TEST REPORT

Ref. number : YE19022

Date of issue : August 23, 2019

Applicant information

Name	: JVCKENWOOD Technologies Singapore Pte. Ltd.
Address	: 1 Ang Mo Kio Street 63, Singapore 569110

Test Sample (EUT) Information

Type description	: DIGITAL MEDIA RECEIVER
Trade name/ Brand	: KENWOOD
Model name	: DPX-M3200BT
Serial number(s)	: 124X0055
Rating	: 12V DC, 6A
Accessory	: None

Test Summary

Test laboratory	: JVCKENWOOD EMC CENTER 3-12, Moriyacho, Kanagawa-ku, Yokohama-shi, Kanagawa, 221-0022, Japan TEL +81-45-450-2473, FAX +81-45-450-2474
Date(s) of test	: August 5, 2019 – August 7, 2019
Test specification	: EN55032:2015+AC:2016/ Class B
Test result	: Pass / The test results relate only to the sample tested.

ilac-MRA VLAC Lab Accreditation VLAC-037

Approved by

Hiroyuki Ryu, Manager

Tested and written by

Emiko Tazawa, Engineer

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1. Scope of test (emission)

Measurements	Result	Remark
Disturbance voltage at the mains terminals	N/A	N/A
Disturbance radiation	Test passed	None
Disturbances voltage at the antenna terminals	Test passed	None
Disturbance at telecommunication ports	Test passed	None

Remark : None

- Procedure : Assessment of conformity to test specification / Type examination
- This measurements report covered by this document have been performed in accordance with the requirements of ISO/IEC 17025 and are traceable to national or international standards of measurement.
- All tests were performed with no deviation from the below standard.
  EN55032:2015+AC:2016/ Class B
- This test results responds to the tested sample.

2. Test facility

Ref. no. : EMCG001, Semi-anechoic chamber (10m SAC), TDK (17m × 12m × 8m)

Ref. no. : EMCG081, Shielded room, TDK (8m × 5m × 3m)

2.1 Filing or accreditation

FCC site filing : Designation no. : JP5176

VCCI site registration : A-0150

VLAC accreditation : Certificate number : VLAC-037

3. Test sample Information (additional)

Description : The EUT DPX-M3200BT is a DIGITAL MEDIA RECEIVER.
The EUT is provided radio tuner and audio amplifier (50W x4, 4Ω - 8Ω).
The maxmum frequency of the internal clock : 6.2208GHz.
For the features/Terminals of the EUT, the details are attached on next page.

Date of receipt : August 1, 2019

Way of sampling : Sent by client

EUT condition : Pre production sample

EUT modifications : No modification has been carried out by test laboratory

3.1 Features / Terminals of the EUT

Features	Terminals	Special options /terminals
☐ CD Player	☒ Wiring harness (14 cables),Note 2	☐
☐ DVD Player	☒ FRONT L/R(RCA)	☐
☒ Radio Tuner	☒ REAR/SW L/R (RCA)	☐
☒ iPod or USB	☒ MIC (φ3.5, mono)	☐
☐	☐ External optional accessory	☐
☐	☐	☐
☐	☐	☐
☐	For front	☐
☐	☒ AUX (φ3.5, stereo)	☐
☐	☒ USB (Slave)	☐
☐	☐	☐
☐	☐	☐

Note 1 : "☒" indicates that the EUT equips the feature/terminal.

"☐" indicates that the EUT does not equip feature/terminal.

Note 2 : The detail as next page.

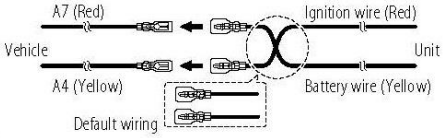
Remark : None

Wiring harness 14 pin cables

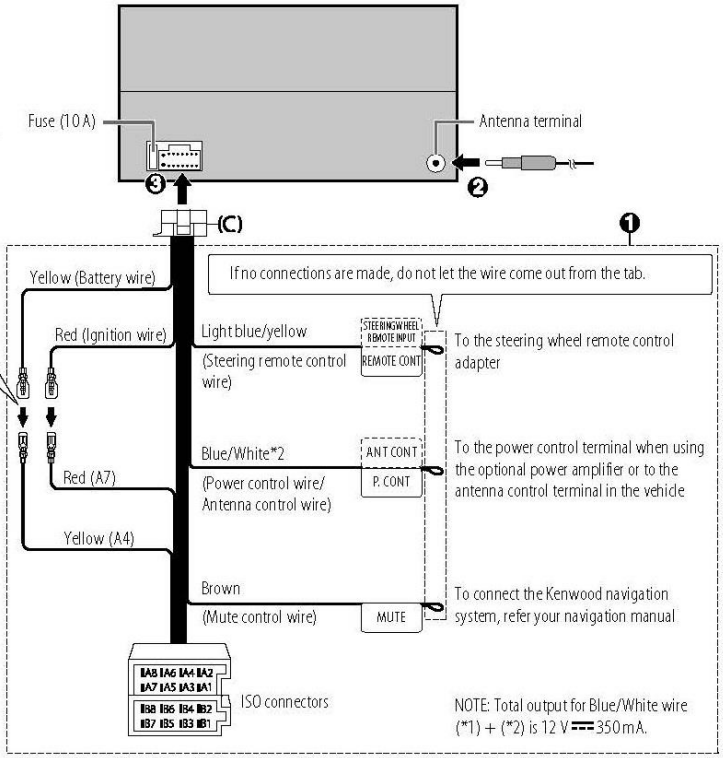
Wiring connection

If your car does not have an ISO terminal:
We recommend installing the unit with a commercially available custom wiring harness specific for your car and leave this job to professionals for your safety. Consult your car audio dealer.

Connecting the ISO connectors on some VW/Audi or Opel (Vauxhall) automobiles
You may need to modify the wiring of the supplied wiring harness as illustrated below.



Pin	Color and function (for ISO connectors)		
A4	Yellow	:	Battery
A5	Blue/White*1	:	Power control
A7	Red	:	Ignition (ACC)
A8	Black	:	Earth (ground) connection
B1	Purple ⊕	:	Rear speaker (right)
B2	Purple/black ⊖		For 3-way crossover: Tweeter (right)
B3	Gray ⊕	:	Front speaker (right)
B4	Gray/black ⊖		For 3-way crossover: Mid range speaker (right)
B5	White ⊕	:	Front speaker (left)
B6	White/black ⊖		For 3-way crossover: Mid range speaker (left)
B7	Green ⊕	:	Rear speaker (left)
B8	Green/black ⊖		For 3-way crossover: Tweeter (left)



Each cable length is as follows

front speaker (left & right / 4 cables)	:	original/20cm + extension/80cm	→	100cm / 4Ω load
rear speaker (left & right / 4 cables)	:	original/20cm + extension/80cm	→	100cm/ 4Ω load
Ignition wire / 1 cable	:	original/20cm + extension/100cm	→	120cm / DC 12V
Battery wire / 1 cable	:	original/20cm + extension/100cm	→	120cm / DC 12V
Ground wire / 1 cable	:	original/20cm + extension/100cm	→	120cm / Ground
Power control wire /1 cable	:	16cm / opened		
Mute control wire /1 cable	:	16cm / opened		
Antenna control wire /1 cable	:	16cm / opened		

3.2 List of accessory

Type no.	Model no.	Serial number	Manufacturer /Brand	CE
USB Flash Memory /Peripheral	SDCZ71-008G (A1574)	None	SanDisk	Not Applicable
iPod touch 6 (32GB/ Ver 12.3) /Peripheral	MKHQ2ZP/A	CCQXC089GGK8	Apple Inc.	CE

3.3 List of cable

Cable type & No.( )	Type no.	Connection	Shielded	Ferrite core	Length (m)	Treatment for the extra length
Wiring harness 14 pin cables (1),Note 1	N/A	EUT	None	None	Note	Freely
REAR/SW L/R cable (2)	RCA	EUT	Yes	None	1.6	Fold back and forth in the center
FRONT L/R cable (3)	RCA	EUT	Yes	None	1.6	Fold back and forth in the center
Mic cable (4)	φ3.5 (mono)	EUT	Yes	None	3.0	Fold back and forth in the center
AUX cable (5)	φ3.5 (Streo)	EUT	Yes	None	1.0	Freely front side located
USB terminal cable (6)	USB	EUT to USB Flash Drive	Yes	None	1.0	Freely front side located
iPod cable (7)	USB	EUT to iPod touch	Yes	None	1.0	Freely front side located
BNC cable (8), Note 2	BNC	EUT to SG	Yes	None	2.0	Freely

Note 1: for details, see “Wiring harness 14 pin cables“ of page 6

Note 2: for AM and FM antenna terminal, only used Disturbance at telecommunication ports measurement

:

4. Test configuration

Power supply : 12V DC

4.1 Communication modes

The EUT exercise program used during testing was designed to exercise the various system components in a manner similar to typical.

The system was configured in typical fashion (as a customer would normally use it) for testing.

4.1.1 Disturbance voltage at the mains terminals

N/A, EUT does not have a mains power supply (DC equipment).

4.1.2 Disturbance radiation

Measurement condition

Frequency range : From 30MHz to 1GHz and from 1GHz to 6GHz

Measurement distance : From 30MHz to 1GHz / 3m

above 1GHz / 3m

Communication modes :

1) EUT alone operated

The details of operation modes are as follows.

Communi-cation modes	Operation modes	4.2.2 Configuration of tested system
1)	1. EUT playback USB memory, 1kHz audio signal / 4Ω dummy load x4 connected	(1) EUT alone operating / USB mode
1)	2. EUT playback iPod, 1kHz signal / 4Ω dummy load x4 connected	(2) EUT alone operating / iPod mode
1)	3. EUT AM 1611kHz tuned / 4Ω dummy load x4 connected	(3) EUT alone operating / AM mode, FM mode
1)	4. EUT FM 88MHz tuned / 4Ω dummy load x4 connected	
1)	5. EUT FM 98MHz tuned / 4Ω dummy load x4 connected	
1)	6. EUT FM 108MHz tuned / 4Ω dummy load x4 connected	

Note :

1. Software is not used to exercise the EUT.
2. The level of the audio output signal is adjusted by the volume control to be 1/8 of the rated output power.

   The volume position is as follows.

   USB Flash Drive playback : 20

   iPod playback : 20

   AM 1611kHz tuned : 27

   FM tuned 88MHz/98MHz/108MHz : 27
3. With the USB, iPod playback mode, FM/AM antenna terminal is terminated at 75Ω.
4. FM signal is modulated 37.5kHz/ monophonic signal 1kHz/ level 60dBuV.
5. AM signal is modulated 40%/ monophonic signal 1kHz/ level 60dBuV.

4.1.3 Disturbance voltage at the antenna terminals

Communication modes :

1) EUT alone operated

The details of operation modes are as follows.

Communi-cation modes	Operation modes	4.3.2 Configuration of tested system
1)	1. FM receiving mode (Auto search mode) / 4Ω dummy load x4 connected	(1) EUT alone operating / FM mode

Note :

1. Software is not used to exercise the EUT.
2. The level of the audio output signal is adjusted by the volume control to be 1/8 of the rated output power.
   The volume position is as follows.
   FM tuned 88MHz/98MHz/108MHz : 27
3. FM signal is modulated 37.5kHz/ monophonic signal 1kHz/ level 60dBuV.

4.1.4 Disturbance at telecommunication ports

Communication modes :

1) EUT alone operated

The details of operation modes are as follows.

Communi-cation modes	Operation modes	4.4.2 Configuration of tested system
1)	1. EUT FM 88MHz tuned / 4Ω dummy load x4 connected	(1) EUT alone operating / AM mode, FM mode
1)	2. EUT FM 98MHz tuned / 4Ω dummy load x4 connected	
1)	3. EUT FM 108MHz tuned / 4Ω dummy load x4 connected	
1)	4. EUT AM 1611kHz tuned / 4Ω dummy load x4 connected	

Note :

1. Software is not used to exercise the EUT.
2. The level of the audio output signal is adjusted by the volume control to be 1/8 of the rated output power.

   The volume position is as follows.

   AM 1611kHz tuned : 27

   FM tuned 88MHz/98MHz/108MHz : 27
3. FM signal is modulated 37.5kHz/ monophonic signal 1kHz/ level 60dBuV.
4. AM signal is modulated 40%/ monophonic signal 1kHz/ level 60dBuV.

4.2 Disturbance radiation

4.2.1 Summary of measurement setting

In the frequency range of 30MHz to 1GHz, the electric field strength is measured according the standard. The test setup is made according to CISPR 16-2-3 and EN55032 in the anechoic chamber, which allows a 3m or 10m distance measurement.

For the EUT of tabletop, the rears of the EUT and the peripherals are all aligned and flush with rear of non - conductive table top. This table is 0.8m height and 1.5m wide x 1.0m deep size. The spacing between the each equipment was 10cm. The mains flexible cords are dropped to floor and are round over to receptacle. Interconnecting cables of table top equipment that hang closer than 0.4m to the ground plane are folded back and forth forming a bundle 0.4m long, hanging approximately in the middle between ground plane and table.

For the EUT of floor-standing, the EUT is placed on the horizontal ground reference plane, orientated for normal use. The EUT is separated from metallic contact with the ground reference plane by up to 15cm of insulation. And the cable is insulated (by 15cm) from the ground reference plane by up to 15cm of insulation. Intra-unit cables (between units forming the EUT or between the EUT and an associated equipment) shall drape to, but remain insulated from, the horizontal ground reference ground. Any excess shall either be folded at the cable center into a bundle no longer than 0.4m or arranged in a serpentine fashion.

The central point of the arrangement shall be positioned at the center of the turn table. The measurement distance is the shortest horizontal distance between an imaginary circular periphery just encompassing this arrangement and the calibration point of antenna.

The measurement is conducted with both horizontal and vertical antenna polarization. The antenna height is varied 1m to 4m with both horizontal and vertical polarization. The turn table is fully rotated and the maximum radiated emission is scanned.

The test is carried out according to our test procedure VYES-T001.

cont.

(for above 1GHz)

In the frequency range of 1GHz to 6GHz, the electric field strength is measured according the standard. The test setup is made according to CISPR 16-2-3 and EN55032 in the anechoic chamber ((Validated test volume (from site validation procedure) : diameter 2.0m, height 2.5m), which allows a 3m distance measurement.

For the EUT of tabletop, the rears of the EUT and the peripherals are all aligned and flush with rear of non - conductive table top. This table is 0.8m height and 1.5m wide x 1.0m deep size. The spacing between the each equipment was 10cm. The mains flexible cords are dropped to floor and are round over to receptacle. Interconnecting cables of table top equipment that hang closer than 0.4m to the ground plane are folded back and forth forming a bundle 0.4m long, hanging approximately in the middle between ground plane and table.

For the EUT of floor-standing, the EUT is placed on the horizontal ground reference plane, orientated for normal use. The EUT is separated from metallic contact with the ground reference plane by up to 15cm of insulation. And the cable is insulated (by 15cm) from the ground reference plane by up to 15cm of insulation. Intra-unit cables (between units forming the EUT or between the EUT and an associated equipment) shall drape to, but remain insulated from, the horizontal ground reference ground. Any excess shall either be folded at the cable center into a bundle no longer than 0.4m or arranged in a serpentine fashion.

The central point of the arrangement shall be positioned at the center of the turn table. The measurement distance is the shortest horizontal distance between an imaginary circular periphery just encompassing this arrangement and the calibration point of antenna.

Absorber shall be spread between floor of a turn table and a receive antenna. (The anechoic chamber shall relay on reflection-free condition.) The measurement is conducted with both horizontal and vertical antenna polarization. The center of receive antenna shall be fixed at the height of the center of the EUT, or the center of the antenna shall be scanned vertically along the line parallel to a maximum vertical dimension larger. The turn table is fully rotated and the maximum radiated emission is scanned.

