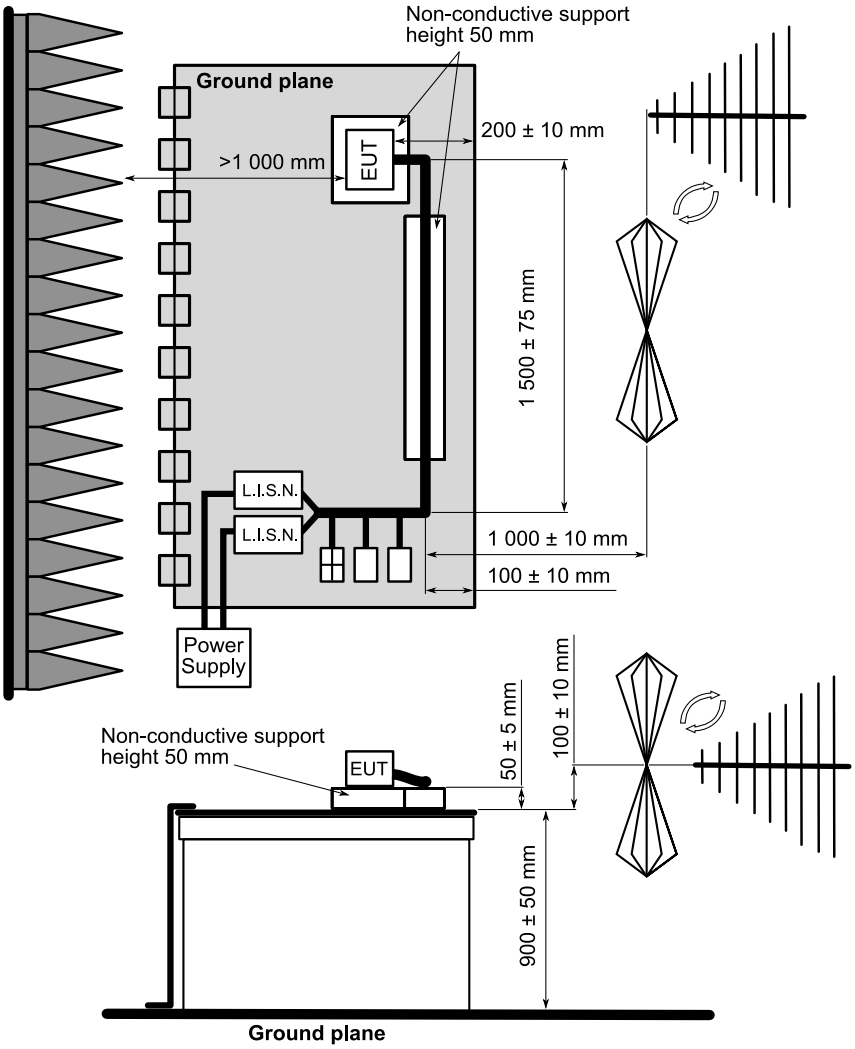


Fig.1 Drawing of the Test Set-up

TDS_EN50498_30M-1GHz.CND

Radiated Disturbance Electromagnetic Quientnes

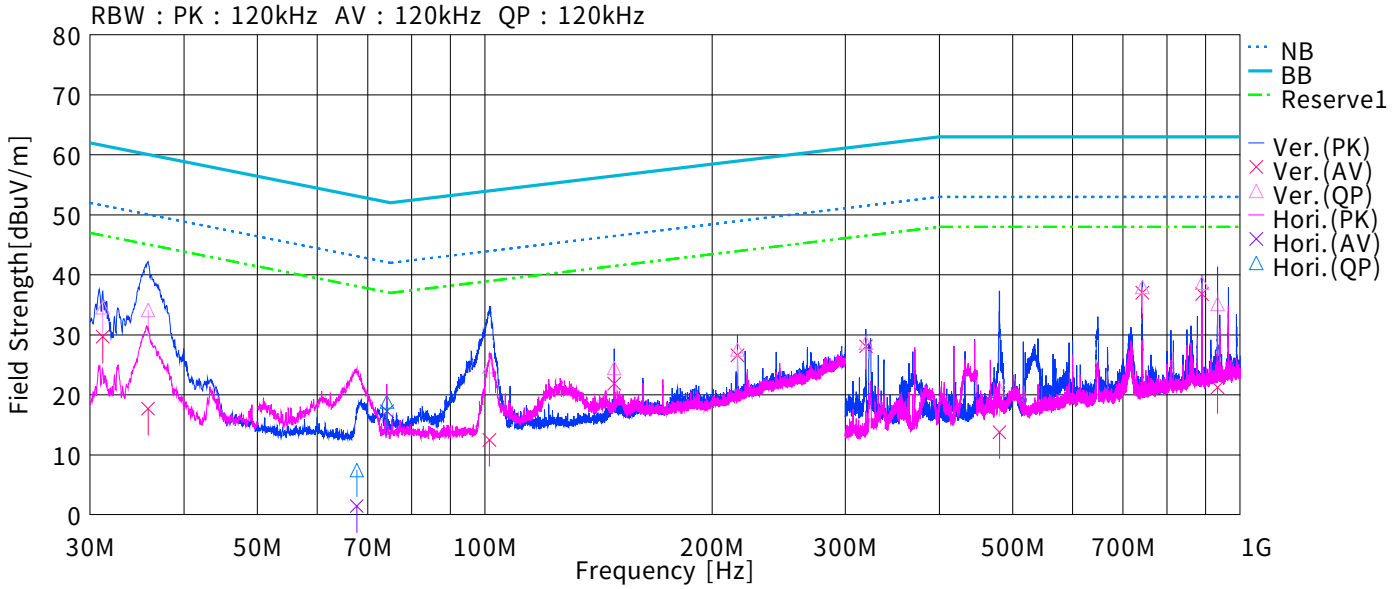
Hachioji Semi-anechoic chamber

Date : 2019/02/28 14:09

Brand name	: KENWOOD	Standard	: EN 50498
Model name	: DNX5190DABS	Temp./Humi.	: 22deg C / 37%
Type	: GPS NAVIGATION SYSTEM	Power Supply	: DC 12V
Serial No.	: PE-X0002	Measured By	: K.Kurihara
Notes	: DVD PLAY(Colorbar, 1kHz, 1/8Po) & FM98MHz & DAB10A & NAVI simulate		

Limit1 : EN50498 ESA Narrow Band Limits
Limit2 : EN50498 ESA Broad Band Limits
Limit3 : EN50498 Narrow Band Limits[-5dB]

RBW : PK : 120kHz AV : 120kHz QP : 120kHz



Band ID	周波数	測定面	レベル			ファクター	結果			NB/BB	リミット	マージン		備考
			PK	AV	QP		PK	AV	QP					
	[MHz]		[dBuV]			[dB]	[dBuV/m]				[dBuV/m]	[dB]		
	31.2000	Vertic	51.34	43.84	48.74	-14.12	37.22	29.72	34.62	BB	61.57	26.95	OK	
	35.8200	Vertic	56.15	31.68	48.12	-13.96	42.19	17.72	34.16	BB	60.06	25.90	OK	
	67.6700	Horizo	39.53	16.68	22.67	-15.19	24.34	1.49	7.48	BB	53.12	45.64	OK	
	74.1800	Horizo	37.16	32.63	34.22	-15.34	21.82	17.29	18.88	NB	42.12	24.83	OK	
	101.4100	Vertic	49.04	27.12	39.36	-14.61	34.43	12.51	24.75	BB	53.98	29.23	OK	
	148.3600	Vertic	39.77	33.94	36.58	-12.09	27.68	21.85	24.49	NB	46.48	24.63	OK	
	215.9900	Vertic	38.73	35.40	36.29	-8.75	29.98	26.65	27.54	NB	48.95	22.30	OK	
	319.5000	Vertic	45.88	43.04	43.66	-14.95	30.93	28.09	28.71	NB	51.52	23.43	OK	
	479.9800	Vertic	48.96	25.69	32.76	-11.91	37.05	13.78	20.85	BB	63.00	42.15	OK	
	741.7500	Vertic	47.27	45.29	46.24	-8.25	39.02	37.04	37.99	NB	53.00	15.96	OK	
	890.1100	Vertic	45.79	42.64	44.52	-5.85	39.94	36.79	38.67	NB	53.00	16.21	OK	
	933.0100	Vertic	46.39	26.37	40.26	-5.07	41.32	21.30	35.19	BB	63.00	27.81	OK	

TDS_EN50498_30M-1GHz.CND

Radiated Disturbance Electromagnetic Quientnes

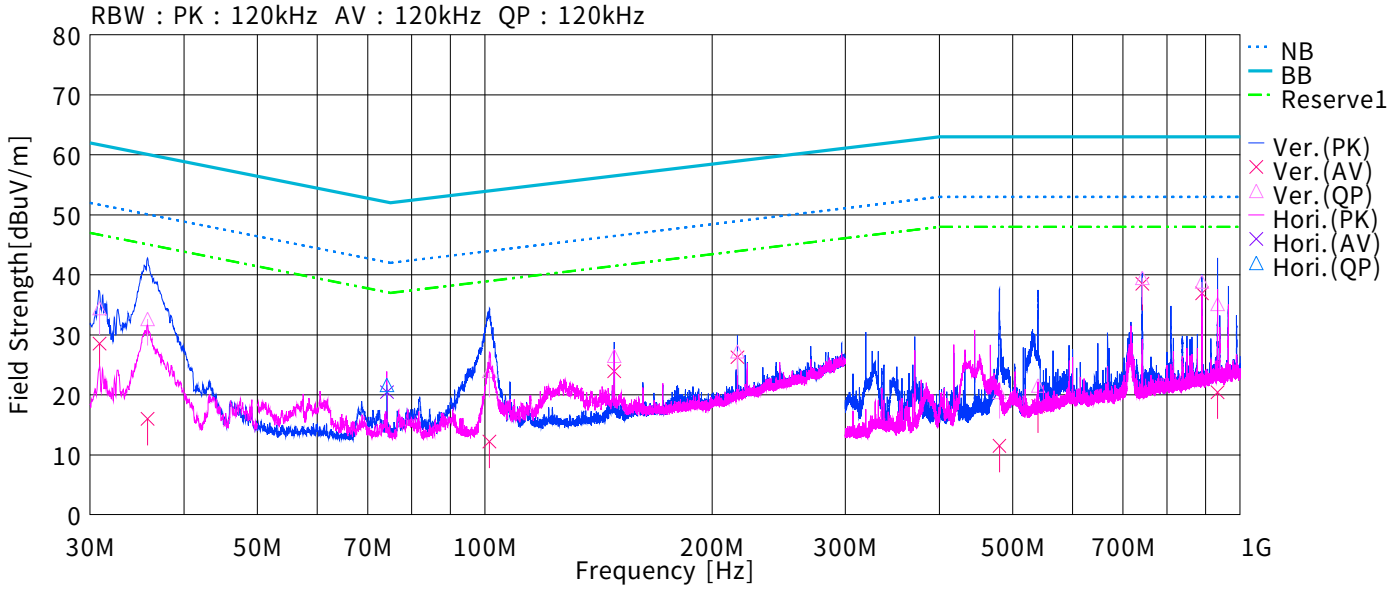
Hachioji Semi-anechoic chamber

Date : 2019/02/28 14:29

Brand name	: KENWOOD	Standard	: EN 50498
Model name	: DNX5190DABS	Temp./Humi.	: 22deg C / 37%
Type	: GPS NAVIGATION SYSTEM	Power Supply	: DC 12V
Serial No.	: PE-X0002	Measured By	: K.Kurihara
Notes	: USB PLAY(Colorbar, 1kHz, 1/8Po) & FM108MHz & DAB13F & NAVI simulate		

