

ISO7821 Dual Digital Isolator Evaluation Module

This user's guide describes the ISO7821 Dual Digital Isolator Evaluation Module (EVM). This EVM allows designers to evaluate device performance for fast development and analysis of isolated systems. The EVM supports evaluation of any of the TI dual-channel digital isolators in a 16DW package.

CAUTION

This evaluation module is made available for isolator parameter performance evaluation only and is not intended for isolation voltage testing. To prevent damage to the EVM, any voltage applied as a supply or digital input/output must be maintained within the 0 V to 5.5 V recommended operating range.

Contents

1	Introduction	2
2	Overview	2
3	Pin Configurations of the ISO7821 Dual-Channel Digital Isolators	2
4	ISO7821 – EVM Board Block Diagram and Image.....	3
5	EVM Setup and Operation.....	4
6	Bill of Materials	5
7	EVM Schematics and Layout	6

List of Figures

1	ISO782x Dual-Channel Digital Isolator Pin Configurations.....	2
2	ISO7821 EVM Configuration	3
3	ISO7821-EVM Photograph	3
4	Basic EVM Operation	4
5	Typical Input and Output Waveforms	4
6	ISO7821 EVM Schematic.....	6
7	ISO7821 PCB Layout	7

List of Tables

1	Bill of Materials	5
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1 Introduction

This user's guide describes EVM operation with respect to the ISO7821 dual-channel digital isolators. However, the EVM may be reconfigured for evaluation of any of TI's dual-channel digital isolators in a 16DW package. This guide also describes the available channel configurations within the ISO7821 family, the EVM schematic, and typical laboratory setup. A typical input and output waveform is also presented.

2 Overview

The ISO7821 is TI's new digital isolator family capable of galvanic isolations up to 8000 Vpk. The devices are certified to meet reinforced isolation requirements by VDE and CSA. These isolators provide high electromagnetic immunity and low emissions at low power consumption, while isolating CMOS or LVCMOS digital I/O's. The ISO7821 digital isolators have logic input and output buffers separated by a silicon oxide (SiO₂) insulation barrier. Used with isolated power supplies, these devices block high voltages, isolate grounds, and prevent noise currents on a data bus or other circuits from entering the local ground and interfering with, or damaging sensitive circuitry.

3 Pin Configurations of the ISO7821 Dual-Channel Digital Isolators

Figure 1 illustrates the ISO782x dual digital isolator pin configurations.

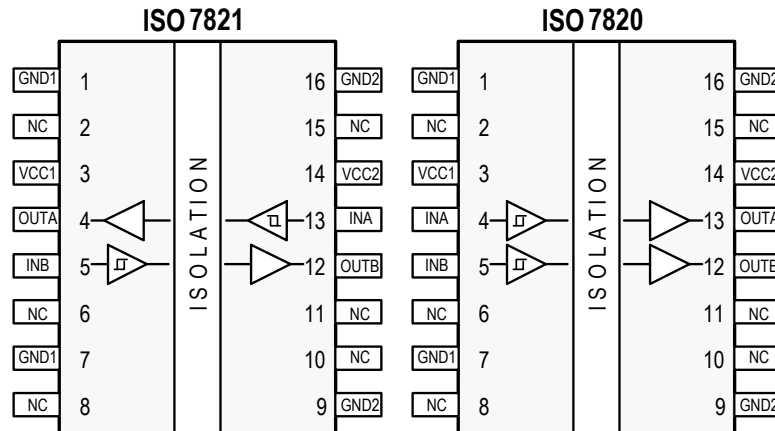


Figure 1. ISO782x Dual-Channel Digital Isolator Pin Configurations

4 ISO7821 – EVM Board Block Diagram and Image

Figure 2 shows the board configuration for evaluation of the ISO7821 dual-channel digital isolator.

