



Futurecom Systems Group, ULC

DVRS
RF Safety Booklet

Document Revisions

Rev	Date	By	Notes & References
R3	September 06, 2017	AJK/SN	Added APX 8500
R4	March 5, 2019	AJK/SN	Updated bystander safe distance rules
R5	January 14, 2020	AJK/SN	Added APX 4500, APX2500 configuration for DVR VHF
R6	February 5, 2020	AJK/SN	Added APX 45000, APX2500 configuration for DVR 700
R7	February 11, 2020	AJK/SN	Added APX 4500, APX2500 configuration for DVR 800

Product Safety and RF Energy Exposure Booklet for Digital Vehicular Repeater Systems (DVRS)

ATTENTION!

Before using this equipment, please read this booklet which contains important operating instructions for safe usage, RF energy control and compliance with exposure limits.

RF Exposure

NOTE:

This equipment has been tested and found to comply with the limits for Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the installation manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

ATTENTION!

Changes or modifications not expressly approved by Futurecom Systems Group, ULC could void the User's authority to operate the equipment.

USA Users: Do not use the DVRS in the frequency band 406.0 – 406.1MHz. This frequency band is reserved for distress beacons.

ATTENTION!

This radio is intended for use in occupational / controlled conditions, where users have full knowledge of their exposure and can exercise control over their exposure to meet FCC limits. This radio device is NOT authorized for general population, consumer, or any other use.

It is the responsibility of the Repeater Operator to ensure that Maximum Permissible Exposure (MPE) limits are observed at all times during repeater transmissions. If this vehicular repeater is used in combination with a separate mobile radio transmitter, the Repeater operator must ensure at all times that no person comes within the MPE distance from the vehicle body to ensure compliance with the FCC/ISED RF energy exposure limits for the general population.

The minimum lateral distance between all possible personnel and the body of the DVRS equipped vehicle must be as specified in Table 1 (Stand-alone DVR) and Table 2 (DVR interfaced to a Mobile Radio i.e. DVRS).

Failure to observe the MPE distance exclusion area around the antenna may expose persons within this area to RF energy above the FCC/ISED exposure limit for bystanders (general population).

Stand Alone DVR (20W)	Recommended Lateral Distance from Antenna
VHF	101 cm (39.76 inches) (up to 50% Tx duty cycle)
UHF 380-512MHz	93 cm (36.61 inches) (up to 50% Tx duty cycle)
700MHz	105 cm (41.33 inches) (up to 100% Tx duty cycle)
800MHz	109 cm (42.91 inches) (up to 100% Tx duty cycle)

Table 1 Recommended Lateral Distance - Stand Alone DVR

NOTE:

50% Tx duty cycle is defined as Push To Talk (PTT), 50% Talk - 50% Listen.
100% Tx duty cycle is defined as Push To Talk (PTT), 100% Talk.

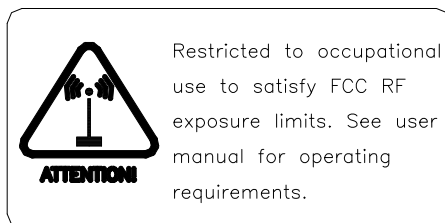
Mobile Radio Rated Power (up to 50% Tx duty cycle)	Recommended Lateral Distance from Vehicle Body
DVRS with <7 Watt XTL Mobile Radio	20 cm (7.9 inches)
DVRS with 7 to 15 Watt XTL Mobile Radio	30 cm (11.8 inches)
DVRS with 16 to 39 Watt XTL Mobile Radio	60 cm (23.6 inches)
DVRS with 40 to 100 Watt XTL Mobile Radio	90 cm (35.4 inches)
DVRS with up to 100 Watt APX Mobile Radio	90 cm (35.4 inches)

Table 2 Recommended Lateral Distance – DVRS (DVR interfaced to a Mobile Radio)

IMPORTANT

The maximum allowed gain of the $\lambda/4$ omni-directional antenna for the Mobexcom P25 DVR Repeater is Unity (0dBd).

RF Exposure Label



The RF Exposure Label should be affixed in the vehicle beside the mobile radio control head. The label should be in the direct view of the Repeater operator. The label is supplied with the Mobexcom P25 DVR Repeater.

FCC Label

This device complies with Part 15 of the FCC Rules.
 Operation is subject to the following two conditions:
 1) This device may not cause harmful interference, and
 2) This device must accept any interference received,
 including interference that may cause undesired
 operation.