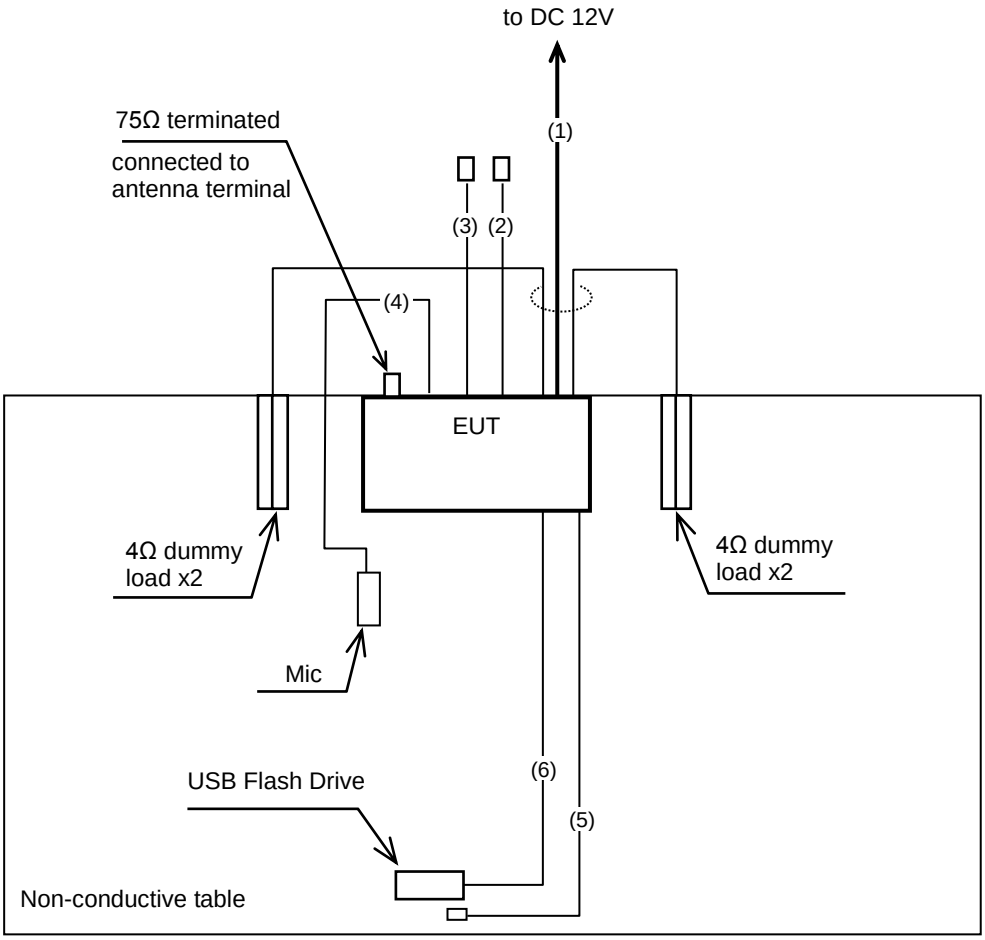
The test is carried out according to our test procedure VYES-T001.

4.2.2 Configuration of tested system

(1) EUT alone operating/ USB mode

Photo 1, 2 and 3

Photo 4 and 5 (above 1GHz)

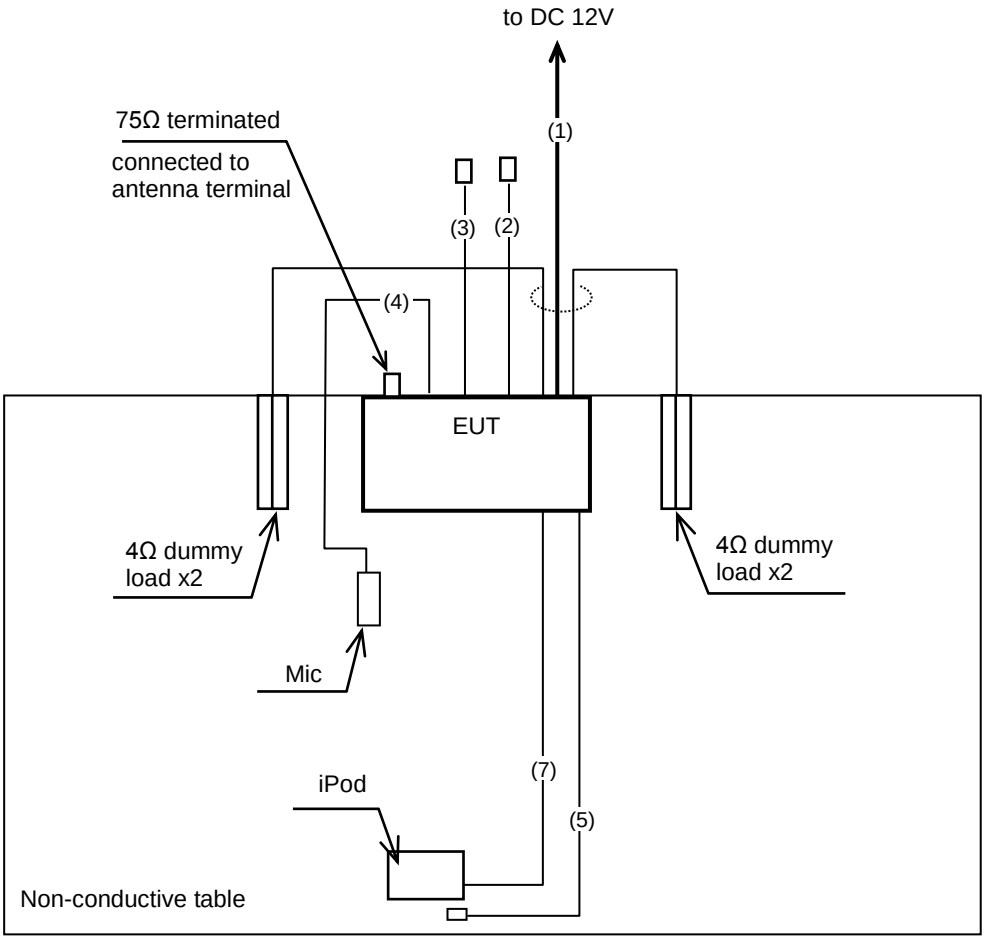


Note : REAR/SW, FRONT, AUX-IN cables are terminated at 22kΩ

(2) EUT alone operating/ iPod mode

Photo 6, 7 and 8

Photo 9 and 10 (above 1GHz)

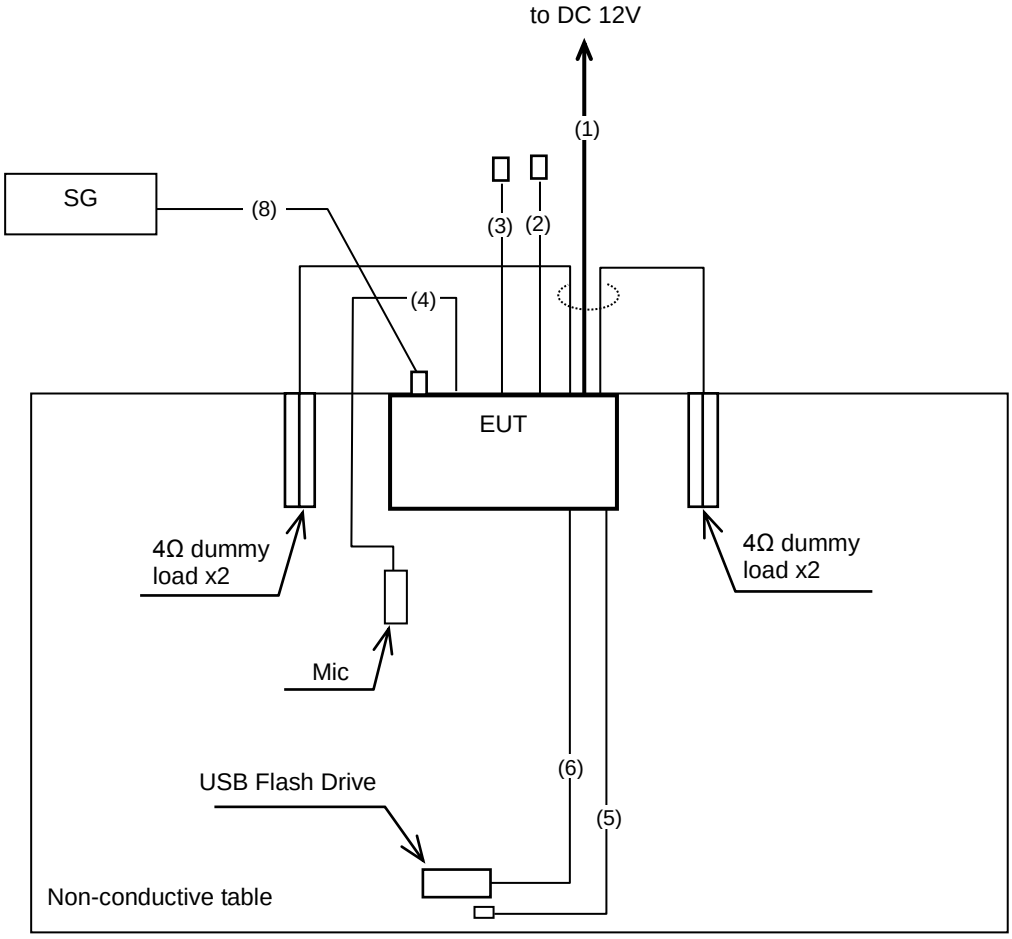


Note : REAR/SW, FRONT, AUX-IN cables are terminated at 22kΩ

(3) EUT alone operating/ FM mode, AM mode

Photo 11, 12 and 13

Photo 14 and 15 (above 1GHz), AM mode only



Note : REAR/SW, FRONT, AUX-IN cables are terminated at 22kΩ

4.2.3 Photographs of test configuration

(1) EUT alone operating/ USB mode

photo 1

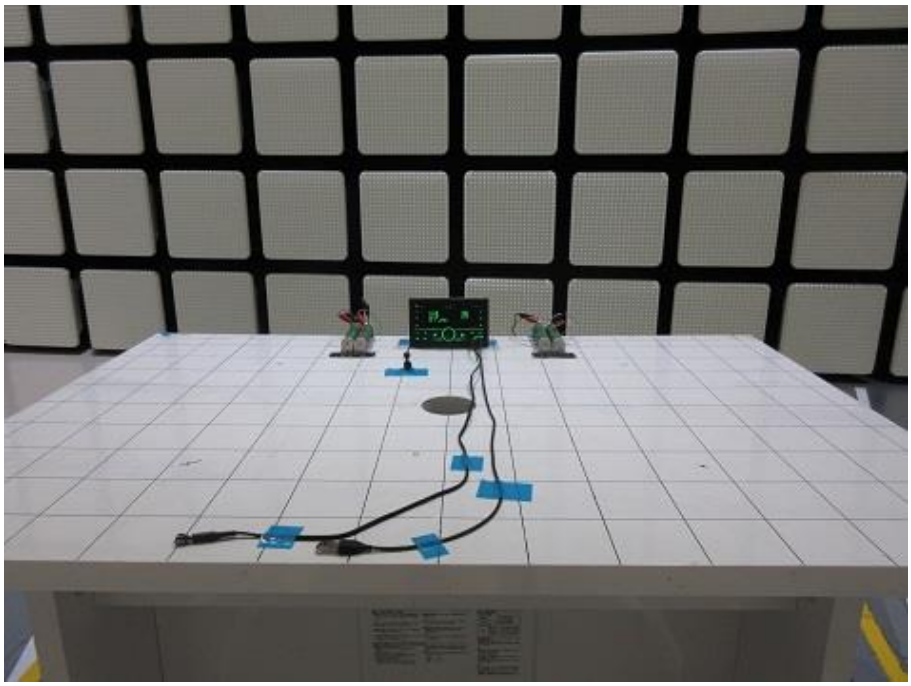


photo 2

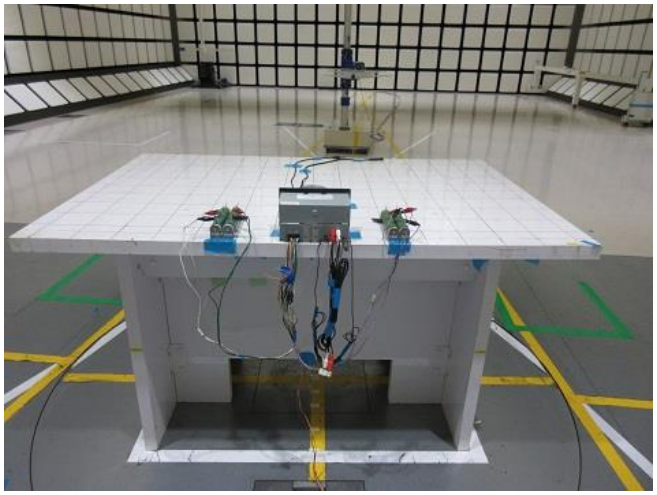


photo 3

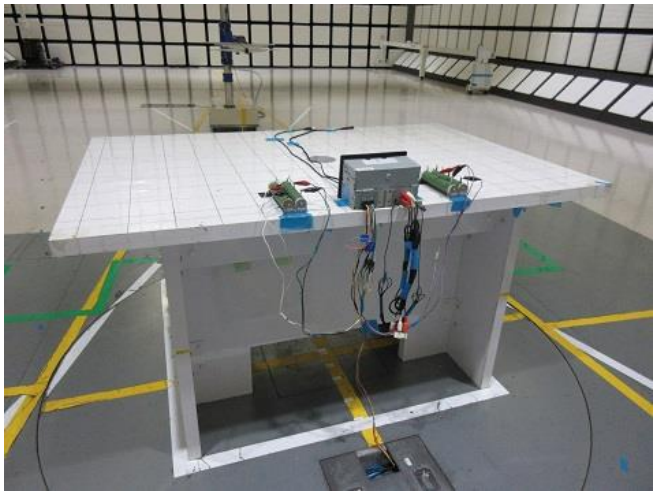


photo 4 Measurement condition of above 1GHz

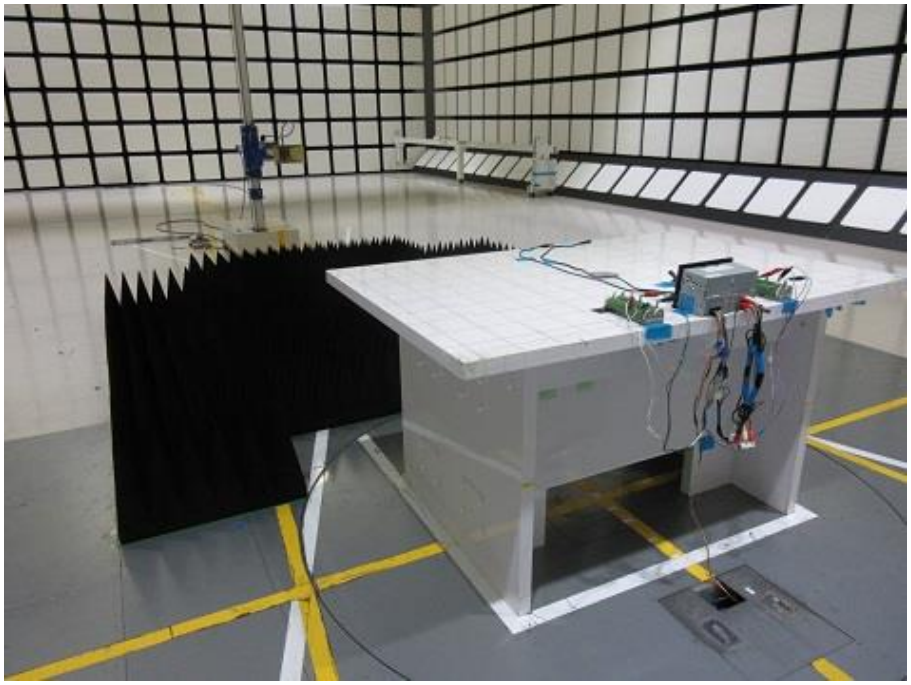
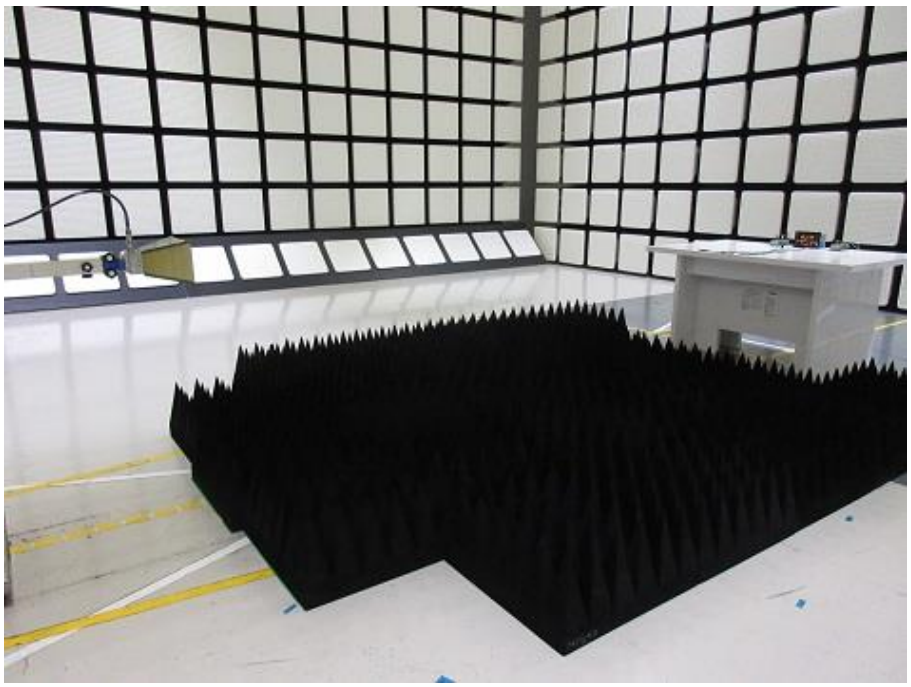


