

# ANI-HDRF

HDMI to Tunable Multichannel RF Extender





## SAFETY INFORMATION



1. To ensure the best results from this product, please read this manual and all other documentation before operating your equipment. Retain all documentation for future reference.
2. Follow all instructions printed on unit chassis for proper operation.
3. To reduce the risk of fire, do not spill water or other liquids into or on the unit, or operate the unit while standing in liquid.
4. Make sure power outlets conform to the power requirements listed on the back of the unit. Keep unit protected from rain, water and excessive moisture.
5. Do not attempt to clean the unit with chemical solvents or aerosol cleaners, as this may damage the unit. Dust with a clean dry cloth.
6. Do not use the unit if the electrical power cord is frayed or broken. The power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.
7. Do not force switched or external connections in any way. They should all connect easily, without needing to be forced.
8. Always operate the unit with the AC ground wire connected to the electrical system ground. Precautions should be taken so that the means of grounding of a piece of equipment is not defeated.
9. AC voltage must be correct and the same as that printed on the rear of the unit. Damage caused by connection to improper AC voltage is not covered by any warranty.
10. Turn power off and disconnect unit from AC current before making connections.
11. Never hold a power switch in the "ON" position.
12. This unit should be installed in a cool dry place, away from sources of excessive heat, vibration, dust, moisture and cold. Do not use the unit near stoves, heat registers, radiators, or other heat producing devices.
13. Do not block fan intake or exhaust ports. Do not operate equipment on a surface or in an environment which may impede the normal flow of air around the unit, such as a bed, rug, carpet, or completely enclosed rack. If the unit is used in an extremely dusty or smoky environment, the unit should be periodically "blown free" of foreign dust and matter.
14. To reduce the risk of electric shock, do not remove the cover. There are no user serviceable parts inside. Refer all servicing to qualified service personnel. There are no user serviceable parts inside.
15. When moving the unit, disconnect input ports first, then remove the power cable; finally, disconnect the interconnecting cables to other devices.
16. Do not drive the inputs with a signal level greater than that required to drive equipment to full output.
17. The equipment power cord should be unplugged from the outlet when left unused for a long period of time.
18. Save the carton and packing material even if the equipment has arrived in good condition. Should you ever need to ship the unit, use only the original factory packing.
19. Service Information Equipment should be serviced by qualified service personnel when:
  - A. The power supply cord or the plug has been damaged.
  - B. Objects have fallen, or liquid has been spilled into the equipment.
  - C. The equipment has been exposed to rain
  - D. The equipment does not appear to operate normally, or exhibits a marked change in performance
  - E. The equipment has been dropped, or the enclosure damaged.

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**DEAR CUSTOMER**

Thank you for purchasing this product. For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

**PACKAGE CONTENTS**

Before connecting the unit, it is necessary to unpack it from the shipping carton and inspect the unit for any damage. While the cards are hot-swappable, it is recommended to install the cards before connecting the unit. This will make the installation easier.

- ANI-HDRF Transmitter
- ANI-HDRF Receiver
- (2) 100-240VAC 50/60Hz 300mA to 5VDC 1A power supply
- Users Manual

**INSTALLATION REQUIREMENTS**

1. HDMI source device (computer graphics card, DVD, PS3, AppleTV, etc.)
2. SDTV, HDTV or projector with HDMI port.
3. RG6 (75Ohm) or better coaxial cable.

**SAFETY PRECAUTIONS**

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply. Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

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## INTRODUCTION

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The ANI-HDRF product is designed to convert an HDMI signal to HD digital TV signal based on DVB-T CAT5 transmission mode using 64QAM. The ANI-HDRF utilizes traditional coax cable and splitters to allow for multiple transmitters and receivers to share one cable. You can also interject an off-air or other modulated signal from other sources on the same coax. Using 64QAM produces a crystal clear image that you expect from HDTV. Large front panel LED displays allow easy channel selection. The ANI-HDRF is comprised of both a transmitter and receiver. Retains channel settings after power is removed. Both components are required to make this system work. You cannot use the ANI-HDRF Transmitter alone and a television with a built-in QAM tuner to receive the signal. You must also use the ANI-HDRF Receiver.