Installation Requirements for Compliance with Radio Frequency (RF) Energy Exposure Safety Standards

ATTENTION!

To ensure compliance with RF Energy Safety Standards:

- Install only Futurecom / Motorola approved antennas and accessories and set conducted power into the DVR and Mobile antennas equal to or lower than the approved power levels – refer to **Table 3** (Stand Alone DVR) or **Table 4** (DVR interfaced to XTL Mobile Radio) or **Table 5** (DVR interfaced to APX Mobile Radio).
- Ensure the antenna installation is consistent with the DVR Antenna Installation instructions described in this document as well as with the Mobile Radio Antenna Installation Instructions published in the applicable Motorola Installation Manual.
- Ensure the **Product & RF Safety Booklets** enclosed with the Mobile Radio and the DVR are available to the end user upon completion of the installation.

		ANTENNA		STAND ALONE DVR MODEL					
#	Kit #	Freq. Range [MHz]	Type	700 MHz (20W) (up to 100% Tx duty cycle)	800 MHz (20W) (up to 100% Tx duty cycle)	403-430 (20W) (up to 50% Tx duty cycle)	450-470 (20W) (up to 50% Tx duty cycle)	470-512 (20W) (up to 50% Tx duty cycle)	VHF (20W) (up to 50% Tx duty cycle)
1	HAF4016	764-870	¼ wave	20W	20W				
2	HAE6012A	380-433	¼ wave			20W			
3	HAE4003A	450-470	¼ wave				20W		
4	HAE4004	470-512	¼ wave					20W	
5	HAD4006	136-144	¼ wave						20W
6	HAD4007	144-150.8	¼ wave						20W
7	HAD4008	150.8-162	¼ wave						20W
8	HAD4009	162-174	¼ wave						20W

Table 3 Approved Stand-Alone DVR Combinations

DVR: 7V083X06 Freq Range: 806-825, 851-870MHz, Trunk Mounted Antenna: HAF4016A, 1/4 wave, 0dBd
 IC:2098B-DVRS800 Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Mobile	Roof Mounted Antenna	Roof Mounted Antenna	Roof Mounted Antenna	Roof Mounted Antenna	Roof Mounted Antenna	Roof Mounted Antenna	Roof Mounted Antenna	Roof Mounted Antenna
APX6500/ APX7500 VHF (136-174MHz) IC: 109U-92FT3824	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd					
Max Power: DVR / Mobile	10W / 60W	10W / 60W	10W / 60W					
APX6500/ APX7500 700/800MHz IC: 109U-92FT5858	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd				
Max Power: DVR / Mobile	10W / 42W	10W / 42W	10W / 42W	10W / 42W				
APX6500/ APX7500 VHF (136-174MHz) IC: 109U-92FT3821	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd					
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W					
APX6500/ APX7500 UHF R1 (380-470MHz) IC: 109U-92FT4894	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd				
Max Power: DVR / Mobile	10W / 48W	10W / 48W	10W / 48W	10W / 48W				
APX6500/ APX7500 UHF R1 (380-470MHz) IC: 109U-92FT4897	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd				
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 120W				
APX6500/ APX7500 UHF R2 (450-520MHz) IC: 109U-92FT4896	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd				
Max Power: DVR / Mobile	10W / 54W	10W / 54W	10W / 54W	10W / 54W				
APX7500 7/800 MHz 35W - VHF 50W IC: 109U-92FT7037	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	
Max Power: DVR / Mobile	10W / 42W	10W / 42W	10W / 42W	10W / 42W	10W / 60W	10W / 60W	10W / 60W	
APX7500 VHF 100W - 7/800 MHz 35W IC: 109U-92FT7035	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 42W	10W / 42W	10W / 42W	10W / 42W	
APX7500 UHF R1 40W - 7/800 MHz 35W IC: 109U-92FT7043	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd
Max Power: DVR / Mobile	10W / 48W	10W / 48W	10W / 48W	10W / 48W	10W / 42W	10W / 42W	10W / 42W	10W / 42W
APX7500 UHF R1 100W - 7/800 MHz 35W IC: 109U-92FT7048	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 42W	10W / 42W	10W / 42W	10W / 42W
APX7500 UHF R2 45W 7/800 MHz 35W IC: 109U-92FT7044	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd
Max Power: DVR / Mobile	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 42W	10W / 42W	10W / 42W	10W / 42W
APX7500 VHF 50W - UHF R1 40W IC: 109U-92FT4895	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	
Max Power: DVR / Mobile	10W / 60W	10W / 60W	10W / 60W	10W / 48W	10W / 48W	10W / 48W	10W / 48W	
APX7500 VHF 100W - UHF R1 100W IC: 109U-92FT4898	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 120W	
APX7500 VHF 50W - UHF R2 45W IC: 109U-92FT7047	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd	
Max Power: DVR / Mobile	10W / 60W	10W / 60W	10W / 60W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	
APX6500 UHF R1 40W - UHF R2 45W IC: 109U-92FT4904	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	10W / 48W	10W / 48W	10W / 48W	10W / 48W	10W / 54W	10W / 54W	10W / 54W	10W / 54W

