# Digital Terrestrial Television

# ISDB-T advantage for the Philippines

(Integrated Services Digital Broadcast – Terrestrial)

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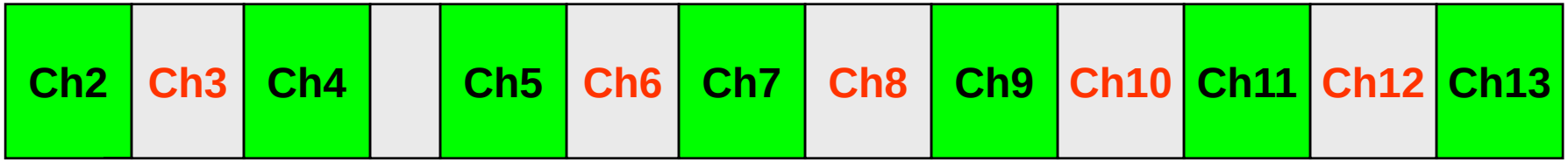
# General Considerations for the selection of a DTV Standard

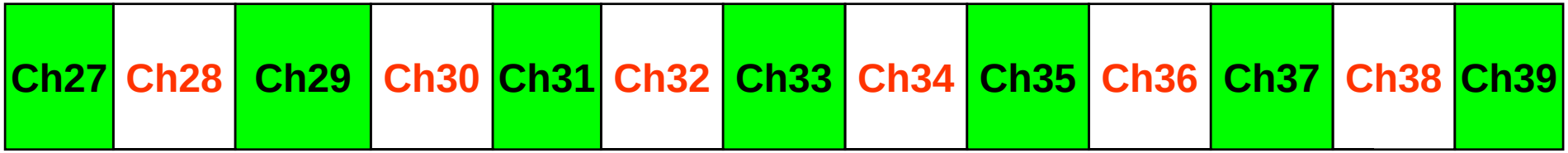
- The Philippines will be undergoing a “Transition” process until such time that the full “Migration” date has been determined by the Regulator.
- The Chosen DTV standard must not affect or upset the current status quo.
- The DTV standard must provide superior TV signal compared with analog NTSC.
- DTV is not a new application rather an improvement of analog broadcast technologies that should provide a better viewing experience for the people.
- DTV is a technology that should serve the interest of the people.

# Analog TV Frequency allocation

## VHF BAND




## UHF BAND


# DTV Channel Allocation

## VHF

| Ch2 | Ch3 | Ch4 | Ch5 | Ch6 | Ch7 | Ch8 | Ch9 | Ch10 | Ch11 | Ch12 | Ch13 |
|---|---|---|---|---|---|---|---|---|---|---|---|

## UHF

| Ch14 | Ch15 | Ch16 | Ch17 | Ch18 | Ch19 | Ch20 | Ch21 | Ch22 | Ch23 | Ch24 | Ch25 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ch26 | Ch27 | Ch28 | Ch29 | Ch30 | Ch31 | Ch32 | Ch33 | Ch34 | Ch35 | Ch36 | Ch37 |
| Ch40 | Ch41 | Ch42 | Ch43 | Ch44 | Ch45 | Ch46 | Ch47 | Ch48 | Ch49 | Ch50 | Ch51 |

*Proposed Transition Band - Ch.14-19 for National Broadcaster*

*Proposed Transition Band - Adjacent channel UHF for Regional Broadcaster*

# Background of Digital Television in the Philippines

- Transition to Digital TV broadcast should provide a superior service to the people.
- It should provide a better viewing experience whenever and wherever so desired.
- It must pave the way for a more efficient utilization of spectrum.
- It should preserve the current broadcast “Status Quo”
- It should continue to provide fast, accurate, reliable and free information to the Public as it has been in the analog TV broadcast.

**DTV service in the Philippines is envisioned to undergo a two stage process,**

1. Transition
   - Parallel broadcast of Analog TV broadcast with Digital TV broadcast.

2. Migration
   - Analog broadcast shut-off and full Digital TV broadcast.

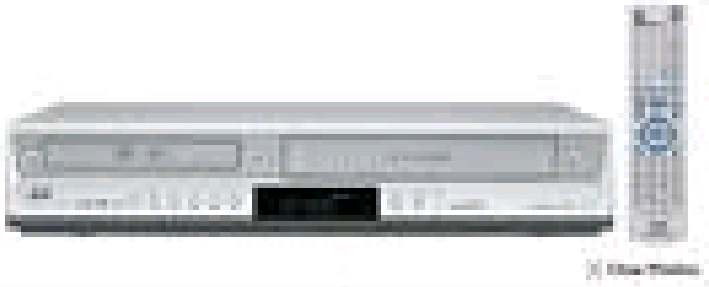
# ISDB-T SERVICE BOQUET

HANDHELD

IRD

PC

DVD



TAPE

ISDB-T has all of this feature incorporated in the standard.