## FEATURES

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- HDMI over a single coax cable
- Multiple Tx and Rx in any combination
- HDCP compliant
- Resolutions up to 1080p@50/60Hz
- Easy Setup

When using a short coaxial cable (~300 feet), you may need to add a 20dB attenuator in series to lower the RF signal level.

## SPECIFICATIONS

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- **Power Supply:** 100-240VAC 50/60Hz 300ma to 5VDC 1A power supply
- **HDMI DDC Signal:** HDMI1.3, fully compatible with HDCP
- **Input Resolutions:** 480i@60Hz, 480p@60Hz, 576i@50Hz, 576p@50Hz, 720p@50/60Hz, 1080i@50/60Hz, 1080p@50/60Hz
- **Output Resolutions:** 480i@60Hz, 480p@60Hz, 576i@50Hz, 576p@50Hz, 720p@50/60Hz, 1080i@50/60Hz, 1080p@50/60Hz
- **HDMI Graphics Resolution:** Up to 1920x1080@60HZ
- **Video Encoding:** H.264
- **Audio Encoding:** MPEG2
- **Coaxial Cable:** RG6, RG7, RG11 etc.
- **Effective Bit Rate:** Max 31.6Mb
- **Insertion Loss:** <2dBm
- **RF TX Output Level:** +0dBm
- **RF RX Sensitivity:** Frequency specific
- **RF Connector:** Type "F" 75Ω
- **Transmission Delay:** 500ms
- **Power Consumption:** Tx: <3.5W / Rx: <3W
- **Working Temperature:** 32° – 122°F (0° – 50° C)
- **Storage Temperature:** 14° – 132°F (-10° – 55°C)
- **Working Humidity:** 10%-80% RH (none condensing)
- **Storage Humidity:** 0%-90% (none condensing)
- **Product Dimension (LxWxH):** 5 x 2.7 x 1 in (130x68x24 mm)

As product improvements are continuous, specifications are subject to change without notice.

