

ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR LOW POWER, NON-LICENSED TRANSMITTER

Test Report No. : E11NR-052

AGR No. : A110A-097

Applicant : Gaon-Int Co., LTD.

Address : Incheon IT Tower Suite 1501, 592-5, Dohwa1-dong, Nam-gu, Incheon, Korea

Manufacturer : RUIHUA ELECTRONICS FACTORY

Address : Xianxixin Industrial Zone, Shatou Village, Changan Town, Dongguan City, Guangdong Province, China

Type of Equipment : FM Transmitter with Bluetooth module

FCC ID. : UP4-GBT-T200

Model Name : GBT-T200

Serial number : N/A

Total page of Report : 16 pages (including this page)

Date of Incoming : November 14, 2011

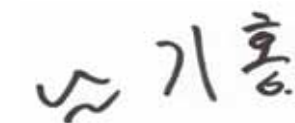
Date of Issuing : November 28, 2011

SUMMARY

The equipment complies with the regulation of *FCC CRF 47 PART 15, SUBPART C, SECTION 15.239*.

This test report contains only the results of a single test of the sample supplied for the examination. It is not a general valid assessment of the features of the respective products of the mass-production.

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Revision History

Issue Report No.	Issued Date	Revisions	Effect Section
E11NR-052	November 28, 2011	Initial Release	All

1. VERIFICATION OF COMPLIANCE

-. APPLICANT : Gaon-Int Co., LTD.
 -. ADDRESS : Incheon IT Tower Suite 1501, 592-5, Dohwa1-dong, Nam-gu, Incheon, Korea
 -. CONTACT PERSON : Mr. D.S, Ha / General Manager
 -. TELEPHONE NO : +82-32-246-1800
 -. FCC ID : UP4-GBT-T200
 -. MODEL NAME : GBT-T200
 -. BRAND NAME : Sound-Fly VIEW
 -. SERIAL NUMBER : N/A
 -. DATE : November 28, 2011

DEVICE TYPE	DDX – Part 15 Low Power Communication Device Transmitter
E.U.T. DESCRIPTION	FM Transmitter with Bluetooth module
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	Charter 7 and 13 of ANSI C63.4: 2009
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SECTION 15.239
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	None
FINAL TEST WAS CONDUCTED ON	3 m open area test site

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

2. GENERAL INFORMATION

2.1 Product Description

The Gaon-Int Co., LTD., Model GBT-T200 (referred to as the EUT in this report) is a FM Transmitter with Bluetooth module that has a function of FM transmitter and Bluetooth. This report is for FM transmitter function. And the report for the Bluetooth will be issued by another report. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic
LIST OF EACH OSC. OR CRY. FREQ.(FREQ. \geq 1 MHz)	8 MHz, 26 MHz and 16.934 4 MHz
FREQUENCY RANGE	88.1 MHz ~ 107.9 MHz (range into 100 kHz Step)
USED ANTENNA	Integral Antenna (No Antenna Socket)
NUMBER OF LAYER	2 Layers
EXTERNAL CONNECTOR	Audio In, Aux Out, USB Port(For charging only), SD card Slot

2.2 Model Differences

-. None

2.3 Related Submittal(s) / Grant(s)

-. Original submittal only

2.4 Test System Details

The model numbers for all the equipments which were used in the tested system is:

Model	Manufacturer	FCC ID	Description	Connected to
GBT-T200	Gaon-Int Co., LTD.	UP4-GBT-T200	FM Transmitter with Bluetooth module (EUT)	-
ORC-200	ORACOM	DoC	MP3 Player	EUT
LG P925	LG	N/A	Mobile phone(For charging)	EUT
N/A	SanDisk	N/A	SD Card	EUT
DC 12V	N/A	N/A	Battery	EUT

2.5 Test Methodology

The radiated testing was performed according to the procedures in chapter 7, 13 of ANSI C63.4: 2009 and performed at a distance of 3 m from EUT to the antenna.

2.6 Test Facility

The open area test site and conducted measurement facilities are located on at 307-51 Daessangryung-ri, Chowol-eup, Gwangju-si, Gyeonggi-do, 464-862, Korea. Description details of test facilities were submitted to the Commission on August 21, 2008. (Registration Number: 340658)

3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
Main Board	N/A	GBT-T200US Rev A	N/A

3.2 EUT exercise Software

-. The Model, GBT-T200 is included a FM transmitter designed to operate on function in the 88.1 MHz ~ 107.9 MHz. The EUT has an audio input port, so this port was connected to applicable peripheral device and than the EUT was transmitted MP3 music files which was saved in SD card or MP3 Player (Audio Input) with maximum audio output level during the test. The worst case data (MP3 Player) was recorded in this report. To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes and the worst case is “XY” axis.