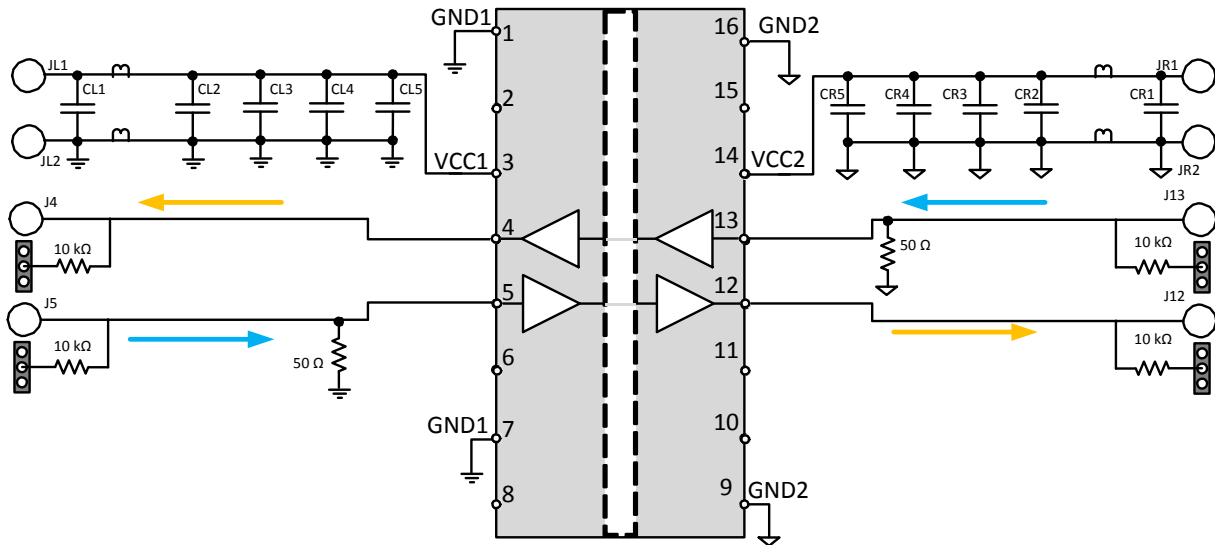


Figure 2. ISO7821 EVM Configuration

Figure 3 shows a photograph of the EVM.

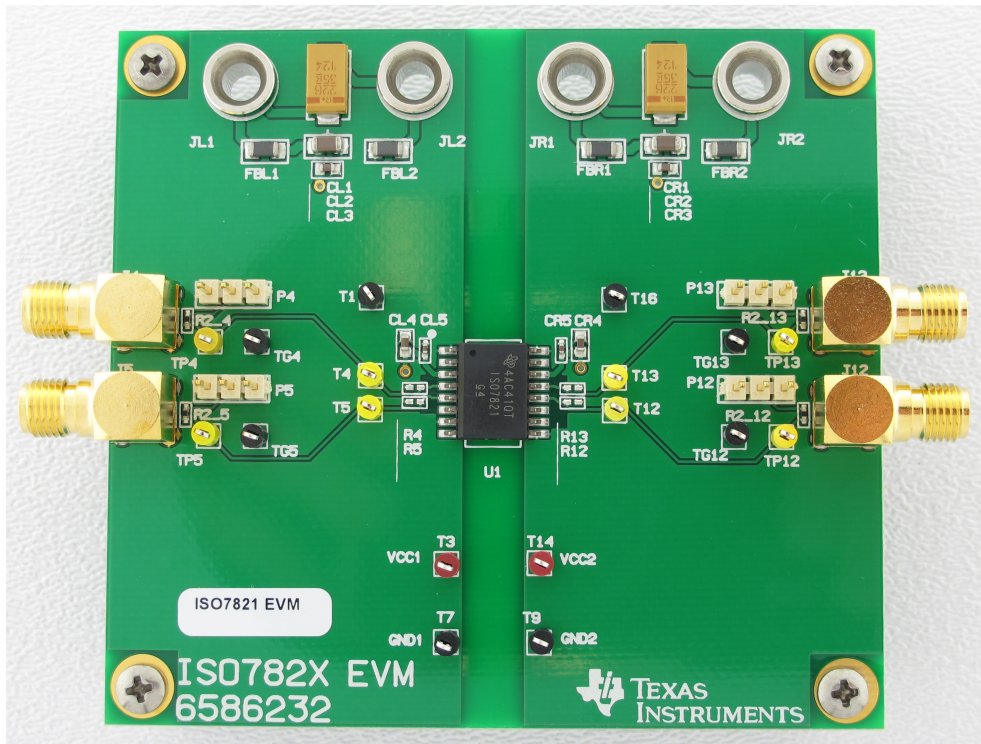


Figure 3. ISO7821-EVM Photograph

5 EVM Setup and Operation

This section describes the setup and operation of the EVM for parameter performance evaluation.

Figure 4 shows the configuration for operating the ISO7821 Dual-channel Digital Isolator EVM using two power supplies.