Table 4A Approved 800 DVRS Configurations – APX6500 / APX7500

DVR: 7V083X05

Freq Range: 764-776, 794-806MHz, Trunk Mounted Antenna: HAF4016A, 1/4 wave, 0dBd

IC:2098B-DVRS700

Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Mobile	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna
APX6500/ APX7500 VHF (136-174MHz) IC: 109U-92FT3824	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd						
Max Power: DVR / Mobile	5W / 60W	5W / 60W	5W / 60W						
APX6500/ APX7500 700/800MHz IC: 109U-92FT5858	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd					
Max Power: DVR / Mobile	5W / 42W	5W / 42W	5W / 42W	5W / 42W					
APX6500/ APX7500 VHF (136-174MHz) IC: 109U-92FT3821	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd						
Max Power: DVR / Mobile	5W / 120W	5W / 120W	5W / 120W						
APX6500/ APX7500 UHF R1 (380-470MHz) IC: 109U-92FT4894	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd					
Max Power: DVR / Mobile	5W / 48W	5W / 48W	5W / 48W	5W / 48W					
APX6500/ APX7500 UHF R1 (380-470MHz) IC: 109U-92FT4897	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd					
Max Power: DVR / Mobile	5W / 120W	5W / 120W	5W / 120W	5W / 120W					
APX6500/ APX7500 UHF R2 (450-520MHz) IC: 109U-92FT4896	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd					
Max Power: DVR / Mobile	5W / 54W	5W / 54W	5W / 54W	5W / 54W					
APX7500 7/800 MHz 35W - VHF 50W IC: 109U-92FT7037	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd		
Max Power: DVR / Mobile	5W / 42W	5W / 42W	5W / 42W	5W / 42W	5W / 60W	5W / 60W	5W / 60W		
APX7500 VHF 100W - 7/800 MHz 35W IC: 109U-92FT7035	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd		
Max Power: DVR / Mobile	5W / 120W	5W / 120W	5W / 120W	5W / 42W	5W / 42W	5W / 42W	5W / 42W		
APX7500 UHF R1 40W - 7/800 MHz 35W IC: 109U-92FT7043	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	
Max Power: DVR / Mobile	5W / 48W	5W / 48W	5W / 48W	5W / 48W	5W / 42W	5W / 42W	5W / 42W	5W / 42W	
APX7500 UHF R1 100W - 7/800 MHz 35W IC: 109U-92FT7048	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	
Max Power: DVR / Mobile	5W / 120W	5W / 120W	5W / 120W	5W / 120W	5W / 42W	5W / 42W	5W / 42W	5W / 42W	
APX7500 UHF R2 45W 7/800 MHz 35W IC: 109U-92FT7044	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	
Max Power: DVR / Mobile	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 42W	5W / 42W	5W / 42W	5W / 42W	
APX7500 VHF 50W - UHF R1 40W IC: 109U-92FT4895	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd		
Max Power: DVR / Mobile	5W / 60W	5W / 60W	5W / 60W	5W / 48W	5W / 48W	5W / 48W	5W / 48W		
APX7500 VHF 100W - UHF R1 100W IC: 109U-92FT4898	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd		
Max Power: DVR / Mobile	5W / 120W	5W / 120W	5W / 120W	5W / 120W	5W / 120W	5W / 120W	5W / 120W		
APX7500 VHF 50W - UHF R2 45W IC: 109U-92FT7047	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd		
Max Power: DVR / Mobile	5W / 60W	5W / 60W	5W / 60W	5W / 54W	5W / 54W	5W / 54W	5W / 54W		
APX6500 UHF R1 40W - UHF R2 45W IC: 109U-92FT4904	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd	
Max Power: DVR / Mobile	5W / 48W	5W / 48W	5W / 48W	5W / 48W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	