Limit1 : EN50498 ESA Narrow Band Limits
Limit2 : EN50498 ESA Broad Band Limits
Limit3 : EN50498 Narrow Band Limits[-5dB]

RBW : PK : 120kHz AV : 120kHz QP : 120kHz



Band ID	周波数	測定面	レベル			ファクター	結果			NB/BB	リミット	マージン		備考
			PK	AV	QP		PK	AV	QP					
	[MHz]		[dBuV]			[dB]	[dBuV/m]				[dBuV/m]	[dB]		
	30.9000	Vertic	51.36	42.67	48.57	-14.13	37.23	28.54	34.44	BB	61.68	27.24	OK	
	35.7600	Vertic	56.78	29.98	46.63	-13.96	42.82	16.02	32.67	BB	60.08	27.41	OK	
	74.1800	Horizo	39.24	35.80	37.01	-15.34	23.90	20.46	21.67	NB	42.12	21.66	OK	
	101.4100	Vertic	49.06	26.85	38.63	-14.61	34.45	12.24	24.02	BB	53.98	29.96	OK	
	148.3600	Vertic	40.90	36.05	38.62	-12.09	28.81	23.96	26.53	NB	46.48	22.52	OK	
	215.9900	Vertic	38.65	35.04	35.99	-8.75	29.90	26.29	27.24	NB	48.95	22.66	OK	
	479.9200	Vertic	49.58	23.44	32.41	-11.91	37.67	11.53	20.50	BB	63.00	42.50	OK	
	539.9800	Vertic	48.61	29.22	32.64	-11.08	37.53	18.14	21.56	BB	63.00	41.44	OK	
	741.7500	Vertic	48.79	46.77	47.75	-8.25	40.54	38.52	39.50	NB	53.00	14.48	OK	
	890.1100	Vertic	45.94	42.79	44.72	-5.85	40.09	36.94	38.87	NB	53.00	16.06	OK	
	933.0100	Vertic	47.93	25.52	40.20	-5.07	42.86	20.45	35.13	BB	63.00	27.87	OK	

TDS_EN50498_30M-1GHz.CND

Radiated Disturbance Electromagnetic Quientnes

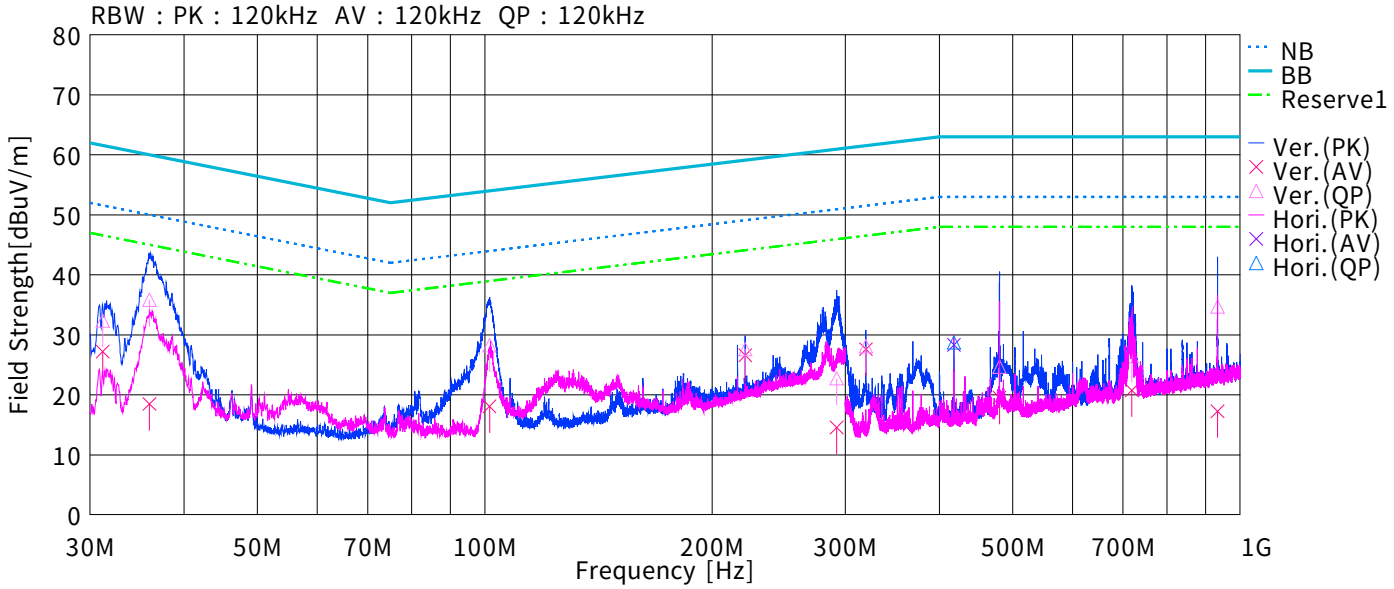
Hachioji Semi-anechoic chamber

Date : 2019/02/28 15:03

Brand name	: KENWOOD	Standard	: EN 50498
Model name	: DNX5190DABS	Temp./Humi.	: 22deg C / 37%
Type	: GPS NAVIGATION SYSTEM	Power Supply	: DC 12V
Serial No.	: PE-X0002	Measured By	: K.Kurihara
Notes	: CarPlay(1kHz, 1/8Po) & FM87.5MHz & DAB5A & NAVI simulate		

Limit1 : EN50498 ESA Narrow Band Limits
Limit2 : EN50498 ESA Broad Band Limits
Limit3 : EN50498 Narrow Band Limits[-5dB]

RBW : PK : 120kHz AV : 120kHz QP : 120kHz



Band ID	周波数	測定面	レベル			ファクター	結果			NB/BB	リミット	マージン		備考
			PK	AV	QP		PK	AV	QP					
	[MHz]		[dBuV]			[dB]	[dBuV/m]				[dBuV/m]	[dB]		
	31.2000	Vertic	48.98	41.33	46.53	-14.12	34.86	27.21	32.41	BB	61.57	29.16	OK	
	35.9700	Vertic	57.61	32.45	49.80	-13.96	43.65	18.49	35.84	BB	60.02	24.18	OK	
	101.4700	Vertic	50.87	32.69	42.91	-14.61	36.26	18.08	28.30	BB	53.99	25.69	OK	
	221.1800	Vertic	38.18	34.98	35.95	-8.32	29.86	26.66	27.63	NB	49.11	22.45	OK	
	292.2400	Vertic	40.74	17.86	26.04	-3.29	37.45	14.57	22.75	BB	60.94	38.19	OK	
	319.5000	Vertic	45.80	42.56	43.08	-14.95	30.85	27.61	28.13	NB	51.52	23.91	OK	
	417.7900	Horizo	43.10	41.44	41.86	-13.12	29.98	28.32	28.74	NB	53.00	24.68	OK	
	480.0100	Vertic	52.46	31.46	36.62	-11.91	40.55	19.55	24.71	BB	63.00	38.29	OK	
	718.8300	Vertic	46.72	29.23	34.93	-8.47	38.25	20.76	26.46	BB	63.00	36.54	OK	
	933.0100	Vertic	48.04	22.37	39.77	-5.07	42.97	17.30	34.70	BB	63.00	28.30	OK	

TDS_EN50498_30M-1GHz.CND

Radiated Disturbance Electromagnetic Quientnes

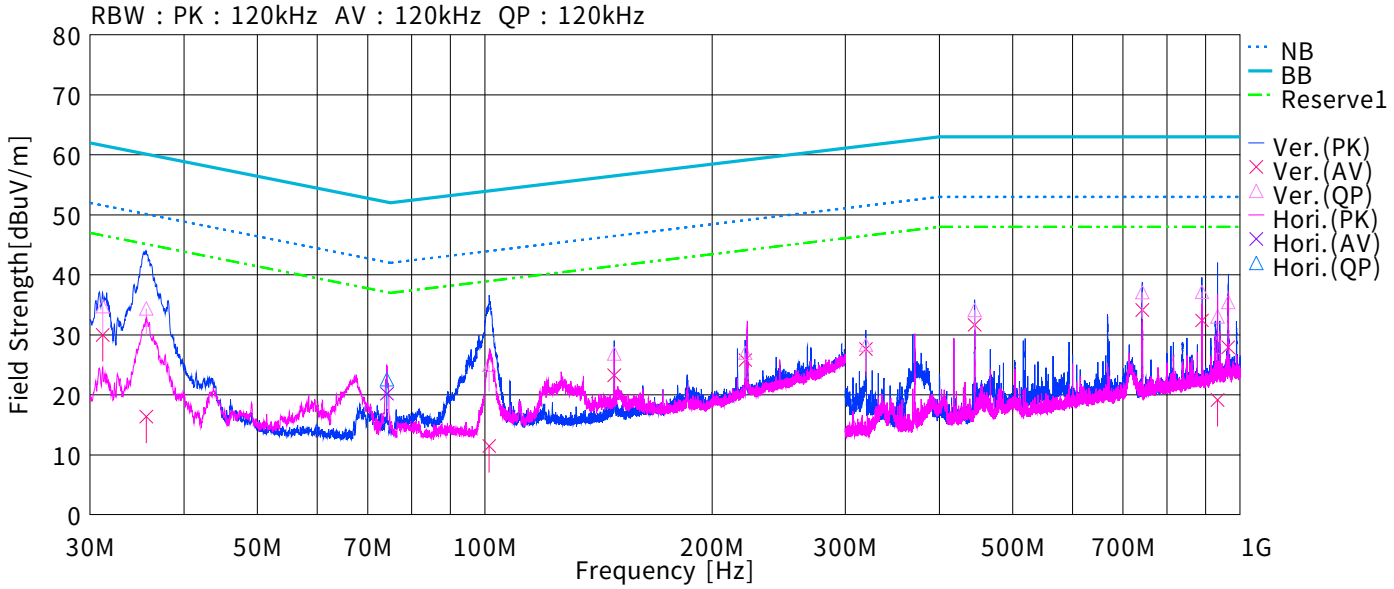
Hachioji Semi-anechoic chamber

Date : 2019/02/28 15:42

Brand name	: KENWOOD	Standard	: EN 50498
Model name	: DNX5190DABS	Temp./Humi.	: 22deg C / 37%
Type	: GPS NAVIGATION SYSTEM	Power Supply	: DC 12V
Serial No.	: PE-X0002	Measured By	: K.Kurihara
Notes	: HDMI(iPhone, Colorbar, 1kHz, 1/8Po) & FM98MHz & DAB10A & NAVI simulate		

Limit1 : EN50498 ESA Narrow Band Limits
Limit2 : EN50498 ESA Broad Band Limits
Limit3 : EN50498 Narrow Band Limits[-5dB]