# Data Broadcasting

**All DTTB Broadcasters and BS Broadcasters providing Data broadcasting (datacast) now**

| | |
|---|---|
| Program related information | Anytime news |
| Weather information | Report of sports game etc, |

Currently the description language is BML format

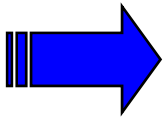
**Features**

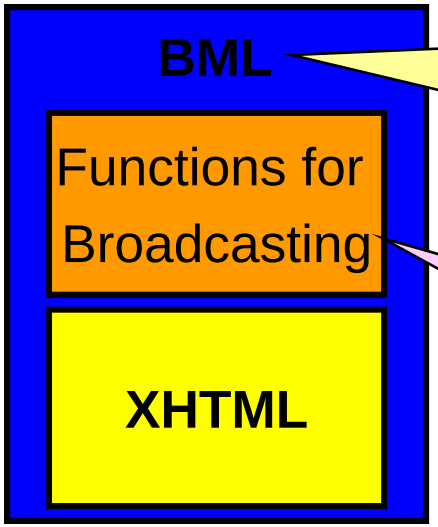
Easy creation of contents

Facilitate convergence of internet

Based on

XHTML






Additional capability

# Example for Datacasting(1)

**Top menu**

# Example for Datacasting(2)

## Weather news

# Example for Datacasting(3)

## Program related data

# Disaster Warning System

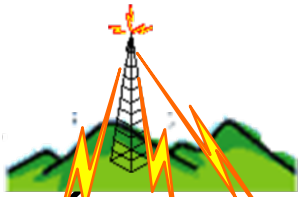
Text Message

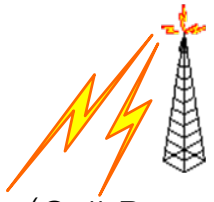
Possibility of river flooding has increased. Residents near the river should evacuate. Areas affected are as follows.

Picture Message

Evacuate from this area !

Activation Control by Broadcasting
Non-congested communication
Power-saving feature is necessary





(Cell Base Station)

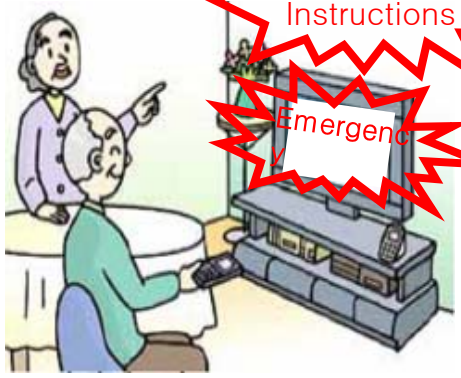
Activation control signal
&
Text and image

Activate !

Meteorological Agency

TV Station

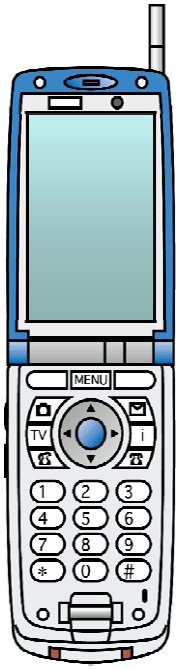
Master Room
(on-air button)




Both in and outside the home.