photo 5 Measurement condition of above 1GHz



(2) EUT alone operating/ iPod mode

photo 6

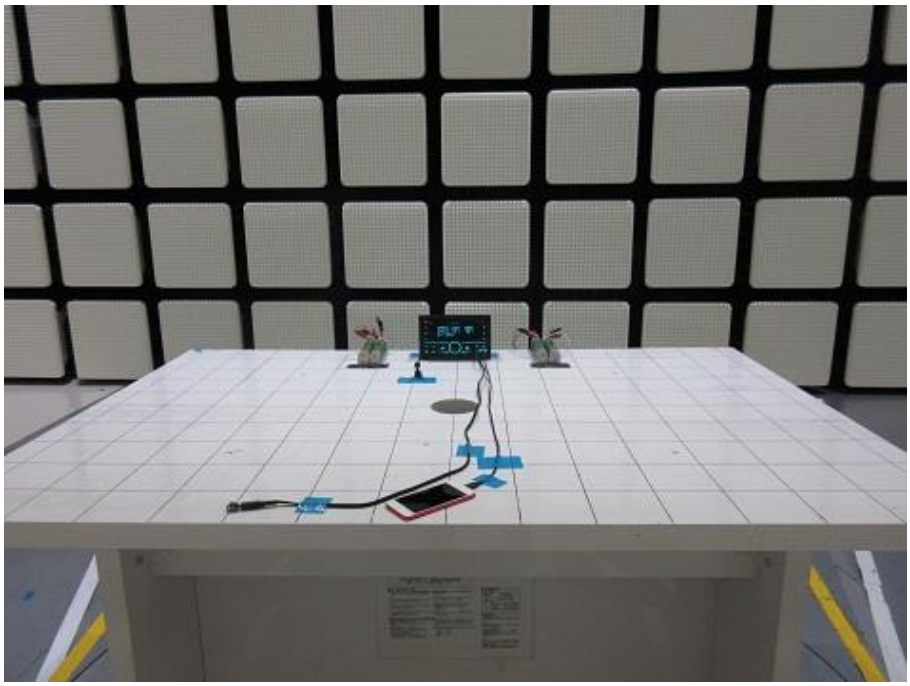


photo 7

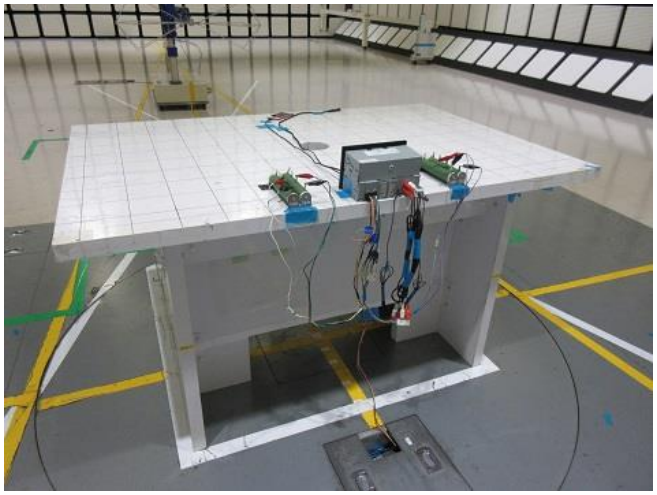


photo 8

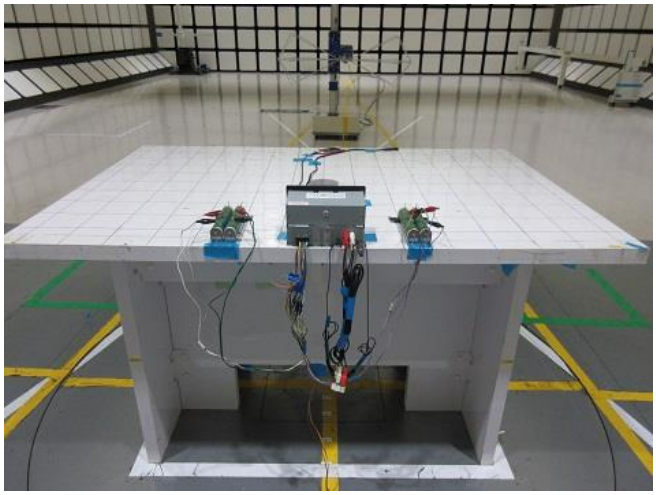


photo 9, Measurement condition of above 1GHz

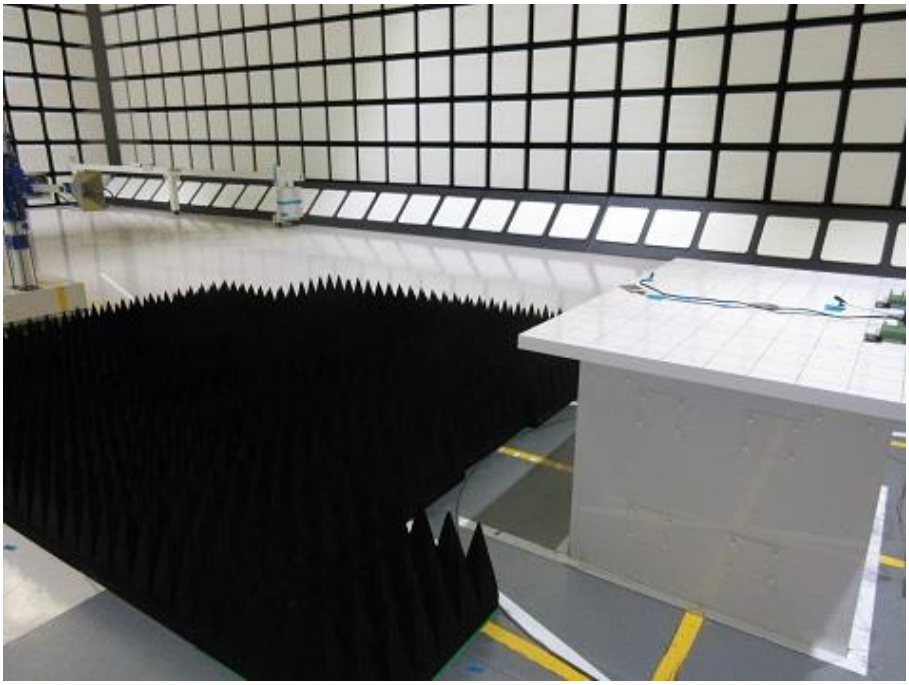
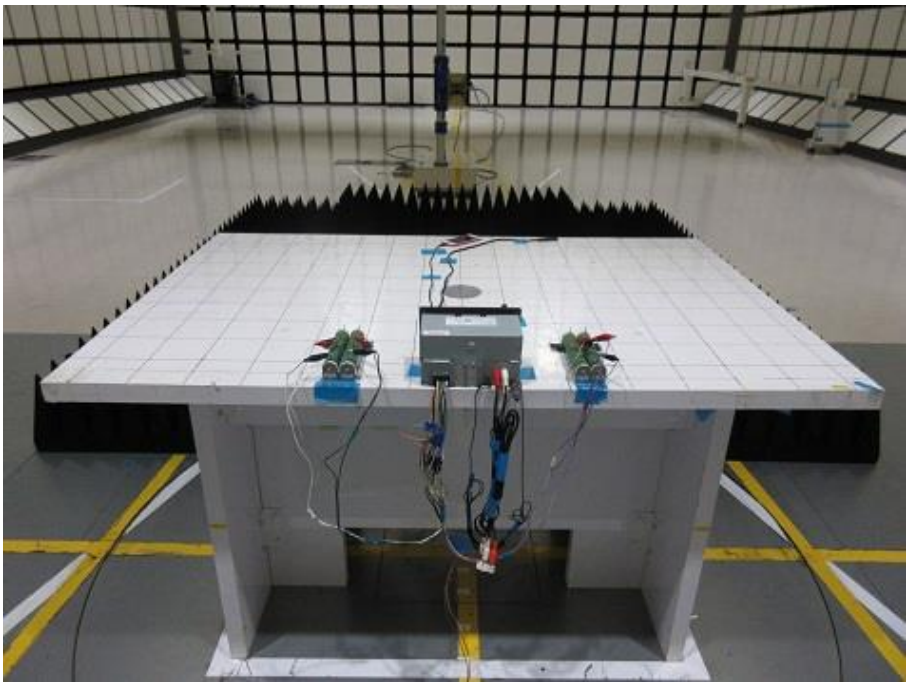


photo 10, Measurement condition of above 1GHz



(3) EUT alone operating/ AM mode, FM mode

photo 11

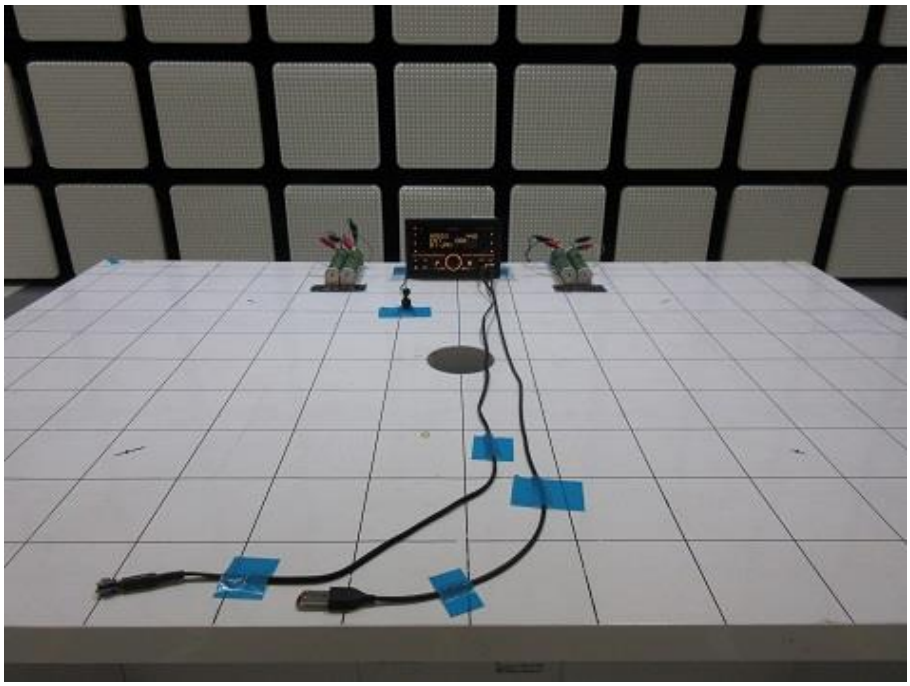


photo 12

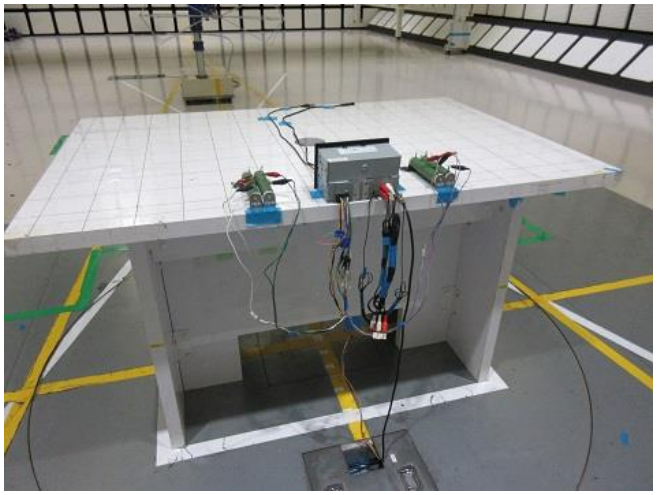


photo 13

photo 14, Measurement condition of above 1GHz, AM mode

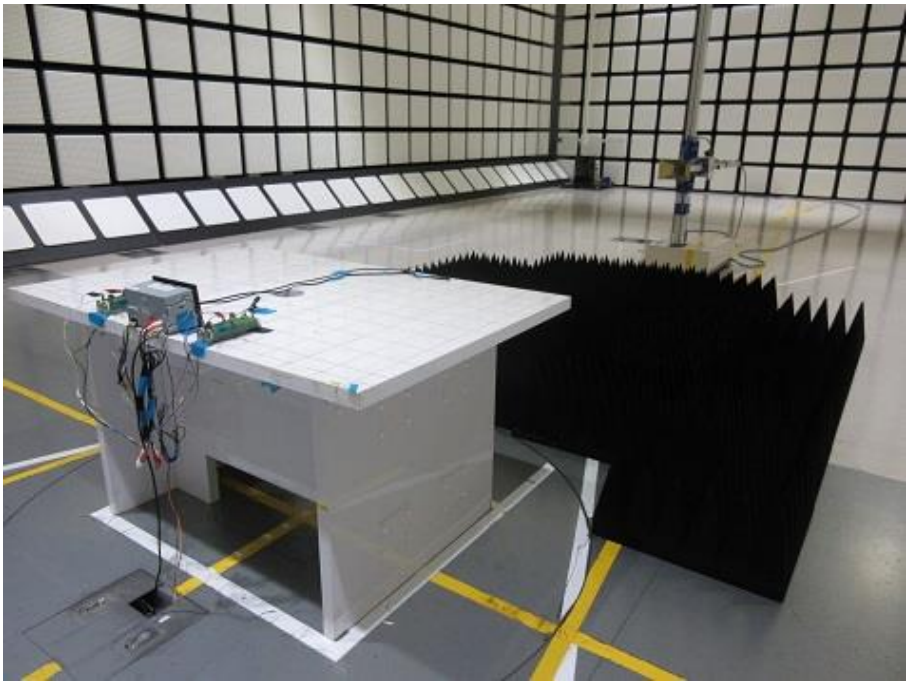
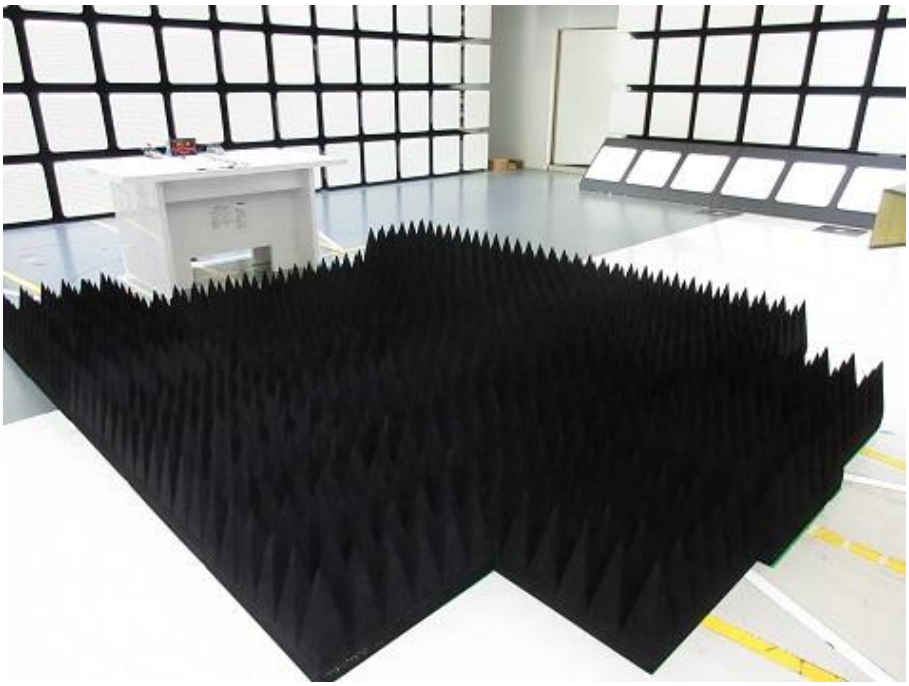


photo 15, Measurement condition of above 1GHz, AM mode



4.2.4 Measuring Instruments

Test Site : 10m Anechoic Chamber/ EMCG001

	Instrument	Type no.	Serial no.	Manufacturer	Inst. no.	Latest cal.	Cal. interval
☐	EMI Receiver	ESCI	100068	Rohde & Schwarz	EX0S001	Aug/14/2018	1 year
☒	EMI Test Receiver	ESR26	101601	Rode & Schwarz	EX0S256	Aug/12/2018	1 year
☐	Spectrum Analyzer	E4440A	MY46185	Agilent Technologies	EW0S069	Aug/13/2018	1 year
☒	Pre Amplifier	TPA0108 -40	0622	Toyo Corp.	EX1S067	Aug/20/2018	1 year
☒	Log-Periodic Antenna	VULP9118A	632	Schwarzbeck	ZZ2S254	May/25/2019	1 year
☒	Biconical Antenna	VHA9103/ BBA9106	VHA 91032334	Schwarzbeck	ZZ2S019	May/25/2019	1 year
☐	Antenna Dipole	VHA9103	VHA 91031608	Schwarzbeck	ZZ2S013	Aug/14/2018	1 year
☐	Antenna Dipole	UHA9105	UHA 91052129	Schwarzbeck	ZZ2S014	Aug/14/2018	1 year
☒	Horn Antenna	3115	9803-5415	Hewlett Packard	ZZ2S015	Aug/14/2018	1 year
☐	Horn Antenna	BBHA9120D	820	Schwarzbeck	ZZ2S215	Aug/14/2018	1 year
☐	Pre Amplifier	MLA-0120 -A02-34	0943-144	tsj.	EX0S216	Aug/20/2018	1 year
☒	Coaxial Attenuator	8491B	MY39265033	Agilent Technologies	EQ1S205	May/16/2019	1 year
☒	Coaxial Attenuator	8491A	36094	Hewlett Packard	EQ1S025	May/16/2019	1 year
☒	Rotary Attenuator	TRA-701 -003N	1265465	Tamagawa Elec.	EQ1S070	May/16/2019	1 year

cont.

cont.

