

Media Station
for **AUDIO ENHANCEMENT**
Specifications
(Detail Design Phase)

Audio Enhancement Approval	
Panasonic Approval	

Ver.1.3

November 20, 2019
Panasonic Corporation



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No.	Ver. Date	Revision	Change time	Sign	Check
1	1.0	First draft	17/DEC/2018	K.Kondo	-
2	1.1	<p>Modification</p> <p>Dimensions and Weight (Section 3.2.1)</p> <p>Startup time (Section 3.2.5)</p> <p>Inrush current (Section 7.1)</p> <p>Outer Box Layout of DECT board (Section 6.2)</p> <p>Countermeasure of pop noise (Section 8.2)</p> <p>Position of parts of DECT board (Section 9.1)</p> <p>Label of DECT board (Section 9.4)</p> <p>In charge of reliability test (Section 11)</p> <p>Addition</p> <p>Dimension of cable (Section 9.2.5)</p>	4/OCT/2019	K.Kondo	-
3	1.2	<p>Modification</p> <p>PACKAGING SPECIFICATIONS OF DECT BOARD (Section 6)</p> <p>Fastening torque (Section 9.3)</p> <p>Label of DECT board (Section 9.4)</p> <p>Addition</p> <p>FCC AND INDUSTRY CANADA REQUIREMENTS REGARDING THE END PRODUCT (Section 12)</p>	12/NOV/2019	K.Kondo	-
	1.2a	<p>Modification</p> <p>Outer Box Layout of DECT board (Section 6.2) (Dimensions and Weight)</p>	12/NOV/2019	K.Kondo	-
4	1.3	<p>Modification</p> <p>FCC AND INDUSTRY CANADA REQUIREMENTS REGARDING THE END PRODUCT (Section 12)</p>	20/NOV/2019	K.Kondo	-

1.GENERAL

• These specifications describe the preliminary specifications of “Media Station” for Audio Enhancement (AE).

• In charge of design

Panasonic	:	DECT board (digital block)
AE	:	Rear and Front panel (analog block), case

2.FEATURES

- Media Station has 4-inputs and 2-outputs.
- AUDIO Input terminal is available to connect to a headphone output of a MP3 player, or computer and so on.
- AUDIO Output terminal is available to connect to a recording and ALD (Assistive Listening Device).
- Each audio input and output has volume control.
- Audio input has tone control.
- Remote volume control functions are available; own volume level control or other volume level control, and LINE master volume level control (same as K-STD14).

3.SPECIFICATIONS

3.1.CONTROLS and INDICATIONS

Power Switch	:	Control Power ON/OFF
Volume Switches	:	Control volume level of OWN, OTHER and LINE
E1 Switch	:	E1 output control
E2 Switch	:	E2 output control
LINK Switch	:	Registration control
Audio Input Volume knobs	:	Control volume level of each Audio Input
Audio Output Volume knobs	:	Control volume level of each Audio Output
Tone Control knob	:	Tone control of Audio Input
LED Indication	:	Power LED (green) and LINK LEDs (green/red)

Refer to “AE DECT Microphone System CD Specification” section 2.8.2.

3.2.SPECIFICATIONS

3.2.1.General Specifications

Power Supply	:	USB Power (AC adaptor) Micro USB type B connector, DC5V ±0.25V
Power Consumption	:	Ave 100mA (T.B.D) Peak 250mA (T.B.D) Note) Please use a power supply of 5 V, 250 mA or more
Dimensions	:	Media Station 7.6”(W) x 5”(D) x 1.13”(H) (193.04 x 127 x 28.7 mm), designed by AE DECT board 2.36”(W) x 2.36”(D) x 0.35”(H) (60 x 60 x 8.9 mm), including antenna 2.60”(W) x 2.86”(D) x 0.35”(H) (66 x 73 x 8.9 mm), including antenna
Weight	:	Media Station 9.6 oz (272.16g), designed by AE— DECT board About 0.6 oz 0.7 oz (17g 20g) , including cables, antenna and shield case

Temperature Range	:	5°C ~ +35°C
Humidity Range	:	~90%
The Condition of Installation	:	Indoor use

3.2.2. Accessory of Media Station

AC adaptor	:	Prepared by Audio Enhancement
USB- Micro USB Cable	:	Prepared by Audio Enhancement
Operating Instructions	:	Prepared by Audio Enhancement
Warranty Card	:	Prepared by Audio Enhancement

3.2.3. RF Specification

Antenna	:	The number of antenna: 2 Antenna type: Dipole. Plate and pattern antenna Frequency range: 1,920 – 1,930(MHz) Antenna Gain: -7dBi(as human body effect)
RF specification	:	Specified in “AE DECT Mic Specification ”
Cover area	:	Same as K-STD14

3.2.4. Audio Specification

Frequency Response	:	100Hz~7kHz
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Audio Input

Number of inputs	:	4 φ3.5 Mini Jack, Unbalanced
Nominal Input Level	:	-24dBV (Media Station) -21dBV (DECT board)
Maximum Input Level	:	-5dBV (Media Station) -2dBV (DECT board)
Tone Control	:	Bass/Treble tone control (Designed by AE)
ALC (Auto Level Control)	:	DECT board does not have ALC. If you need the countermeasure of excessive input, please install ALC on the rear panel.

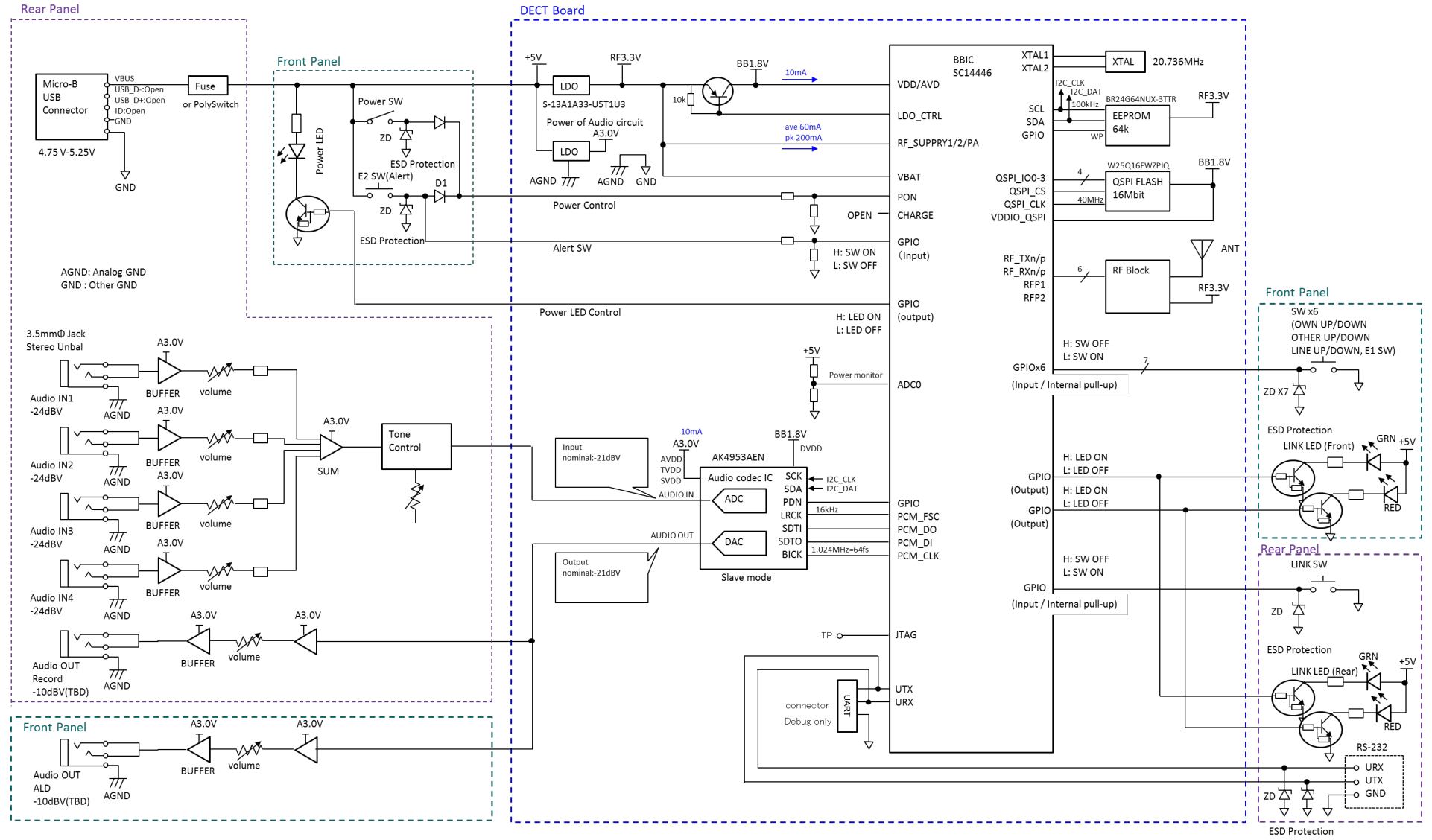
Audio Output

Number of outputs	:	2 φ3.5 Mini Jack, Unbalanced
Nominal output Level	:	-10dBV (Media Station) (Designed by AE) -21dBV (DECT board)
Maximum Output Level	:	0dBV (Media Station) -4dBV (DECT board)