# Emergency Warning Broadcast System

Receive only EWS Signal



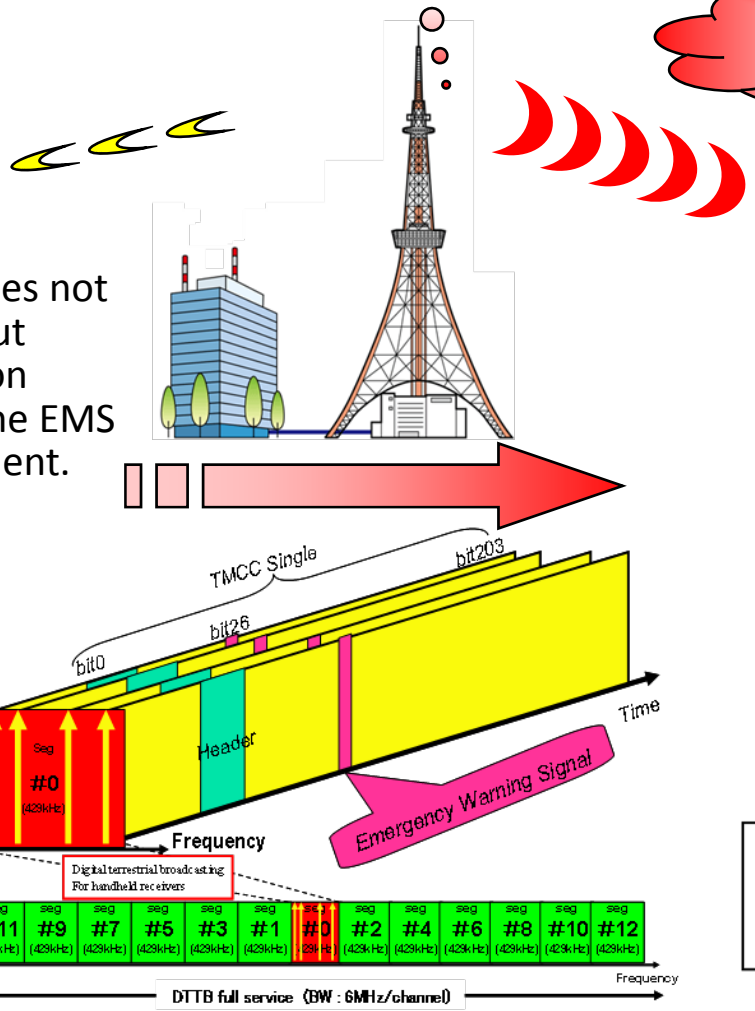

The system does not employ FFT, but instead stays on stand-by for the EMS signal component.

Low power consumption stand-by mode

Tsunami warning issued

Wake-up handheld receiver

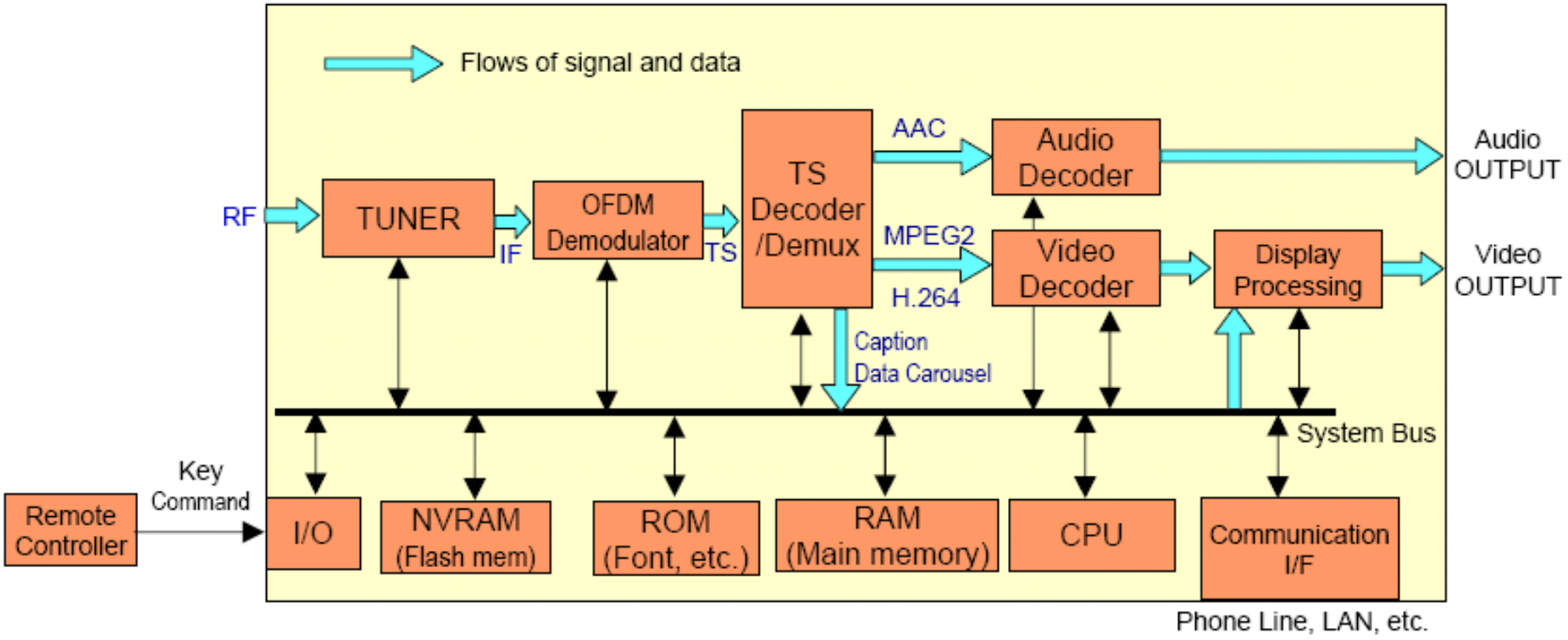
Emergency warning broadcast





Active mode to receive emergency warning broadcast

# Basic ISDB-T Set Top Box




Between a Full-Seg receiver and a One-Seg receiver, the basic configurations are about the same, though there are some differences such as a tuner, video decoder, resolution of display and so on.