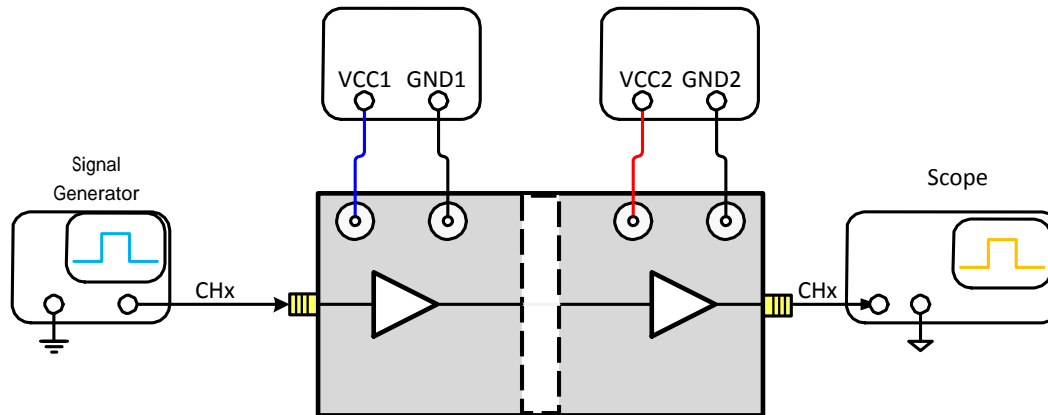


Figure 4. Basic EVM Operation

Figure 5 shows typical input and output waveforms of the EVM for a 1-MHz clock. The input is shown as channel 1, and the output is shown as channel 2.

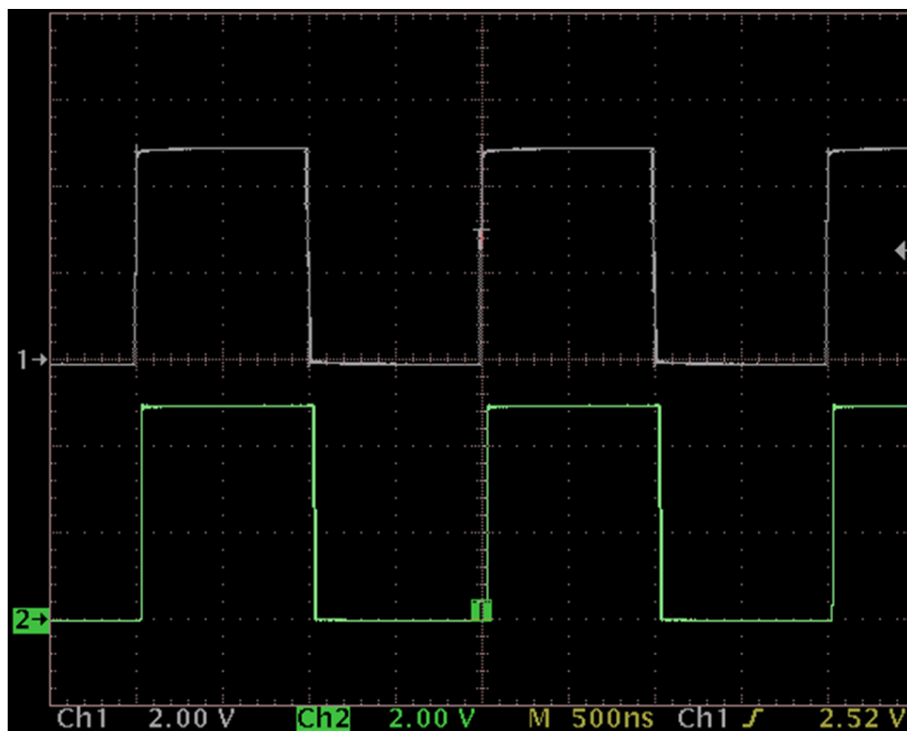


Figure 5. Typical Input and Output Waveforms

6 Bill of Materials

Table 1 shows the bill of materials (BOM) for this EVM.

Table 1. Bill of Materials

Item	Quantity	References	Value	Footprint
1	2	CL1,CR1	22uF	7343
2	2	CL2,CR2	10uF	1206
3	4	CL3,CL4,CR3,CR4	1uF	0603
4	2	CL5,CR5	0.1uF	0402
5	4	FBL1,FBL2,FBR1,FBR2	600ohms	1206
6	4	H1,H2,H3,H4	STANDOFF	STANDOFF
7	4	JL1,JL2,JR1,JR2	BANANA	BANANA
9	4	J4,J5,J12,J13	SMA	SMA
10	4	P4,P5,P12,P13	3 pin Header	Header
11	4	R2_4,R2_5,R2_12,R2_13	10Kohms	0402
12	4	R4,R5,R12,R13	DNP	0402
13	8	T1,T7,T9,T16,TG4,TG5,TG12,TG13	Test Point	Test Point
14	2	T3,T14	Test Point	Test Point
15	8	T4,T5,T12,T13,TP4,TP5,TP12,TP13	Test Point	Test Point
16	1	U1	ISO7821	ISO7821