RBW : PK : 120kHz AV : 120kHz QP : 120kHz



Band ID	周波数	測定面	レベル			ファクター	結果			NB/BB	リミット	マージン		備考
			PK	AV	QP		PK	AV	QP					
	[MHz]		[dBuV]			[dB]	[dBuV/m]				[dBuV/m]	[dB]		
	31.2000	Vertic	51.01	44.11	48.90	-14.12	36.89	29.99	34.78	BB	61.57	26.79	OK	
	35.6400	Vertic	57.92	30.37	48.38	-13.97	43.95	16.40	34.41	BB	60.12	25.71	OK	
	74.1800	Horizo	40.24	35.55	37.98	-15.34	24.90	20.21	22.64	NB	42.12	21.91	OK	
	101.3500	Vertic	51.24	26.13	39.62	-14.62	36.62	11.51	25.00	BB	53.98	28.98	OK	
	148.3600	Vertic	41.16	35.35	38.99	-12.09	29.07	23.26	26.90	NB	46.48	23.22	OK	
	221.1800	Vertic	37.48	34.12	35.35	-8.32	29.16	25.80	27.03	NB	49.11	23.31	OK	
	319.5000	Vertic	45.78	42.59	43.31	-14.95	30.83	27.64	28.36	NB	51.52	23.88	OK	
	445.0600	Vertic	48.49	44.28	46.77	-12.62	35.87	31.66	34.15	NB	53.00	21.34	OK	
	741.7500	Vertic	47.04	42.41	45.36	-8.25	38.79	34.16	37.11	NB	53.00	18.84	OK	
	890.1100	Vertic	45.45	38.27	43.02	-5.85	39.60	32.42	37.17	BB	63.00	25.83	OK	
	933.0100	Vertic	47.10	24.24	38.16	-5.07	42.03	19.17	33.09	BB	63.00	29.91	OK	
	964.2700	Vertic	44.54	32.38	39.90	-4.40	40.14	27.98	35.50	BB	63.00	27.50	OK	

TDS_EN50498_30M-1GHz.CND

Radiated Disturbance Electromagnetic Quientnes

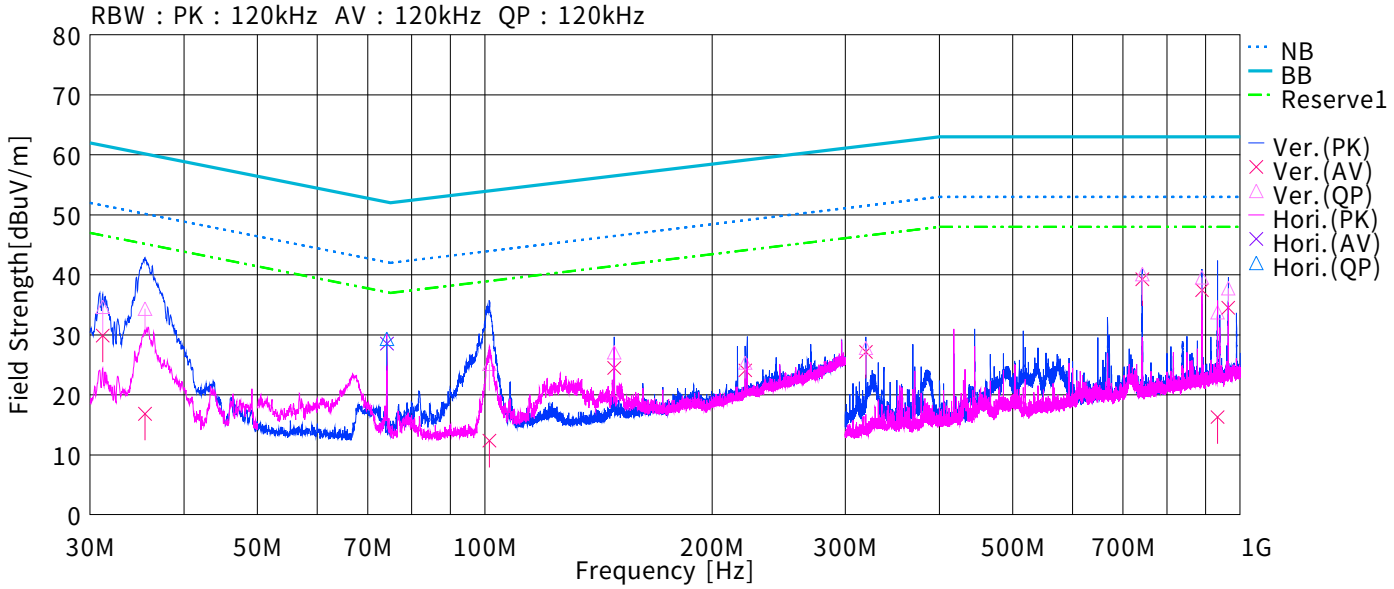
Hachioji Semi-anechoic chamber

Date : 2019/02/28 15:24

Brand name	: KENWOOD	Standard	: EN 50498
Model name	: DNX5190DABS	Temp./Humi.	: 22deg C / 37%
Type	: GPS NAVIGATION SYSTEM	Power Supply	: DC 12V
Serial No.	: PE-X0002	Measured By	: K.Kurihara
Notes	: SD PLAY(Colorbar, 1kHz, 1/8Po) & FM108MHz & DAB13F & NAVI simulate		

Limit1 : EN50498 ESA Narrow Band Limits
Limit2 : EN50498 ESA Broad Band Limits
Limit3 : EN50498 Narrow Band Limits[-5dB]

RBW : PK : 120kHz AV : 120kHz QP : 120kHz



Band ID	周波数	測定面	レベル			ファクター	結果			NB/BB	リミット	マージン		備考
			PK	AV	QP		PK	AV	QP					
	[MHz]		[dBuV]			[dB]	[dBuV/m]				[dBuV/m]	[dB]		
	31.2000	Vertic	50.92	44.01	48.78	-14.12	36.80	29.89	34.66	BB	61.57	26.91	OK	
	35.4900	Vertic	56.89	30.83	48.34	-13.97	42.92	16.86	34.37	BB	60.17	25.80	OK	
	74.1800	Horizo	45.72	43.88	44.66	-15.34	30.38	28.54	29.32	NB	42.12	13.58	OK	
	101.3800	Vertic	50.31	26.99	39.77	-14.62	35.69	12.37	25.15	BB	53.98	28.83	OK	
	148.3600	Vertic	41.75	36.59	39.20	-12.09	29.66	24.50	27.11	NB	46.48	21.98	OK	
	221.1800	Vertic	36.50	32.41	33.70	-8.32	28.18	24.09	25.38	NB	49.11	25.02	OK	
	319.4700	Vertic	44.60	42.10	42.77	-14.95	29.65	27.15	27.82	NB	51.52	24.37	OK	
	741.7500	Vertic	49.32	47.52	48.39	-8.25	41.07	39.27	40.14	NB	53.00	13.73	OK	
	890.1100	Vertic	46.80	43.33	45.46	-5.85	40.95	37.48	39.61	NB	53.00	15.52	OK	
	933.0100	Vertic	47.49	21.38	38.85	-5.07	42.42	16.31	33.78	BB	63.00	29.22	OK	
	964.2700	Vertic	43.99	38.91	42.18	-4.40	39.59	34.51	37.78	NB	53.00	18.49	OK	

TDS_EN50498_30M-1GHz.CND

Radiated Disturbance Electromagnetic Quientnes

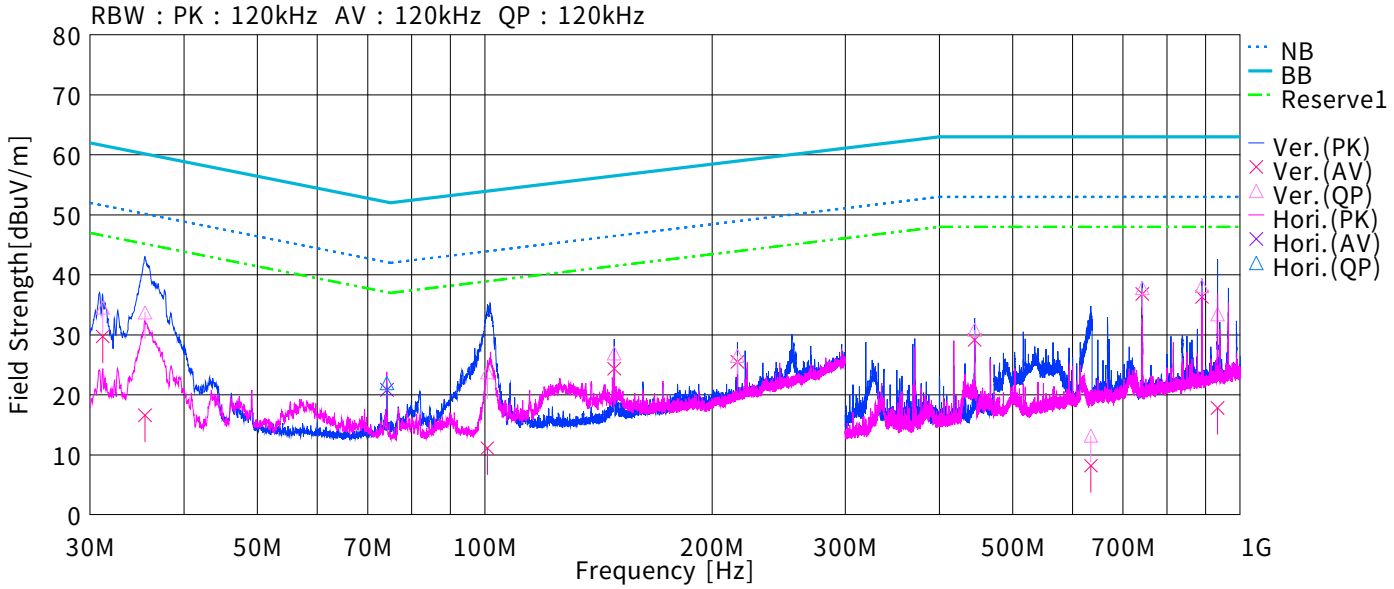
Hachioji Semi-anechoic chamber

Date : 2019/02/28 14:46

Brand name	: KENWOOD	Standard	: EN 50498
Model name	: DNX5190DABS	Temp./Humi.	: 22deg C / 37%
Type	: GPS NAVIGATION SYSTEM	Power Supply	: DC 12V
Serial No.	: PE-X0002	Measured By	: K.Kurihara
Notes	: USB2 PLAY(Colorbar, 1kHz, 1/8Po) & FM87.5MHz & DAB5A & NAVI simulate		

Limit1 : EN50498 ESA Narrow Band Limits
Limit2 : EN50498 ESA Broad Band Limits
Limit3 : EN50498 Narrow Band Limits[-5dB]