RF • •Radio Frequency
IF : Intermediate Frequency
TS : Transport Stream
Demux : Demultiplexer
NVRAM : Non-volatile RAM

# Structure of Digital Receiver

## 1. Relationship between Japan/Brazil ISDB-T system

(1)As shown in receiver composition, hardware difference is only “Video Decoder” portion. Datacasting is based on software.

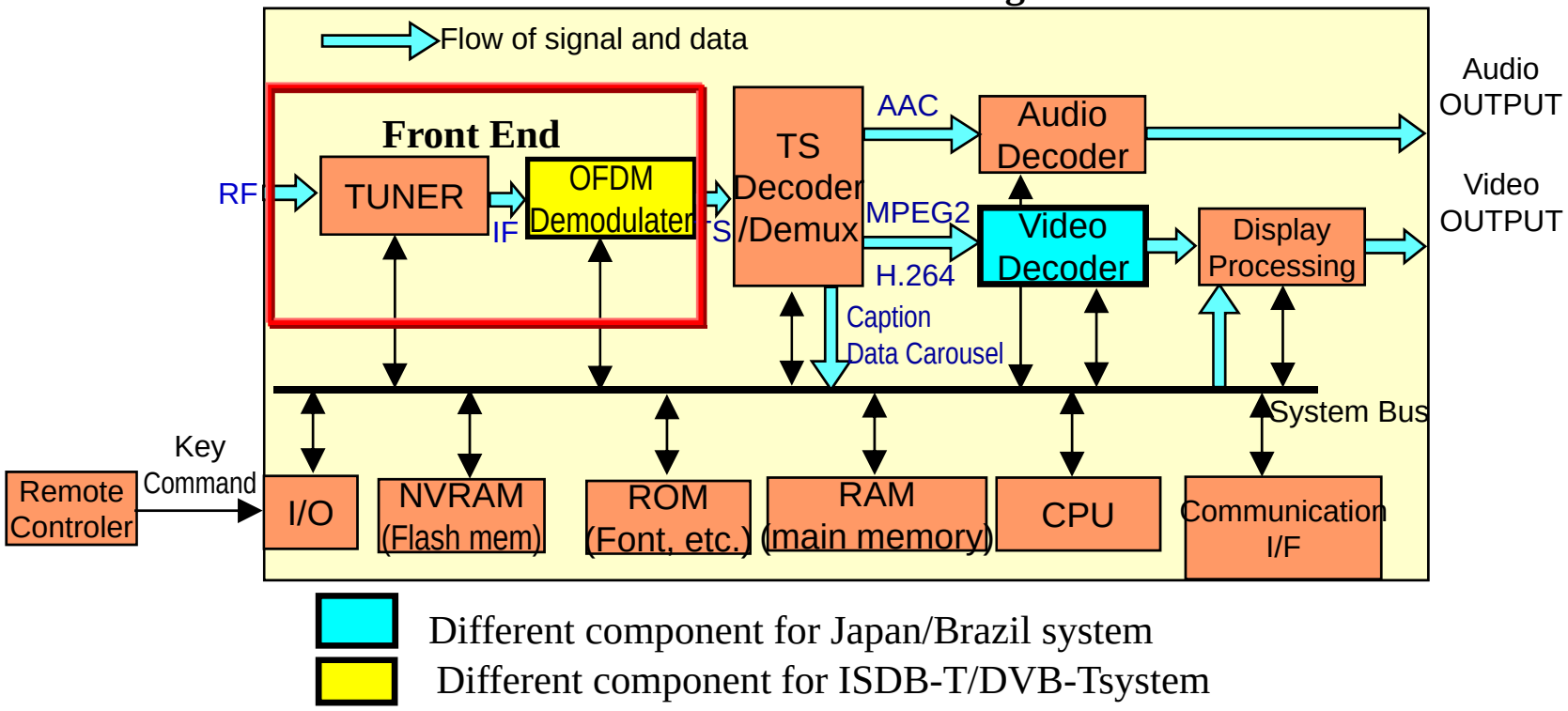
(2) Common hardware can be used for “Front End”( 6MHz BST-OFDM)

(3)Japan/Brazil ISDB-T is family, so many component can be used for both systems

## 2. Relationship between ISDB-T/DVB-T system

(1)As shown in receiver composition, hardware difference is only “OFDM demodulator” portion. **The composition of Backend basically depends on the service quality/performance.**