	Instrument	Type no.	Serial no.	Manufacturer	Inst. no.	Latest cal.	Cal. Interval
☒	Software	EP5/RE	9805006	Toyo Corp.	EMCG004	N/A	N/A
☒	Absorber	IS-030A	from 01 to 25	TDK	EMCG268	N/A	N/A
☒	Pre Amplifier	310N	185442	Sonoma	EX0S233	Aug/20/2018	1 year
☒	Signal Generator	SMY	844484/062	Rohde & Schwarz	EG2S247	Jun/12/2019	1 year
☐							
☐							
☐							
☐							

Note 1 : "☒" indicates that these instruments were in use for this test.
"☐" indicates that these instruments were not in use for this test.

Note 2 : The next calibration will be done by the end of the same month one year later.

4.2.5 Calculation

The field strength is calculated by adding the antenna factor and Cable loss, and subtracting the amplifiers gain (if any) from the measured reading.

The basic equation with a sample calculation is as follows,

Result = Reading + c.f.

c.f. = AF + CF – AG

Where Result = Field strength (emission level)

Reading = EMI receiver reading

c.f. = Correction factor

AF = Antenna factor

CF = Cable loss + Attenuator loss

AG = Amplifier gain

Assume a receiver reading of 49.9dBuV is obtained. The antenna factor of 9.2dB/m, the cable loss and attenuator loss of 5.7dB are added, and the amplifier gain of 29.8dB is subtracted, giving a result of 35.0dBuV/m.

Result = 49.9 + 9.2 + 5.7 - 29.8 = 35.0dBuV/m

In the measurement above 1GHz ;

For all measurements, normalize (as follows calculation) the measurement E-field or voltage data to the distance the reference position.

Result (above 1GHz) = Result + 20 x log (D_{mnopq} / D_{ref})

D_{ref} : 3m (reference position)

D_{mnopq} : The actual separation distance for the measurement location

For example,

D_{mnopq} = 50cm

Result (above 1GHz) = 49.9 + 20 x log (3.5 / 3) = 49.9 + 1.3 = 51.3dBuV/m

D_{mnopq} = 10cm

Result (above 1GHz) = 49.9 + 20 x log (3.1 / 3) = 49.9 + 0.3 = 50.2dBuV/m

4.2.6 Special test condition

None

4.2.7 Test procedure

In the frequency range of 30MHz to 6GHz, the test was performed in the SAC (semi anechoic chamber) according to Item 4.2.1. The preliminary test was carried out to investigate more than 6 points of the highest emission frequency using the peak detector of the spectrum analyzer by the software control. The measurement results of at least the six highest emission from the type of port being assessed relative to the limit, unless they are 10dB or more below the limit, was measured. The adjustment of set-up and wire connection was done for getting the maximum emission. Then, the final measurement was carried out by the quasi-peak detector of the EMI receiver with the broad band antennas such as the bi-conical antenna (30MHz -300MHz) and the log-periodic antenna (300MHz - 1GHz). If the margin of the result was less than 2dB, the final measurement was repeated again with the dipole antenna. Furthermore the final measurement above 1GHz was carried out by peak and average detector of the spectrum analyzer or the EMI receiver with the horn antenna (1GHz – 18GHz). Refer to the photographs (Item 4.2.3) for the worst case configuration of the EUT. This test procedure was summarized as follows. (1) Pre check spectrum chart was measured by the peak detector. (2) The disturbance frequencies were specified from the pre check spectrum chart. (3) The final emission levels of the specified frequencies were measured by the quasi-peak detector (30MHz to 1GHz) the peak or average detector (above 1GHz).

Measurement Frequency range

Internal highest frequency (clock)	:	6.2208GHz
Measurement upper frequency	:	6GHz

Frequency range of 30MHz to 1GHz

Detector mode	:	Quasi – peak
Bandwidth	:	120kHz
Measurement distance	:	10m

cont.

Frequency range of 1GHz to 6GHz

Detector mode	:	Average and Peak modes of Spectrum analyzer
Bandwidth	:	1MHz
EUT (including systems) height	:	Maximum 0.4m (0.4m + 0.8m Table)
Receive antenna	:	The antenna height is varied from 1m
Receive antenna beam width	:	Measurement distance 3m
		antenna beam width 3.46m at 1GHz
		antenna beam width 1.89m at 2GHz
		antenna beam width 1.89m at 4GHz
		antenna beam width 1.44m at 6GHz

The radiated electric field strength intensity has been measured on the semi anechoic camber with a ground plane at a distance of 3.45m.

A normalized level of the distance is included in result of a measurement.

The observation of the fewer than six emission within 10dB of the limit

☒ Observed less than six ☐ Observed more than six

Note : "☒" indicates that is corresponded.

"☐" indicates that is not corresponded.

4.3.8 Measurement uncertainty

(1-1) 10m distance / frequency range 30MHz - 300MHz

Horizontal Polarized : Measurement Result, ± 3.35dB

Vertical Polarized : Measurement Result, ± 3.55dB

(1-2) 10m distance / frequency range 300MHz - 1000MHz

Horizontal Polarized : Measurement Result, ± 3.65dB

Vertical Polarized : Measurement Result, ± 3.69dB

(1-3) 10m distance / frequency range 1GHz – 6GHz

Horizontal Polarized : Measurement Result, ± 4.30dB

Vertical Polarized : Measurement Result, ± 4.57dB

(1-4) 10m distance / frequency range 6GHz – 18GHz

Horizontal Polarized : Measurement Result, ± 4.38dB

Vertical Polarized : Measurement Result, ± 4.69dB

(2-1) 3m distance / frequency range 30MHz – 300MHz

Horizontal Polarized : Measurement Result, ± 2.99dB

Vertical Polarized : Measurement Result, ± 3.21dB

(2-2) 3m distance / frequency range 300MHz – 1000MHz

Horizontal Polarized : Measurement Result, ± 3.50dB

Vertical Polarized : Measurement Result, ± 4.96dB

(2-3) 3m distance / frequency range 1GHz – 6GHz

Horizontal Polarized : Measurement Result, ± 4.32dB

Vertical Polarized : Measurement Result, ± 4.59dB

(2-4) 3m distance / frequency range 6GHz – 18GHz

Horizontal Polarized : Measurement Result, ± 4.51dB

Vertical Polarized : Measurement Result, ± 4.81dB

All measurement uncertainty is less than or equal to U_{cispr} (as follows) in table 1 of CISPR 16-4-2:2011.

Frequency range	:	30MHz – 1000MHz /	U_{cispr}	: 6.3dB / SAC
		1GHz – 6GHz /	U_{cispr}	: 5.2dB / FAR
		6GHz – 18GHz /	U_{cispr}	: 5.5dB / FAR

The measurement uncertainties have been determined at a confidence level of approximately 95% (k=2). The uncertainty applies only to the measured values and gives no indication of the long term stability of the Radiated Interference Field Strength Test Equipments. The performance criterion indicated was decided in accordance with CISPR 16-4-2:2011, Item 4.

4.3 Disturbance voltage at the antenna terminals

4.3.1 Summary of measurement setting

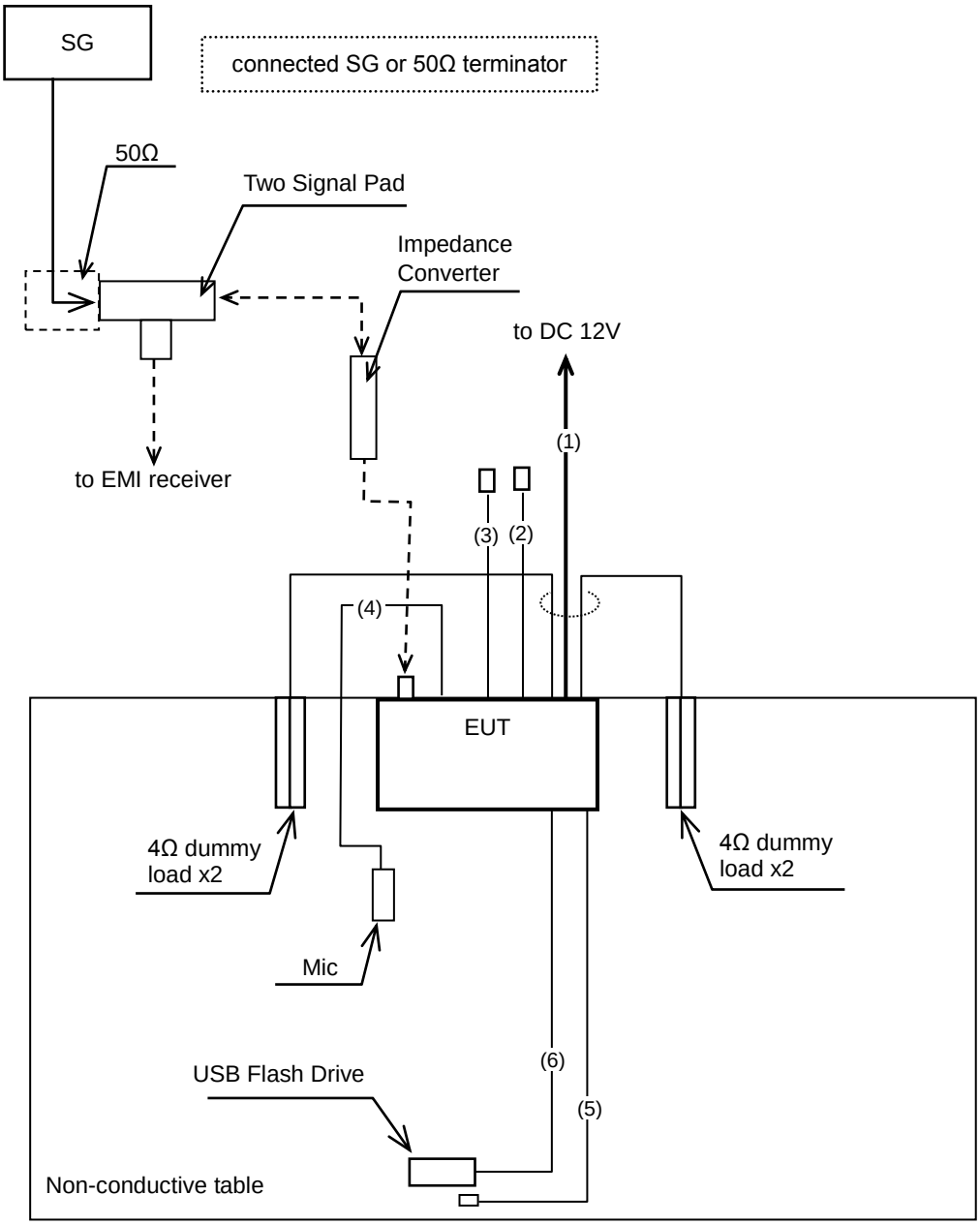
In the range of 30MHz to 1GHz, the conducted voltage at the antenna terminal is measured according the standard. The test setup is made according to in the CISPR32 / EN55032 shielded room. This table is 0.8m height and 1.5m wide x 1.0m deep size. The each spacing between the equipments is 10cm. Except for the antenna terminal of the EUT, interconnecting cables of the table top equipment that hang closer than 0.4m to the floor ground plane are folded back and forth forming a bundle 0.4m long, hanging approximately in the middle between ground plane and table. The antenna terminal of the EUT is connected with the EMI receiver or the spectrum analyzer via an impedance converter (matching network) and a two signal pad (combining network) which is connected with the auxiliary signal generator (or terminated).

The test is carried out according to our test procedure VYES-T003.

4.3.2 Configuration of tested system

(1) EUT alone operating / FM mode

Photo 1 and 2



Note : REAR/SW, FRONT, AUX-IN cables are terminated at 22kΩ

4.3.3 Photo of test configuration

(1) EUT alone operating / FM mode

photo 1

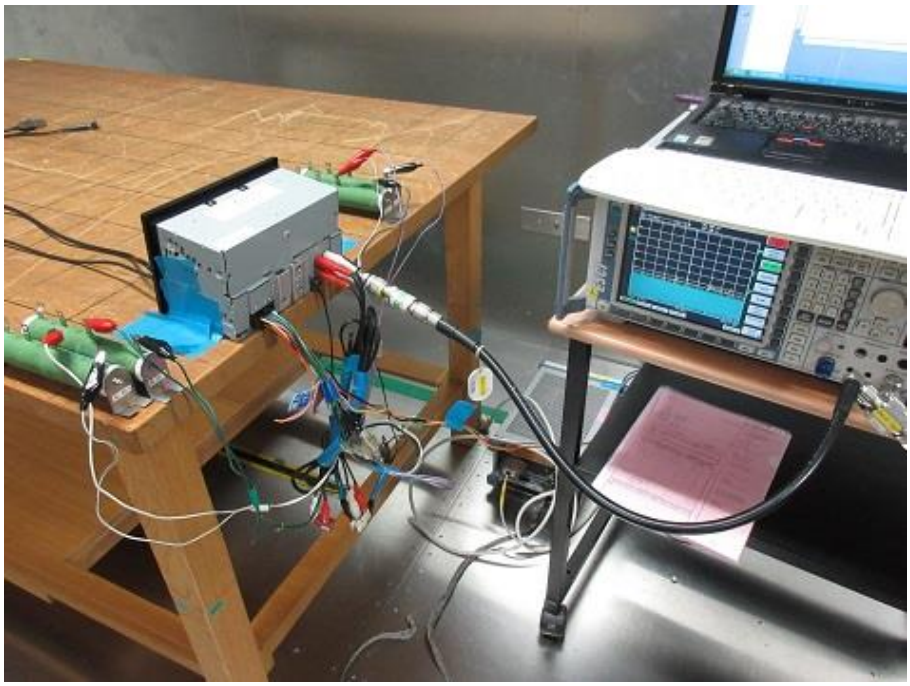


photo 2

4.3.4 Measuring Instruments

Test Site : Shielded room 2/EMCG081

	Instrument	Type no.	Serial no.	Manufacturer	Inst. no.	Latest cal.	Cal. interval
☒	EMI Receiver	ESCI	100068	Rohde & Schwarz	EX0S001	Aug/14/2018	1 year
☐	EMI Test Receiver	ESR7	102042	Rode & Schwarz	EX0S263	Aug/21/2018	1 year
☒	Software	EP5/AT	301023	Toyo Corp.	EMCG030	N/A	N/A
☒	Signal Generator	SMY	844484/062	Rohde & Schwarz	EG2S247	Jun/12/2019	1 year
☒	Impedance Converter	57Z-3G	#7314	JFW Industries Inc.	EX0S055	May/28/2019	1 year
☒	Coaxial Terminator	50T-007	#7314	JFW Industries Inc.	EX1S054	Aug/21/2018	1 year
☒	Two Signal Pad	50PD-015	0435	JFW Industries Inc.	EMCG049	Jun/25/2019	1 year
☐	DC Power Supply	PAN16-10	CK001767	KIKUSUI	EP1S145	Apr/17/2019	1 year

Note 1 : "☒" indicates that these instruments were in use for this test.
"☐" indicates that these instruments were not in use for this test.