## RX FRONT PANEL

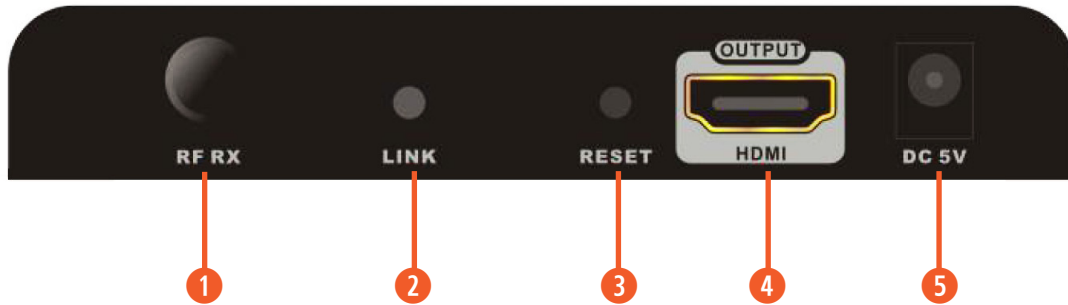


## TX FRONT PANEL

**1/2 CHANNEL PARAMETERS SETTINGS**

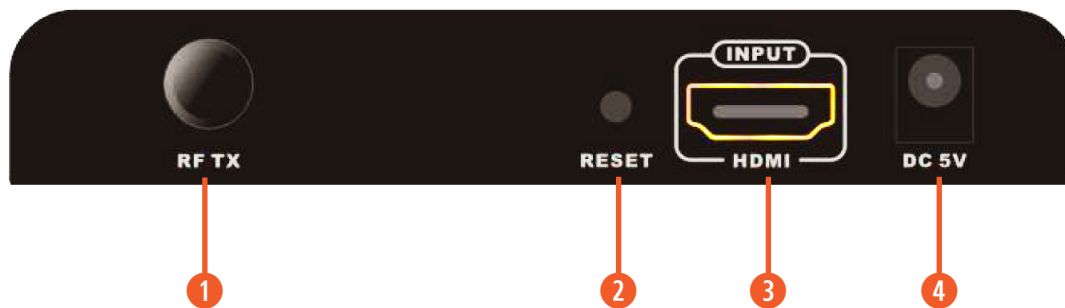
There are 0-99 channels available. There are (2) buttons to change the channels; the button on the left increments the (10's) digit and the button on the right increments the (1's) digit. The combination of the (10's) digits and single digits makes (99) channels total. As much as logic would dictate, we have to say this anyways....the Tx and Rx must be on the same channel in order to receive a signal.

## RX REAR PANEL



- 1 **RF RX:** RF signal receive
- 2 **LINK:** Connection LED indicator
- 3 **RESET:** Press to reset
- 4 **HDMI OUTPUT:** HDMI signal output
- 5 **DC5V:** DC 5V power input

## TX REAR PANEL



- 1 **RF TX:** RF signal send
- 2 **RESET:** Press to reset
- 3 **HDMI INPUT:** HDMI signal input
- 4 **DC5V:** DC 5V power input



CONNECTION

As with any RF system, you first should calculate your insertion losses. There are many online tools to use such as:

<http://www.net-comber.com/cable-loss.html>

- a.) First, review Appendix A “**Channel Parameters**” for the channel receive sensitivity.
- b.) Then calculate Coaxial Cable Attenuation using the online tool.

**For Example:** Channel 5 (177.5MHz) receive sensitivity is -80dBm. Coax Cable Attenuation 100ft RG6 cable attenuation is around 2.87dBm (177.5MHz is close to 211MHz).

Enter cable length: 100, 250,  or 555.55, in feet or meters.

**Cable Loss in decibels (dB)**

FEET (ft)				Frequency	METERS (M)			
RG59/U	RG6/U	RG7/U	RG11/U	MHz	RG59/U	RG6/U	RG7/U	RG11/U
0.77	0.57	0.56	0.36	5	2.53	1.87	1.84	1.18
1.88	1.5	1.22	0.95	55	6.17	4.92	4	3.12
3.59	2.87	2.29	1.81	211	11.78	9.42	7.51	5.94
3.89	3.12	2.49	1.98	250	12.76	10.24	8.17	6.5
4.05	3.24	2.59	2.06	270	13.29	10.63	8.5	6.76
4.27	3.43	2.74	2.17	300	14.01	11.25	8.99	7.12
4.5	3.61	2.89	2.29	330	14.76	11.84	9.48	7.51
4.64	3.72	2.98	2.36	350	15.22	12.2	9.78	7.74
4.88	4	3.2	2.53	400	16.01	13.12	10.5	8.3
5.3	4.28	3.41	2.69	450	17.39	14.04	11.19	8.83
5.5	4.51	3.61	2.85	500	18.04	14.8	11.84	9.35
5.9	4.76	3.8	3.01	550	19.36	15.62	12.47	9.88
6.18	4.98	3.99	3.16	600	20.28	16.34	13.09	10.37
6.96	5.62	4.5	3.58	750	22.83	18.44	14.76	11.75
7.54	6.09	4.87	3.9	870	24.74	19.98	15.98	12.8
7.9	6.39	5.11	4.1	950	25.92	20.96	16.77	13.45
8.09	6.54	5.25	4.23	1000	26.54	21.46	17.22	13.88

CATS SPLITTER



When using splitters or combiners (splitter used backwards) for one-to-multiple and multiple-to-multiple connections, it is important to consider insertion loss. Insertion loss and different cable losses are cumulative. Choose a splitter with low insertion, high isolation, strong shielding, and a rating of 5-1000MHz to build your RF network.