**ISDB-T receiver block diagram**



# Contents

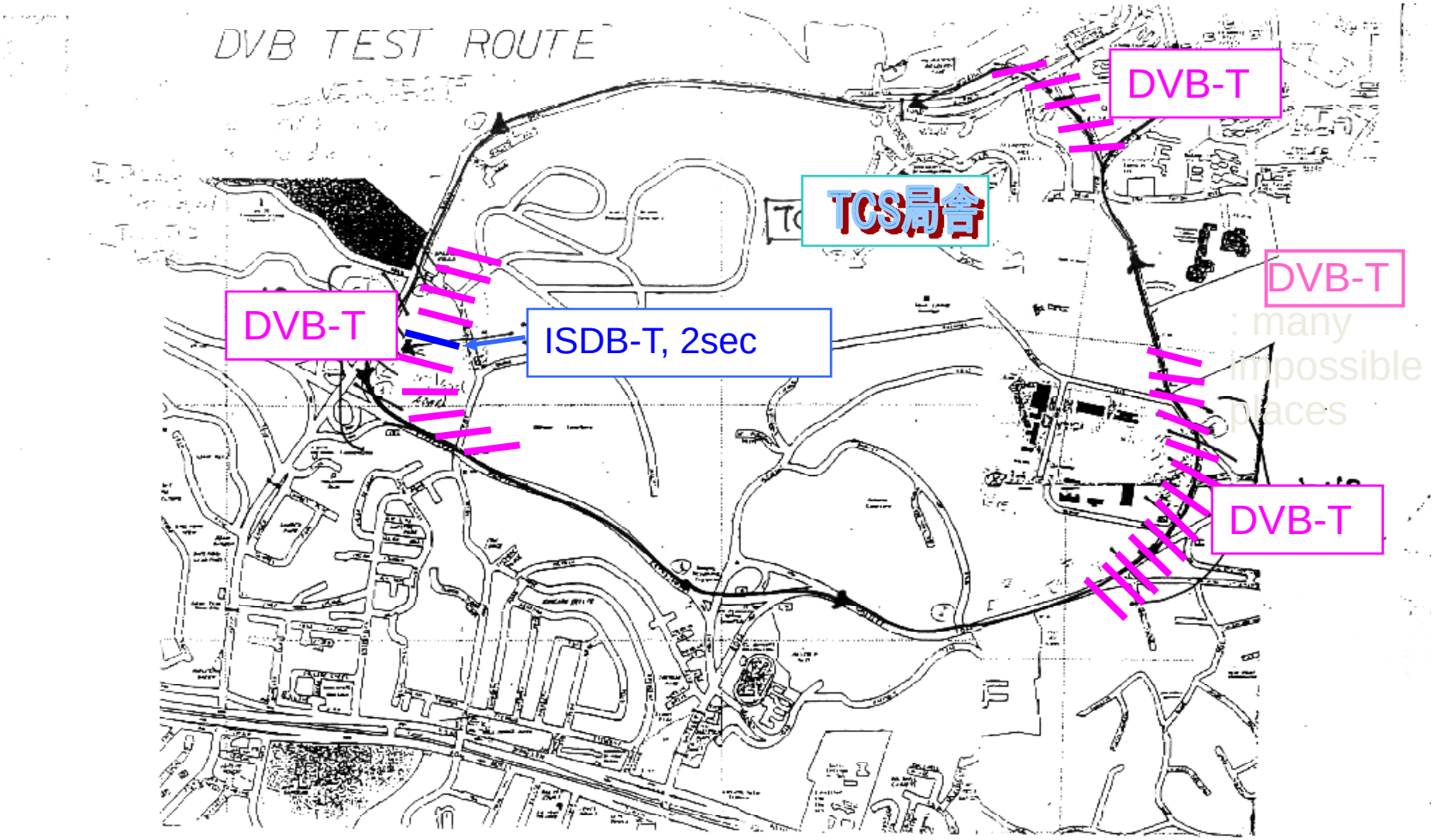

* Background
* Technical Parameters
* Technical Features
* Receivers
* **Studies elsewhere**
* Market Projections
* Strength of ISDB-T