RBW : PK : 120kHz AV : 120kHz QP : 120kHz

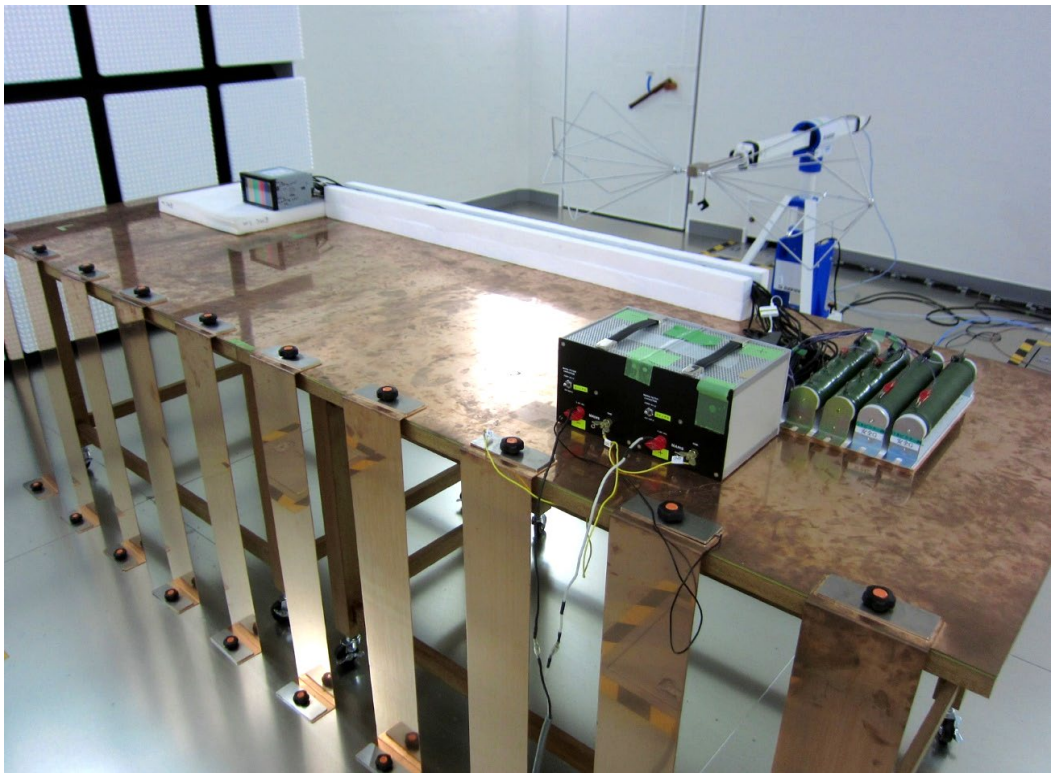


Band ID	周波数	測定面	レベル			ファクター	結果			NB/BB	リミット	マージン		備考
			PK	AV	QP		PK	AV	QP					
	[MHz]		[dBuV]			[dB]	[dBuV/m]				[dBuV/m]	[dB]		
	31.2000	Vertic	50.70	43.87	48.69	-14.12	36.58	29.75	34.57	BB	61.57	27.00	OK	
	35.4900	Vertic	57.01	30.57	47.73	-13.97	43.04	16.60	33.76	BB	60.17	26.41	OK	
	74.1800	Horizo	39.19	36.20	37.32	-15.34	23.85	20.86	21.98	NB	42.12	21.26	OK	
	100.7800	Vertic	49.78	25.79	38.46	-14.65	35.13	11.14	23.81	BB	53.94	30.13	OK	
	148.3600	Vertic	41.40	36.43	39.03	-12.09	29.31	24.34	26.94	NB	46.48	22.14	OK	
	215.9900	Vertic	37.50	34.24	35.28	-8.75	28.75	25.49	26.53	NB	48.95	23.46	OK	
	445.0600	Vertic	45.42	41.76	43.47	-12.62	32.80	29.14	30.85	NB	53.00	23.86	OK	
	634.4500	Vertic	44.32	17.67	22.68	-9.46	34.86	8.21	13.22	BB	63.00	49.78	OK	
	741.7500	Vertic	47.19	45.10	46.05	-8.25	38.94	36.85	37.80	NB	53.00	16.15	OK	
	890.1100	Vertic	45.23	42.16	43.99	-5.85	39.38	36.31	38.14	NB	53.00	16.69	OK	
	933.0100	Vertic	47.63	22.91	38.52	-5.07	42.56	17.84	33.45	BB	63.00	29.55	OK	

Photo Documentation

Measurement of electrical radiated emission

Biconical antenna (30MHz-300MHz)



Log periodic antenna (300MHz-1000MHz)

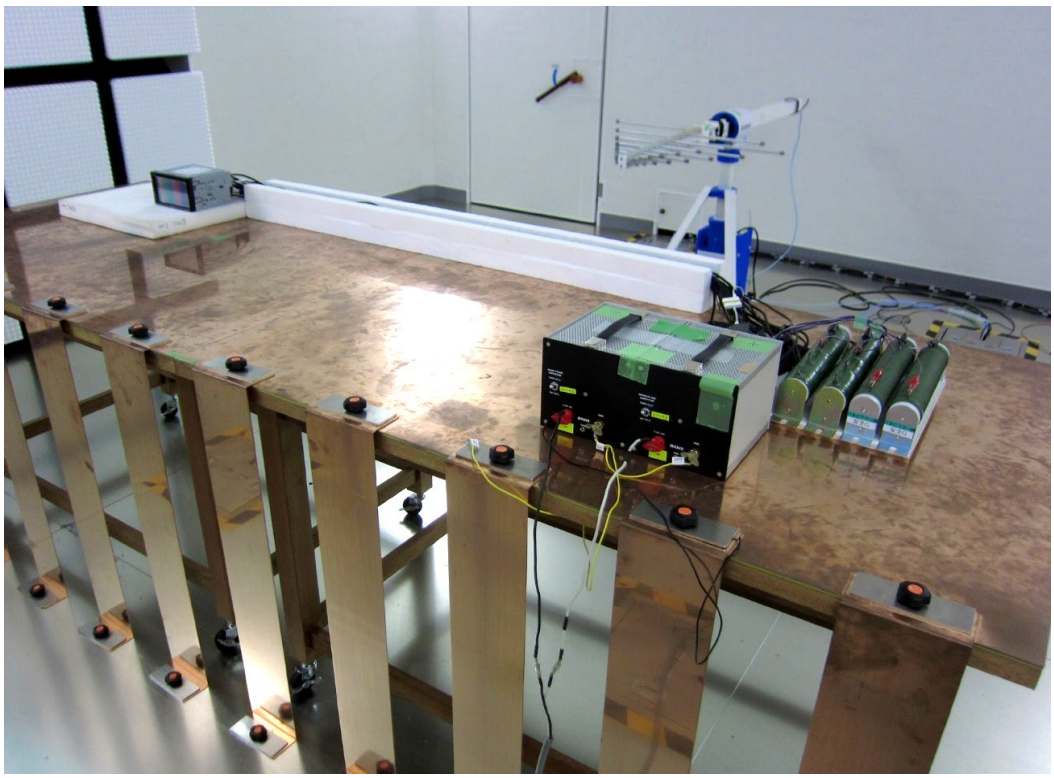
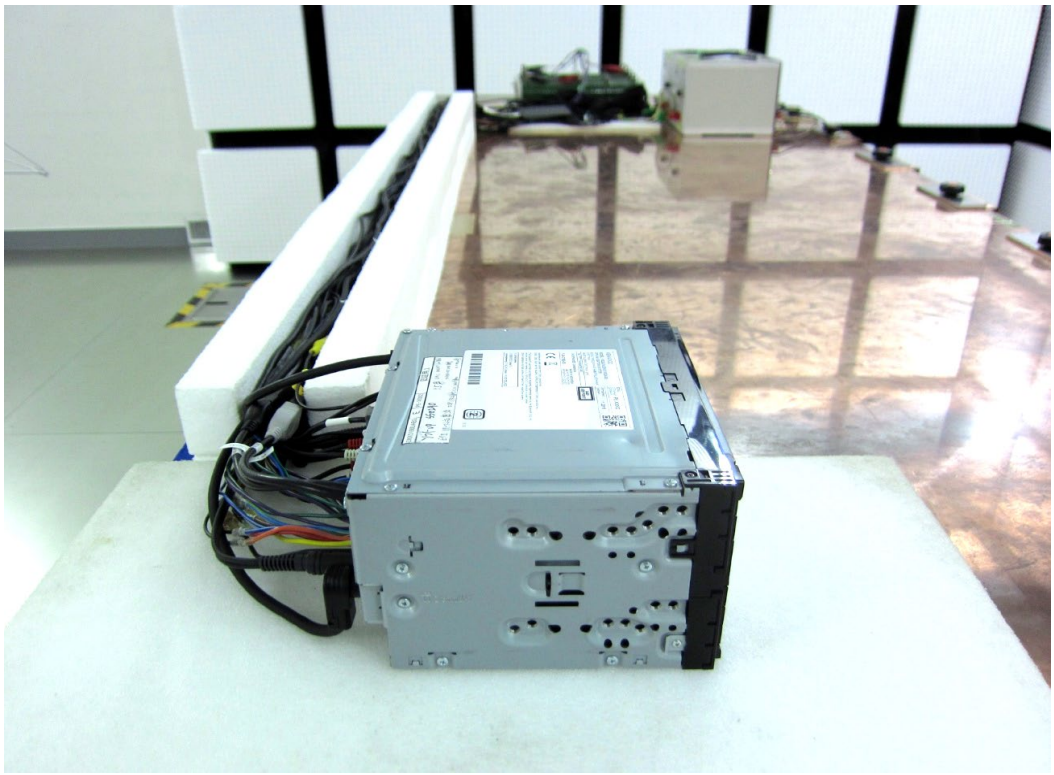
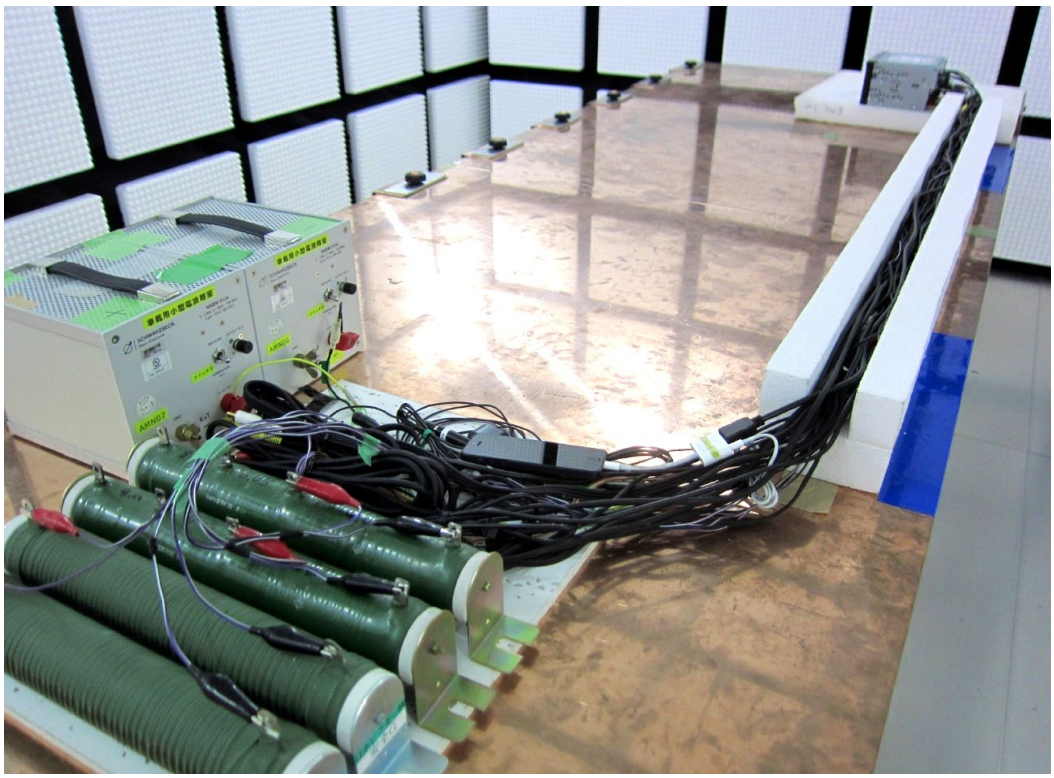


Photo Documentation

Measurement of electrical radiated emission





Voltage Transient Emission Test

Date of test:	February-25-2019
Tester:	K.Kurihara
EUT:	DNX5190DABS
Standard:	EN 50498 (2010)
Application:	12 V system
Ambient Temperature:	See data
Humidity:	See data

Test Result	
Result:	Test passed!