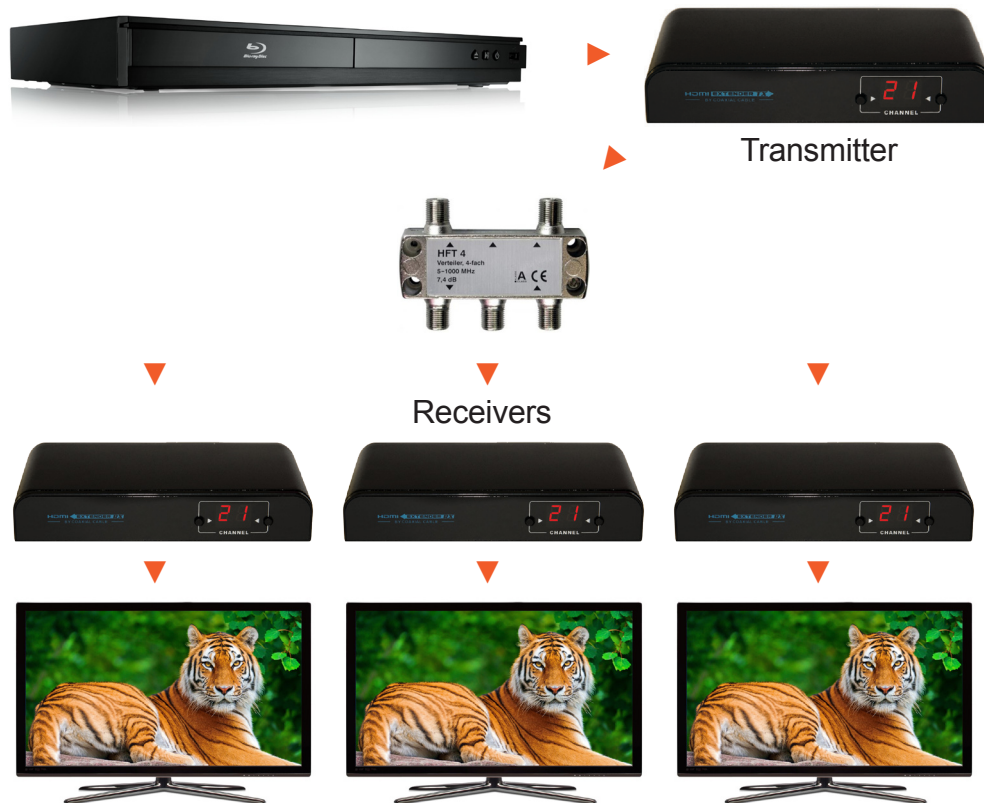
ONE TX TO ONE RX CONNECTION



1. Connect your component to the Transmitter.
2. Connect the Transmitter to the Receiver using a CAT5 cable.
3. Connect the Receiver to your display.

The Transmitter sends the HDMI signal over to the Receiver where the Receiver then delivers the signal to the display.