Table 4B Approved 700 DVRS Configurations – APX6500 / APX7500

DVR: 7V083X07 Freq Range: 380-430MHz, Trunk Mounted Antenna: HAE6012A, 1/4 wave, 0dBd

DVR IC: 2098B-DVRSUHF Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Mobile	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna
APX6500/ APX7500 VHF (136-174MHz) IC: 109U-92FT3824	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd						
Max Power: DVR / Mobile	10W / 60W	10W / 60W	10W / 60W						
APX6500/ APX7500 700/800MHz IC: 109U-92FT5858	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd					
Max Power: DVR / Mobile	10W / 42W	10W / 42W	10W / 42W	10W / 42W					
APX6500/ APX7500 VHF (136-174MHz) IC: 109U-92FT3821	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd						
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W						
APX6500/ APX7500 UHF R1 (380-470MHz) IC: 109U-92FT4894	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd					
Max Power: DVR / Mobile	10W / 48W	10W / 48W	10W / 48W	10W / 48W					
APX6500/ APX7500 UHF R1 (380-470MHz) IC: 109U-92FT4897	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd					
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 120W					
APX6500/ APX7500 UHF R2 (450-520MHz) IC: 109U-92FT4896	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd					
Max Power: DVR / Mobile	10W / 54W	10W / 54W	10W / 54W	10W / 54W					
APX7500 7/800 MHz 35W - VHF 50W IC: 109U-92FT7037	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd		
Max Power: DVR / Mobile	10W / 42W	10W / 42W	10W / 42W	10W / 42W	10W / 60W	10W / 60W	10W / 60W		
APX7500 VHF 100W - 7/800 MHz 35W IC: 109U-92FT7035	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd		
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 42W	10W / 42W	10W / 42W	10W / 42W		
APX7500 UHF R1 40W - 7/800 MHz 35W IC: 109U-92FT7043	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	
Max Power: DVR / Mobile	10W / 48W	10W / 48W	10W / 48W	10W / 48W	10W / 42W	10W / 42W	10W / 42W	10W / 42W	
APX7500 UHF R1 100W - 7/800 MHz 35W IC: 109U-92FT7048	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 42W	10W / 42W	10W / 42W	10W / 42W	
APX7500 UHF R2 45W 7/800 MHz 35W IC: 109U-92FT7044	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	
Max Power: DVR / Mobile	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 42W	10W / 42W	10W / 42W	10W / 42W	
APX7500 VHF 50W - UHF R1 40W IC: 109U-92FT4895	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd		
Max Power: DVR / Mobile	10W / 60W	10W / 60W	10W / 60W	10W / 48W	10W / 48W	10W / 48W	10W / 48W		
APX7500 VHF 100W - UHF R1 100W IC: 109U-92FT4898	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd		
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 120W		
APX7500 VHF 50W - UHF R2 45W IC: 109U-92FT7047	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd		
Max Power: DVR / Mobile	10W / 60W	10W / 60W	10W / 60W	10W / 54W	10W / 54W	10W / 54W	10W / 54W		
APX6500 UHF R1 40W - UHF R2 45W IC: 109U-92FT4904	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd	
Max Power: DVR / Mobile	10W / 48W	10W / 48W	10W / 48W	10W / 48W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	

Table 4C Approved UHF R1 DVRS Configurations – APX6500 / APX7500

DVR: 7V083X03 Freq Range: 450-470MHz, Trunk Mounted Antenna: HAE4003A, 1/4 wave, 0dBd; HAE6016A,