3.2.5. Startup time

Startup time from pressing the Power SW to the audio link	:	T.B.D Minimum 5s
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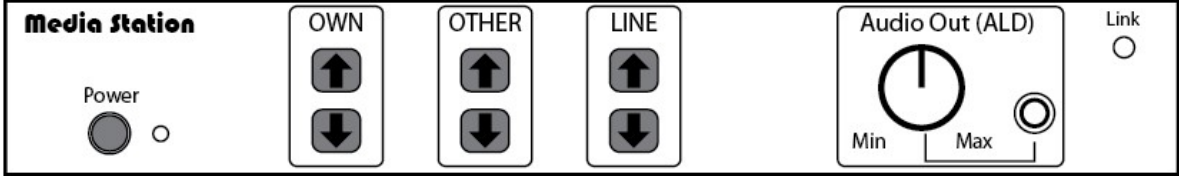
4. BLOCK DIAGRAM



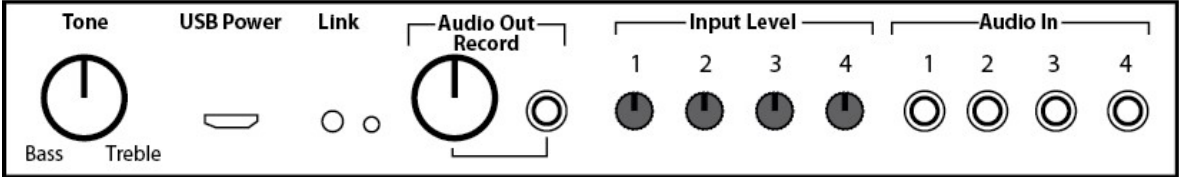
5.APPEARANCE

Image of appearance (case is designed by AE)