3.3 Cable Description

Ports Name	Shielded	Ferrite Bead	Metal Hood	Length (m)	Connected to
Audio In	N	Y(EUT END)	N	0.3	MP3 Player
AUX Out	N	N	N	1.5	Speaker

3.4 Equipment Modifications

-. None

3.5 Configuration of Test System

Line Conducted Test: It is not need to test this requirement, because the EUT shall be operated by car battery.

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.4: 2009 8.3.1.1 and 13.4.1 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 m open area test site.

Occupied Bandwidth Measurement:

This measurement is performed with the antenna located close enough to give a full-scale deflection of the modulated carrier on the spectrum analyzer. The EUT has an audio input port, so this port was connected to applicable peripheral device and than the EUT was transmitted MP3 music files which was saved in SD card or MP3 Player (Audio Input) with maximum audio output level during the test.

3.6 Antenna Requirement

According to section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Construction:

The FM transmitter antenna of the EUT is included in a power line, no consideration of replacement by the user.

4. PRELIMINARY TEST

4.1 AC Power line Conducted Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
It is not need to test this requirement, because the EUT shall be operated by car battery.	

4.2 Radiated Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Transmit the RF Signal continuously from audio input port using MP3 Player	X
Transmit the RF Signal continuously from SD port	-

5. FINAL RESULT OF MEASUREMENT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level

5.1 Radiated Emission Test (Within the permitted 200 kHz band)

The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 43 % R.H. Temperature: 23 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.239 (b)
Type of Test : Low Power Communication Device Transmitter
Result : PASSED BY -5.67 dB at 97.70 MHz under average mode

EUT : FM Transmitter with Bluetooth module Date: November 14, 2011
Distance : 3 m

Radiated Emission			Ant		Turn	Correction Factors		Total	Limit	Margin
Freq. (MHz)	Amplitude (dBμV)	Detect Mode	Pol.	Height (m)	Table (°)	Ant. (dBμV/m)	Cable (dB)	Amplitude (dBμV/m)	(dBμV/m)	(dB)
88.10	29.90	Peak	H	2.3	160.00	9.49	2.16	41.55	68.00	-26.45
	22.40	Peak	V	2.0	220.00	9.49	2.16	34.05	68.00	-33.95
	28.60	Average	H	2.3	160.00	9.49	2.16	40.25	48.00	-7.75
	20.30	Average	V	2.0	220.00	9.49	2.16	31.95	48.00	-16.05
97.70	29.50	Peak	H	2.3	180.00	11.48	2.25	43.23	68.00	-24.77
	20.40	Peak	V	2.0	110.00	11.48	2.25	34.13	68.00	-33.87
	28.60	Average	H	2.3	180.00	11.48	2.25	42.33	48.00	-5.67
	18.50	Average	V	2.0	110.00	11.48	2.25	32.23	48.00	-15.77
107.90	23.50	Peak	H	2.3	190.00	10.75	2.38	36.63	68.00	-31.37
	15.00	Peak	V	2.0	250.00	10.75	2.38	28.13	68.00	-39.87
	21.60	Average	H	2.3	190.00	10.75	2.38	34.73	48.00	-13.27
	11.30	Average	V	2.0	250.00	10.75	2.38	24.43	48.00	-23.57

Radiated Emission Tabulated Data



Tested by: Chang-Uk, Jun / Engineer

5.2 Radiated Emission Test (Outside of the specified 200 kHz band)

The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 43 %R.H. Temperature: 23 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.239 (a)
Type of Test : Low Power Communication Device Transmitter
Result : PASSED BY -5.41 dB at 75.20 MHz

EUT : FM Transmitter with Bluetooth module Date: November 14, 2011
Frequency range : 30 MHz ~ 1 000 MHz
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
Distance : 3 m
Remark : Other emissions

Radiated Emission		Antenna		Turn	Correction Factors		Total	Limit	Margin
Freq. (MHz)	Amplitude (dBμV)	Pol.	Height (m)	Table (°)	Ant. (dBμV/m)	Cable (dB)	Amplitude (dBμV/m)	(dBμV/m)	(dB)
75.20	24.80	H	2.30	270.00	7.69	2.10	34.59	40.00	-5.41
92.70	23.10	H	2.30	330.00	10.59	2.20	35.89	43.52	-7.63
161.50	15.40	V	2.20	90.00	8.24	2.97	26.61	43.52	-16.91
187.30	23.20	H	2.40	40.00	9.30	3.13	35.63	43.52	-7.89
328.40	15.20	V	2.30	110.00	14.03	3.56	32.79	46.02	-13.23
544.90	17.20	V	2.30	80.00	18.18	4.96	40.34	46.02	-5.68