# Comparison between Three Systems

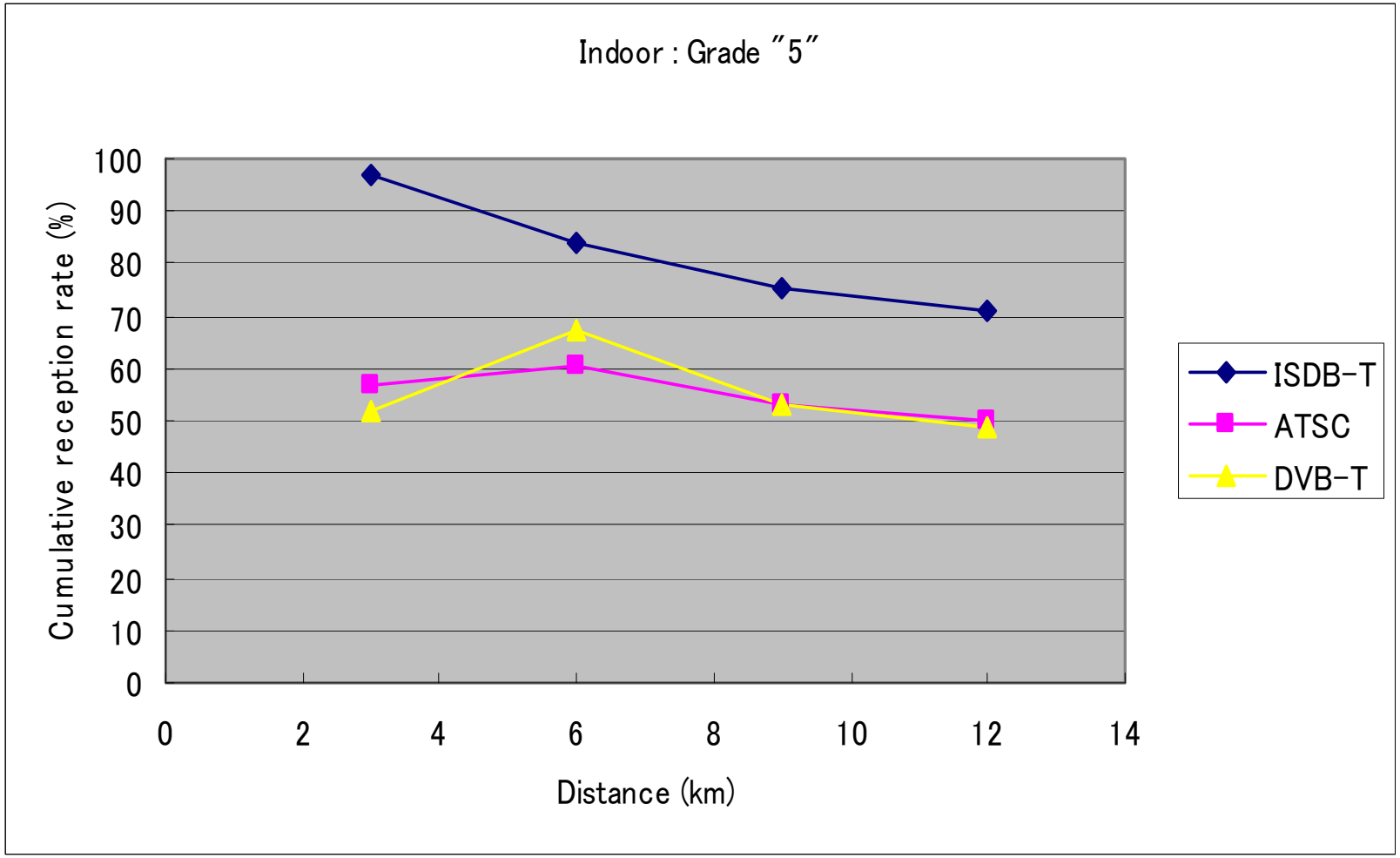
| Item | ATSC | DVB-T | ISDB-T |
|---|---|---|---|
| Modulation | 8VSB-AM | OFDM | BST-OFDM |
| Hierarchical transmission | Non | Non | Yes |
| Time interleave | Non | Non | Yes |
| Mobile & portable | Non | DVB-H, Separate Std. (Needs other frequencies) | One-seg(more than 20,000,000 was sold) |
| Artificial noise | Poor | Poor | Excellent |
| HDTV | Yes | Non | Yes |
| Data Broadcasting | Non | (MHP),MHEG5 | BML(more than 30,000,000 receivers) |