Front



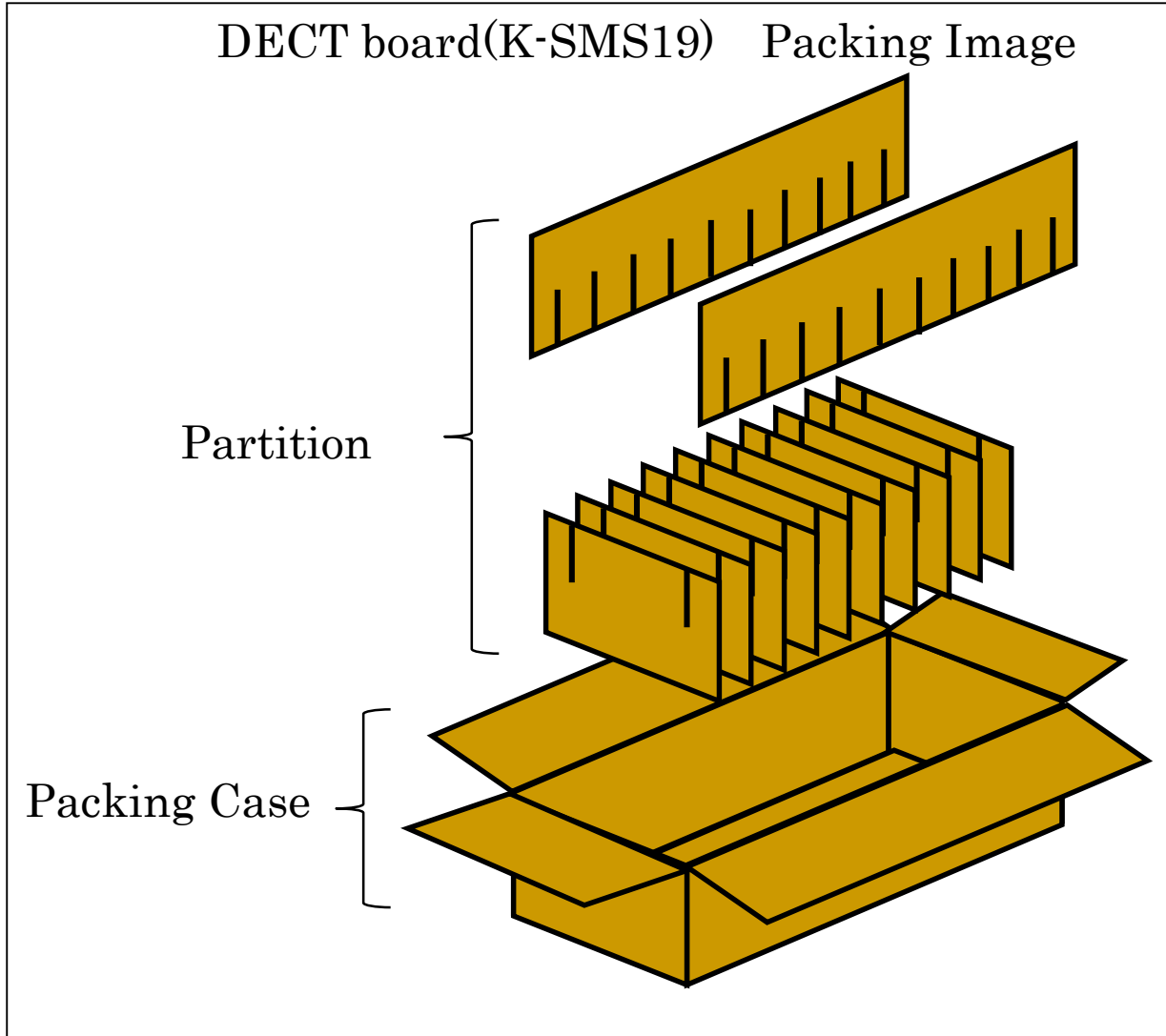
Rear



6.PACKAGING SPECIFICATIONS OF DECT BOARD

6.1.Packaging Specifications

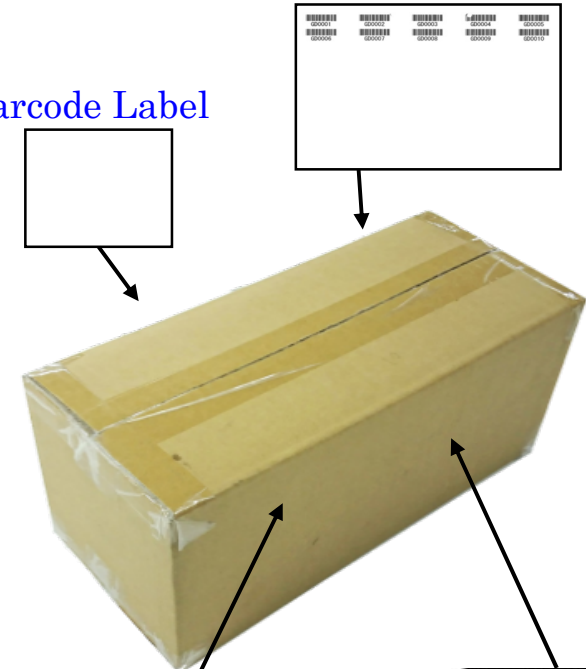
DECT board(K-SMS19) Packing Image



Label

Serial Label

Barcode Label



Packing Label

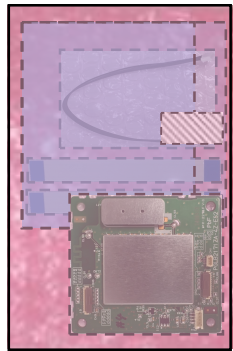


FCC Compliance Label

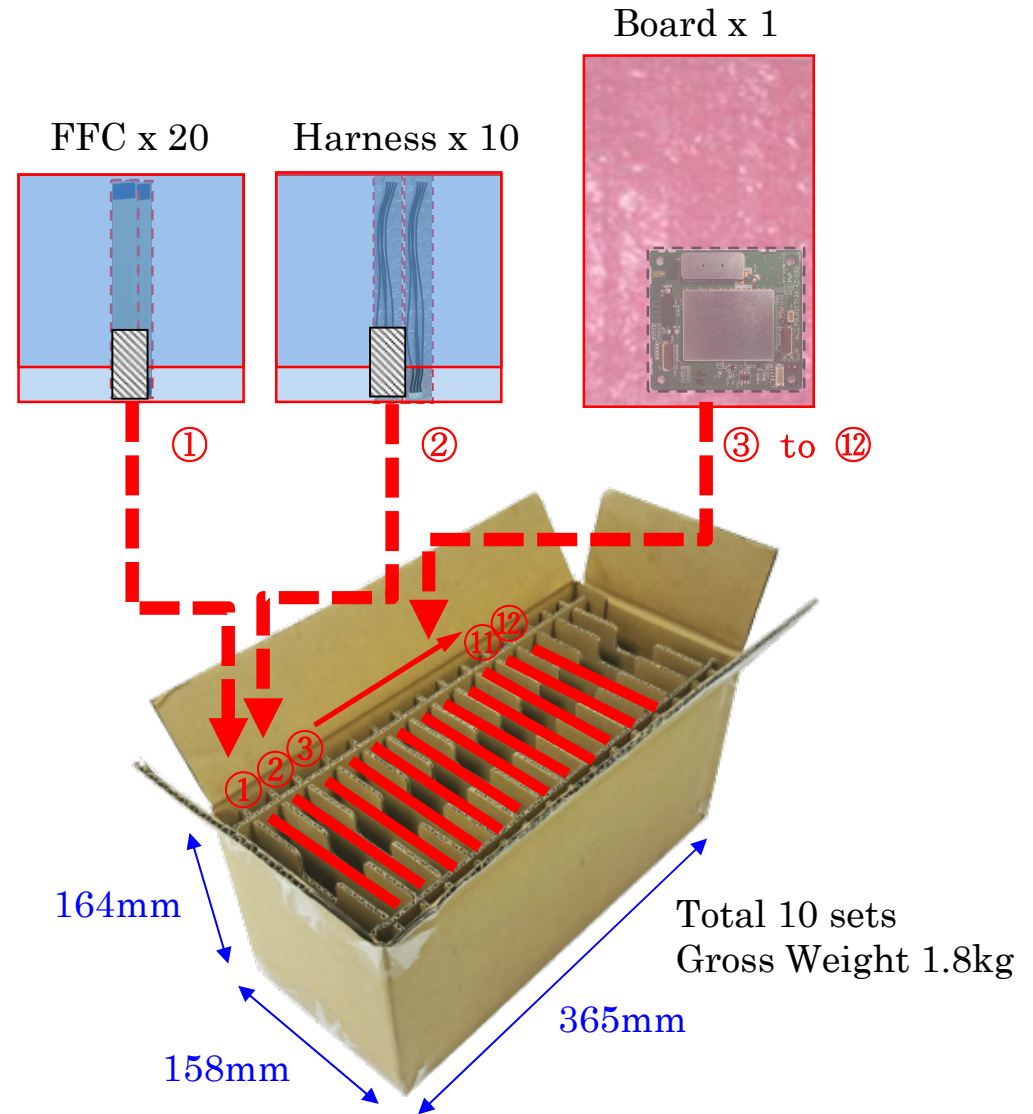
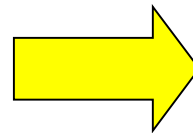
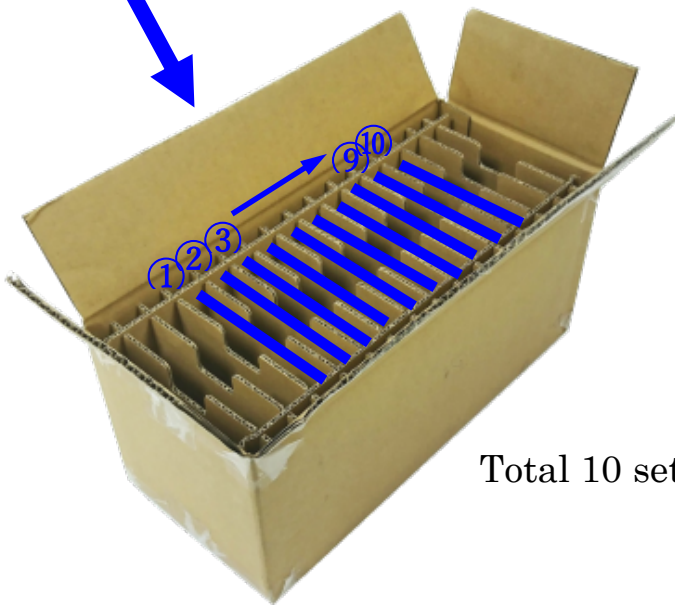
6.2. Outer Box Layout of DECT board

T.B.D

Change of packing layout



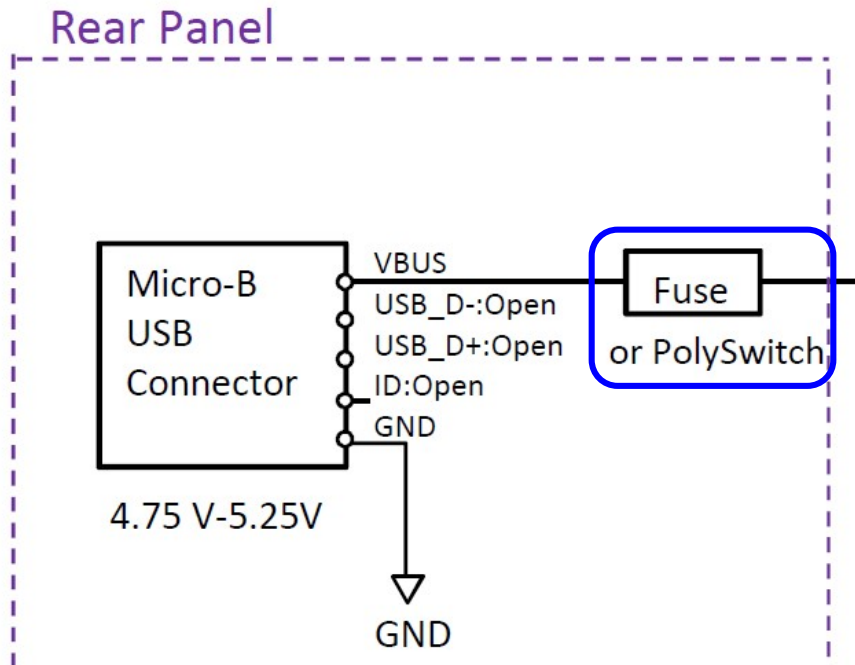
① to ⑩



7. CIRCUIT PROTECTION

7.1. Countermeasure of short circuit

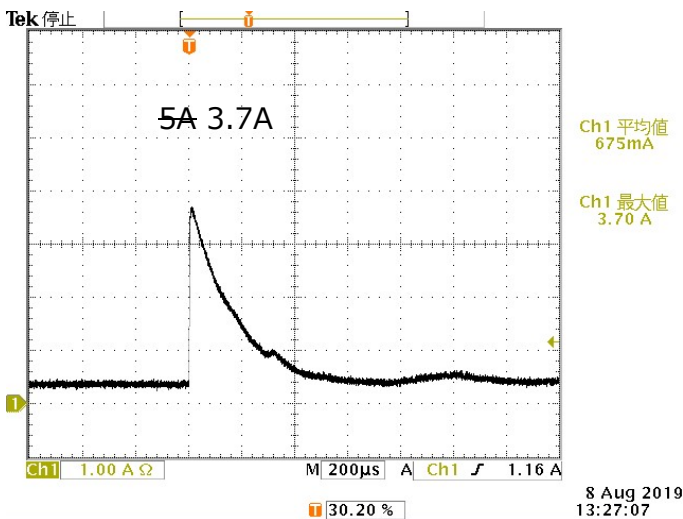
Please mount the protector (fuse or polyswitch) on the **rear panel**.



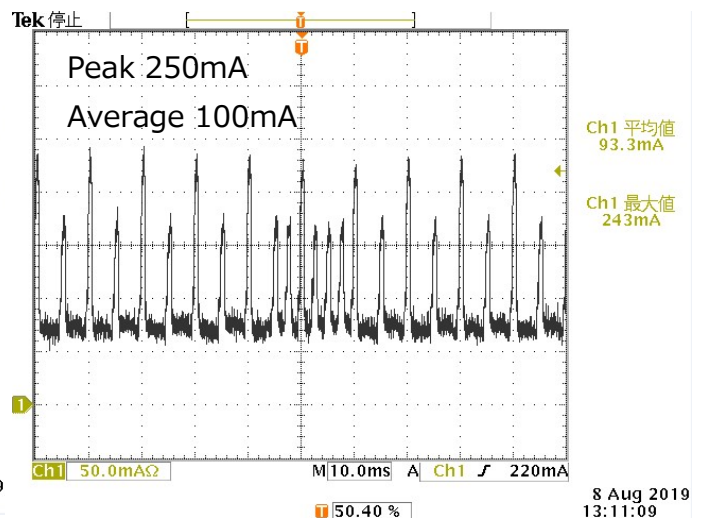
Consumption current during the normal operation is as follows.