EUT Information	
Brand Name:	KENWOOD
Model Name:	DNX5190DABS
Type:	GPS NAVIGATION SYSTEM
Serial Number:	PE-X0002
Operation Mode:	DVD Play
Description:	Colorbar, 1kHz, 1/8Po

Test Configuration

EUT was placed on a non-conductive pallet height of 50 mm above the ground plane under the description of ISO 7637-2 as shown in Fig.1 and Fig.2.

The disturbance voltage was measured with switch closed and opened using a voltage probe and an oscilloscope.

The test was performed 10 times at each mode, and the data of the largest ampitude noise level was used as the final test result.

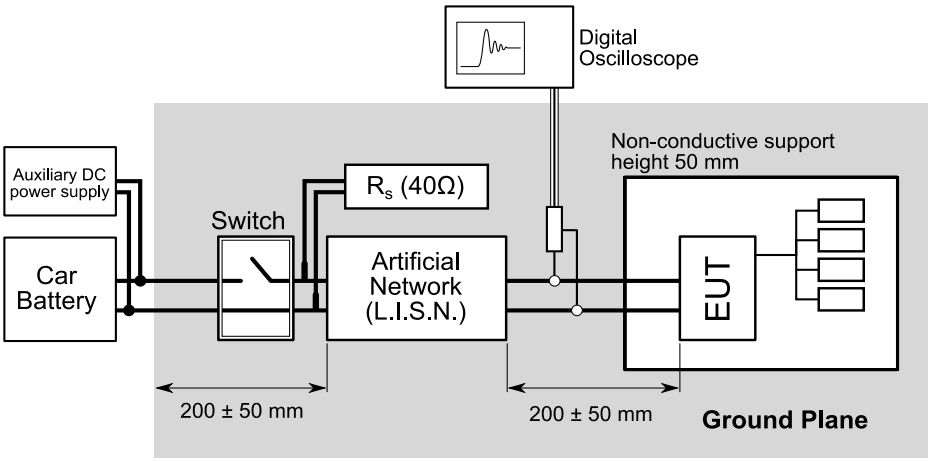


Fig.1 Drawing of the Test Set-up for Slow pulse

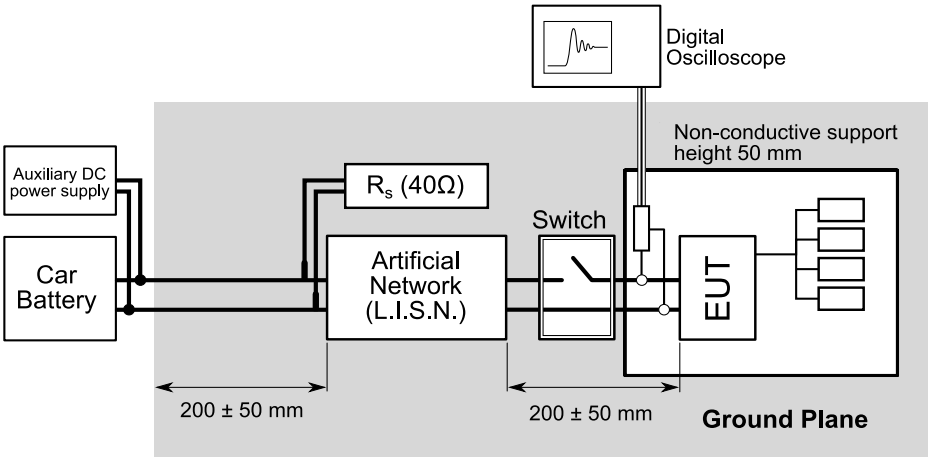
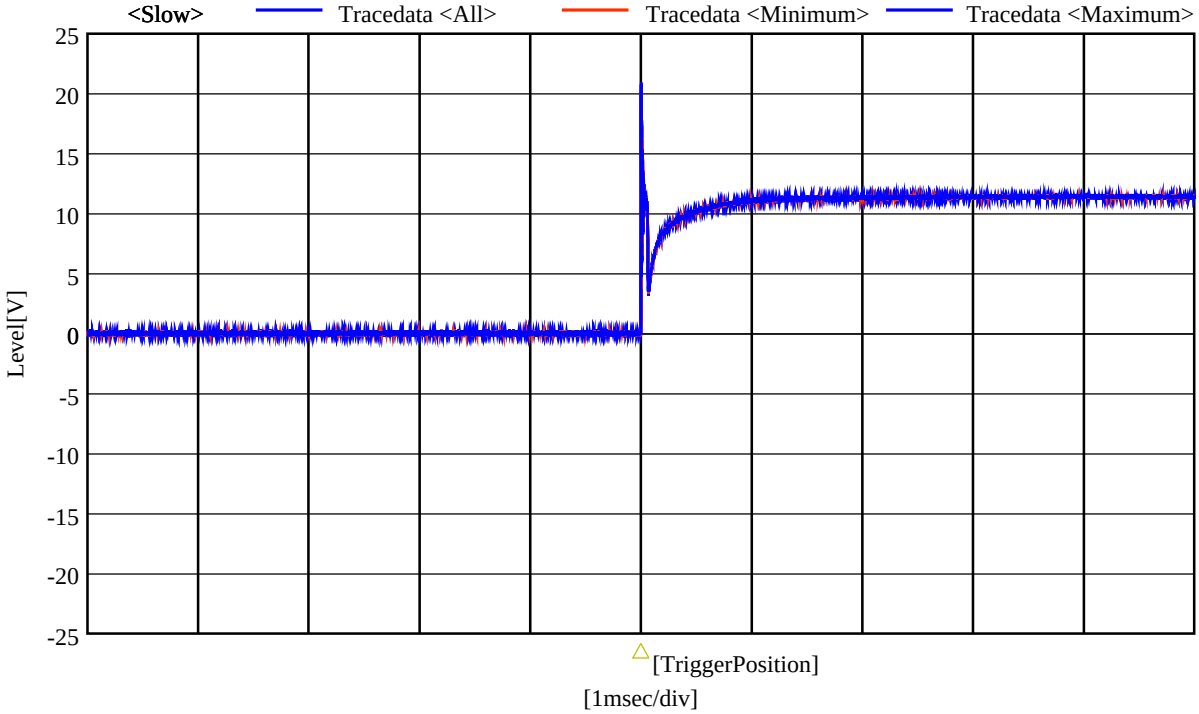


Fig.2 Drawing of the Test Set-up for Fast pulse

ISO 7637-2 Transient emission

Date : 2019/02/25 15:11

Trade Name	: KENWOOD	Standard	: ISO 7637-2
Model Name	: DNX5190DABS	Power Supply	: DC 13.5V
Serial No.	: PE-X0002	Temp/Humi	: 25degC 27%
Test Mode	: --	Operator	: K.Kurihara
Test Condition	: Slow OFF->ON		



switch/relay :Electronic Switch BS 200N100 EMTEST

********** Results of Measurement **********

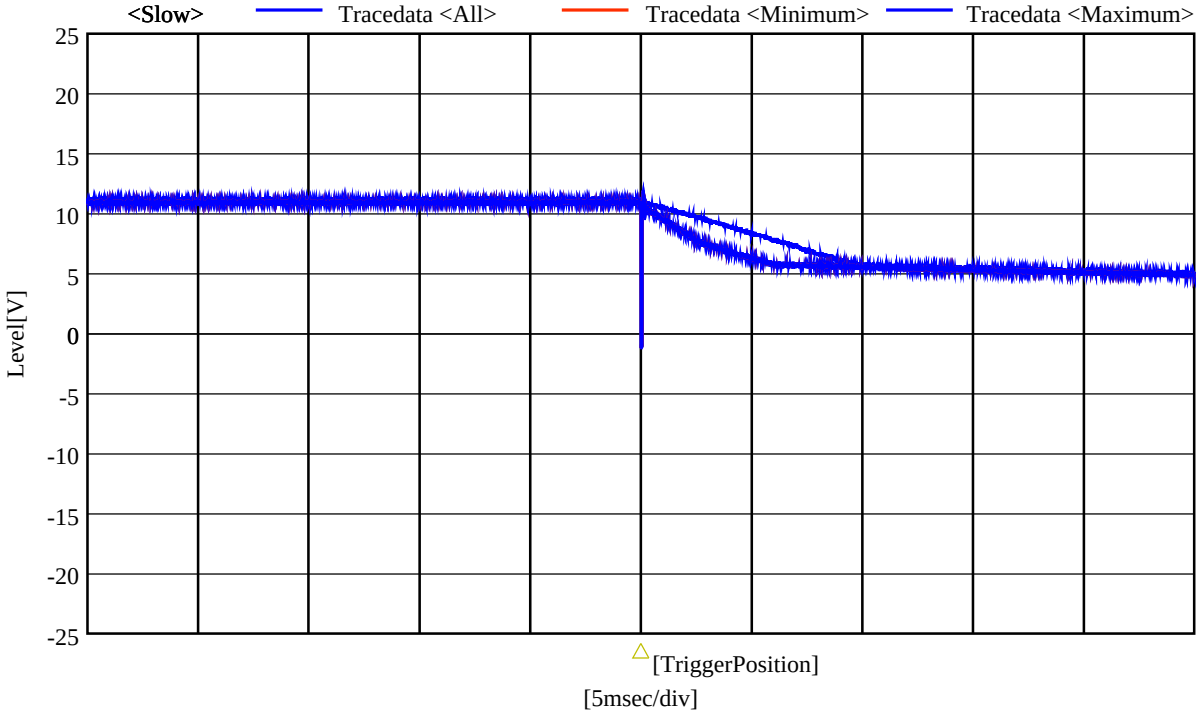
No	Min(V)	Max(V)
1	-13.7	7.1
2	-13.7	6.5
3	-13.7	6.5
4	-13.7	6.7
5	-13.7	7.4
6	-13.7	6.9
7	-13.7	5.9
8	-13.7	7.3
9	-13.7	7.3
10	-13.7	7.3

Minimum	-13.70 V
Average	-13.70 V
Deviation	0.00 V
Maximum	7.45 V
Average	6.86 V
Deviation	0.49 V