ONE TX TO MULTIPLE RX CONNECTION

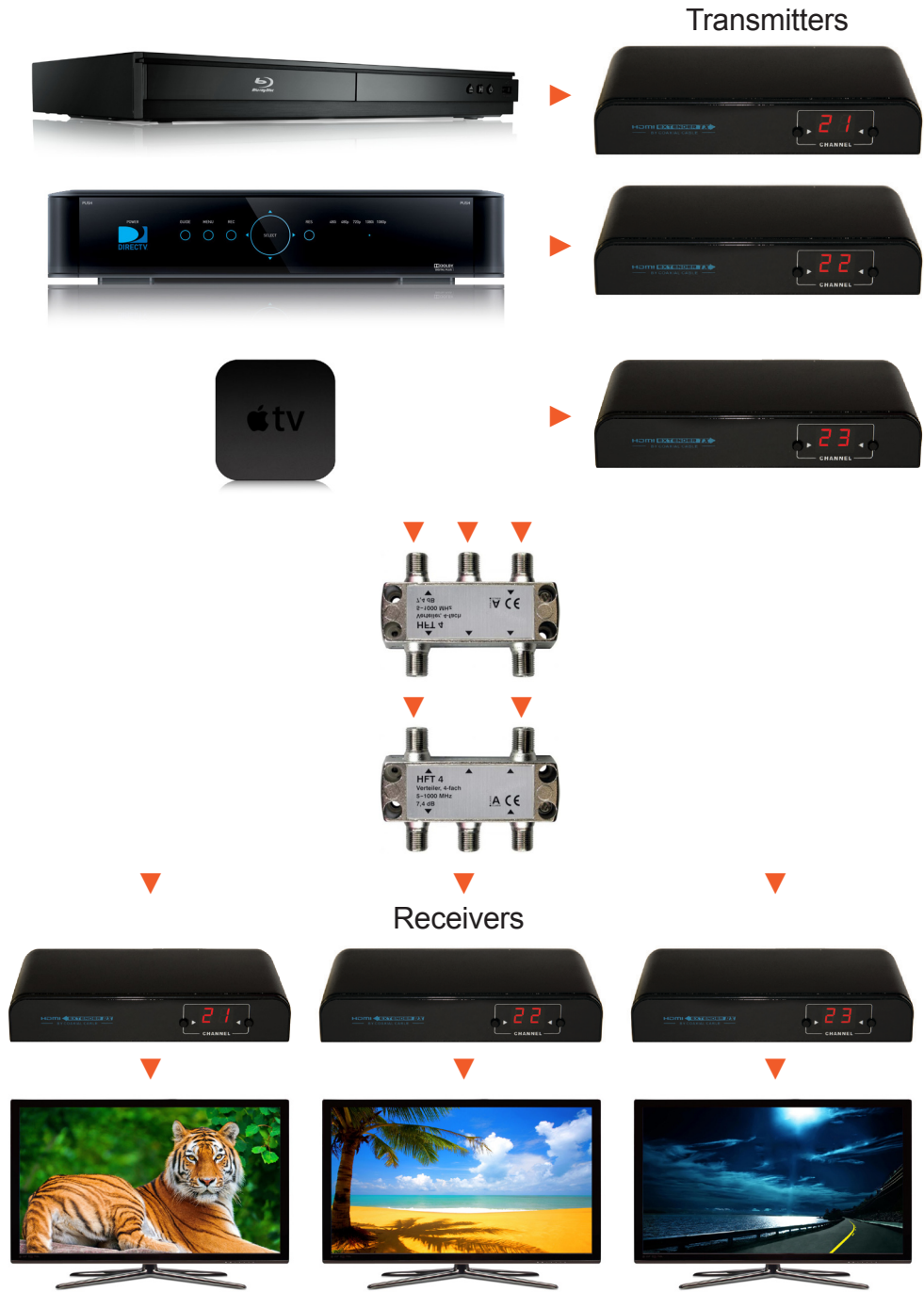


1. Connect your component to the Transmitter.
2. Set the Channel on the Transmitter.
3. Connect the Transmitter to the RF Splitter and the splitter to the Receivers.
4. Set your Receivers to the same pre-selected channel on the Transmitter.
5. Connect the Receivers to your displays.

The Transmitter sends the HDMI signal over to the Receivers where the Receivers then deliver the signal to the displays.



MULTIPLE TX TO MULTIPLE RX CONNECTION



1. Connect your components to the Transmitters.
2. Set the Channels on the Transmitters.
3. Connect the Transmitters to the RF Splitter and the splitter to the Receivers.
4. Connect the Receivers to your displays.
5. Set your Receivers to the same pre-selected channels on the Transmitters.

The Transmitter sends the HDMI signal over to the Receivers where the Receivers then deliver the signal to the displays. You can now change the channels on the Receivers to cycle through the connected components.