Item	Value
Inrush current (when Micro-USB is connected)	About 5A 4A
Peak current (Audio Link)	250mA (T.B.D)
Average current (Audio Link)	100mA (T.B.D)

Inrush current

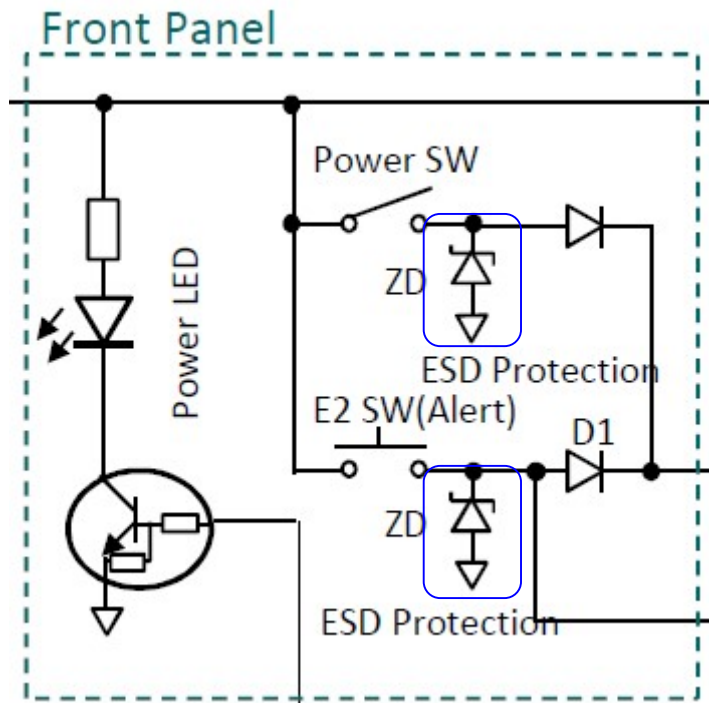
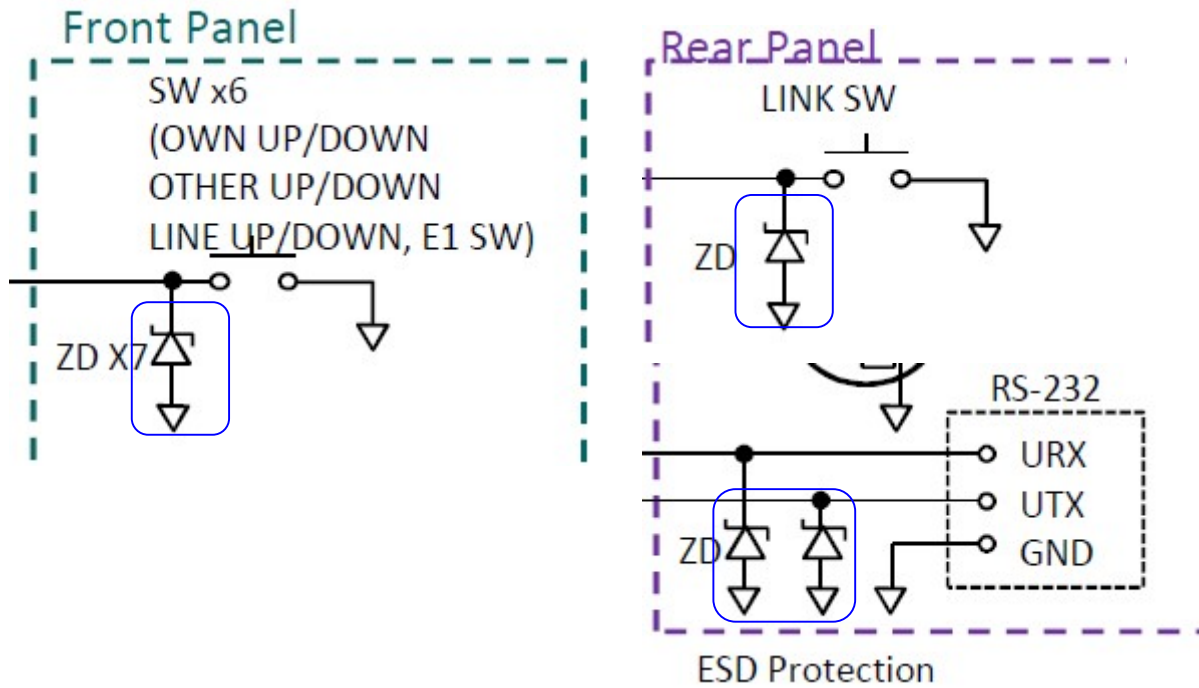


Audio link



7.2. Countermeasure of ESD (Electro Static Discharge)

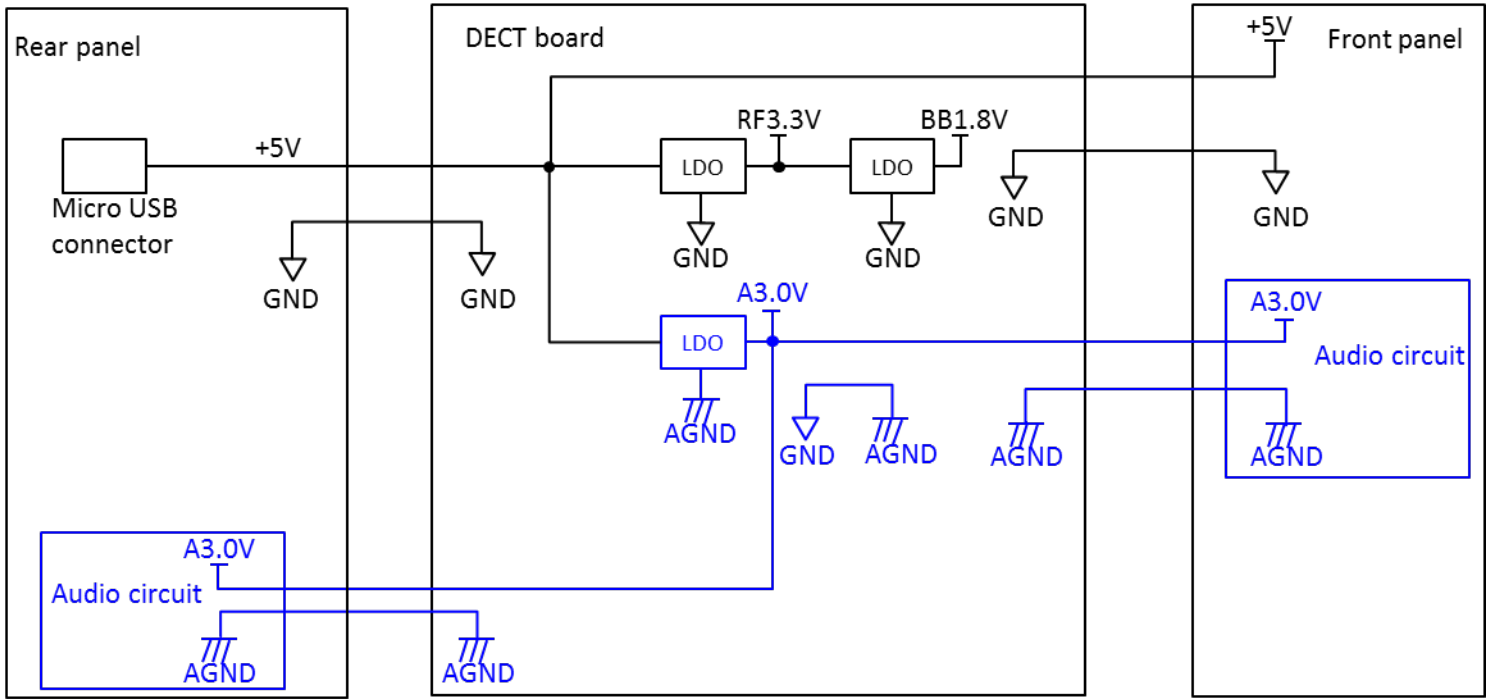
Please mount the ESD protector (Zener diode) near the each SW, volume and connector of **rear and front panel**.



8.AUDIO BLOCK

8.1.Power supply and GND of audio block

Power supply and GND is as follows.

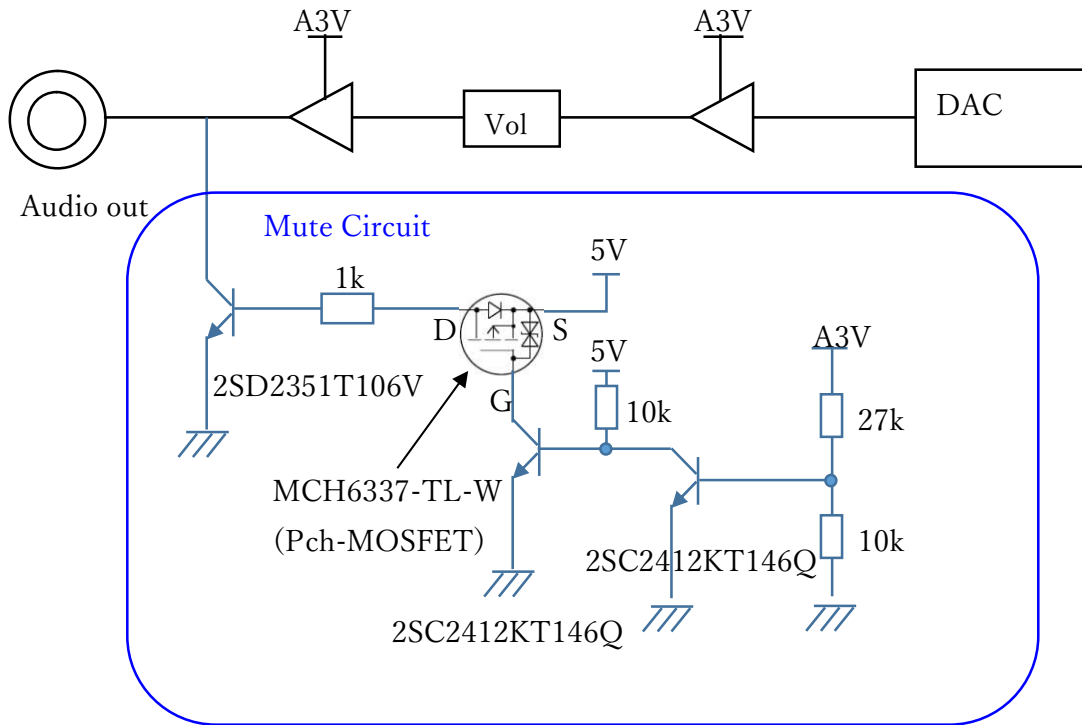


- +5V : USB power
- RF3.3V : Power supply of RF
- BB1.8V : Power supply of BBIC (DECT IC)
- A3.0V : Power supply of audio block
- AGND : Audio GND
- GND : Other GND