ISO 7637-2 Transient emission

Date : 2019/02/25 15:30

Trade Name	: KENWOOD	Standard	: ISO 7637-2
Model Name	: DNX5190DABS	Power Supply	: DC 13.5V
Serial No.	: PE-X0002	Temp/Humi	: 25degC 29%
Test Mode	: DVD Play(Colorbar, 1kHz, 1/8Po)	Operator	: K.Kurihara
Test Condition	: Slow ON->OFF		



switch/relay :Electronic Swtich BS 200N100 EMTEST

********** Results of Measurement **********

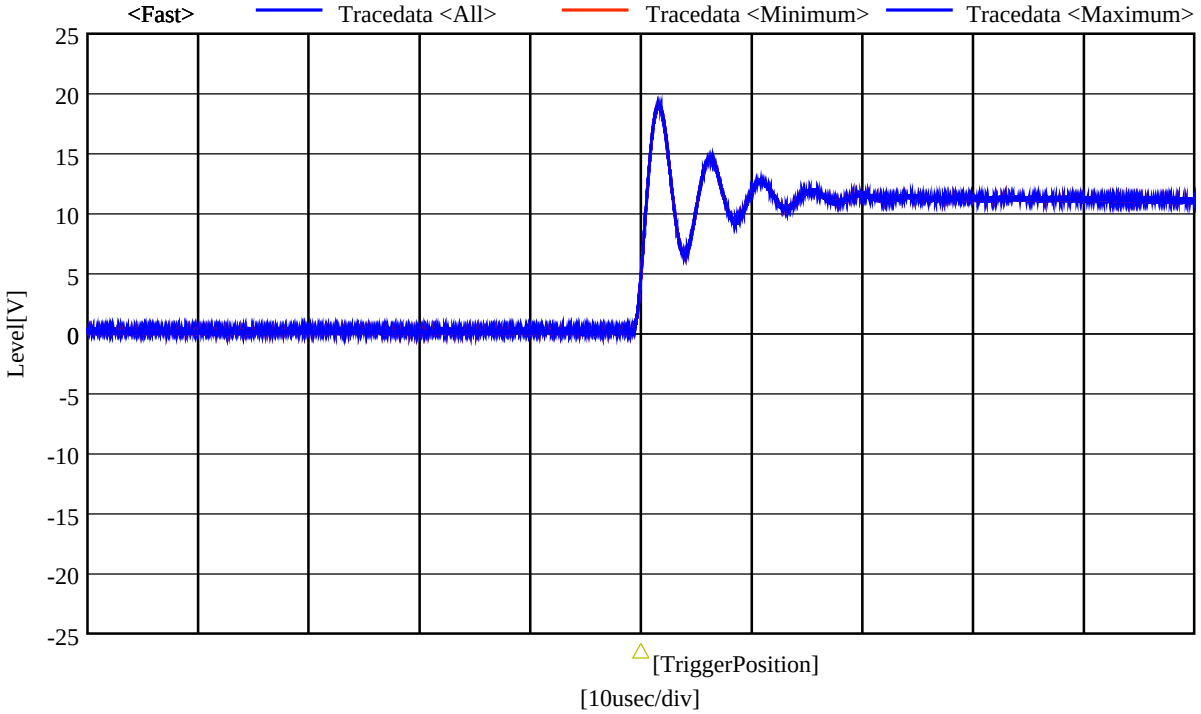
No	Min(V)	Max(V)
1	-14.7	-1.6
2	-14.5	-1.6
3	-14.7	-1.6
4	-14.7	-1.6
5	-14.7	-1.6
6	-14.7	-1.6
7	-14.7	-1.6
8	-14.7	-1.6
9	-14.5	-1.6
10	-14.5	-1.6

Minimum	-14.69 V
Average	-14.63 V
Deviation	0.10 V
Maximum	-1.64 V
Average	-1.64 V
Deviation	0.00 V

ISO 7637-2 Transient emission

Date : 2019/02/25 15:46

Trade Name	: KENWOOD	Standard	: ISO 7637-2
Model Name	: DNX5190DABS	Power Supply	: DC 13.5V
Serial No.	: PE-X0002	Temp/Humi	: 25degC 29%
Test Mode	: --	Operator	: K.Kurihara
Test Condition	: Fast OFF->ON		



switch/relay :Electronic Switch BS 200N100 EMTEST

********** Results of Measurement **********

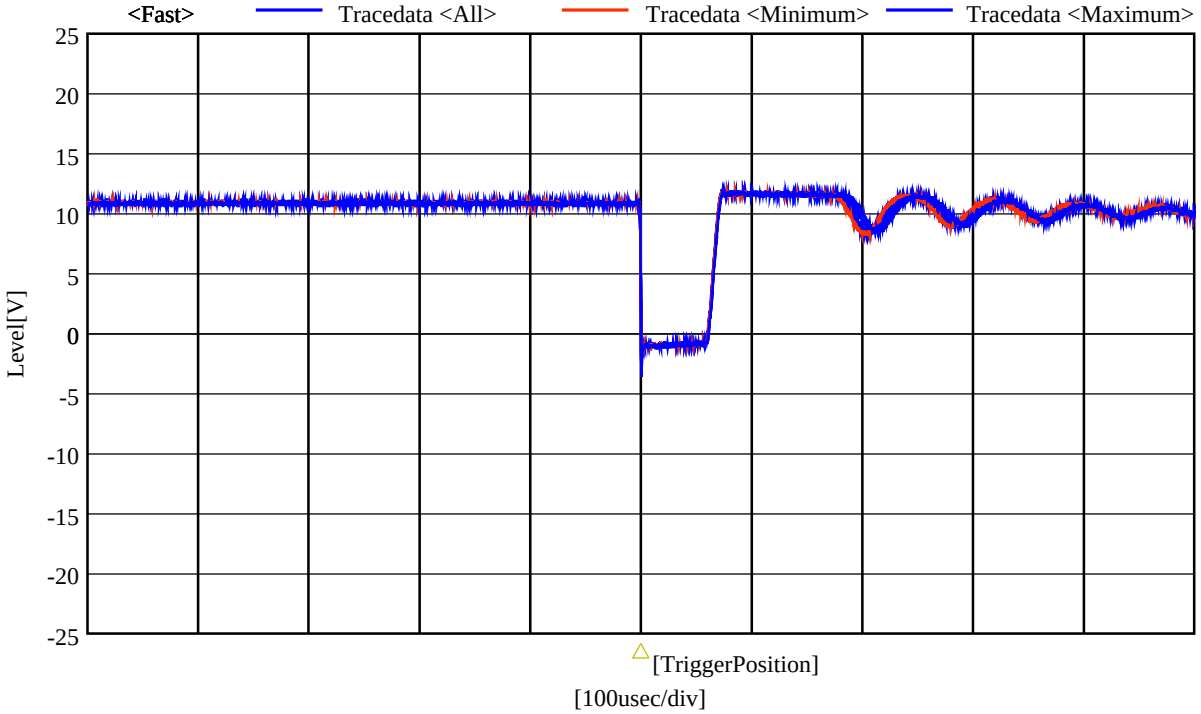
No	Min(V)	Max(V)
1	-13.7	5.7
2	-13.5	5.7
3	-13.5	5.7
4	-13.5	5.7
5	-13.5	5.7
6	-13.5	5.7
7	-13.5	5.7
8	-13.5	5.5
9	-13.5	5.7
10	-13.5	5.7

Minimum	-13.70 V
Average	-13.52 V
Deviation	0.06 V
Maximum	5.67 V
Average	5.65 V
Deviation	0.06 V

ISO 7637-2 Transient emission

Date : 2019/02/25 16:01

Trade Name	: KENWOOD	Standard	: ISO 7637-2
Model Name	: DNX5190DABS	Power Supply	: DC 13.5V
Serial No.	: PE-X0002	Temp/Humi	: 25degC 29%
Test Mode	: DVD Play(Colorbar, 1kHz, 1/8Po)	Operator	: K.Kurihara
Test Condition	: Fast ON->OFF		



switch/relay :Electronic Switch BS 200N100 EMTEST

********** Results of Measurement **********

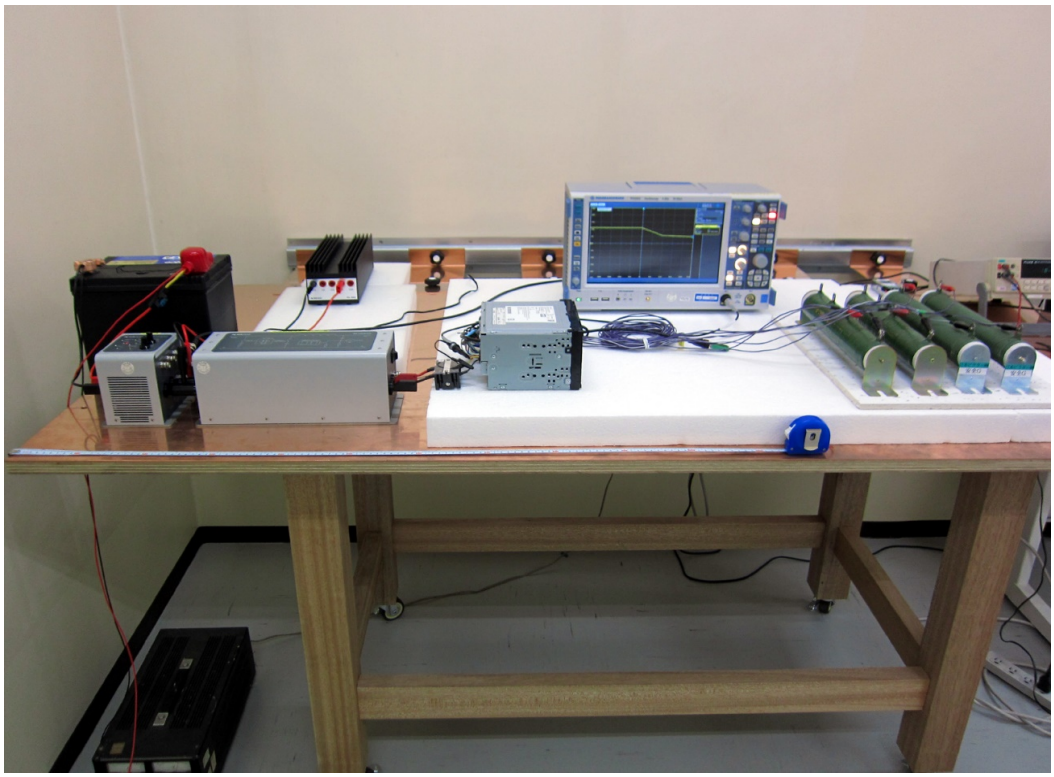
No	Min(V)	Max(V)
1	-17.1	-1.6
2	-16.9	-1.6
3	-17.1	-1.4
4	-16.9	-1.6
5	-17.1	-1.6
6	-17.1	-1.6
7	-17.1	-1.4
8	-16.9	-1.6
9	-17.1	-1.4
10	-17.1	-1.4

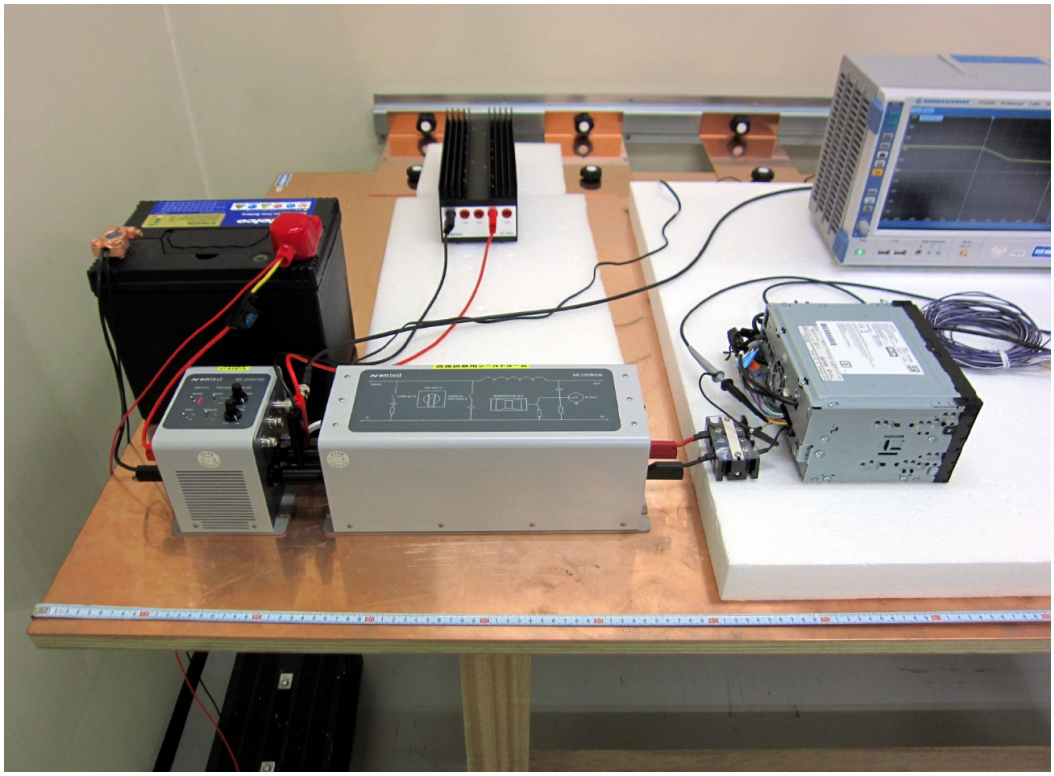
Minimum	-17.06 V
Average	-17.00 V
Deviation	0.10 V
Maximum	-1.44 V
Average	-1.56 V
Deviation	0.10 V

