

WANT HDTV?

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INTRODUCTION

First of all, the answer to the question of "WANT HDTV?" is yes! Why? This is because the HDTV gives us the best picture quality than that of the old TV can. The HDTV means High Definition Television, which is the new generation of television to replace the old television. The HDTV is the success of both the new hardware design of TV to replace the old TV, and the new software design of signal processing, using the Digital Signal Processing Technique (DSPT), to replace that of the old analog TV,

In the years of early 1980s, the HDTV development was started and now the HDTV era is here and the old TV is being phased out. The time table for phasing out the old analog signal broadcasting (OASB) in USA is February 2009, which is not very far away from now. After that the new digital signal broadcasting (NDSB) will be adapted in USA. At the present time, both OASB and NDSB are used to provide the transition period for the implementation of the NDSB of HDTV. Therefore, there is an urgent need of indoor as well as outdoor antennas for the reception of the best picture quality of HDTV programs. In addition, it is free of monthly service charges, as compared to that of cable service which not only does have monthly service charges, but also does have the cable loss to degrade the picture quality.

It is now the time to have the new generation antenna products to replace the old traditional antenna products in meeting the need of challenging requirements for the new generation HDTV and many others as will be mentioned below. The new generation antenna products mentioned here are the New Revolutionary Antenna (NRA) Products, which are based on the NRA Technology. The NRA Technology was first started for developing the commercial antenna products in the years of early 1990s and now these NRA products are patented and are ready to gradually replace the old Traditional Antenna (TA) products, in the areas of HDTV/DTV and GPS (Global Positioning System) and CP (Cellular Phone) and WLAN (Wireless Local Area Network) application. In the future, many other areas of NRA Products will be developed to solve the problems for the broadband and multi-function and integrated antenna system.

The major advantages of NRA Products over that of the TA products are performance better and price cheaper! In addition, the NRA Products can be a part of integrated circuit which eliminates the need of cable and connectors, and the TA products cannot. This is due to the fact that the NRA products are using the printed-circuit material or film or chip or others suited for the purpose, not as the TA products which use the metallic rod or tube or plate or others shapes suited for the purpose. As a result, the NRA Products have many nice features, such as: planar, flexible, chip, invisible, conformable, lighter, thinner, smaller, prettier, cheaper, reliable, broadband, better performance, suited for system integration and mass production using the printed-circuit technology and silk screening method.

This paper is a first of 3 series reports to introduce the first new NRA product, which is the "WANT HDTV?" product, including its terminology of "WANT". The purpose of this report is to let people know the nice features of this new NRA Product as compared to that of the old TA products and how to use this NRA Product. The other two reports will be followed to introduce the other two new NRA Products developed, which are the "WANT GPS/GSM?" and "WANT WLAN?". It is hoped that through these

series of reports, people will understand the NRA Technology and Products as well as the TA Products to make the right choice of antennas for their needs.

TERMINOLOGY

The "WANT" terminology is created by the author of this article as the Trade Mark for all NRA Products. The "WANT" is defined as: "Wireless/Antenna". For wireless communications' era, such as for satellite and mobile communications, antenna has to be used. Therefore, the "WANT" terminology is used for the promotion of all NRA Products.

PRODUCTS

As mentioned in the Introduction Section, the NRA Technology is simply using the latest printed-circuit technology and silk-screening production methods for making NRA Products to replace the production methods for the old TA products. The NRA Products are in the forms of the printed-circuit log-periodic monopoles, dipoles, meander line, chip, and other forms of antennas suited for the purpose, and silk-screening on MYLAR and other materials suited for the purpose, to replace the old TA products, such as metallic monopoles, dipoles, loops, horns, Yagi, dish and many other types of antennas suited for the purpose.

Since the 21st Century is the Satellite and Wireless and Mobile Communications era, it needs both antenna and cable to provide a completely effective communication system. For signals which cannot be reached due to the physical blockage, the cable has to be used to remove the physical blockage and to provide the signals for transmission and reception. For Satellite and Mobile Communications, however, cable cannot be used. Therefore, antenna has to be used to replace cable in solving the distance and mobility problems. It is envisioned that the NRA Technology will be continued to grow and NRA Products will be continued to expand for meeting the challenging requirements in all applications during the 21st Century. As a result, people can watch and enjoy the HDTV Programs and can listen to good music and to hear the Good News in every corner of the world. In this report, only the antennas for the HDTV application, including both the NRA and TA, will be discussed.

New Revolution Antenna (NRA) Product

The NRA Product for the HDTV application is defined here as the "WANT HDTV" product. The WANT HDTV is a printed-circuit dielectric horn antenna, which has been developed and patented and now is in mass production. The nice features of this antenna are broadband and planar and high antenna gain without the need of the LNA (Low Noise Amplifier) and omni-directional coverage in the Azimuth plane and light weight and low cost. This antenna can be wall-mounted (without its base unit) or placed on the top of a television set (with the base unit) as a beautiful picture.

Traditional Antenna (TA) Product

People have been used to the indoor TA products for the last century, such as Rabbit Ears, Monopole, Dipole, Loop, and many other types of antennas for the old analog TV application. They don't know much about the NRA product for their HDTV. The major difference between these two different antenna products is that the TA products are usually needed a LNA to improve its antenna gain. However, with the LNA, the signal loss will be induced which will degrade the picture quality. It should

be mentioned that the picture quality depends on the value of S/N (signal strength to the noise strength ratio). The NRA product will provide the best S/N value as compared to that of TA products. If the received signal at the antenna is low due to the low gain of antenna itself, the LNA will introduce more noise and will not be able to improve much of the picture quality.

Test Results

The Panasonic Company in Taiwan had tested the indoor WANT HDTV of NRA product and other indoor TA products for the DTV (Digital Television) reception performance and the results were documented in their test report. The conclusion from their test results was that the WANT HDTV product had the best reception performance. The measured reception field strength is summarized in Table A below for the 5 different channels using this WANT HDTV of NRA product and TA products of Monopole and Dipole. It is seen from the Table A that the measured field strength of the WANT HDTV of NRA product for the 5 different channels is much better than that of the TA.

Table A: Summary of test results for DTV receptions
(Measured Field Strength in dBuV)

Name	NRA WANT HDTV	TA Monopole	TA Dipole
Channel 24 (533 MHz)	36.51	32.45	31.85
Channel 26 (545 MHz)	37.49	31.89	32.42
Channel 28 (557 MHz)	35.59	30.45	31.44
Channel 32 (581 MHz)	36.79	27.27	29.95
Channel 34 (593 MHz)	36.07	28.22	31.94

It should be mentioned here that the signal inside a home or building may be blocked and it is also not uniform. The field strength varies, according to its environment and the direction and distance from the broadcasting channel locations. In general, the antenna location should be away from the metal environment and close to windows. It will be good to use a field strength meter to measure the signal strength inside the home or building where the antenna will be placed or mounted to ensure that the good signal qualify will be received. If the signal inside the home or building is too weak to be received, then the antenna has to be placed outside the home or building, such like our traditional Yagi antenna.

The WANT HDTV of NRA product can be used outdoor also to replace the Yagi antenna. This was successfully tested in Taiwan. By mounting the WANT HDTV of NRA on top of a building and connecting to a RF cable with the length about 30 meters, without using LNA, the TV located in the basement was able to receive signals for the DTV programs.

CONCLUSION

It is hoped that through this article people will understand the NRA Technology and the WANT HDTV of NRA Product, so people can make the right choice of antennas for their needs in the area of HDTV application.