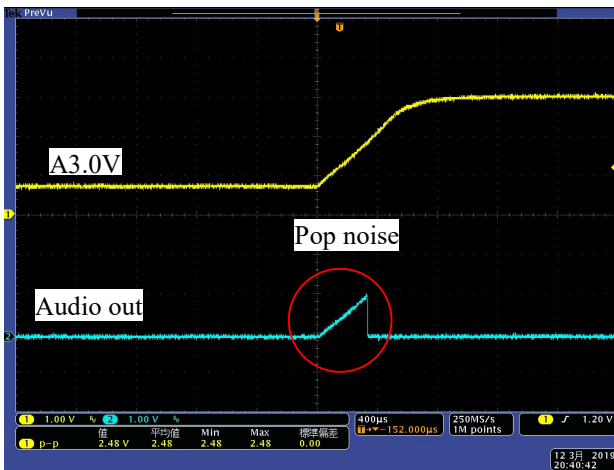
Please use A3.0 V and AGND for the audio block power supply and GND

8.2. Countermeasure of pop noise

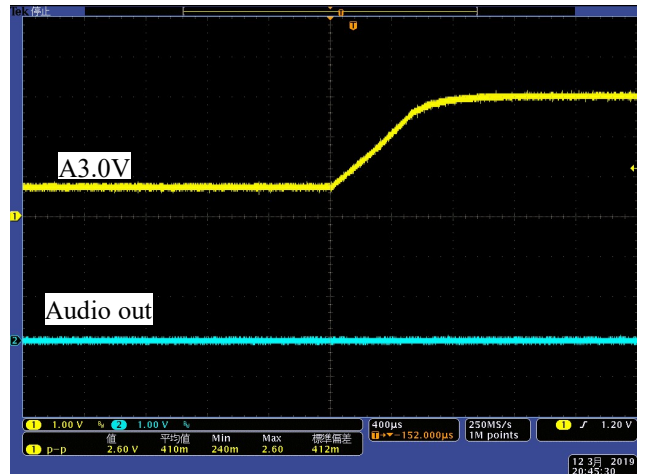
When the power supply A3.0 V of the audio block start-up, a pop noise is generated from the audio out. Please mount the mute circuit of audio out of **front and rear panel**. Example of mute circuit is as follows.