Tested by: Chang-Uk, Jun / Engineer

5.3 Bandwidth of the operating frequency

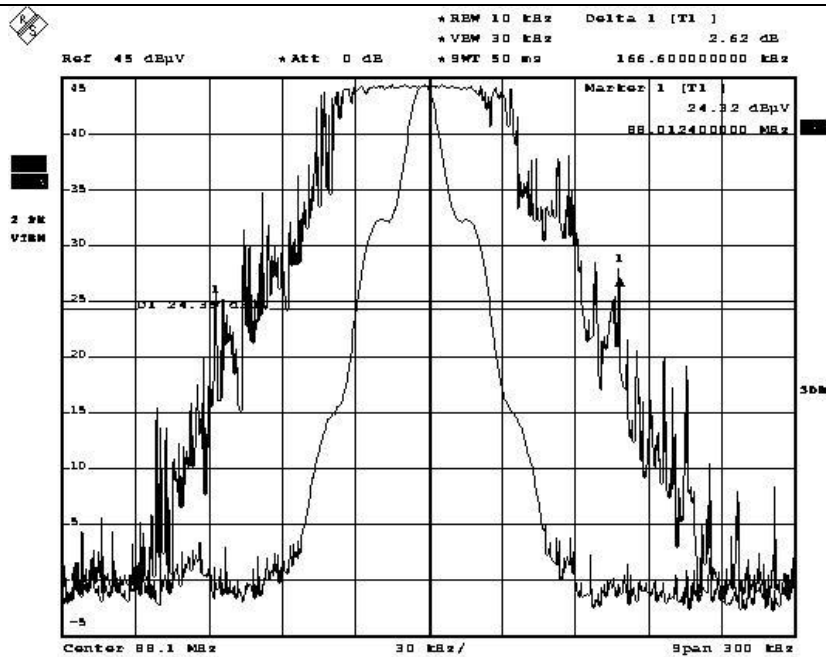
Humidity Level : 48 % R.H. Temperature: 24 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.239 (a)
Result : PASSED

EUT : FM Transmitter with Bluetooth module Date: November 23, 2011
Operating Condition : Transmit the RF signal.
Minimum Resolution
Bandwidth : 10 kHz
Remark : Refer to test data in next page.

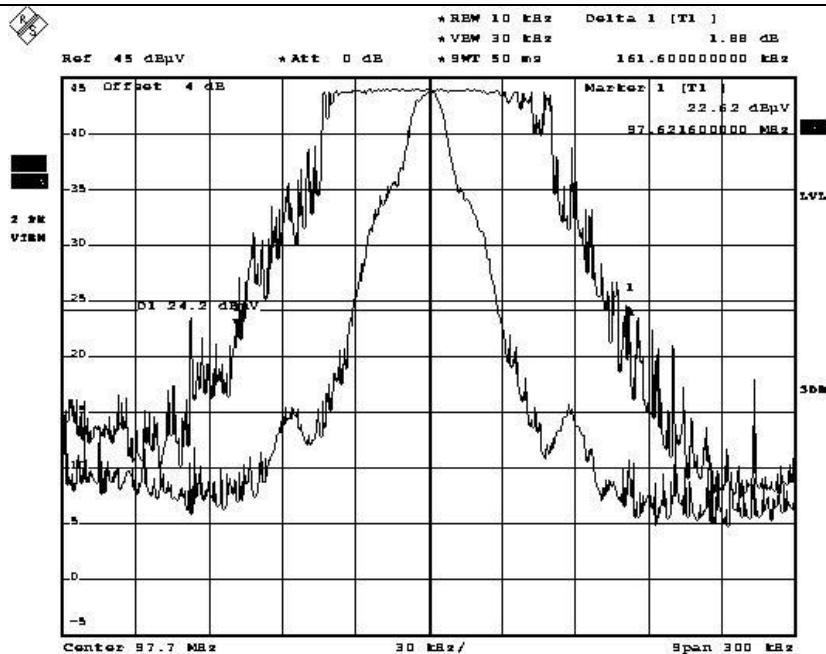
Frequency (MHz)	Measured Value (kHz)	Limit (kHz)	Margin (kHz)
88.10	166.6	200	-33.4
97.70	161.6		-38.4
107.90	162.2		-37.8