Note 2 : The next calibration will be done by the end of the same month one year later.

4.3.5 Calculation

The conducted voltage is calculated by adding the Impedance converter factor and cable loss,

The basic equation with a sample calculation is as follows,

Result = Reading + c.f., c.f. = CF + IF

Where Result = Conducted voltage

Reading = EMI receiver reading

c.f. = Correction factor

CF = Cable loss + Two signal pad loss

IF = Impedance converter loss + Impedance converting coefficient

Assume a receiver reading of 32.1dBuV is obtained. The cable and the two signal pad loss of 6.27dB, the impedance converter loss of 5.87dB and the impedance converting coefficient (75Ω to 50Ω) of 1.76dB are added, giving a result of 46.0dBuV.

Result = 32.1 + 6.27 + 5.87 + 1.76 = 46.0dBuV

4.3.6 Special test condition

None

4.3.7 Test procedure

In the frequency range of 30MHz to 1GHz, the measurement was performed in the Shielded room according to Item 4.3.1. As the preliminary test, the spectrum analyzer was swept between regulation frequency range on the max hold mode, then the EUT was tuned all receiving frequencies (channels) and spectrum chart was plotted for searching maximum emission roughly. The next step, the receiving frequencies of the maximum emission were specified exactly after that the span and the band width of the spectrum analyzer were adjusted finely. As the final test, in respect to each the specified and representative receiving frequencies (channels), the fundamental and harmonics of the local oscillator and other conducted emission of the EUT were measured by using the quasi-peak detector (30MHz to 1GHz) or using the peak detector (above 1GHz) of the EMI receiver. If the value exceeded the limit above 1GHz, the measurement was done by using the peak detector of the EMI receiver. The photos (Item 4.3.3) of the setup on the maximum emission were taken and recorded. The antenna terminal of the EUT was connected with the EMI receiver or the spectrum analyzer via an impedance converter (matching network) and a two signal pad (combining network) which was terminated or connected with the auxiliary signal generator (final result). Because the enough margin had the results of the spectrum was measured at the peak detector for the limit. Accordingly the final test in the quasi-peak detector of the EMI receiver was not carried out.

Frequency range of 30MHz to 1GHz

Detector mode : Peak mode of Spectrum analyzer

Bandwidth : 100kHz

The observation of the fewer than six emission within 10dB of the limit

☒ Observed less than six ☐ Observed more than six

Note : "☒" indicates that is corresponded.

"☐" indicates that is not corresponded.

4.3.8 Measurement uncertainty

(1) Frequency range, 30MHz - 2150MHz

Using 75/50Ω impedance converter : Measurement Result, ± 1.92dB

All measurement uncertainty in table 1 of CISPR 16-4-2:2011 is no description.

The measurement uncertainties have been determined at a confidence level of approximately 95% (k=2).

4.4 Conducted common mode disturbance at telecommunication

4.4.1 Summary of measurement setting

For Current probe measurement (for LAN STP cable measurement)

The conducted common mode disturbance at telecommunication measurement in the frequency range from 0.15MHz – 30MHz is measured according to the standard. The test setup is made according to CISPR 16-2-3 and EN55032 in the shielded room. The rear of non-conductive table top is placed 0.4m from a vertical metal reference plane that is one of the walls.

For the EUT of tabletop, the rears of the EUT and the peripherals are all aligned and flush with the rear of non-conductive table top. This table is 0.4m height and 1.5m wide x 1.0m deep size.

For the EUT of floor-standing, the EUT is placed on the horizontal ground reference plane, orientated for normal use. The EUT is separated from metallic contact with the ground reference plane by up to 15cm of insulation. And the cable is insulated (by 15cm) from the ground reference plane by up to 15cm of insulation.

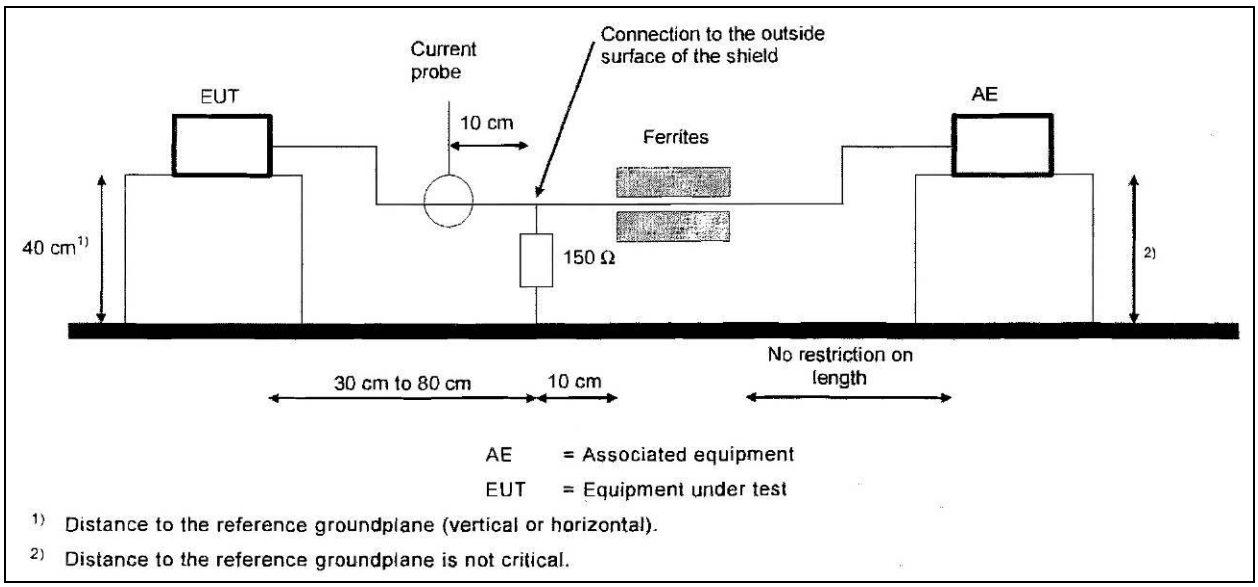
Intra-unit cables (between units forming the EUT or between the EUT and an associated equipment) shall drape to, but remain insulated from, the horizontal ground reference ground, any excess shall either be folded at the cable center into a bundle no longer than 0.4m or arranged in a serpentine fashion.

cont.

cont.

The each spacing between equipments is 10cm. The connection of EUT (telecommunication port) to the current probe providing a voltage measuring port is required. The current probe is placed 70cm from the 150Ωresistor (see follows figure,). The current prove which was placed 10cm from the 150Ω resistor connection was used to measure current. The Ferrite clamp (Absorbing clamp) which was placed 10cm from 150Ω resistor and AE. Then, the connection of EUT to the artificial mains network (LISN) is required. The distance between the closet surface of the EUT and the closet surface of the LISN is 0.8m. Connection of the all other equipment to the second LISN is required. The distance between the peripherals and the closet surface of the second artificial network is minimum 0.8m. The both LISN and second LISN are terminated with 50Ω terminator. Where a mains flexible cord is provided by the manufacture, this is about 2m length and excess cable is folded back and forth as far as possible to 0.8m so as to from a bundle not exceeding 0.4m in length. Interconnecting cables of the table top equipment that hang closer than 0.4m to the floor ground plane are folded back and forth forming a bundle 0.4m long, hanging approximately in the middle between ground plane and table.

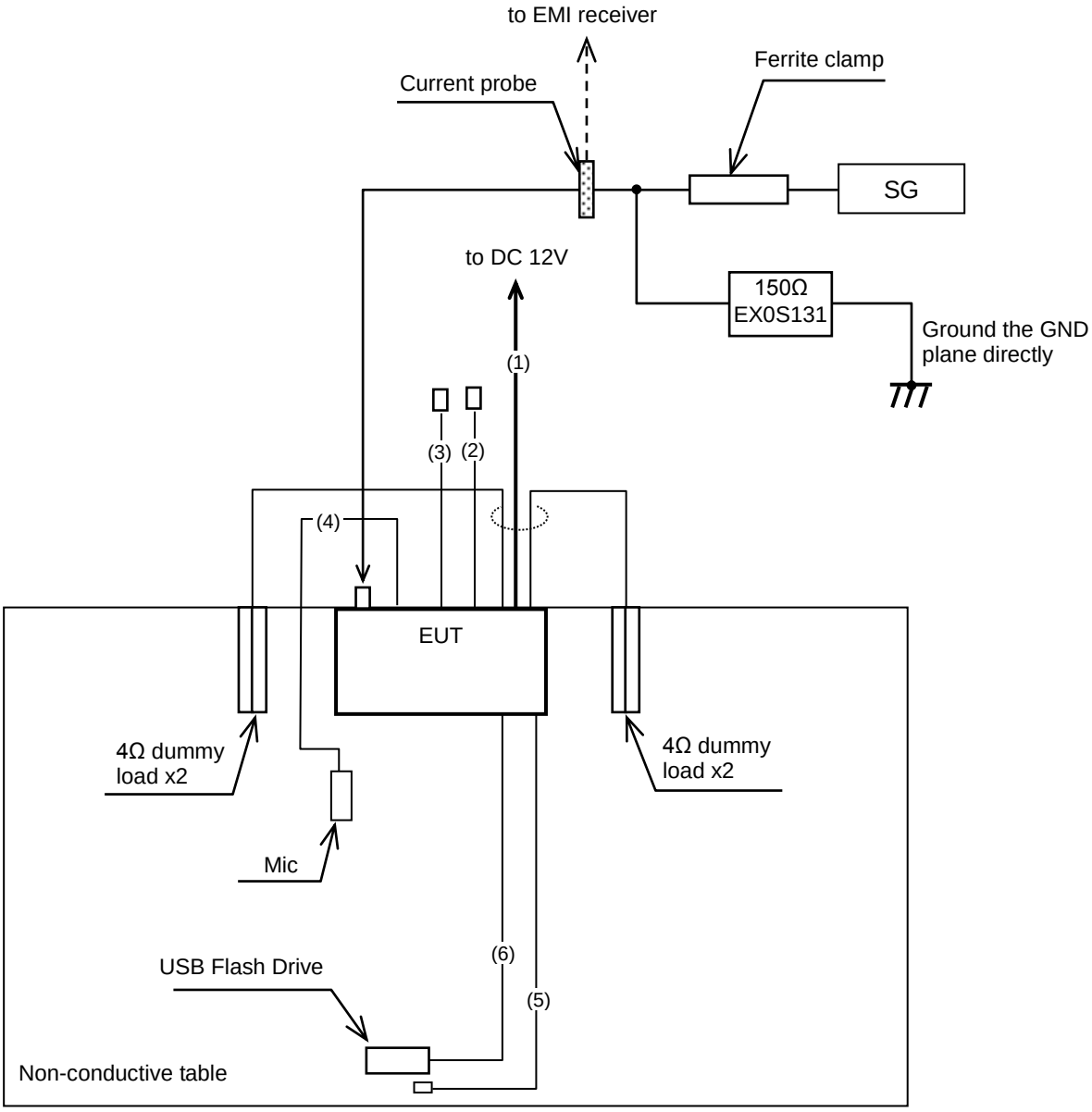
The test is carried out according to our test procedure VYES-T029.



4.4.2 Configuration of tested system

(1) EUT alone operating/ AM mode, FM mode

Photo from 1 to 4



Note : REAR/SW, FRONT, AUX-IN cables are terminated at 22kΩ

4.4.3 Photo of test configuration

(1) EUT alone operating/ AM mode, FM mode

photo 1

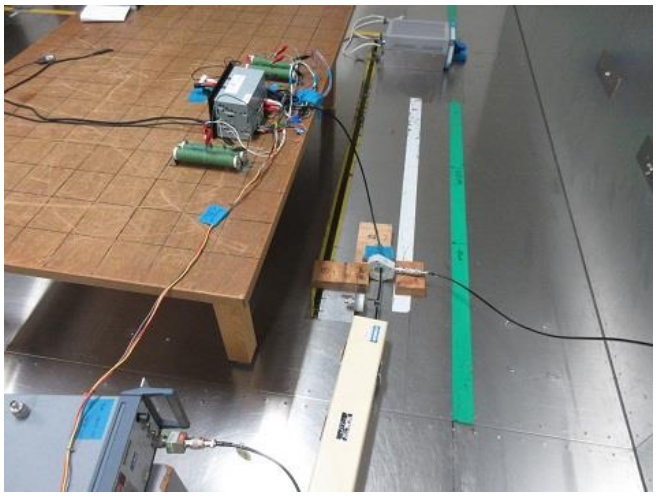


photo 2

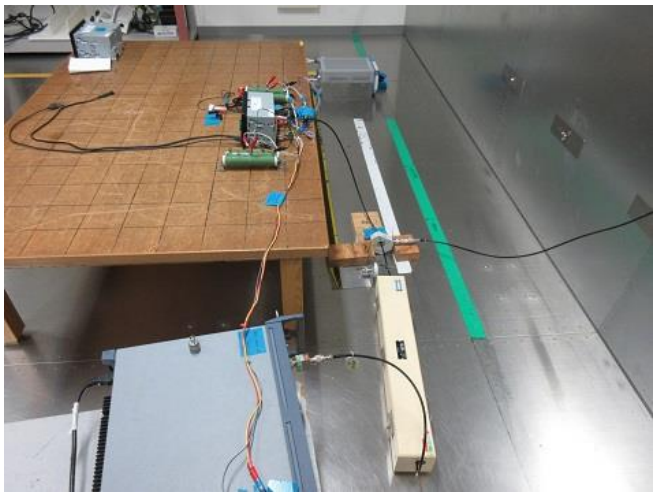


photo 3

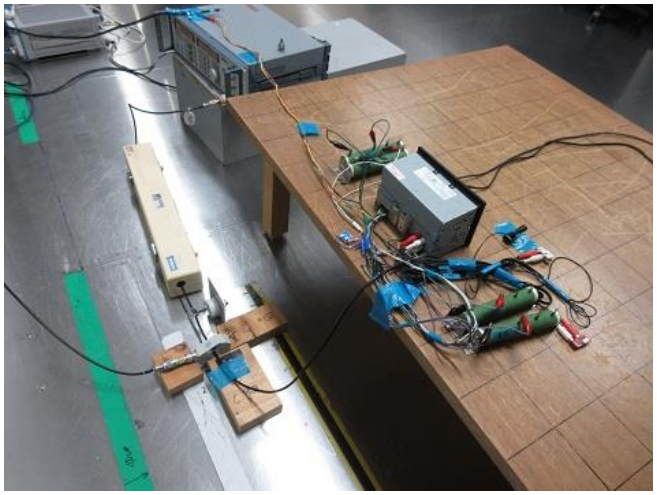
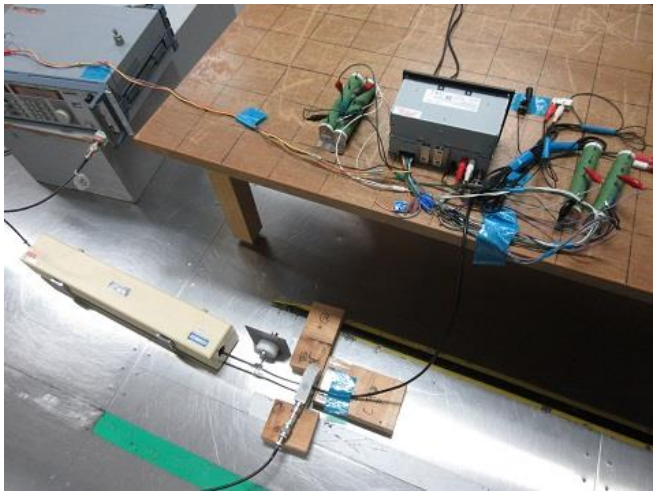


photo 4



4.4.4 Measuring Instruments

Test Site : Shielded room 2/EMCG081

	Instrument	Type no.	Serial no.	Manufacturer	Inst. no.	Latest cal.	Cal. interval
☒	EMI Test Receiver	ESR7	102042	Rode & Schwarz	EX0S263	Aug/21/2018	1 year
☐	EMI Receiver	ESCI	100068	Rohde & Schwarz	EX0S001	Aug/14/2018	1 year
☒	Pre Amplifier	8447D	2944A09273	Hewlett Packard	EX0S004	Aug/20/2018	1 year
☐	RF Current Probe	TCP-9651	468	Toyo Corp.	EX0S094	Aug/16/2018	1 year
☒	RF Current Probe	EZ-17	848719/012	Rohde & Schwarz	EX0S246	Aug/16/2018	1 year
☐	Lisn (for EUT)	ESH3-Z5	848773/021	Rohde & Schwarz	EX0S008	Aug/20/2018	1 year
☐	Lisn (for peripheral)	MN2050D/3	1542	Schaffner Chase	EX0S009	Aug/20/2018	1 year
☐	Coaxial Terminator	CT-03BP	206974	Tamagawa Elec.	EX0S023	Aug/21/2018	1 year
☐	Coaxial Terminator	CT-03BP	1257477E	Tamagawa Elec.	EX0S099	Aug/21/2018	1 year
☒	Absorbing Clamp	KT-20	8-880-5	Kyoritsu Elec.	EX0S064	N/A	N/A
☒	Software	EP5/CE	9805006	Toyo Corp.	EMCG003	N/A	N/A
☒	Calibration Kit	CAL801	70044.2	Schaffner	EX0S131	Aug/16/2018	1 year
☐	Lisn (for EUT or peripheral)	ENV216	100270	Rohde & Schwarz	EX0S262	Aug/20/2018	1 year
☐	Lisn (for peripheral or EUT)	ENV216	100269	Rohde & Schwarz	EX0S261	Aug/20/2018	1 year

cont.

cont.