Mute circuit
Not available

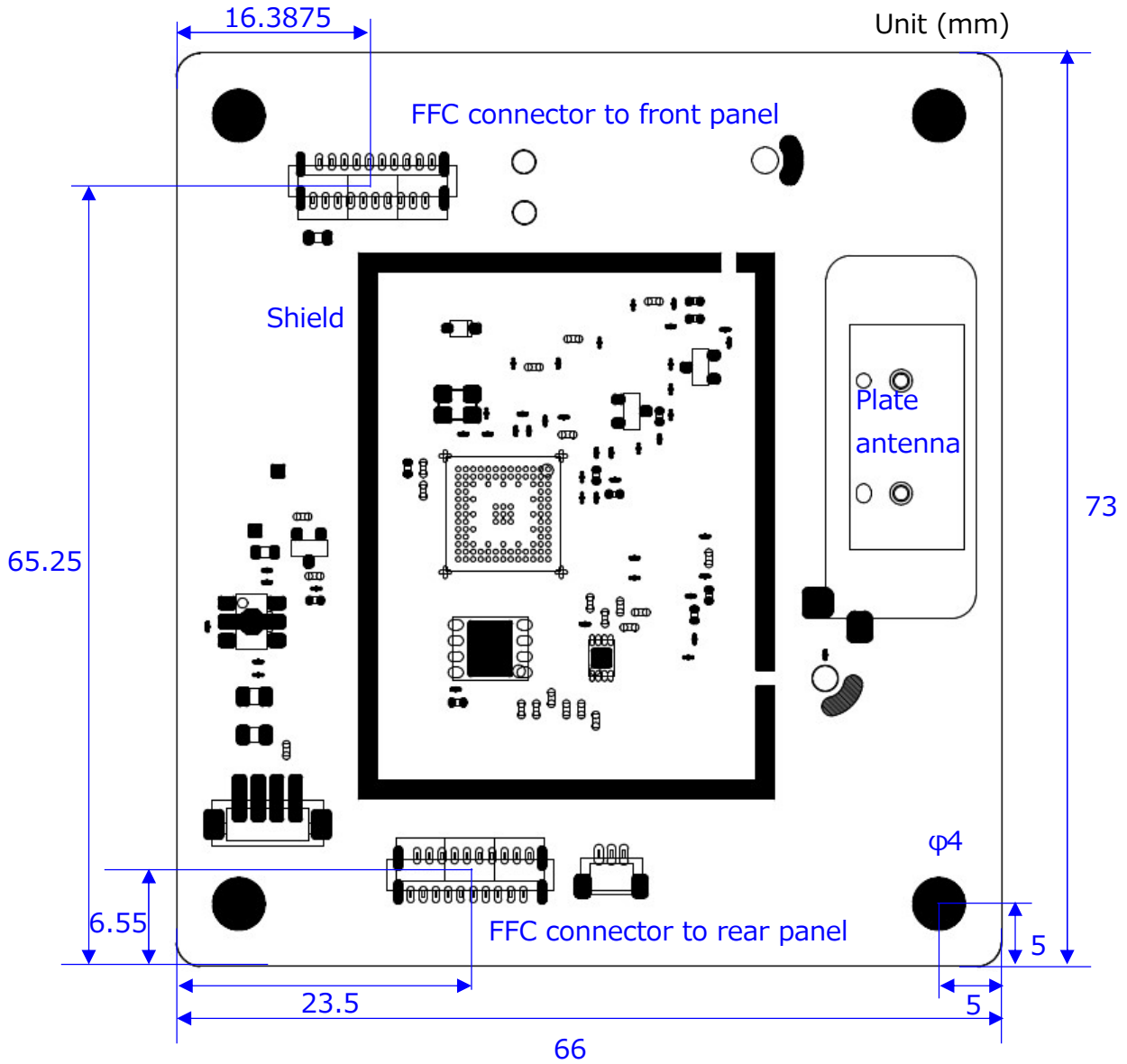


Available

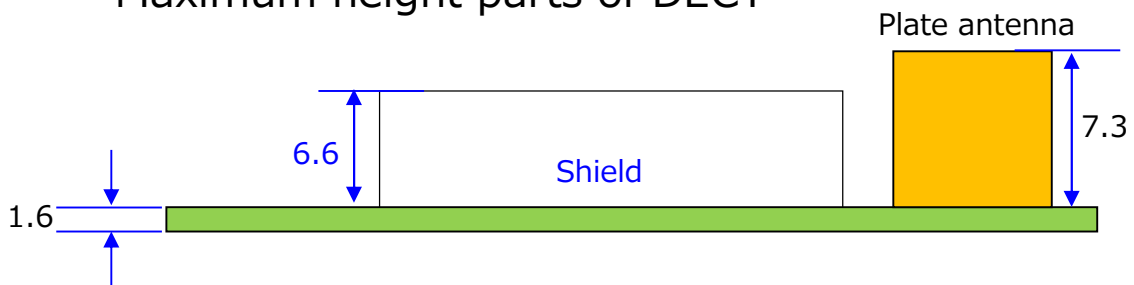


9. STRUCTURE

9.1. Position of parts of DECT board (K-SMS19)

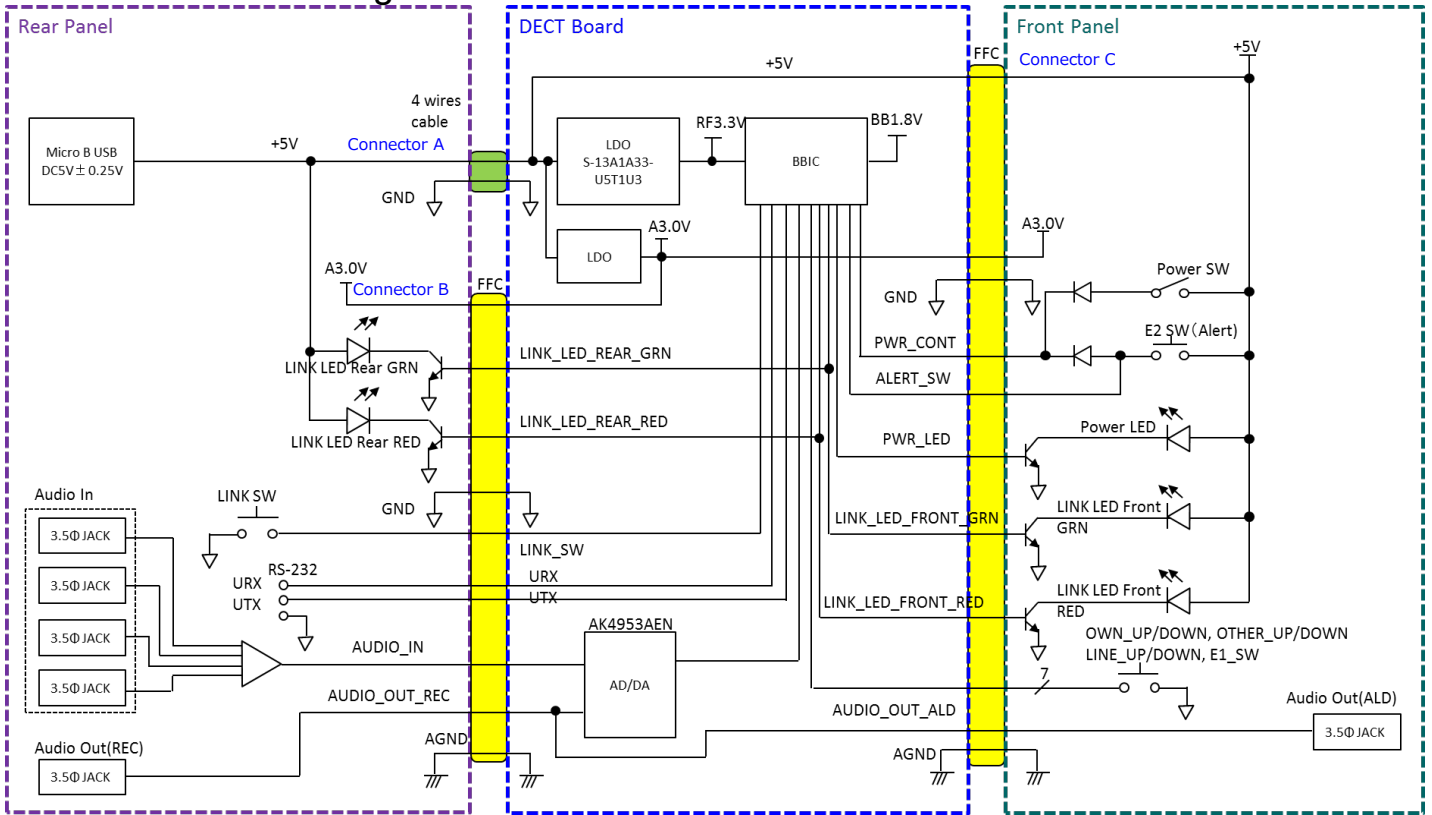


Maximum height parts of DECT



9.2.Connector

9.2.1.Pin assignment



ConnectorA
B4B-ZR-SM4-TF(LF)(SN)

Pin #	Rear Panel	DECT Board
1	+5V	+5V
2	+5V	+5V
3	GND	GND
4	GND	GND

ConnectorB
FH12-20S-0.5SVA(54)

Pin #	Rear Panel	DECT Board
1	GND	AUDIO_OUT_REC
2	GND	AGND
3	GND	AUDIO_IN
4	GND	AGND
5	URX	AGND
6	UTX	AGND
7	LINK SW	A3.0V
8	LINK_LED_REAR_RED	A3.0V
9	LINK_LED_REAR_GRN	A3.0V
10	NC	NC
11	NC	NC
12	A3.0V	LINK_LED_REAR_GRN
13	A3.0V	LINK_LED_REAR_RED
14	A3.0V	LINK SW
15	AGND	UTX
16	AGND	URX
17	AGND	GND
18	AUDIO_IN	GND
19	AGND	GND
20	AUDIO_OUT_REC	GND

ConnectorC
FH12-20S-0.5SVA(54)

Pin #	DECT Board	Front Panel
1	PWR_CONT	AGND
2	ALERT_SW	AUDIO_OUT_ALD
3	PWR_LED	AGND
4	LINK_LED_FRONT_GRN	A3.0V
5	LINK_LED_FRONT_RED	A3.0V
6	OWN_UP	GND
7	OWN_DOWN	+5V
8	OTHER_UP	GND
9	OTHER_DOWN	E1_SW
10	LINE_UP	LINE_DOWN
11	LINE_DOWN	LINE_UP
12	E1_SW	OTHER_DOWN
13	GND	OTHER_UP
14	+5V	OWN_DOWN
15	GND	OWN_UP
16	A3.0V	LINK_LED_FRONT_RED
17	A3.0V	LINK_LED_FRONT_GRN
18	AGND	PWR_LED
19	AUDIO_OUT_ALD	ALERT_SW
20	AGND	PWR_CONT

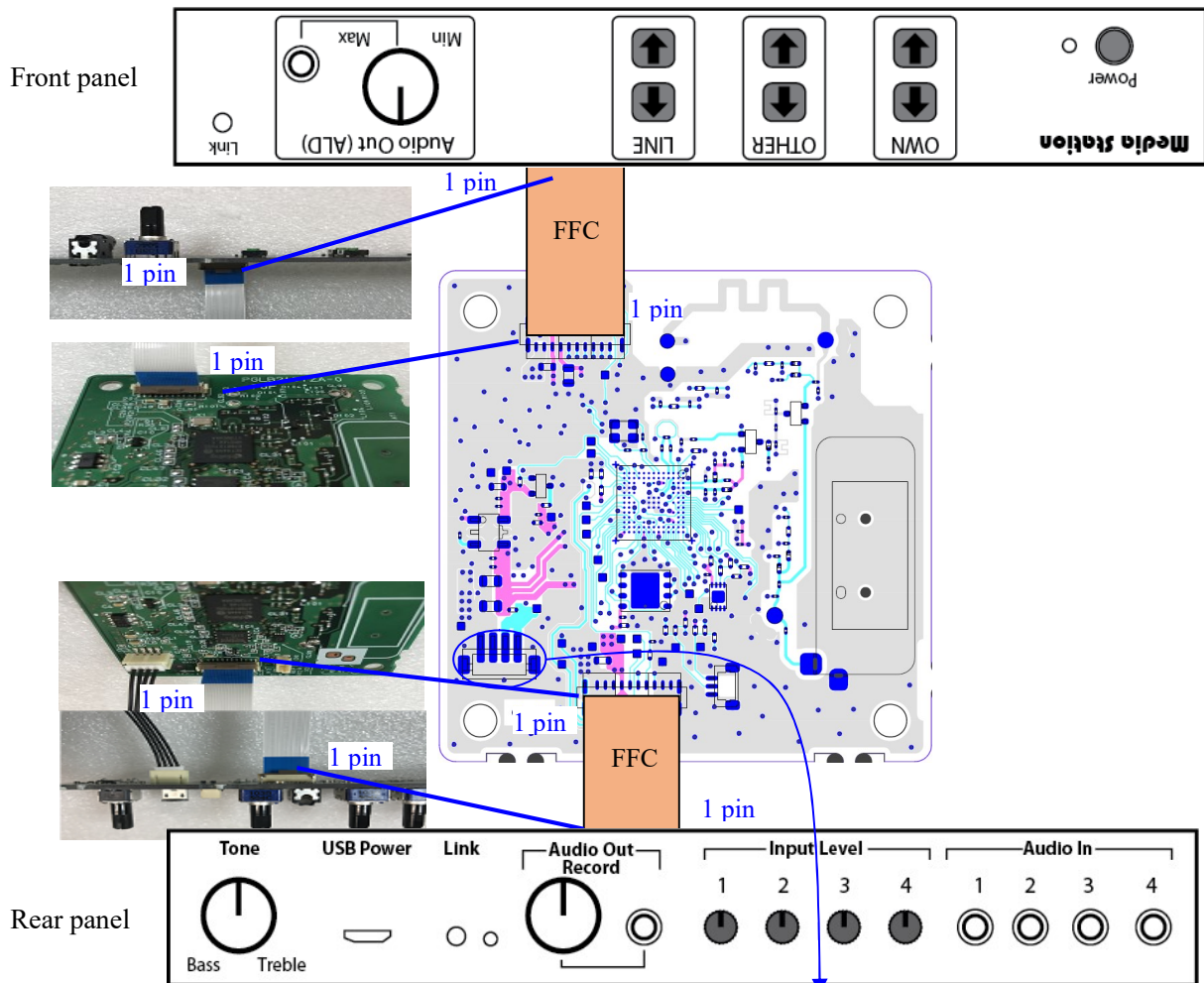
9.2.2.Parts # of connector

Please use the following connector.