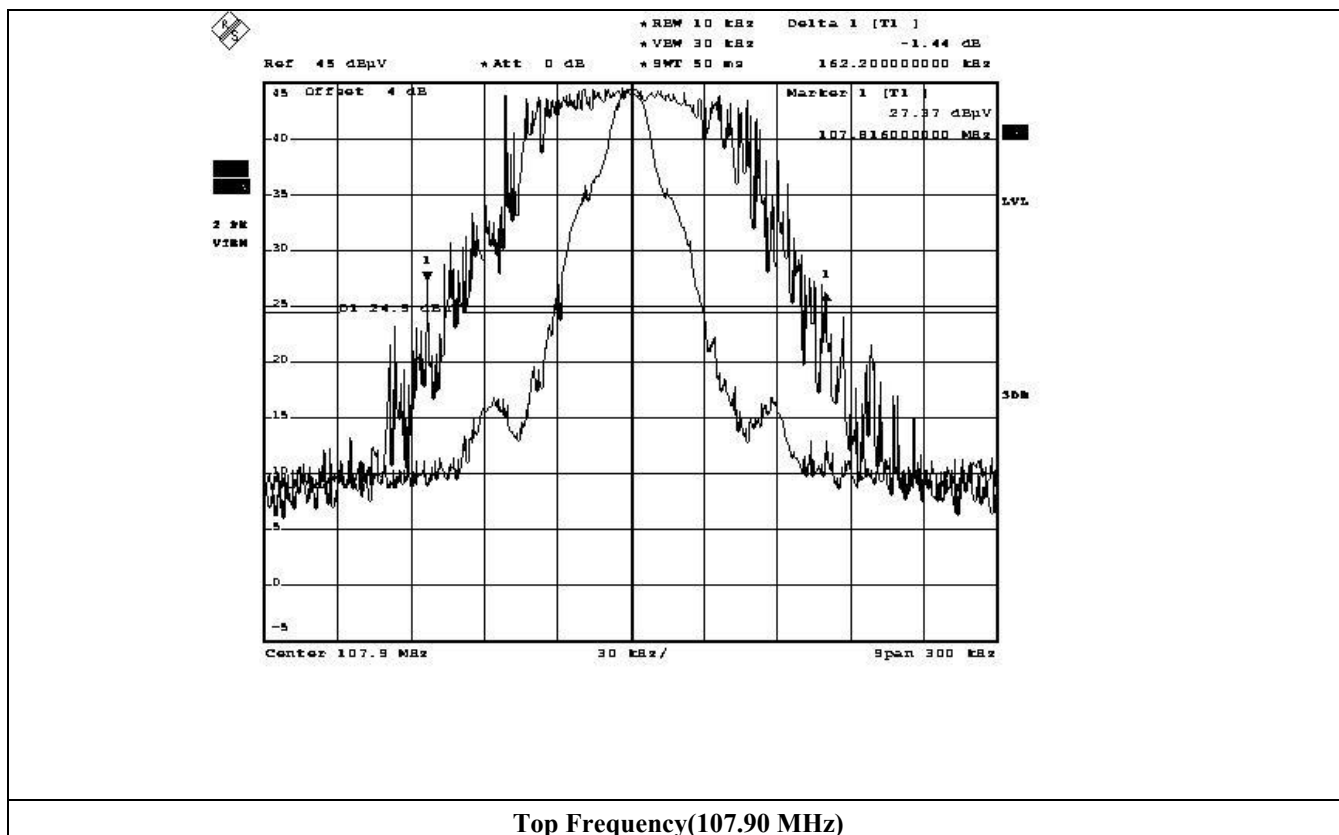
Tested by: Chang-Uk, Jun / Engineer



Bottom Frequency (88.10 MHz)



Middle Frequency (97.90 MHz)