	Instrument	Type no.	Serial no.	Manufacturer	Inst. no.	Latest cal.	Cal. interval
☒	Signal Generator	SMY	844484/062	Rohde & Schwarz	EG2S247	Jun/12/2019	1 year
☒	Impedance Converter	ZT-204	1012137	Tamagawa Elec.	EX0S022	May/28/2019	1 year
☐							
☐							
☐							
☐							
☐							

Note 1 : "☒" indicates that these instruments were in use for this test.
"☐" indicates that these instruments were not in use for this test.

Note 2 : The next calibration will be done by the end of the same month one year later.

4.4.5 Calculation

The conducted voltage is calculated by adding the current prove factor and cable loss (including pre AMP) to the measured reading.

The basic equation with a sample calculation is as follows,

c.f. = LF + CF

Where Result = Conducted voltage (emission level)

Reading = EMI receiver reading

c.f. = Correction factor

LF = current probe factor

CF = Cable loss + Pre AMP gain

Assume a receiver reading of 50.0dBuV (Current probe at 1MHz) is obtained. The factor of 9.2dB, the cable and Pre AMP of -28.1dB are added, giving a result of 12.7dBuV.

Result = 50.0 - 9.2 - 28.1 = 12.7dBuV

4.4.6 Special test condition

None

4.4.7 Test procedure

At the frequency range 0.15MHz to 30MHz, the test was performed in the shielded room according to Item 4.4.1. The preliminary test was done to investigate more than 6 points of the highest emission frequency and pre check spectrum chart was recorded using the peak detector of the spectrum analyzer by software control. The measurement results of at least the six highest emission from the type of port being assessed relative to the limit, unless they are 10dB or more below the limit, was measured. The positions of the peripheral equipment and cable layout were changed to investigate and find worst case emissions. Then, the final measurement was carried out at each frequency which was found the higher emission by the quasi-peak and average detector of the EMI receiver and the results were recorded. The photos (Item 4.4.3) of the setup on the maximum emission were taken and recorded. This test procedure was summarized as follows. (1) The pre check spectrum chart was measured by the peak detector. (2) The higher emission frequencies were specified from the pre check spectrum chart. (3) The worst emission of the specified frequency was measured by the quasi-peak and average detector.

Frequency range of 150kHz to 30MHz

Detector mode : Quasi – peak and Average
Bandwidth : 9kHz

The observation of the fewer than six emission within 10dB of the limit

☒ Observed less than six ☐ Observed more than six

Note : "☒" indicates that is corresponded.
"☐" indicates that is not corresponded.

4.4.8 Measurement uncertainty

(1) Frequency range, 150kHz - 30MHz

Using CP : Measurement Result, ± 1.92dB

All measurement uncertainty is less than or equal to U_{cispr} (2.9dB) in table 1 of CISPR 16-4-2:2011

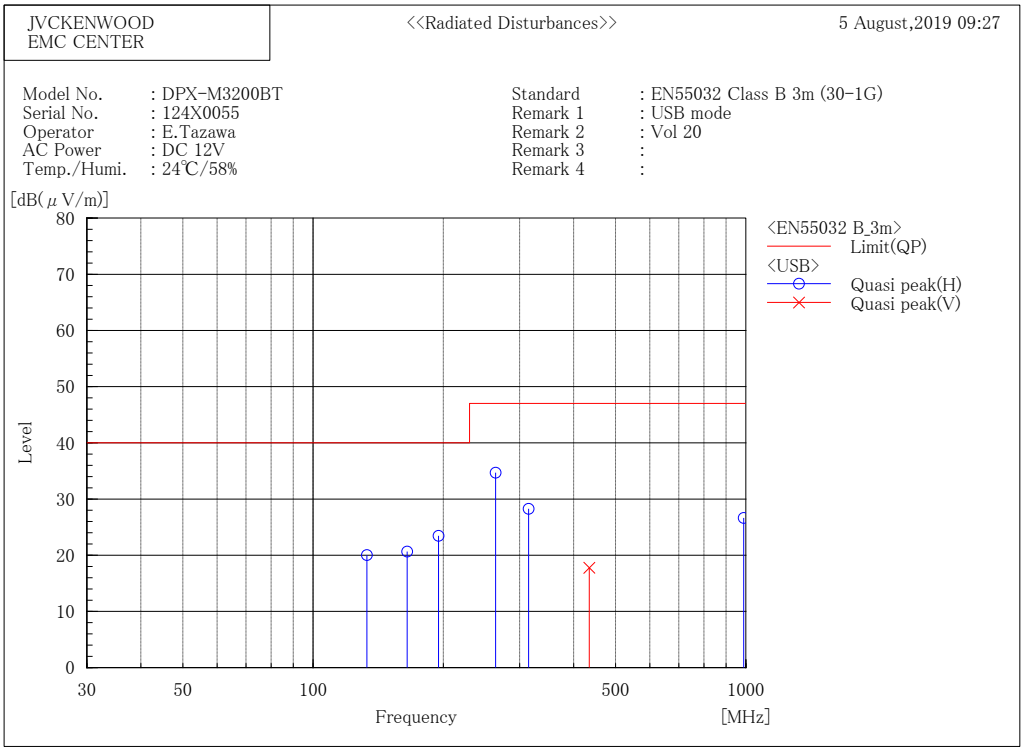
The measurement uncertainties have been determined at a confidence level of approximately 95% (k=2). The uncertainty applies only to the measured values and gives no indication of the long term stability of the Radiated Interference Field Strength Test Equipments. The performance criterion indicated was decided in accordance with CISPR 16-4-2:2011, item. 4.

5. Measurement results

5.1 Disturbance radiation

(1-1) 3m distance, 30MHz - 1GHz

EUT playback USB memory, 1kHz audio signal / 4Ω dummy load x4 connected



Final Result

--- Horizontal Polarization (QP)---

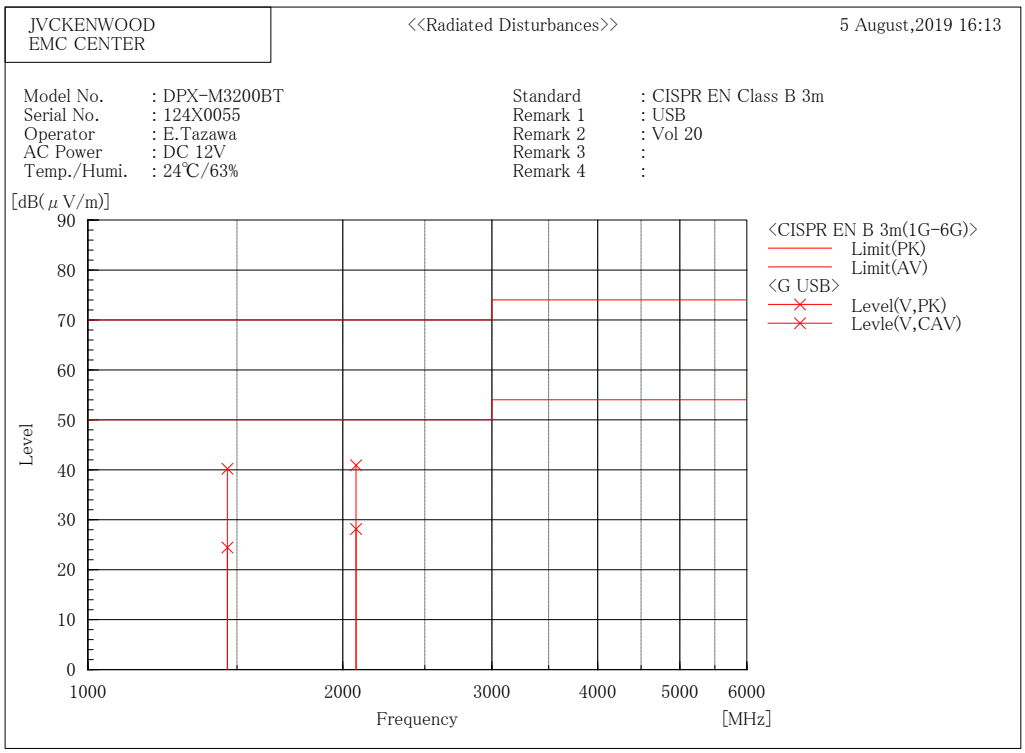
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	133.132	30.3	-10.3	20.0	40.0	20.0	185.0	259.0	
2	165.012	29.1	-8.5	20.6	40.0	19.4	177.0	106.0	
3	194.968	30.5	-7.1	23.4	40.0	16.6	116.0	52.0	
4	264.054	46.0	-11.3	34.7	47.0	12.3	100.0	34.0	
5	314.721	37.9	-9.6	28.3	47.0	18.7	100.0	215.0	
6	989.029	22.1	4.5	26.6	47.0	20.4	100.0	46.0	

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	434.795	24.1	-6.3	17.8	47.0	29.2	100.0	177.0	

(1-2) 3m distance, 1GHz - 6GHz

EUT playback USB memory, 1kHz audio signal / 4Ω dummy load x4 connected



Final Result

--- Vertical Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	1461.669	55.4	-15.2	40.2	70.0	29.8	100.0	185.0	
2	2073.583	52.5	-11.6	40.9	70.0	29.1	100.0	199.0	

--- Vertical Polarization (CAV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	1461.669	39.7	-15.2	24.5	50.0	25.5	100.0	185.0	
2	2073.583	39.8	-11.6	28.2	50.0	21.8	100.0	199.0	

(2-1) 3m distance, 30MHz - 1GHz

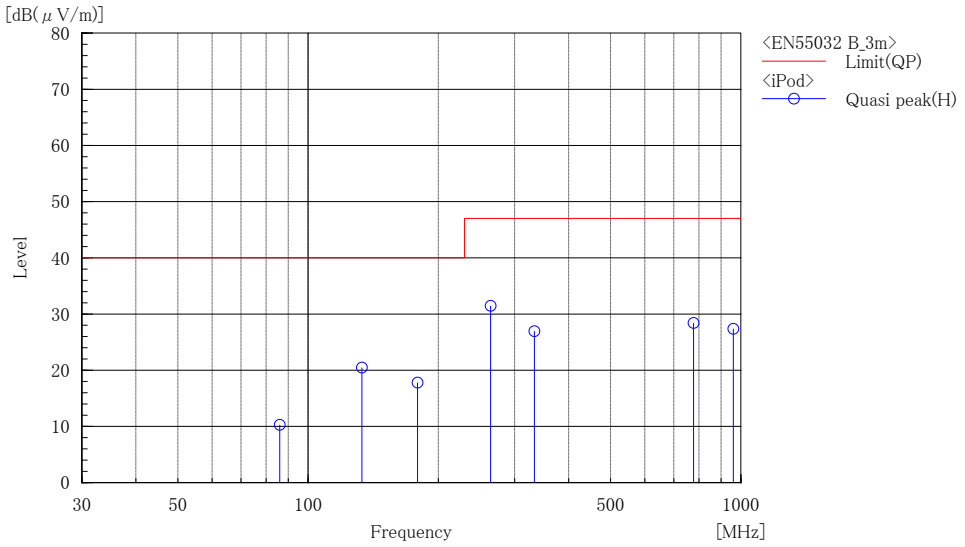
EUT playback iPod, 1kHz signal

JVCKENWOOD
EMC CENTER

<<Radiated Disturbances>>

5 August,2019 09:27

Model No.	: DPX-M3200BT	Standard	: EN55032 Class B 3m (30-1G)
Serial No.	: 124X0055	Remark 1	: iPod mode
Operator	: E.Tazawa	Remark 2	: Vol 20
AC Power	: DC 12V	Remark 3	:
Temp./Humi.	: 24℃/58%	Remark 4	:



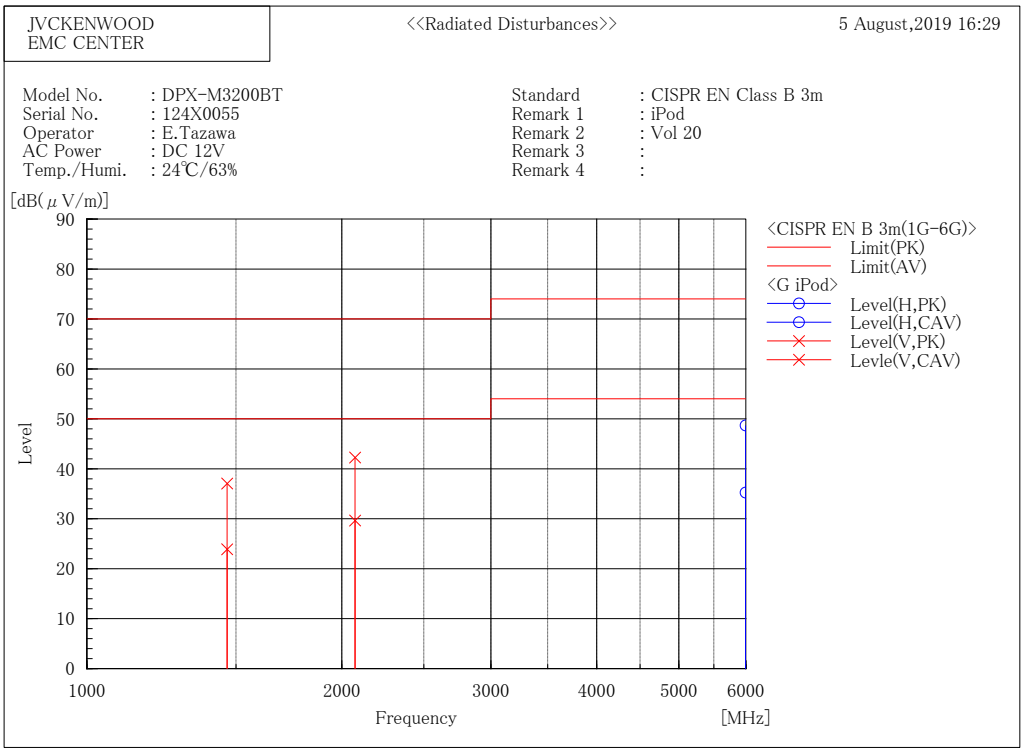
Final Result

--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	86.015	27.3	-17.0	10.3	40.0	29.7	319.0	271.0	
2	133.133	30.8	-10.3	20.5	40.0	19.5	247.0	270.0	
3	179.096	25.6	-7.8	17.8	40.0	22.2	117.0	59.0	
4	264.062	42.7	-11.3	31.4	47.0	15.6	119.0	40.0	
5	333.258	36.0	-9.1	26.9	47.0	20.1	100.0	210.0	
6	777.593	28.3	0.1	28.4	47.0	18.6	118.0	205.0	
7	960.960	23.8	3.6	27.4	47.0	19.6	100.0	44.0	

(2-2) 3m distance, 1GHz - 6GHz

EUT playback iPod, 1kHz signal



Final Result

--- Horizontal Polarization (PK)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	5995.375	48.6	0.1	48.7	74.0	25.3	100.0	0.0	

--- Horizontal Polarization (CAV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	5995.375	35.1	0.1	35.2	54.0	18.8	100.0	0.0	