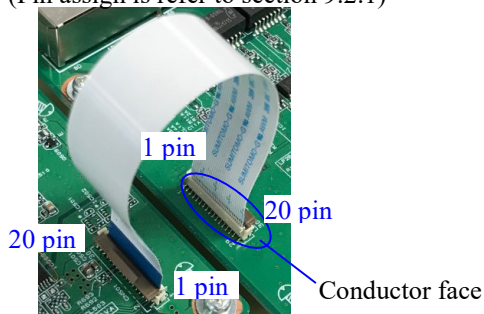
Connector	Manufacture	Parts #	Part mounting
4pin connector	JST	B4B-ZR-SM4-TF(LF)(SN)	DECT board, Rear panel
20pin FFC connector	HIROSE ELECTRIC	FH12-20S-0.5SVA(54)	DECT board, Rear panel, Front panel

9.2.3.Direction of cable and connector

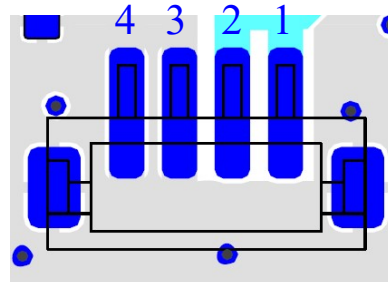
Direction of cable and connector is as follows.



Direction of FFC
(Pin assign is refer to section 9.2.1)

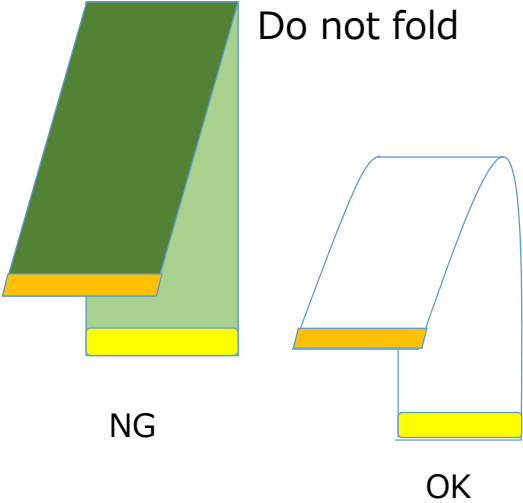


4pin connector
(Pin assign is refer to section 9.2.1)



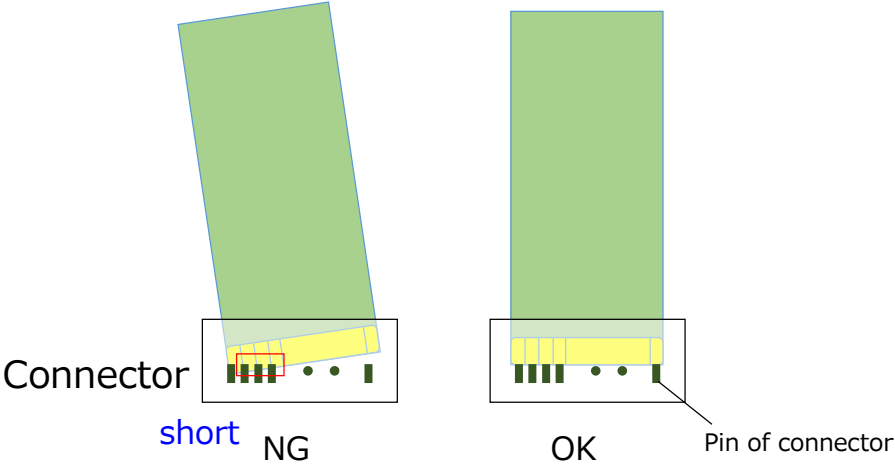
9.2.4.Connection of FFC

-Bending



If fold FFC, FFC breaks

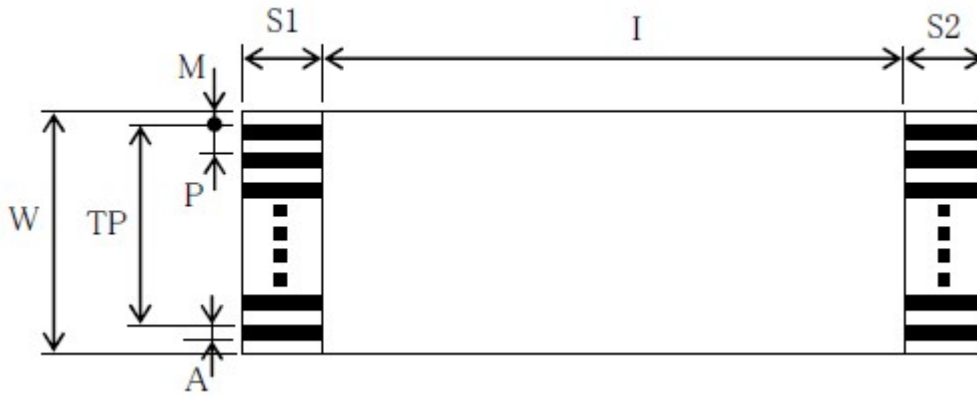
-Connection



If it is inserted diagonally it may short-circuit with the next pin

9.2.5.Dimension of cable

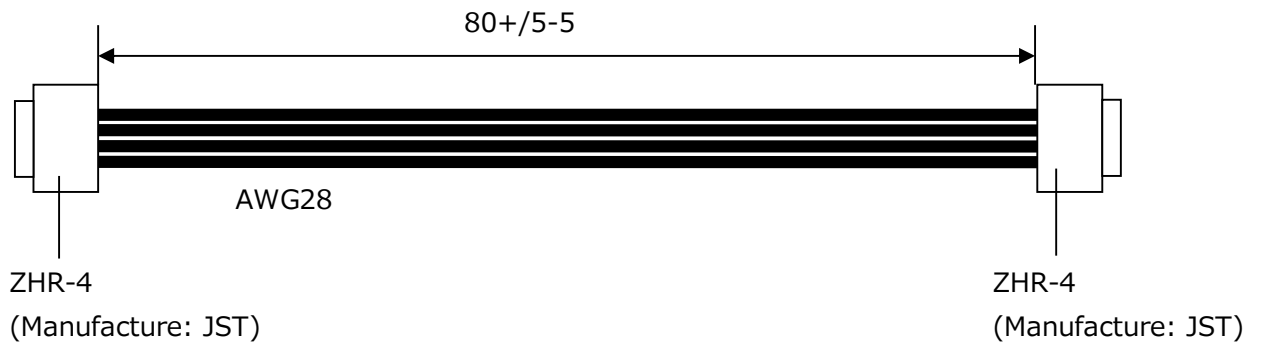
20pin FFC



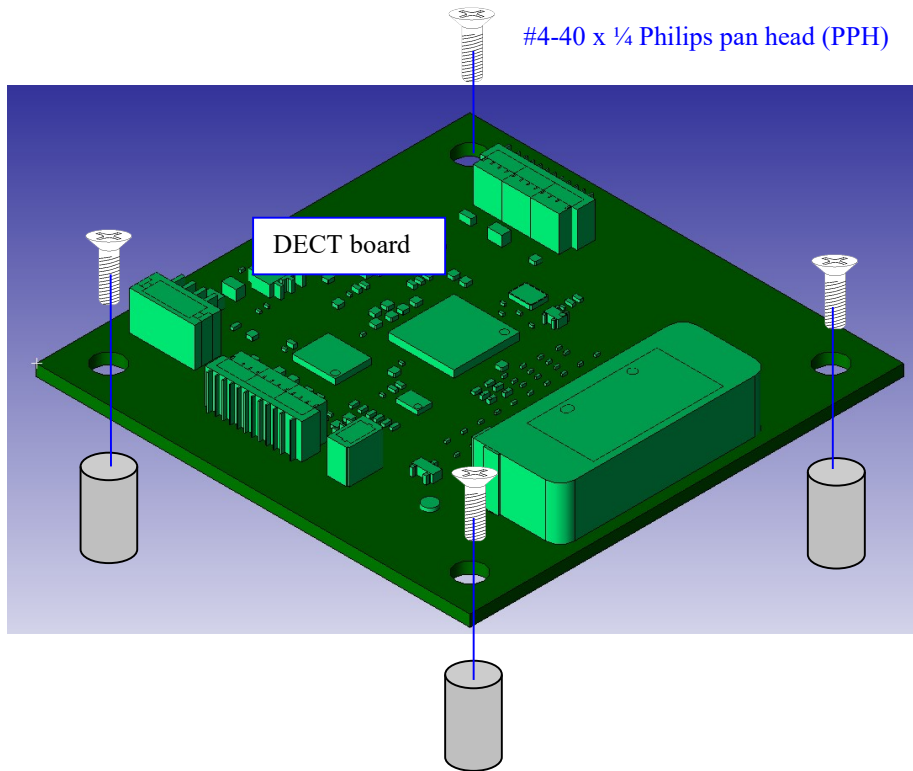
Unit (mm)