7 EVM Schematics and Layout

Separate orderable EVMs are available for each dual-channel device in the ISO782x family of digital isolators. The EVMs need to be modified only in the placement of 50-Ω termination resistors at the input, and 10-pF capacitive loads at the output (only if needed) of each channel. Figure 6 shows the ISO7821 EVM schematic and Figure 7 shows the printed-circuit board (PCB) layout.

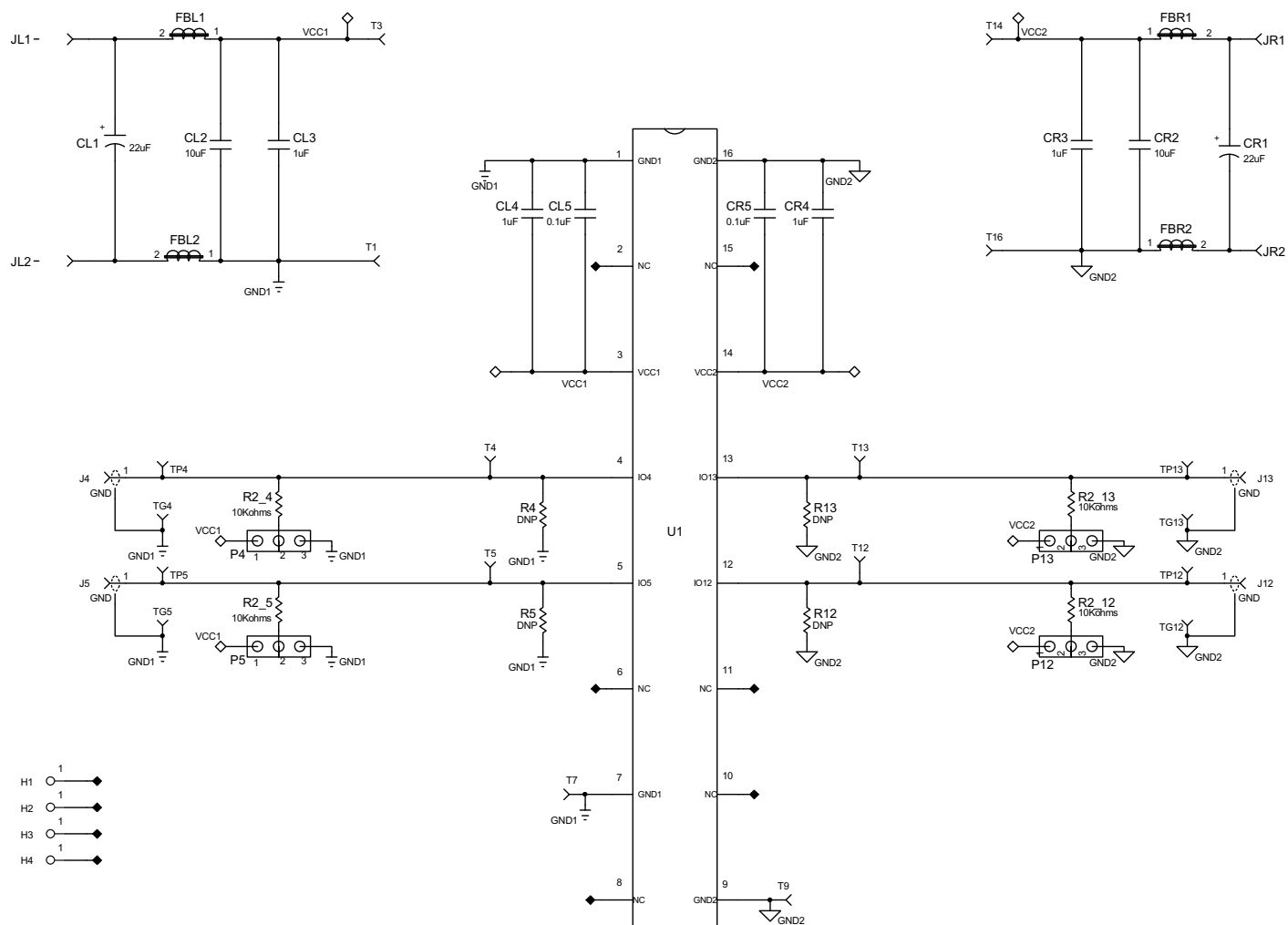


Figure 6. ISO7821 EVM Schematic

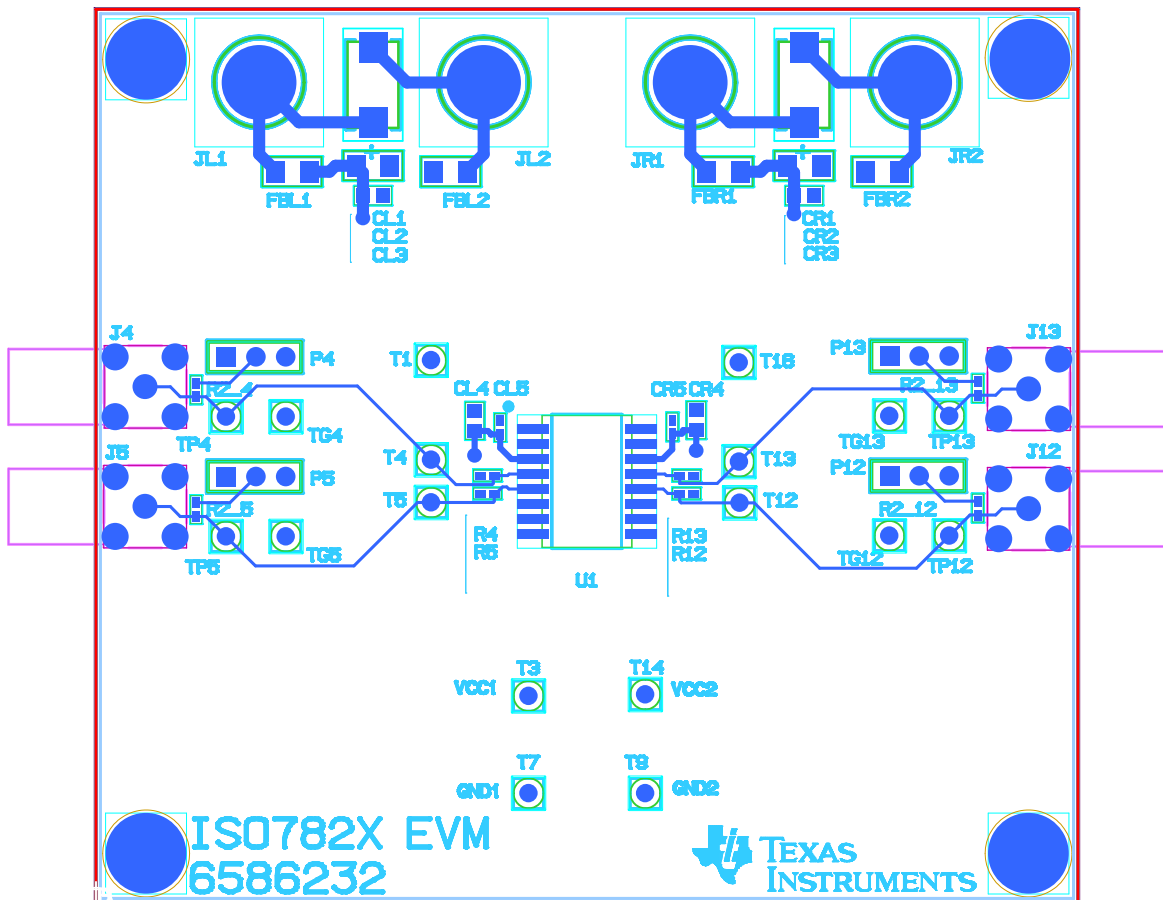


Figure 7. ISO7821 PCB Layout

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CAUTION

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

3.2 Canada

3.2.1 For EVMs issued with an Industry Canada Certificate of Conformance to RSS-210

Concerning EVMs Including Radio Transmitters:

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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Le présent appareil est conforme aux CNR d'Industrie 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, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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Concernant les EVMs avec antennes détachables

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante. Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés dans le manuel d'usage et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

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http://www.tij.co.jp/lstds/ti_ja/general/eStore/notice_01.page

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2. Use EVMs only after User obtains the license of Test Radio Station as provided in Radio Law of Japan with respect to EVMs, or
3. Use of EVMs only after User obtains the Technical Regulations Conformity Certification as provided in Radio Law of Japan with respect to EVMs. Also, do not transfer EVMs, unless User gives the same notice above to the transferee. Please note that if User does not follow the instructions above, User will be subject to penalties of Radio Law of Japan.

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