Photo Documentation

Measurement of electrical transient emission (ISO7637-2)

Set up for Slow pulse



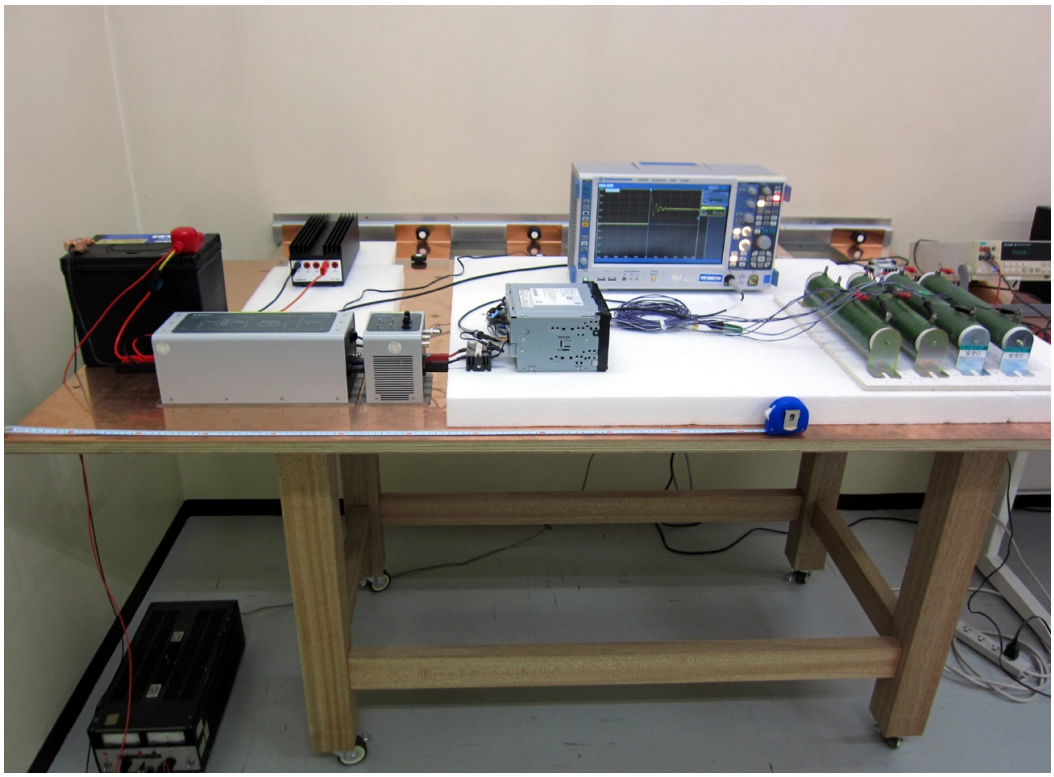


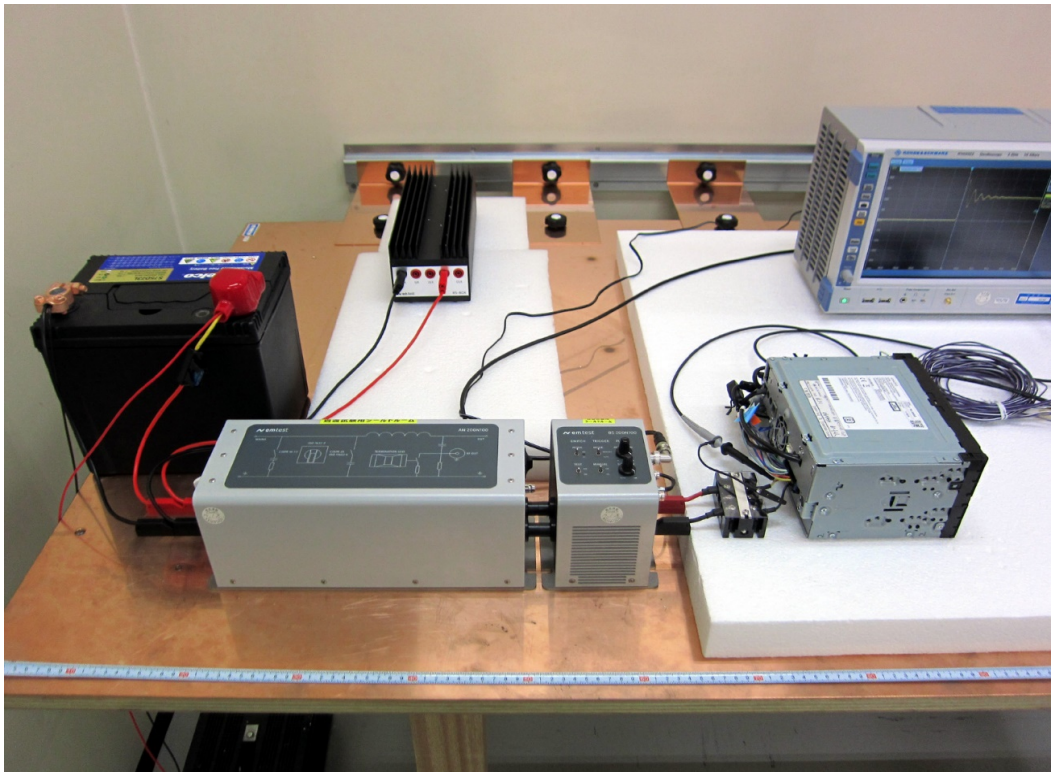
JVCKENWOOD Corporation
Automotive
2967-3 Ishikawa-mach, Hachioji-shi, Tokyo, 192-8525 Japan Tel:+81-42-646-5525

Photo Documentation

Measurement of electrical transient emission (ISO7637-2)

Set up for Fast pulse





Transient Immunity Test

Date of test:	February-25-2019
Tester:	K.Kurihara
D. U. T:	DNX5190DABS
Standard:	EN 50498 (2010)
Application:	12 V system
Ambient Temperature:	25 degC
Humidity:	28%

Test Result	
Result:	Test passed!

D.U.T Information	
Brand Name:	KENWOOD
Model Name:	DNX5190DABS
Type:	GPS NAVIGATION SYSTEM
Serial Number:	PE-X0002
Operation Mode:	DVD Play
Description:	1kHz, Colorbar

Test Configuration

D.U.T was placed on a non-conductive support height 50 mm above the ground plane under the description of ISO 7637-2 as shown in Fig.1.

D.U.T was in the operation condition specified.

The performance of D.U.T was monitored continuously.

The check of each operation was performed after each test.

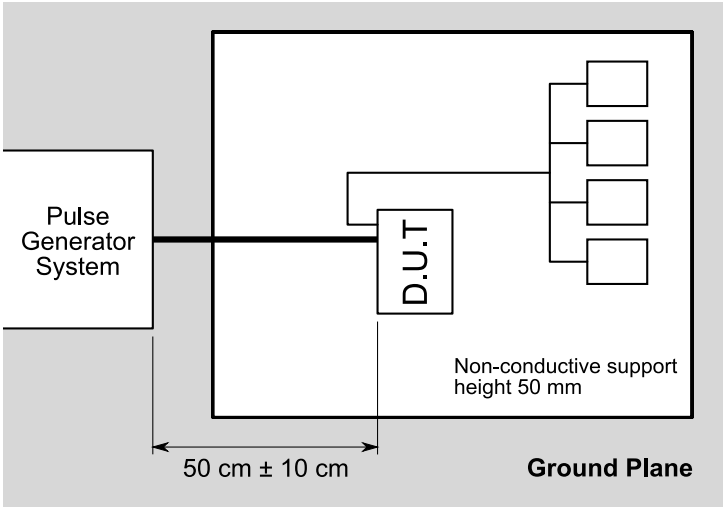
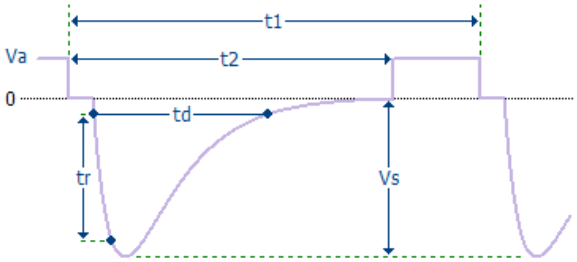


Fig.1 Drawing of the Test Set-up

Test Procedure			
Pulse Name:	prEN 50498 (2008-03) : Pulse 1		
Test generator:	UCS200N50	Software No.:	000873
		Serial No.:	P1741204742
Coupling network:	UCS200N50	Serial No.:	P1741204742
Va (Alternator):	13.5 V	Current limit:	25 A
Software:	iso.control	Version:	6.0.1

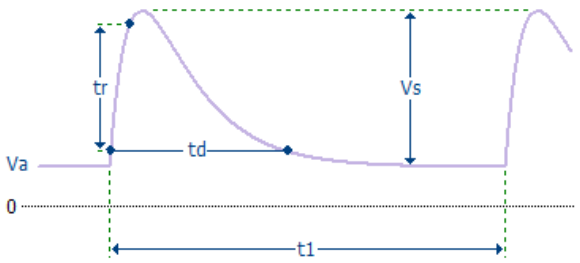
Test Setup		
Vs:	-75	V
t1:	0.5	s
t2:	200	ms
tr:	1	us
td:	2000	us
Ri:	10	Ohm
Coupling:	Battery	
Events:	5000	
Test duration:	00:41:40	h



Test Result			
Pulses:	5000	Required functional status:	Class D
Result:	Test passed!		
Comments:	Power supply repeats ON and OFF in the test (Screen blinking). After the test, return to the normal state, and it can be operated normally.		