DVR IC:2098B-DVRSUHF Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Mobile	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna
APX6500/ APX7500 VHF (136-174MHz) IC: 109U-92FT3824	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd						
Max Power: DVR / Mobile	10W / 60W	10W / 60W	10W / 60W						
APX6500/ APX7500 700/800MHz IC: 109U-92FT5858	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd					
Max Power: DVR / Mobile	10W / 42W	10W / 42W	10W / 42W	10W / 42W					
APX6500/ APX7500 VHF (136-174MHz) IC: 109U-92FT3821	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd						
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W						
APX6500/ APX7500 UHF R1 (380-470MHz) IC: 109U-92FT4894	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd					
Max Power: DVR / Mobile	10W / 48W	10W / 48W	10W / 48W	10W / 48W					
APX6500/ APX7500 UHF R1 (380-470MHz) IC: 109U-92FT4897	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd					
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 120W					
APX6500/ APX7500 UHF R2 (450-520MHz) IC: 109U-92FT4896	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd					
Max Power: DVR / Mobile	10W / 54W	10W / 54W	10W / 54W	10W / 54W					
APX7500 7/800 MHz 35W - VHF 50W IC: 109U-92FT7037	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd		
Max Power: DVR / Mobile	10W / 42W	10W / 42W	10W / 42W	10W / 42W	10W / 60W	10W / 60W	10W / 60W		
APX7500 VHF 100W - 7/800 MHz 35W IC: 109U-92FT7035	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd		
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 42W	10W / 42W	10W / 42W	10W / 42W		
APX7500 UHF R1 40W - 7/800 MHz 35W IC: 109U-92FT7043	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	
Max Power: DVR / Mobile	10W / 48W	10W / 48W	10W / 48W	10W / 48W	10W / 42W	10W / 42W	10W / 42W	10W / 42W	
APX7500 UHF R1 100W - 7/800 MHz 35W IC: 109U-92FT7048	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 42W	10W / 42W	10W / 42W	10W / 42W	
APX7500 UHF R2 45W 7/800 MHz 35W IC: 109U-92FT7044	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	
Max Power: DVR / Mobile	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 42W	10W / 42W	10W / 42W	10W / 42W	
APX7500 VHF 50W - UHF R1 40W IC: 109U-92FT4895	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd		
Max Power: DVR / Mobile	10W / 60W	10W / 60W	10W / 60W	10W / 48W	10W / 48W	10W / 48W	10W / 48W		
APX7500 VHF 100W - UHF R1 100W IC: 109U-92FT4898	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd		
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 120W		
APX7500 VHF 50W - UHF R2 45W IC: 109U-92FT7047	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd		
Max Power: DVR / Mobile	10W / 60W	10W / 60W	10W / 60W	10W / 54W	10W / 54W	10W / 54W	10W / 54W		
APX6500 UHF R1 40W - UHF R2 45W IC: 109U-92FT4904	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd	
Max Power: DVR / Mobile	10W / 48W	10W / 48W	10W / 48W	10W / 48W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	

Table 4D Approved UHF R2 DVRS Configurations – APX6500 / APX7500

DVR: 7V083X04 Freq Range: 470-512MHz, Trunk Mounted Antenna: HAE4004A, 1/4 wave, 0dBd; HAE6016A,

DVR IC:2098B-DVRSUHF Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Mobile	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna
APX6500/ APX7500 VHF (136-174MHz) IC: 109U-92FT3824	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd						
Max Power: DVR / Mobile	10W / 60W	10W / 60W	10W / 60W						
APX6500/ APX7500 700/800MHz IC: 109U-92FT5858	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd					
Max Power: DVR / Mobile	10W / 42W	10W / 42W	10W / 42W	10W / 42W					
APX6500/ APX7500 VHF (136-174MHz) IC: 109U-92FT3821	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd						
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W						
APX6500/ APX7500 UHF R1 (380-470MHz) IC: 109U-92FT4894	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd					
Max Power: DVR / Mobile	10W / 48W	10W / 48W	10W / 48W	10W / 48W					
APX6500/ APX7500 UHF R1 (380-470MHz) IC: 109U-92FT4897	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd					
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 120W					
APX6500/ APX7500 UHF R2 (450-520MHz) IC: 109U-92FT4896	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd					
Max Power: DVR / Mobile	10W / 54W	10W / 54W	10W / 54W	10W / 54W					
APX7500 7/800 MHz 35W - VHF 50W IC: 109U-92FT7037	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd		
Max Power: DVR / Mobile	10W / 42W	10W / 42W	10W / 42W	10W / 42W	10W / 60W	10W / 60W	10W / 60W		
APX7500 VHF 100W - 7/800 MHz 35W IC: 109U-92FT7035	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd		
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 42W	10W / 42W	10W / 42W	10W / 42W		
APX7500 UHF R1 40W - 7/800 MHz 35W IC: 109U-92FT7043	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	
Max Power: DVR / Mobile	10W / 48W	10W / 48W	10W / 48W	10W / 48W	10W / 42W	10W / 42W	10W / 42W	10W / 42W	
APX7500 UHF R1 100W - 7/800 MHz 35W IC: 109U-92FT7048	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 42W	10W / 42W	10W / 42W	10W / 42W	
APX7500 UHF R2 45W 7/800 MHz 35W IC: 109U-92FT7044	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	
Max Power: DVR / Mobile	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 42W	10W / 42W	10W / 42W	10W / 42W	
APX7500 VHF 50W - UHF R1 40W IC: 109U-92FT4895	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd		
Max Power: DVR / Mobile	10W / 60W	10W / 60W	10W / 60W	10W / 48W	10W / 48W	10W / 48W	10W / 48W		
APX7500 VHF 100W - UHF R1 100W IC: 109U-92FT4898	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd		
Max Power: DVR / Mobile	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 120W	10W / 120W		
APX7500 VHF 50W - UHF R2 45W IC: 109U-92FT7047	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd		
Max Power: DVR / Mobile	10W / 60W	10W / 60W	10W / 60W	10W / 54W	10W / 54W	10W / 54W	10W / 54W		
APX6500 UHF R1 40W - UHF R2 45W IC: 109U-92FT4904	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd	
Max Power: DVR / Mobile	10W / 48W	10W / 48W	10W / 48W	10W / 48W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	