Symbol	Item	Spec
P	Pitch	0.50+0.03/-0.03
TP	Total Pitch	9.50+0.03/-0.03
W	Cable Width	10.50+0.05/-0.05
M	Margin width	0.35+0.10/-0.10
A	Conductor width	0.300+0.050/-0.020
I	Insulation Length	66.0+2.0/-2.0
S1, S2	Strip Length	2.0+0.5/-0.5

4pin cable



9.3.Fastening torque

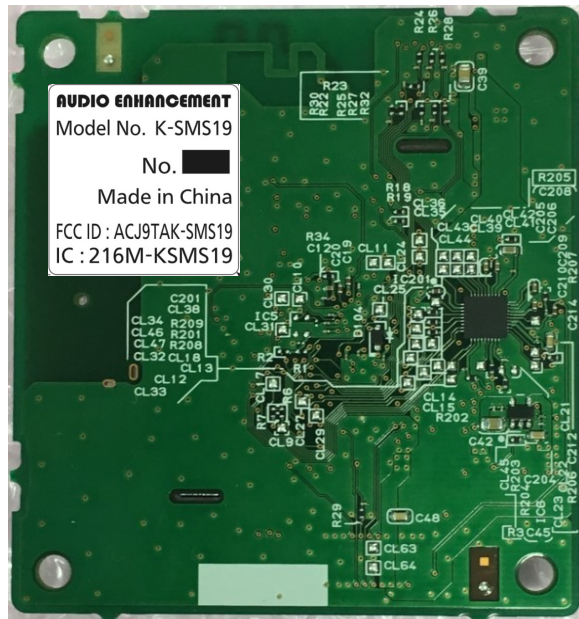


Panasonic recommend torque : $0.78+0.1/-0.1$ (N·m)

9.4.Label of DECT board

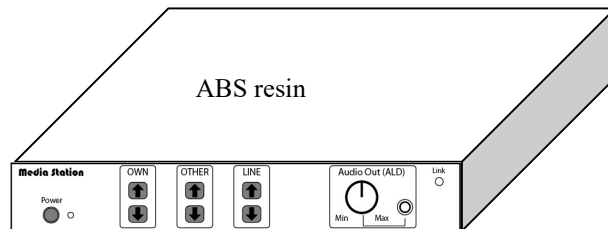
T.B.D

Delete the FCC logo and Canada ICES compliance label and correct the Canada IC.
 Because FCC logo and Canada ICES conformance label are displayed on the end product that passed the unintentional-radiator test.



9.5. Material of case

Please use ABS resin for the case of the Media Station.



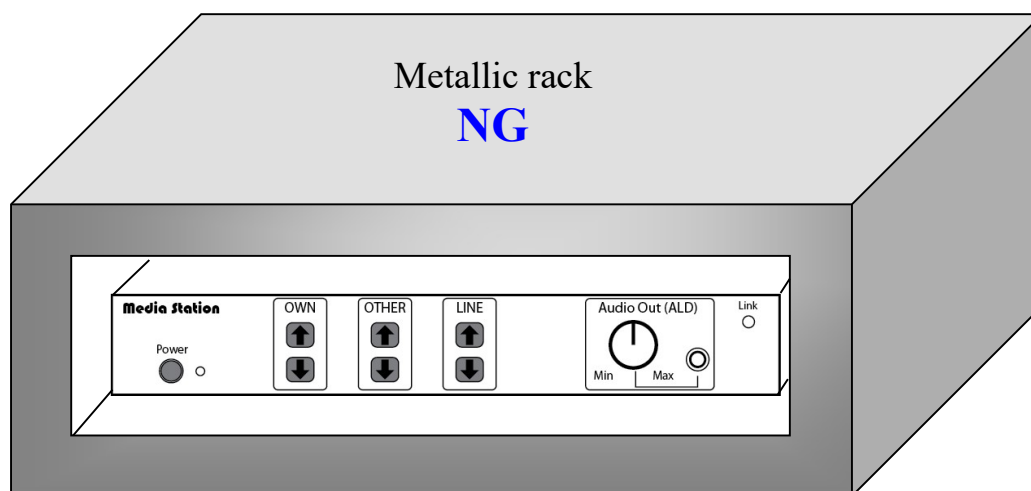
Note) Do not use metallic component

10.INSTALLATION

Install the media station on the desk.



Note) Do not cover the Media Station with metallic component.



11. IN CHARGE OF RELIABILITY TEST

Panasonic is in charge of DECT board only.

Therefore, please confirm the reliability of Media Station by AE.

#	Test Item	Test condition	Board	Assembled set	
1	DC power supply Up/Down test	Typ voltage $\pm 10\%$	<input type="radio"/>		Panasonic
2	Power ON/OFF test	Power ON/OFF 500 cycles	<input type="radio"/>		
3	Vibration test of packing box	Vertical:5-50Hz, 9.8m/s ² (=1.0G), 50min Horizontal:5-50Hz, 4.9m/s ² (=0.5G), 27min x2	<input type="radio"/>		
4	Pressure test of packing box	Pressure:196N, Variation:10mm	<input type="radio"/>		
5	Low temperature storage test	-20°C, 8h	<input type="radio"/>		
6	High temperature, high-humidity storage test	60°C, 93%RH, 8h	<input type="radio"/>		
7	Thermal shock test	85°C, 10min / -40°C, 10min / 200 cycles	<input type="radio"/>		
8	Drop test of packing box	Height: 0.70m	<input type="radio"/>		
9	Power measurement	Maximum load current		<input type="radio"/>	AE
10	AC power supply Up/Down test	Typ voltage +15%/-15%		<input type="radio"/>	
11	Radiated emission test	FCC part15	<input type="radio"/>		Panasonic
12	Conducted emission test	FCC part15	<input type="radio"/>		
13	ESD test	IEC 61000-4-2		<input type="radio"/>	AE
14	Electrical fast transient / burst immunity test	IEC 61000-4-4		<input type="radio"/>	
15	Surge immunity test	IEC 61000-4-5		<input type="radio"/>	
16	Voltage dips, short interruptions test	IEC 61000-4-11		<input type="radio"/>	
17	Heating test	Normal operation		<input type="radio"/>	
18	Vibration test of packaged products	Frequency: 5-55Hz Acceleration: 2.94m/s ² (=0.3G) Time: 10min		<input type="radio"/>	
19	Low temperature operating test	Normal operation, 0°C, 2h		<input type="radio"/>	
20	High temperature operating test	Normal operation, 40°C, 2h		<input type="radio"/>	
21	High temperature, high-humidity operating test	Normal operation, 40°C, 93%RH, 2h		<input type="radio"/>	
22	Temperature cycle test	Normal operation, 40°C,2h / 0°C,2h / 3 cycles		<input type="radio"/>	
23	Chemical resistance test of outside case	Acetic acid 75% (ABS resin), dip time: 5min		<input type="radio"/>	
24	Condensation cycle test	25°C, 93%RH, 20min / 5°C, 60%RH, 20min / 200 cycles		<input type="radio"/>	
25	Start up test at low temperature	0°C		<input type="radio"/>	
26	Drop test of packaged products	Height: 0.75m		<input type="radio"/>	

12.FCC AND INDUSTRY CANADA REQUIREMENTS REGARDING THE END PRODUCT

12.1.List of applicable FCC and IC rules

K-SMS19 (DECT Module board) complies with FCC part15 subpart D and Industry Canada RSS 213 Issue3.

12.2.FCC rules that must be complied with in the end product

K-SMS19 (DECT Module board) is only FCC authorized for the specific rule FCC part 15 subpart D listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The end product manufacturer is responsible for compliance to any other FCC rules FCC part15 subpart B.

12.3.IC rules that must be complied with in the end product

K-SMS19 (DECT Module board) is only IC authorized for the specific rule Industry Canada RSS 213 Issue3 listed on the grant, and that the host product manufacturer is responsible for compliance to any other ICC rules that apply to the host not covered by the modular transmitter grant of certification. The end product manufacturer is responsible for compliance to any other ICC rules ICES-003 issue 6.

12.4.Requirement of regarding the end product and manual

End product and literature provided to the end user must include the following wording:

Wording	Display location
Contains Transmitter Module FCC ID:ACJ9TAK-SMS19 IC:216M-KSMS19	User manual and end product
CAN ICES-3(A)/NMB-3(A)	User manual and end product
FCC Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.	User manual
This device complies with Part 15 of the FCC Rules and Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.	User manual and end product. If it cannot be displayed on the end product, it must be displayed on the packaging box
NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.	User manual

<p>FCC RF Exposure Warning: To comply with FCC RF exposure requirements in uncontrolled environment: – This equipment must be installed and operated in accordance with provided instructions and a minimum 20 cm (8 inches) spacing must be provided between antenna and all person’s body (excluding extremities of hands, wrists, feet and ankles) during wireless modes of operation.</p>	<p>User manual</p>
<p>This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.</p>	<p>User manual</p>
<p>RSS-Gen · Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication. · This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions: 1. This device may not cause interference. This device must accept any interference, including interference that may cause undesired operation of the device. L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : 1. L'appareil ne doit pas produire de brouillage; L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.</p>	<p>User manual</p>

12.5. Notice

1. This module (K-SMS19) is not the Limited Module.
2. There is no trace antenna design in the end product.