--- Vertical Polarization (PK)---

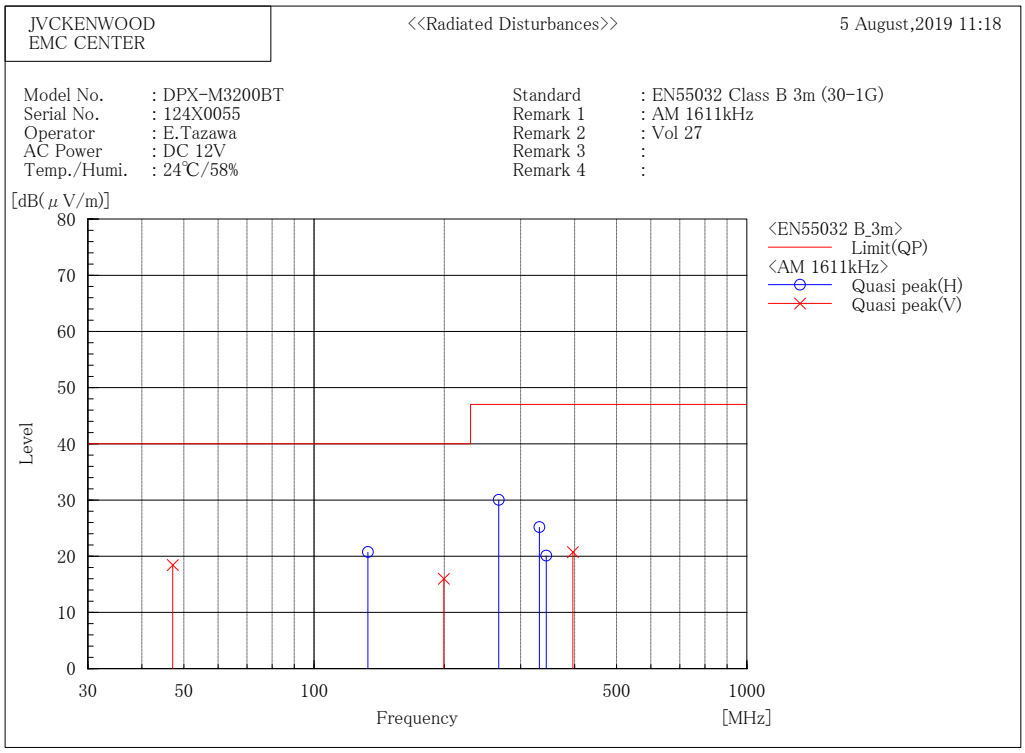
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	1464.620	52.3	-15.2	37.1	70.0	32.9	100.0	120.0	
2	2073.582	53.9	-11.6	42.3	70.0	27.7	100.0	195.0	

--- Vertical Polarization (CAV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	1464.620	39.1	-15.2	23.9	50.0	26.1	100.0	120.0	
2	2073.582	41.3	-11.6	29.7	50.0	20.3	100.0	195.0	

(3-1) 3m distance, 30MHz - 1GHz

EUT AM 1611kHz tuned / 4Ω dummy load x4 connected



Final Result

--- Horizontal Polarization (QP)---

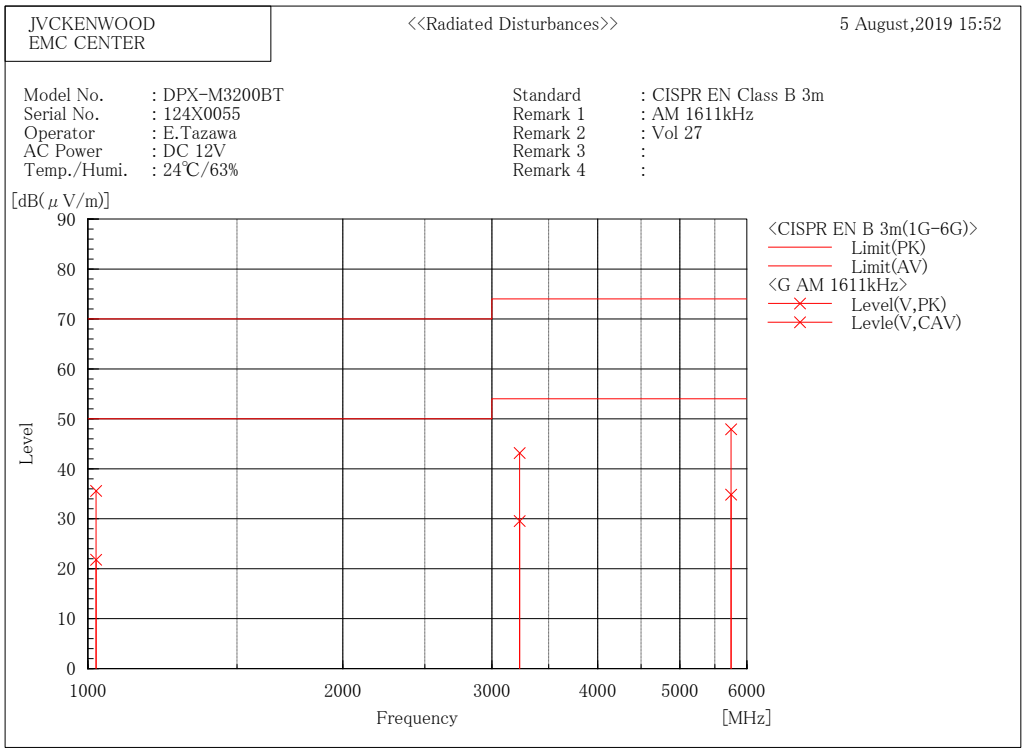
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	133.132	31.1	-10.3	20.8	40.0	19.2	193.0	264.0	
2	267.138	41.1	-11.1	30.0	47.0	17.0	100.0	20.0	
3	331.685	34.3	-9.1	25.2	47.0	21.8	100.0	207.0	
4	344.060	28.9	-8.8	20.1	47.0	26.9	100.0	312.0	

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	47.118	31.4	-13.0	18.4	40.0	21.6	100.0	17.0	
2	199.443	23.0	-7.0	16.0	40.0	24.0	100.0	16.0	
3	396.419	28.0	-7.3	20.7	47.0	26.3	100.0	188.0	

(3-2) 3m distance, 1GHz - 6GHz

EUT AM 1611kHz tuned / 4Ω dummy load x4 connected



Final Result

--- Vertical Polarization (PK)---

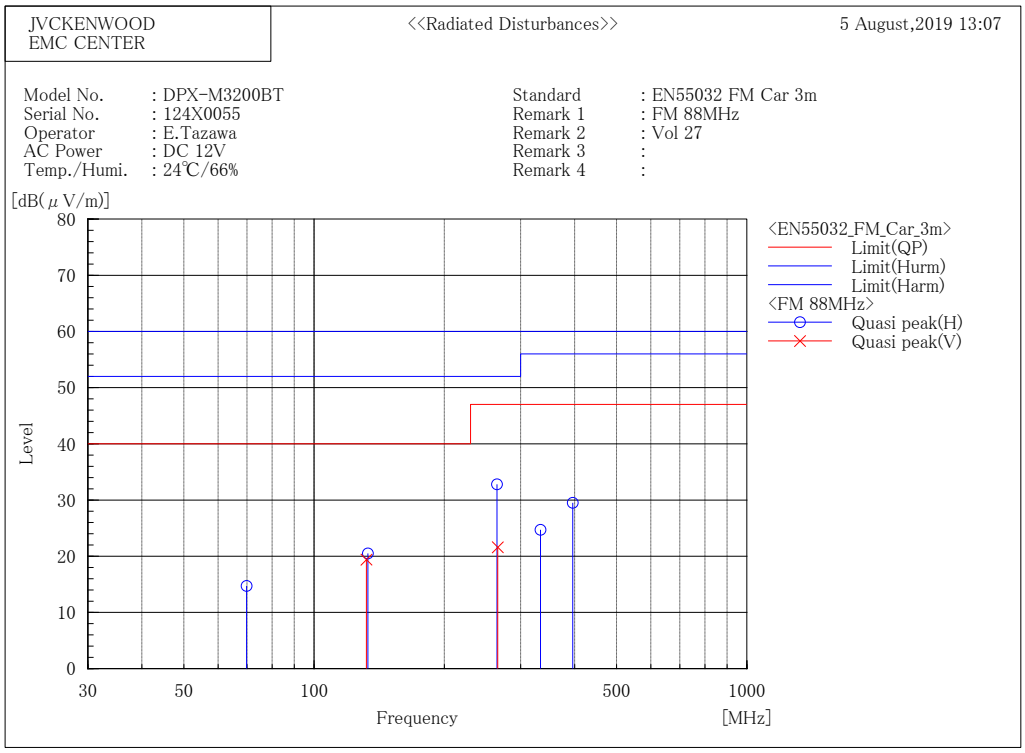
No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	1022.860	53.2	-17.6	35.6	70.0	34.4	100.0	285.0	
2	3235.260	50.4	-7.2	43.2	74.0	30.8	100.0	174.0	
3	5748.101	47.9	0.0	47.9	74.0	26.1	100.0	311.0	

--- Vertical Polarization (CAV)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	1022.860	39.4	-17.6	21.8	50.0	28.2	100.0	285.0	
2	3235.260	36.8	-7.2	29.6	54.0	24.4	100.0	174.0	
3	5748.101	34.8	0.0	34.8	54.0	19.2	100.0	311.0	

(4-1) 3m distance, 30MHz - 1GHz

EUT FM 88MHz tuned / 4Ω dummy load x4 connected



Final Result

--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	69.838	33.3	-18.6	14.7	40.0	25.3	284.0	115.0	other
2	133.132	30.8	-10.3	20.5	40.0	19.5	165.0	282.0	other
3	264.598	44.0	-11.2	32.8	47.0	14.2	124.0	32.0	other
4	333.550	33.8	-9.1	24.7	47.0	22.3	111.0	204.0	other
5	396.062	36.8	-7.3	29.5	47.0	17.5	100.0	316.0	other

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	132.091	29.8	-10.4	19.4	40.0	20.6	252.0	1.0	other
2	265.639	32.8	-11.2	21.6	47.0	25.4	100.0	138.0	other

(4-2) 3m distance, 30MHz - 1GHz

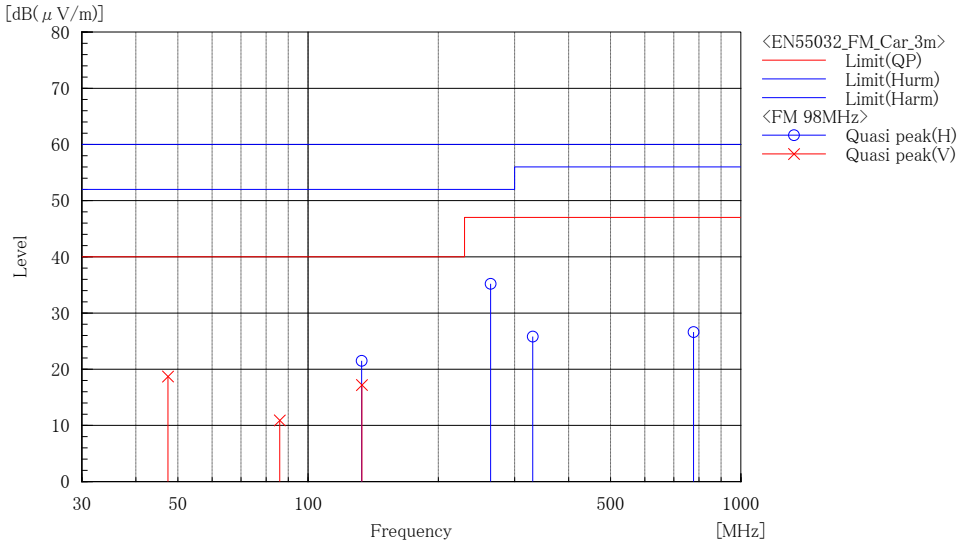
EUT FM 98MHz tuned / 4Ω dummy load x4 connected

JVCKENWOOD
EMC CENTER

<<Radiated Disturbances>>

5 August,2019 14:04

Model No.	: DPX-M3200BT	Standard	: EN55032 FM Car 3m
Serial No.	: 124X0055	Remark 1	: FM 98MHz
Operator	: E.Tazawa	Remark 2	: Vol 27
AC Power	: DC 12V	Remark 3	:
Temp./Humi.	: 24℃/66%	Remark 4	:



Final Result

--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	133.007	31.8	-10.3	21.5	40.0	18.5	229.0	268.0	other
2	264.087	46.5	-11.3	35.2	47.0	11.8	125.0	33.0	other
3	330.517	34.9	-9.1	25.8	47.0	21.2	100.0	212.0	other
4	777.593	26.5	0.1	26.6	47.0	20.4	100.0	286.0	other

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	47.434	31.9	-13.2	18.7	40.0	21.3	100.0	7.0	other
2	86.014	27.9	-17.0	10.9	40.0	29.1	100.0	126.0	other
3	133.132	27.5	-10.3	17.2	40.0	22.8	246.0	349.0	other

(4-3) 3m distance, 30MHz - 1GHz

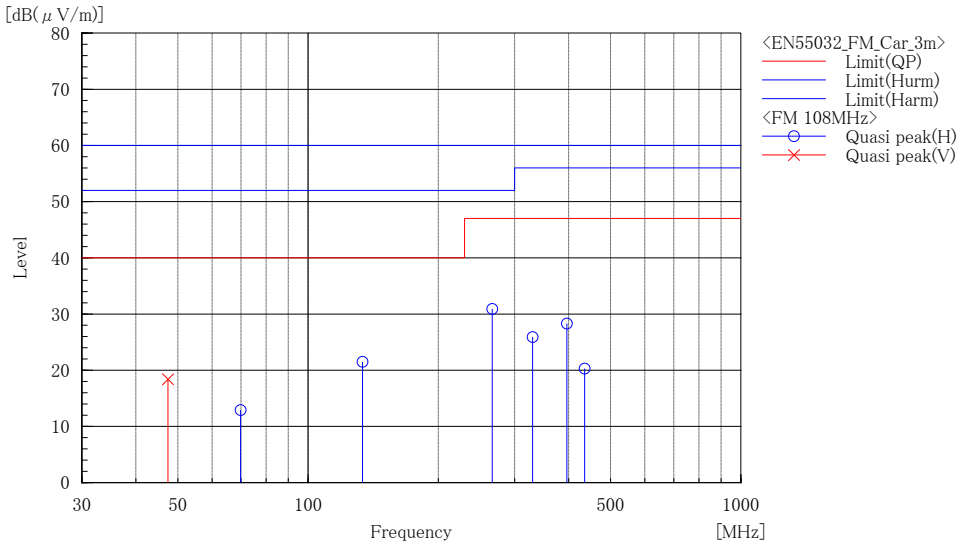
EUT FM 108MHz tuned / 4Ω dummy load x4 connected

JVCKENWOOD
EMC CENTER

<<Radiated Disturbances>>

5 August,2019 14:04

Model No.	: DPX-M3200BT	Standard	: EN55032 FM Car 3m
Serial No.	: 124X0055	Remark 1	: FM 108MHz
Operator	: E.Tazawa	Remark 2	: Vol 27
AC Power	: DC 12V	Remark 3	:
Temp./Humi.	: 24℃/66%	Remark 4	:



Final Result

--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	69.840	31.5	-18.6	12.9	40.0	27.1	298.0	313.0	other
2	133.657	31.8	-10.3	21.5	40.0	18.5	229.0	266.0	other
3	266.363	42.1	-11.2	30.9	47.0	16.1	123.0	27.0	other
4	330.172	35.0	-9.1	25.9	47.0	21.1	100.0	214.0	other
5	396.420	35.6	-7.3	28.3	47.0	18.7	100.0	314.0	other
6	435.661	26.6	-6.3	20.3	47.0	26.7	100.0	234.0	other

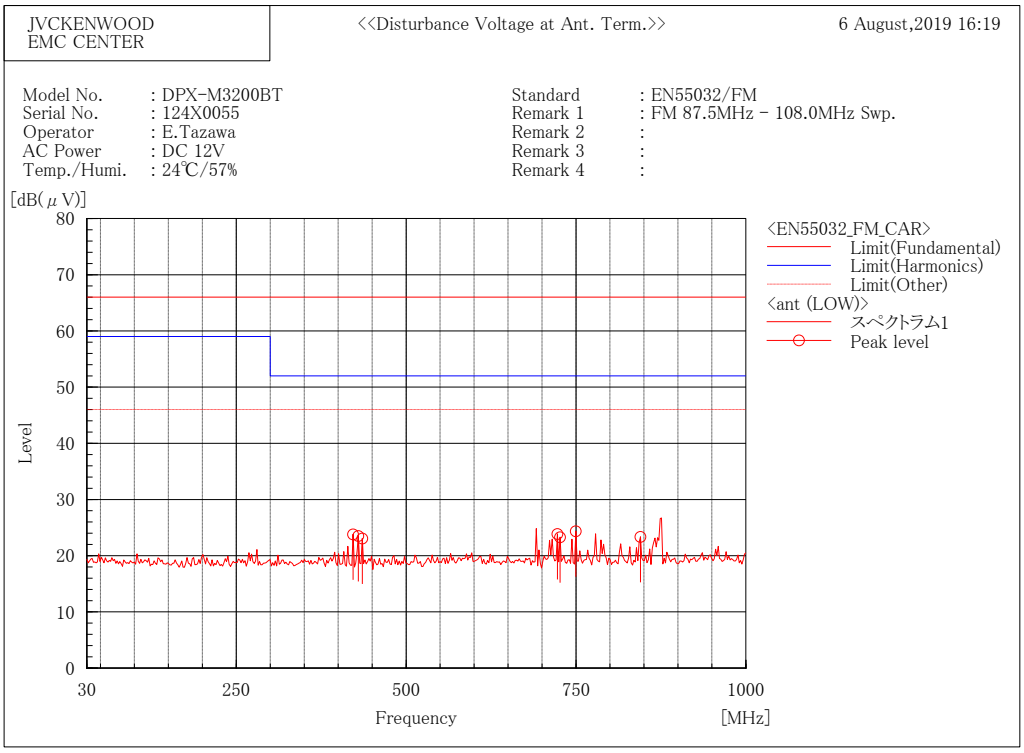
--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]	Remark
1	47.434	31.6	-13.2	18.4	40.0	21.6	100.0	359.0	other

5.2 Disturbance voltage at the antenna terminals

FM receiving mode (Auto search mode), a frequency rante from 30MHz - 1000MHz

(Only peak value carried out the measurement.)