Table 4E Approved UHF R3 DVRS Configurations – APX6500 / APX7500

DVR: 7V083X01 Freq Range: 136-174MHz, Trunk Mounted Antenna: HAD4006A, 1/4 wave, 0dBd, HAD4007A,
DVR IC:2098B-DVRSVHF Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Mobile	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna
	Roof Mounted	Roof Mounted	Roof Mounted	Roof Mounted	Roof Mounted	Roof Mounted	Roof Mounted	Roof Mounted	Roof Mounted
APX6500/ APX7500 VHF (136-174MHz) IC: 109U-92FT3824	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd						
Max Power: DVR / Mobile	6W / 60W	6W / 60W	6W / 60W						
APX6500/ APX7500 700/800MHz IC: 109U-92FT5858	HAF4013A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd						
Max Power: DVR / Mobile	6W / 42W	6W / 42W	6W / 42W						
APX6500/ APX7500 VHF (136-174MHz) IC: 109U-92FT3821	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd						
Max Power: DVR / Mobile	6W / 120W	6W / 120W	6W / 120W						
APX6500/ APX7500 UHF R1 (380-470MHz) IC: 109U-92FT4894	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd					
Max Power: DVR / Mobile	6W / 48W	6W / 48W	6W / 48W	6W / 48W					
APX6500/ APX7500 UHF R1 (380-470MHz) IC: 109U-92FT4897	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd					
Max Power: DVR / Mobile	6W / 120W	6W / 120W	6W / 120W	6W / 120W					
APX6500/ APX7500 UHF R2 (450-520MHz) IC: 109U-92FT4896	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd					
Max Power: DVR / Mobile	6W / 54W	6W / 54W	6W / 54W	6W / 54W					
APX7500 7/800 MHz 35W - VHF 50W IC: 109U-92FT7037	HAF4013A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd			
Max Power: DVR / Mobile	6W / 42W	6W / 42W	6W / 42W	6W / 60W	6W / 60W	6W / 60W			
APX7500 VHF 100W - 7/800 MHz 35W IC: 109U-92FT7035	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd			
Max Power: DVR / Mobile	6W / 120W	6W / 120W	6W / 120W	6W / 42W	6W / 42W	6W / 42W			
APX7500 UHF R1 40W - 7/800 MHz 35W IC: 109U-92FT7043	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAF4013A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd		
Max Power: DVR / Mobile	6W / 48W	6W / 48W	6W / 48W	6W / 48W	6W / 42W	6W / 42W	6W / 42W		
APX7500 UHF R1 100W - 7/800 MHz 35W IC: 109U-92FT7048	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAF4013A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd		
Max Power: DVR / Mobile	6W / 120W	6W / 120W	6W / 120W	6W / 120W	6W / 42W	6W / 42W	6W / 42W		
APX7500 UHF R2 45W 7/800 MHz 35W IC: 109U-92FT7044	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd		
Max Power: DVR / Mobile	6W / 54W	6W / 54W	6W / 54W	6W / 54W	6W / 42W	6W / 42W	6W / 42W		
APX7500 VHF 50W - UHF R1 40W IC: 109U-92FT4895	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd		
Max Power: DVR / Mobile	6W / 60W	6W / 60W	6W / 60W	6W / 48W	6W / 48W	6W / 48W	6W / 48W		
APX7500 VHF 100W - UHF R1 100W IC: 109U-92FT4898	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd		
Max Power: DVR / Mobile	6W / 120W	6W / 120W	6W / 120W	6W / 120W	6W / 120W	6W / 120W	6W / 120W		
APX7500 VHF 50W - UHF R2 45W IC: 109U-92FT7047	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd		
Max Power: DVR / Mobile	6W / 60W	6W / 60W	6W / 60W	6W / 54W	6W / 54W	6W / 54W	6W / 54W		
APX6500 UHF R1 40W - UHF R2 45W IC: 109U-92FT4904	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE6015A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE4004A, 1/4 wave, 0dBd	
Max Power: DVR / Mobile	6W / 48W	6W / 48W	6W / 48W	6W / 48W	6W / 54W	6W / 54W	6W / 54W	6W / 54W	