**\*\*\*When using a short coaxial cable (~300 feet), you may need to add a 20dB attenuator in series to lower the RF signal.\*\*\***

CHANNEL PARAMETERS

Channel (0-99)	Band	Center Frequency [MHZ]	BW [MHZ]	Rx Sensitivity (dBm)
0	default	177.5	7	-80
1	user defined	240	8	-79
2	Special (VHF low band)	149.5	7	-80
3	Special (VHF low band)	156.5	7	-80
4	Special (VHF low band)	163.5	7	-80
5	VHF III	177.5	7	-80
6	VHF III	184.5	7	-80
7	VHF III	191.5	7	-79
8	VHF III	198.5	7	-75
9	VHF III	205.5	7	-75
10	VHF III	212.5	7	-79
11	VHF III	219.5	7	-79
12	VHF III	226.5	7	-80
13	Special (UHF hyper band)	410	8	-79
14	Special (UHF hyper band)	418	8	-79
15	Special (UHF hyper band)	426	8	-79
16	Special (UHF hyper band)	434	8	-79
17	Special (UHF hyper band)	442	8	-79
18	Special (UHF hyper band)	450	8	-79
19	Special (UHF hyper band)	458	8	-79
20	Special (UHF hyper band)	466	8	-79
21	UHF IV	474	8	-79
22	UHF IV	482	8	-79
23	UHF IV	490	8	-78
24	UHF IV	498	8	-76
25	UHF IV	506	8	-71
26	UHF IV	514	8	-76
27	UHF IV	522	8	-77
28	UHF IV	530	8	-74
29	UHF IV	538	8	-77
30	UHF IV	546	8	-78
31	UHF IV	554	8	-76
32	UHF IV	562	8	-78
33	UHF IV	570	8	-78
34	UHF IV	570	8	-78
35	UHF IV	586	8	-75
36	UHF IV	594	8	-64
37	UHF IV	602	8	-76
38	UHFV	610	8	-78
39	UHFV	618	8	-78
40	UHFV	626	8	-78
41	UHFV	634	8	-78

Channel (0-99)	Band	Center Frequency [MHZ]	BW [MHZ]	Rx Sensitivity (dBm)
42	UHFV	642	8	-75
43	UHFV	650	8	-76
44	UHFV	658	8	-77
45	UHFV	666	8	-77
46	UHFV	674	8	-78
47	UHFV	682	8	-77
48	UHFV	690	8	-77
49	UHFV	698	8	-78
50	UHFV	706	8	-77
51	UHFV	714	8	-77
52	UHFV	722	8	-77
53	UHFV	730	8	-76
54	UHFV	738	8	-70
55	UHFV	746	8	-64
56	UHFV	754	8	-77
57	UHFV	762	8	-78
58	UHFV	770	8	-78
59	UHFV	770	8	-78
60	UHFV	786	8	-78
61	UHFV	794	8	-78
62	UHFV	802	8	-78
63	UHFV	810	8	-79
64	UHFV	818	8	-79
65	UHFV	826	8	-77
66	UHFV	834	8	-77
67	UHFV	842	8	-76
68	UHFV	850	8	-77
69	UHFV	858	8	-77
70	UHFV	866	8	-77
71	UHFV	874	8	-77
72	UHFV	882	8	-77
73	UHFV	890	8	-77
74	UHFV	898	8	-74
75	UHFV	906	8	-74
76	UHFV	914	8	-74
77	UHFV	922	8	-74
78	UHFV	930	8	-70
79	UHFV	938	8	-70
80	UHFV	946	8	-70
81	user defined	240	8	-79
82	user defined	250	8	-79
83	user defined	260	8	-79

## CHANNEL PARAMETERS

Channel (0-99)	Band	Center Frequency [MHZ]	BW [MHZ]	Rx Sensitivity (dBm)
84	user defined	270	8	-79
85	user defined	280	8	-79
86	user defined	290	8	-79
87	user defined	330	8	-79
88	user defined	340	8	-79
89	user defined	350	8	-79
90	user defined	360	8	-79
91	user defined	370	8	-79
92	user defined	380	8	-79
93	user defined	390	8	-79
94	user defined	400	8	-79
95	user defined	410	8	-79
96	user defined	420	8	-79
97	user defined	430	8	-79
98	user defined	440	8	-79
99 (0x99)	UHF IV	474	8	-79

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