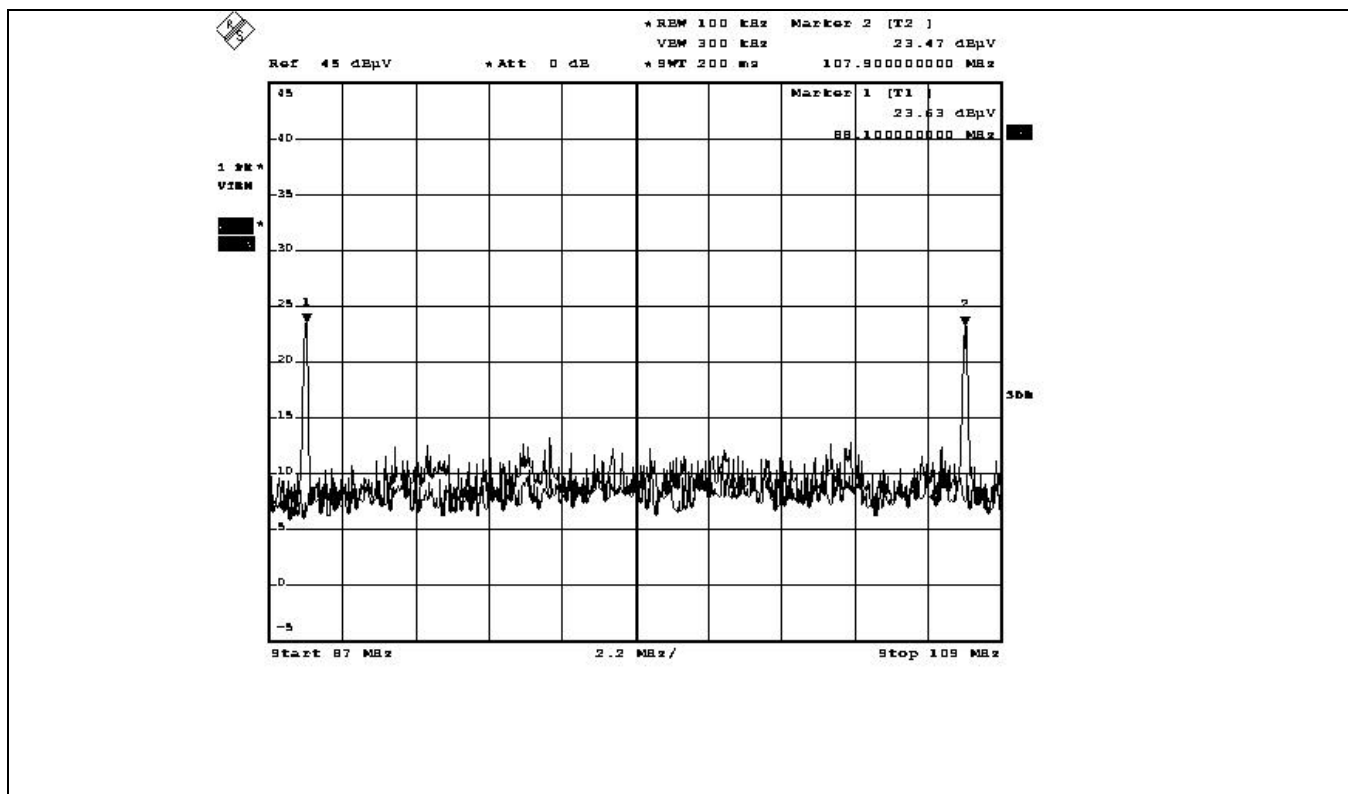
5.4 Tuning Range of the operating frequency

Humidity Level : 48 % R.H. Temperature: 24 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART C, SECTION 15.239 (a)
Result : PASSED

EUT : FM Transmitter with Bluetooth module Date: November 23, 2011
Operating Condition : The lowest and highest frequency was adjusted by manual using up/down button on the EUT and the spectrum was in max hold mode for capturing the spectrum.
Test Result : Met the requirement. Refer to test data in next page.



Tested by: Chang-Uk, Jun / Engineer



6. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+	Meter reading	(dB μ V)
+	Cable Loss	(dB)
+	Antenna Factor	(dB/m)
=	Corrected Reading	(dB μ V/m)
-	Specification Limit	(dB μ V/m)
=	dB Relative to Spec	(\pm dB)

7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVD	838453/018	OCT/11	12MONTH	■
2.	Spectrum analyzer	HP	HP8568B	3001A04955	JUN/11	12MONTH	■
3.	Test receiver	R/S	ESiB26	100296	APR/11	12MONTH	
4.	Test receiver	R/S	ESHS 10	834467/007	MAY/11	12MONTH	
5.	TRILOG Broadband Antenna	Schwarzbeck	VULB9163	VULB9163 202	MAY/10	24MONTH	■
6.	Biconical antenna	Schwarzbeck	VHA9103	91031852	MAR/10	24MONTH	
7.	Log Periodic antenna	Schwarzbeck	9108-A(494)	62281001	MAR/10	24MONTH	
8.	LISN	EMCO	3825/2	9109-1867	JUN/11	12MONTH	
				9109-1869	JUN/11		
		Schwarzbeck	NSLK 8126	8126-404	JUN/11		
			NSLK 8128	8128-216	JUN/11		
9.	Position Controller	HD GmbH	HD100	N/A	N/A	N/A	■
10.	Turn Table	HD GmbH	DS420S	N/A	N/A	N/A	■
11.	Antenna Master	HD GmbH	MA240	N/A	N/A	N/A	■

Remark: Mark ■ mean used equipment.