Table 4F Approved VHF DVRS Configurations – APX6500 / APX7500

DVR: 7V083X06 Freq Range: 806-825, 851-870MHz, Trunk Mounted Antenna: HAF4016A, 1/4 wave, 0dBd
 DVR IC:2098B-DVRS800 Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Mobile	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna
APX8500 VHF (136-174MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd	HAD4006A, 1/4 wave, 0dBd	HAD4007A, 1/4 wave, 0dBd	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4016A, 1/4 wave, 0dBd	HAD4017A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAD4022A, 5/8 wave, 3dBd	RAD4010ARB, 1/2 wave, 3dBd					
Max Power: DVR / Mobile	10W / 60W	10W / 60W	10W / 60W	10W / 60W	10W / 60W	10W / 60W	10W / 60W	10W / 60W	10W / 60W	10W / 60W					
APX8500 UHF (380-470MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd	HAE6010A, 1/2 wave, 3.5dBd	HAE6011A, 5/8 wave, 5dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE6031A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE6015A, 1/2 wave, 2dBd	HAE6016A, 1/4 wave, 0dBd	RAE4014ARB, 5/8 wave, 5dBd				
Max Power: DVR / Mobile	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W				
APX8500 UHF (450-520MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE6031A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE6015A, 1/2 wave, 2dBd	HAE6016A, 1/4 wave, 0dBd	RAE4014ARB, 5/8 wave, 5dBd	HAE4004A, 1/4 wave, 0dBd	HAE4012A, 1/2 wave, 3.5dBd	HAE4013A, 1/2 wave, 3.5dBd	RAE4015ARM, 5/8 wave, 5dBd	RAE40416ARB, 5/8 wave, 5dBd		
Max Power: DVR / Mobile	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W	10W / 54W		
APX8500 7/800MHz IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd										
Max Power: DVR / Mobile	10W / 42W	10W / 42W	10W / 42W	10W / 42W	10W / 42W										

Table 5A Approved 800 DVRS Configurations – APX8500

DVR: 7V083X05 Freq Range: 764-776, 794-806MHz, Trunk Mounted Antenna: HAF4016A, 1/4 wave, 0dBd
 IC:2098B-DVRS700 Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Mobile	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna
APX8500 VHF (136-174MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd	HAD4006A, 1/4 wave, 0dBd	HAD4007A, 1/4 wave, 0dBd	HAD4008A, 1/4 wave, 0dBd	HAD4009A, 1/4 wave, 0dBd	HAD4016A, 1/4 wave, 0dBd	HAD4017A, 1/4 wave, 0dBd	HAD4021A, 1/4 wave, 0dBd	HAD4022A, 5/8 wave, 3dBd	RAD4010ARB, 1/2 wave, 3dBd					
Max Power: DVR / Mobile	5W / 60W	5W / 60W	5W / 60W	5W / 60W	5W / 60W	5W / 60W	5W / 60W	5W / 60W	5W / 60W	5W / 60W					
APX8500 UHF (380-470MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd	HAE6010A, 1/2 wave, 3.5dBd	HAE6011A, 5/8 wave, 5dBd	HAE6012A, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE6031A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE6015A, 1/2 wave, 2dBd	HAE6016A, 1/4 wave, 0dBd	RAE4014ARB, 5/8 wave, 5dBd				
Max Power: DVR / Mobile	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W				
APX8500 UHF (450-520MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd	HAE6013A, 1/2 wave, 2dBd	HAE6031A, 1/2 wave, 2dBd	HAE4003A, 1/4 wave, 0dBd	HAE4011A, 1/2 wave, 3.5dBd	HAE6015A, 1/2 wave, 2dBd	HAE6016A, 1/4 wave, 0dBd	RAE4014ARB, 5/8 wave, 5dBd	HAE4004A, 1/4 wave, 0dBd	HAE4012A, 1/2 wave, 3.5dBd	HAE4013A, 1/2 wave, 3.5dBd	RAE4015ARM, 5/8 wave, 5dBd	RAE40416ARB, 5/8 wave, 5dBd		
Max Power: DVR / Mobile	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W	5W / 54W		
APX8500 7/800MHz IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd	HAF4013A, 1/4 wave, 3dBd	HAF4014A, 1/4 wave, 3dBd	HAF4016A, 1/4 wave, 0dBd	HAF4017A, 1/4 wave, 3dBd										
Max Power: DVR / Mobile	5W / 42W	5W / 42W	5W / 42W	5W / 42W	5W / 42W										