Test Procedure			
Pulse Name:	prEN 50498 (2008-03) : Pulse 2a		
Test generator:	UCS200N50	Software No.:	000873
		Serial No.:	P1741204742
Coupling network:	UCS200N50	Serial No.:	P1741204742
Va (Alternator):	13.5 V	Current limit:	25 A
Software:	iso.control	Version:	6.0.1

Test Setup		
Vs:	+37	V
t1:	0.2	s
tr:	1	us
td:	50	us
Ri:	2	Ohm
Coupling:	Battery	
Events:	5000	
Test duration:	00:16:40	h

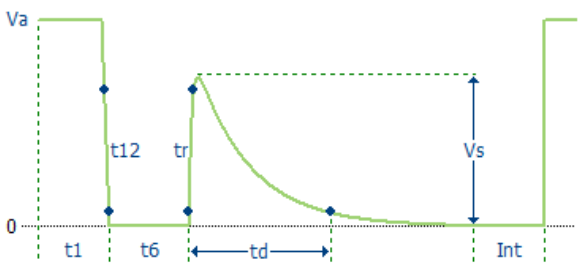


Test Result			
Pulses:	5000	Required functional status:	Class D
Result:	Test passed!		
Comments:	Normal operating both during and after the test		

Test Procedure			
Pulse Name:	prEN 50498 (2008-03) : Pulse 2b		
Test generator:	VDS200Q25	Software No.:	001298
		Serial No.:	P1804213872
Coupling network:	UCS200N50	Serial No.:	P1741204742
Va (Alternator):	13.5 V	Current limit:	25 A
Software:	iso.control	Version:	6.0.1

Test Setup

Vs:	10.0	V
t1:	1.0	s
t6:	1	ms
td:	200	ms
Int:	1.0	s
Ri:	0.05	Ohm
t12:	1	ms
tr:	1	ms
Events:	10	
Test duration:	00:00:28	h

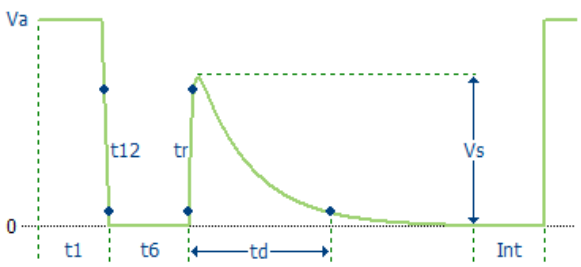


Test Result			
Pulses:	10	Required functional status:	Class D
Result:	Test passed!		
Comments:	Power supply is shutdown during the pulse is applied. After the test, return to the normal state, and it can be operated normally.		

Test Procedure			
Pulse Name:	prEN 50498 (2008-03) : Pulse 2b		
Test generator:	VDS200Q25	Software No.:	001298
		Serial No.:	P1804213872
Coupling network:	UCS200N50	Serial No.:	P1741204742
Va (Alternator):	13.5 V	Current limit:	25 A
Software:	iso.control	Version:	6.0.1

Test Setup

Vs:	10.0	V
t1:	1.0	s
t6:	1	ms
td:	2000	ms
Int:	1.0	s
Ri:	0.05	Ohm
t12:	1	ms
tr:	1	ms
Events:	10	
Test duration:	00:01:13	h

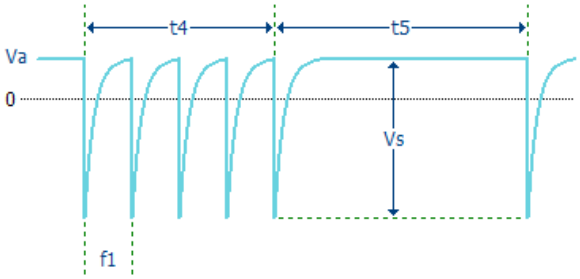


Test Result			
Pulses:	10	Required functional status:	Class D
Result:	Test passed!		
Comments:	Power supply is shutdown during the pulse is applied. After the test, return to the normal state, and it can be operated normally.		

Test Procedure			
Pulse Name:	prEN 50498 (2008-03) : Pulse 3a		
Test generator:	UCS200N50	Software No.:	000873
		Serial No.:	P1741204742
Va (Alternator):	13.5 V	Current limit:	25 A
Software:	iso.control	Version:	6.0.1

Test Setup

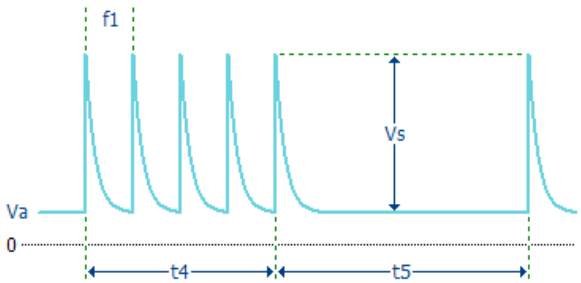
Vs:	-112	V
f1:	10	kHz
t4:	10	ms
t5:	90	ms
tr:	5	ns
td:	100	ns
Ri:	50	Ohm
Coupling:	Battery	
Test duration:	1	h



Test Result			
Test duration:	01:00:01 h	Required functional status:	Class D
Result:	Test passed!		
Comments:	Normal operating both during and after the test		

Test Procedure			
Pulse Name:	prEN 50498 (2008-03) : Pulse 3b		
Test generator:	UCS200N50	Software No.:	000873
		Serial No.:	P1741204742
Va (Alternator):	13.5 V	Current limit:	25 A
Software:	iso.control	Version:	6.0.1

Test Setup		
Vs:	+75	V
f1:	10	kHz
t4:	10	ms
t5:	90	ms
tr:	5	ns
td:	100	ns
Ri:	50	Ohm
Coupling:	Battery	
Test duration:	1	h

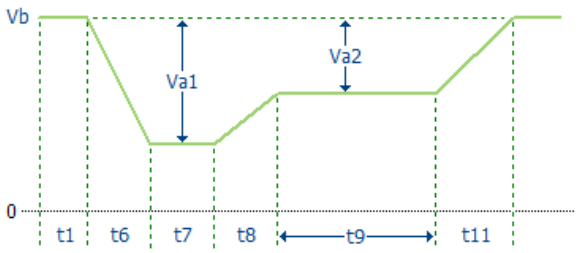


Test Result			
Test duration:	01:00:01 h	Required functional status:	Class D
Result:	Test passed!		
Comments:	Normal operating both during and after the test		

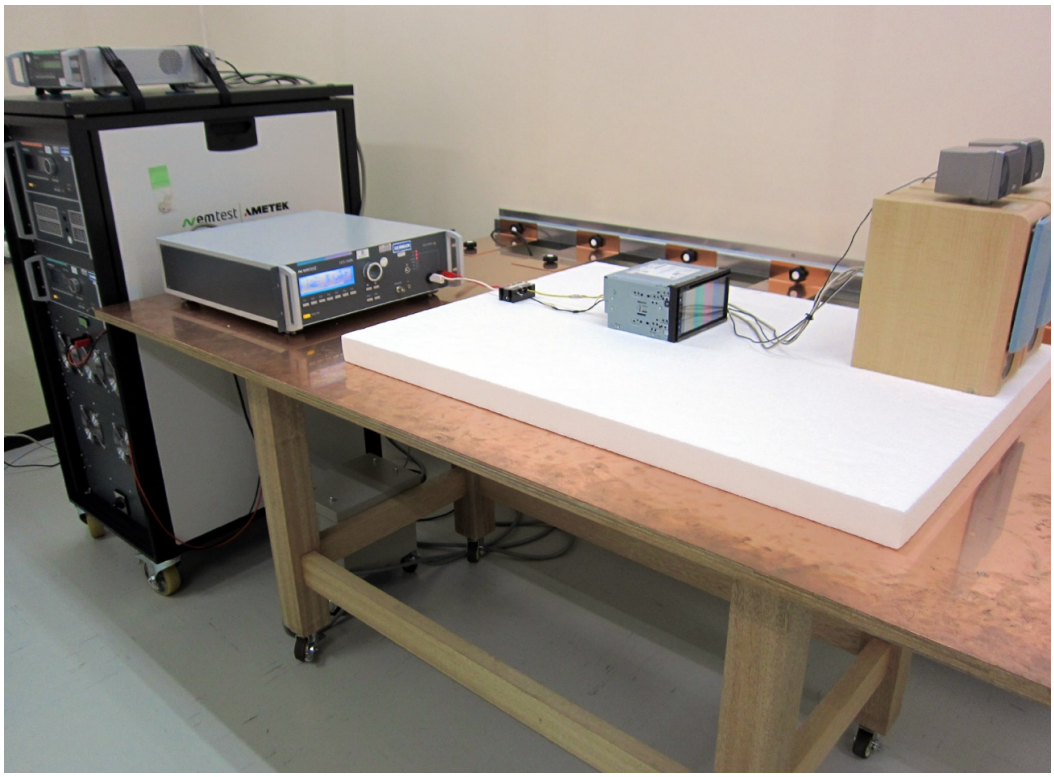
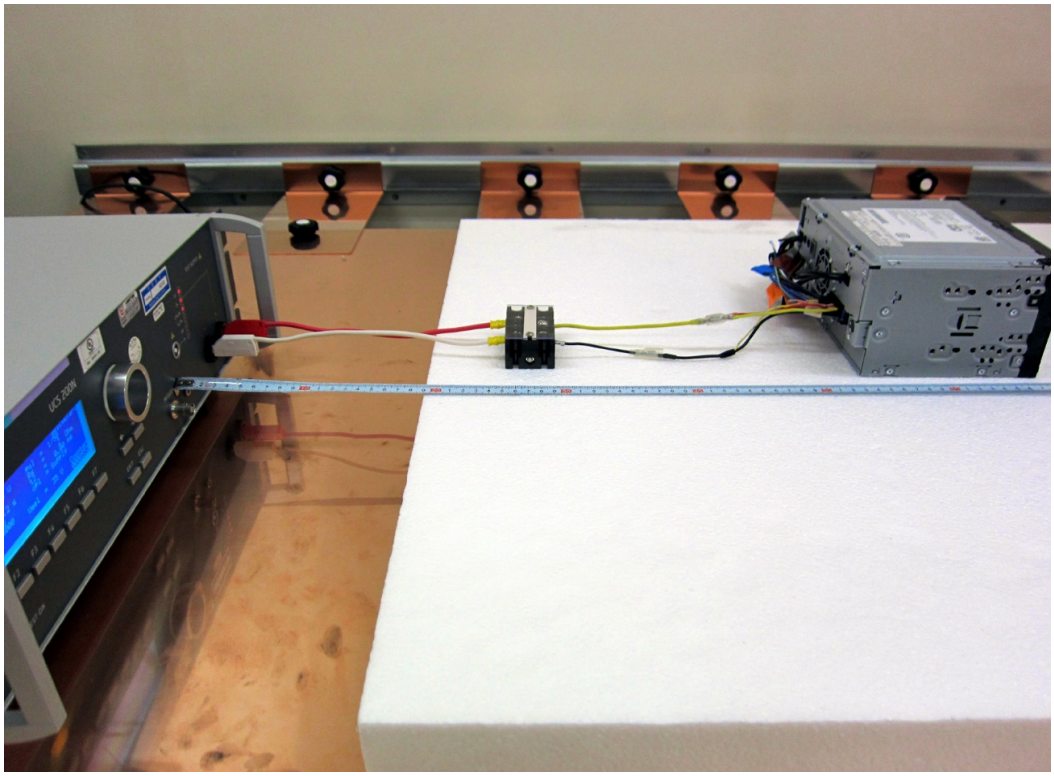
Test Procedure			
Pulse Name:	prEN 50498 (2008-03) : Pulse 4		
Test generator:	VDS200Q25	Software No.:	001298
		Serial No.:	P1804213872
Coupling network:	UCS200N50	Serial No.:	P1741204742
Vb (Battery):	12.0 V	Current limit:	25 A
Software:	iso.control	Version:	6.0.1

Test Setup

Va1:	-6.0	V
Va2	-5.0	V
t1:	1.0	s
t6:	5	ms
t7:	20	ms
t8:	30	ms
t9:	0.5	s
t11:	50	ms
Events:	1	
Test duration:	00:00:02	h



Test Result			
Pulses:	1	Required functional status:	Class D
Result:	Test passed!		
Comments:	Power supply is shutdown during the pulse is applied. After the test, return to the normal state, and it can be operated normally.		

Photo Documentation

Measurement of electrical transient immunity (ISO7637-2)