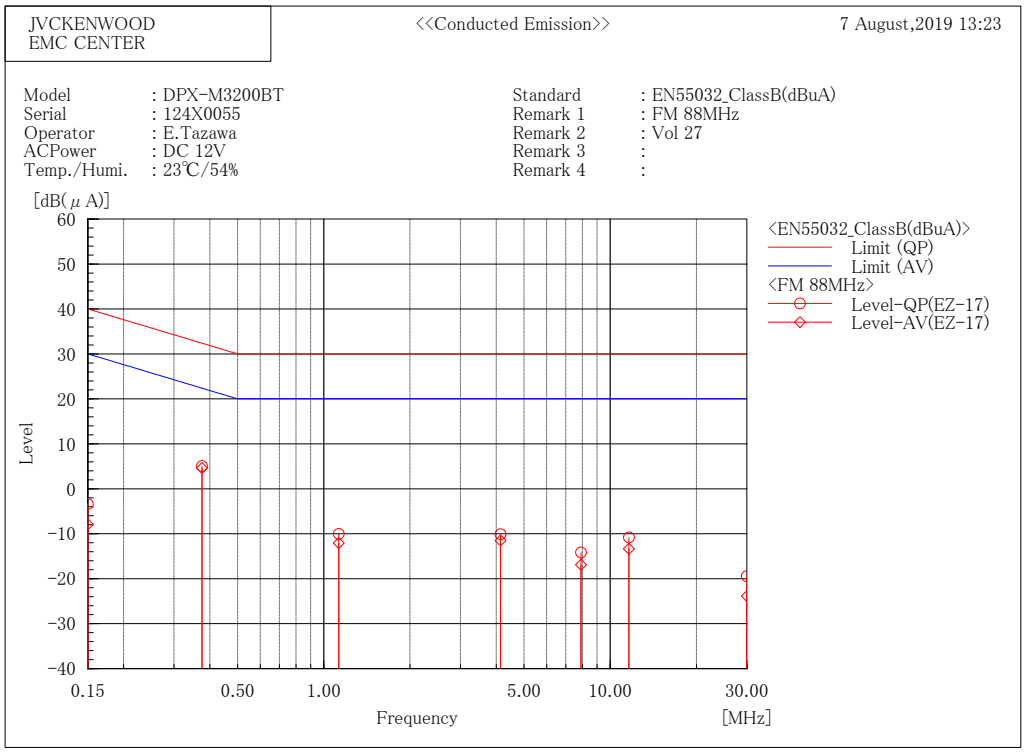
Spectrum Selection (Peak Value)

Ch.	No.	Frequency [MHz]	Harm (<)	Reading [dB(μV)]	c.f [dB]	Result [dB(μV)]	Limit [dB(μV)]	Margin [dB]
LOW	1	421.880		10.0	13.8	23.8	46.0	22.2
	2	429.640		9.7	13.8	23.5	46.0	22.5
	3	435.460		9.3	13.8	23.1	46.0	22.9
	4	722.580		10.0	13.8	23.8	46.0	22.2
	5	726.460		9.5	13.8	23.3	46.0	22.7
	6	749.740		10.5	13.8	24.3	46.0	21.7
	7	844.800		9.4	13.9	23.3	46.0	22.7

Because it is difficult to distinguish between Harmonics of Local OSC and Other, we judged by other limit

5.3 Disturbance at telecommunication ports

(1) EUT FM 88MHz tuned / 4Ω dummy load x4 connected

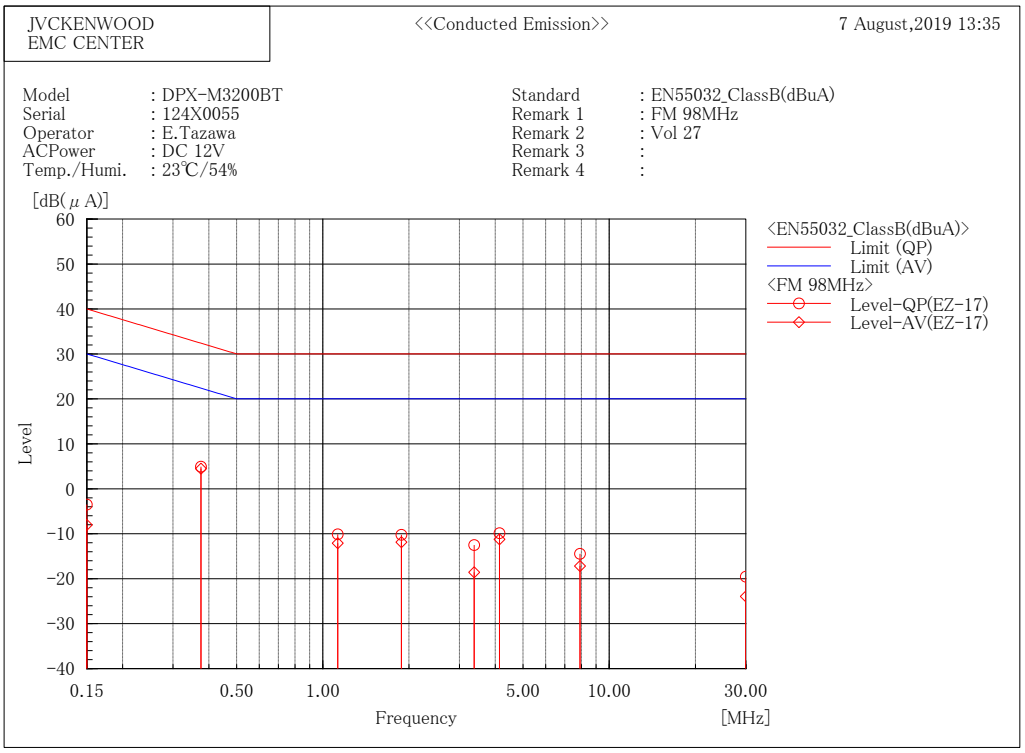


Final Result

--- EZ-17 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB(1/Ω)]	Result QP [dB(μA)]	Result CAV [dB(μA)]	Limit QP [dB(μA)]	Limit AV [dB(μA)]	Margin QP [dB]	Margin CAV [dB]	Remark
1	0.150	10.9	6.4	-14.3	-3.4	-7.9	40.0	30.0	43.4	37.9	
2	0.3757	26.5	26.1	-21.5	5.0	4.6	32.4	22.4	27.4	17.8	
3	1.12869	16.8	14.8	-26.9	-10.1	-12.1	30.0	20.0	40.1	32.1	
4	4.1401	18.0	16.6	-28.1	-10.1	-11.5	30.0	20.0	40.1	31.5	
5	7.90581	14.0	11.3	-28.2	-14.2	-16.9	30.0	20.0	44.2	36.9	
6	11.62105	17.3	14.7	-28.1	-10.8	-13.4	30.0	20.0	40.8	33.4	
7	30.000	8.6	4.1	-28.0	-19.4	-23.9	30.0	20.0	49.4	43.9	

(2) EUT FM 98MHz tuned / 4Ω dummy load x4 connected

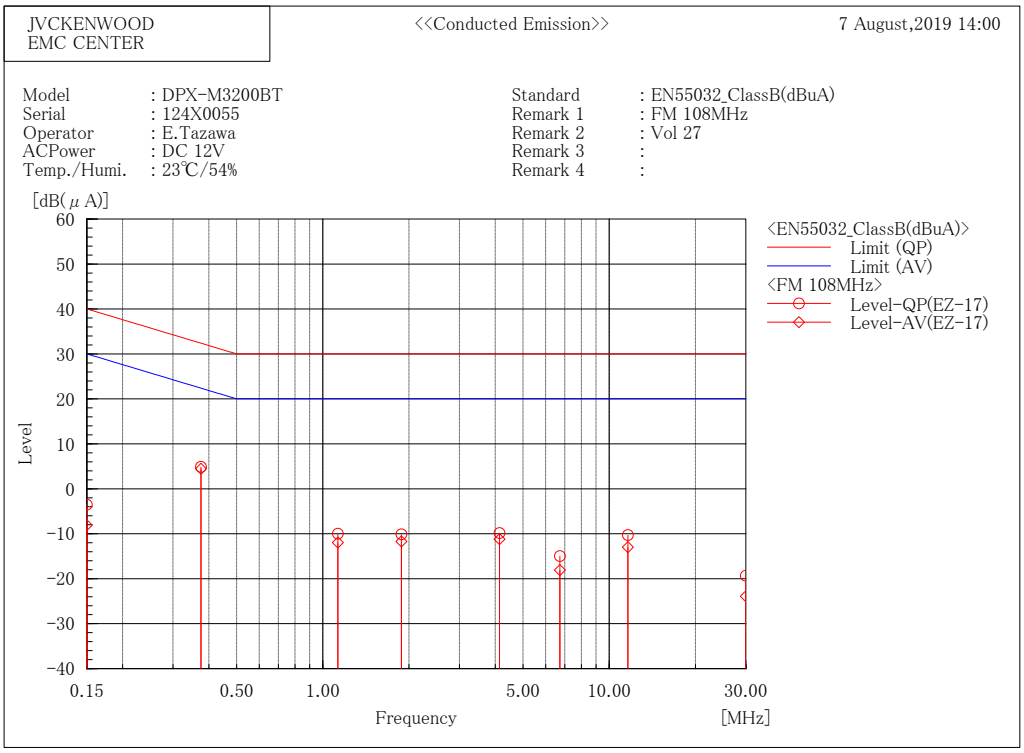


Final Result

--- EZ-17 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB(1/Ω)]	Result QP [dB(μA)]	Result CAV [dB(μA)]	Limit QP [dB(μA)]	Limit AV [dB(μA)]	Margin QP [dB]	Margin CAV [dB]	Remark
1	0.150	10.8	6.2	-14.3	-3.5	-8.1	40.0	30.0	43.5	38.1	
2	0.3757	26.4	26.0	-21.5	4.9	4.5	32.4	22.4	27.5	17.9	
3	1.1286	16.8	14.8	-26.9	-10.1	-12.1	30.0	20.0	40.1	32.1	
4	1.88142	17.6	15.9	-27.8	-10.2	-11.9	30.0	20.0	40.2	31.9	
5	3.38012	15.5	9.4	-28.0	-12.5	-18.6	30.0	20.0	42.5	38.6	
6	4.14076	18.2	16.9	-28.1	-9.9	-11.2	30.0	20.0	39.9	31.2	
7	7.90608	13.7	11.0	-28.2	-14.5	-17.2	30.0	20.0	44.5	37.2	
8	30.000	8.4	4.1	-28.0	-19.6	-23.9	30.0	20.0	49.6	43.9	

(3) EUT FM 108MHz tuned / 4Ω dummy load x4 connected

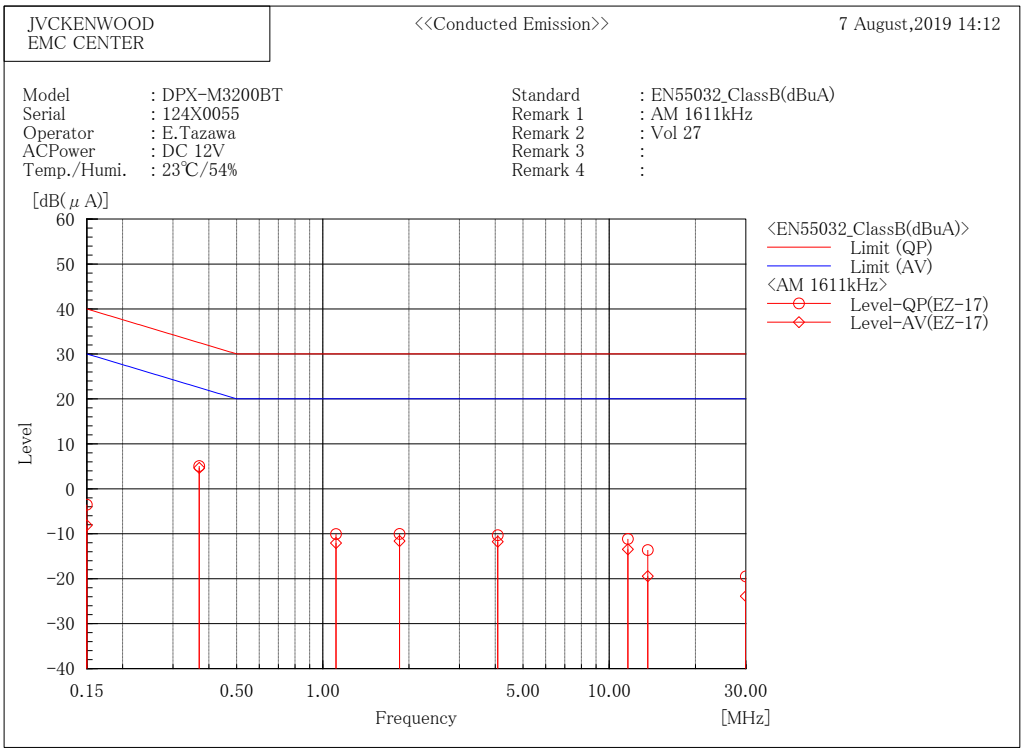


Final Result

--- EZ-17 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB(1/Ω)]	Result QP [dB(μA)]	Result CAV [dB(μA)]	Limit QP [dB(μA)]	Limit AV [dB(μA)]	Margin QP [dB]	Margin CAV [dB]	Remark
1	0.150	10.8	6.2	-14.3	-3.5	-8.1	40.0	30.0	43.5	38.1	
2	0.3757	26.4	25.9	-21.5	4.9	4.4	32.4	22.4	27.5	18.0	
3	1.12884	16.9	14.9	-26.9	-10.0	-12.0	30.0	20.0	40.0	32.0	
4	1.88195	17.7	16.1	-27.8	-10.1	-11.7	30.0	20.0	40.1	31.7	
5	4.14098	18.2	16.9	-28.1	-9.9	-11.2	30.0	20.0	39.9	31.2	
6	6.72779	13.2	10.1	-28.2	-15.0	-18.1	30.0	20.0	45.0	38.1	
7	11.62062	17.8	15.1	-28.1	-10.3	-13.0	30.0	20.0	40.3	33.0	
8	30.000	8.7	4.1	-28.0	-19.3	-23.9	30.0	20.0	49.3	43.9	

(4) EUT AM 1611kHz tuned / 4Ω dummy load x4 connected



Final Result

--- EZ-17 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading CAV [dB(μV)]	c.f [dB(1/Ω)]	Result QP [dB(μA)]	Result CAV [dB(μA)]	Limit QP [dB(μA)]	Limit AV [dB(μA)]	Margin QP [dB]	Margin CAV [dB]	Remark
1	0.150	10.7	6.2	-14.3	-3.6	-8.1	40.0	30.0	43.6	38.1	
2	0.37037	26.5	26.0	-21.4	5.1	4.6	32.5	22.5	27.4	17.9	
3	1.11248	16.7	14.7	-26.8	-10.1	-12.1	30.0	20.0	40.1	32.1	
4	1.85459	17.8	16.2	-27.8	-10.0	-11.6	30.0	20.0	40.0	31.6	
5	4.08046	17.8	16.3	-28.1	-10.3	-11.8	30.0	20.0	40.3	31.8	
6	11.62308	16.9	14.6	-28.1	-11.2	-13.5	30.0	20.0	41.2	33.5	
7	13.63937	14.5	8.7	-28.1	-13.6	-19.4	30.0	20.0	43.6	39.4	
8	30.000	8.5	4.1	-28.0	-19.5	-23.9	30.0	20.0	49.5	43.9	