# Results of Mobile Reception In Singapore

Comparison tests between DVB-T and ISDB-T



# *The Comparison Test in Chile*



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* Background
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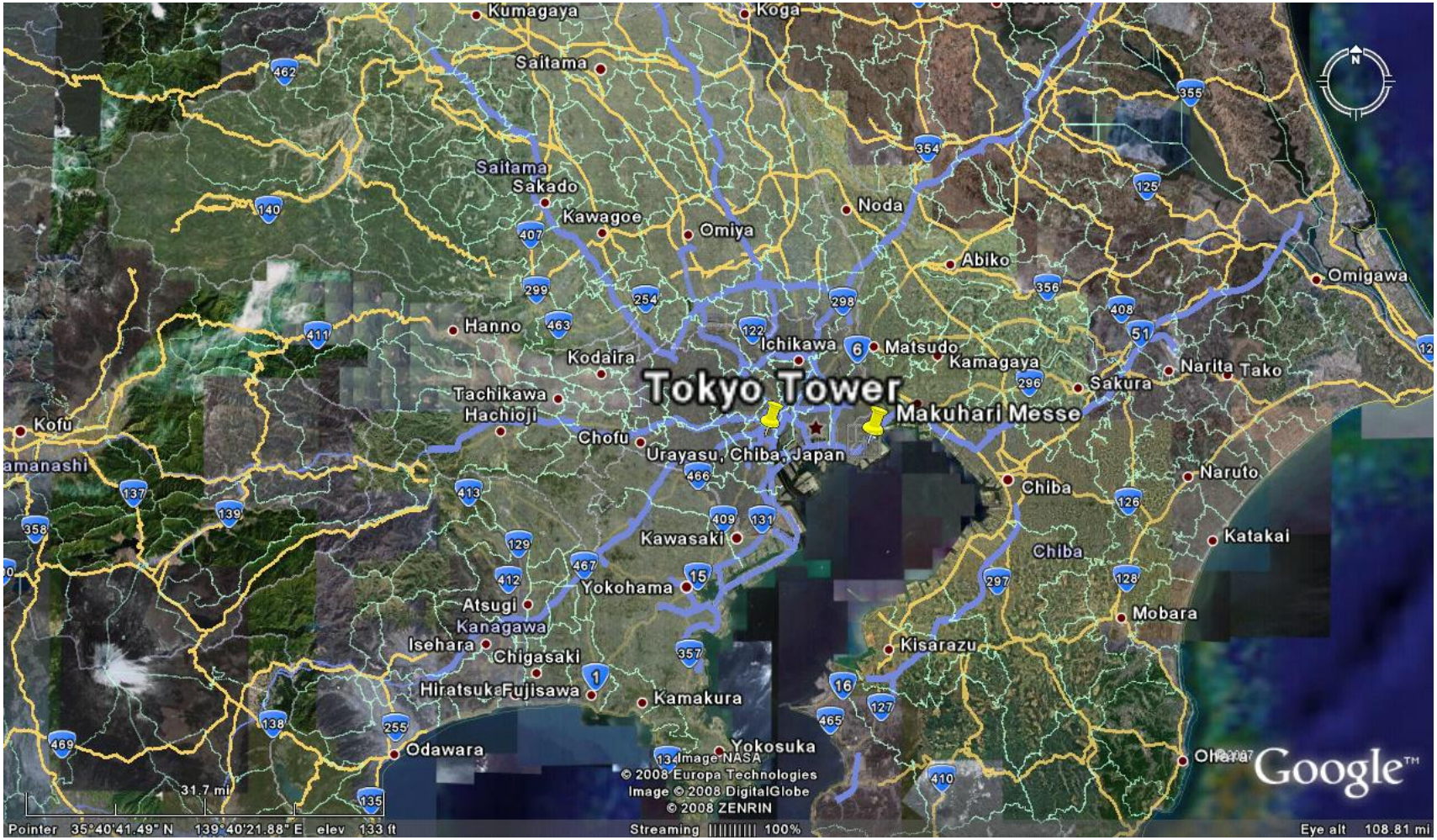
* **Figurative illustration of DTV Coverage**
* Market Projections
* Strength of ISDB-T

# ISDB-T transmission in Tokyo

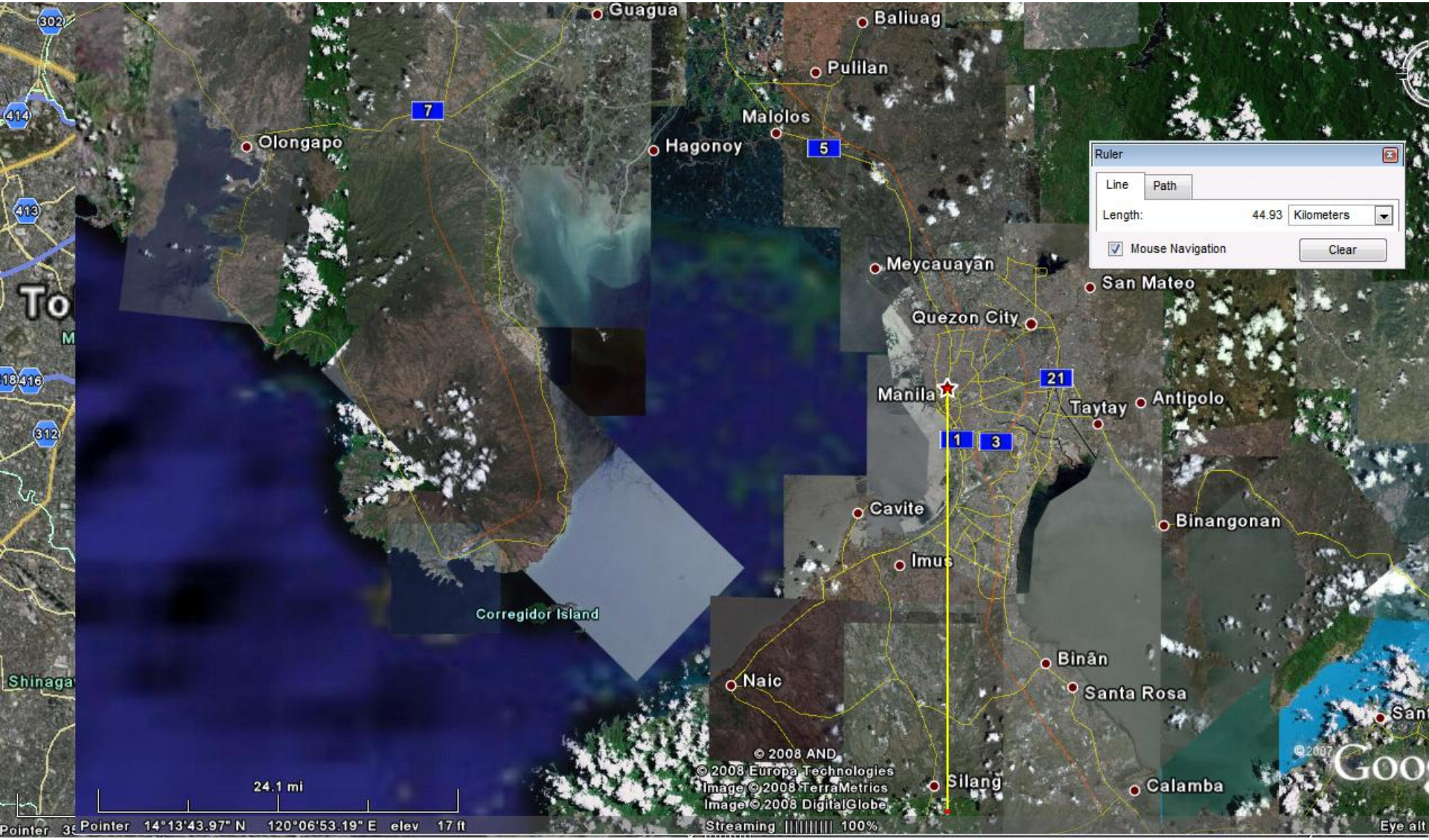
Transmitter Power = 10 KW

Antenna Configuration = 8 Level, 24 phases



# DVB-T in Singapore

# Mega-Manila


Guagua
Baliuag
Pulilan
Malolos
Olongapo
Hagonoy
Meycauayan
San Mateo
Quezon City
Manila
Taytay
Antipolo
Cavite
Binangonan
Imus
Corregidor Island
Binān
Naic
Santa Rosa
Silang
Calamba
Ruler
Line
Path
Length:
44.93
Kilometers
Mouse Navigation
Clear
24.1 mi
© 2008 AND
© 2008 Europa Technologies
Image © 2008 TerraMetrics
Image © 2008 DigitalGlobe
Streaming
100%
Pointer 14°13'43.97" N 120°06'53.19" E elev 17 ft
Eye alt

# Scenario

- Broadcast SDTV now broadcast HDTV later:
  - Broadcaster
    - Invest in SD infrastructure and later invest again in HD infrastructure.
  - People
    - Buy SD STB and then replace again with new HD STB.

    **No Compelling reason for the people to migrate to Digital!**

- Broadcast HDTV Now
  - Broadcaster
    - Invest in HD infrastructure one time.
  - People
    - Buy HD STB is compatible with SD STB

    **People will be interested to buy DTV receiving equipment.**

# SUMMARY

| | DIGITAL TELEVISION STANDARD | | |
|---|---|---|---|
| **RECEPTION TYPE** | **ATSC** | **DVB** | **ISDB-T** |
| **FIXED ROOFTOP** | | | |
| **PORTABLE/ MOBILE** | A-VSB/ MPH (Under development) | Impulse Noise Problem | |
| **HANDHELD** | A-VSB/ MPH (Under development) | DVB-H Infrastructure | |

# VIDEO DEMONSTRATION OF ISDB-T RECEPTION

- Inside the Van and Car mobile HDTV reception
- Inside the Car mobile HDTV reception in an underpass
- Handheld reception inside a train running at 80kph
- Handheld reception in basement 2
- Field experiment in Mito, Hitachi, Yamagata Prefecture

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# Thank you for your attention