Table 5B Approved 700 DVRS Configurations – APX8500

DVR: 7V083X07
IC:2098B-DVRSUHF

Freq Range: 380-430MHz, Trunk Mounted Antenna: HAE6012A, 1/4 wave, 0dBd
Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Mobile	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna
APX8500 VHF (136-174MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd								
Max Power: DVR / Mobile	10W / 60W								
APX8500 UHF (380-470MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd								
Max Power: DVR / Mobile	10W / 54W								
APX8500 UHF (450-520MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd								
Max Power: DVR / Mobile	10W / 54W								
APX8500 7/800MHz IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd								
Max Power: DVR / Mobile	10W / 42W								

Table 5C Approved UHF R1 DVRS Configurations – APX8500

DVR: 7V083X03
IC:2098B-DVRSUHF

Freq Range: 450-470MHz, Trunk Mounted Antenna: HAE4003A, 1/4 wave, 0dBd; HAE6016A,
Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Mobile	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna
APX8500 VHF (136-174MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd								
Max Power: DVR / Mobile	10W / 60W								
APX8500 UHF (380-470MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd								
Max Power: DVR / Mobile	10W / 54W								
APX8500 UHF (450-520MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd								
Max Power: DVR / Mobile	10W / 54W								
APX8500 7/800MHz IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd								
Max Power: DVR / Mobile	10W / 42W								

Table 5D Approved UHF R2 DVRS Configurations – APX8500

DVR: 7V083X04
IC:2098B-DVRSUHF

Freq Range: 470-512MHz, Trunk Mounted Antenna: HAE4004A, 1/4 wave, 0dBd; HAE6016A,

Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Roof Mounted Roof Mounted Roof Mounted Roof Mounted Roof Mounted Roof Mounted Roof Mounted Roof Mounted

Mobile	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna
APX8500 VHF (136-174MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd							
Max Power: DVR / Mobile	10W / 60W							
APX8500 UHF (380-470MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd							
Max Power: DVR / Mobile	10W / 54W							
APX8500 UHF (450-520MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd							
Max Power: DVR / Mobile	10W / 54W							
APX8500 7/800MHz IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd							
Max Power: DVR / Mobile	10W / 42W							

Table 5E Approved UHF R3 DVRS Configurations – APX8500

DVR: 7V083X01
IC:2098B-DVRSVHF

Freq Range: 136-174MHz, Trunk Mounted Antenna: HAD4006A, 1/4 wave, 0dBd, HAD4007A,

Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Roof Mounted Roof Mounted Roof Mounted Roof Mounted Roof Mounted Roof Mounted Roof Mounted Roof Mounted

Mobile	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna	Antenna
APX8500 VHF (136-174MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd							
Max Power: DVR / Mobile	6W / 60W							
APX8500 UHF (380-470MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd							
Max Power: DVR / Mobile	6W / 54W							
APX8500 UHF (450-520MHz) IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd							
Max Power: DVR / Mobile	6W / 54W							
APX8500 7/800MHz IC: 109U-92FT7089	AN000131A01, 1/4 wave, 0dBd							
Max Power: DVR / Mobile	6W / 42W							

Table 5F Approved VHF DVRS Configurations – APX8500

DVR: 7V083X01

Freq Range: 136-174 MHz, Trunk Mounted Antenna: HAD4006A, 4007A,4008A,4009A, 1/4 wave, 0dBd

IC:2098B-DVRVHF

Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Roof Mounted

Mobile	Antenna
APX2500/ APX4500 VHF (136-162MHz) ISED: 109U-92FT3826	HAD40016A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	6W / 60W
APX2500/ APX4500 VHF (146-174 MHz) ISED: 109U-92FT3826	HAD4017A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	6W / 60W
APX2500/ APX4500 VHF (136-174 MHz) ISED: 109U-92FT3826	HAD4021A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	6W / 60W
APX2500/ APX4500 VHF (136-144 MHz) ISED: 109U-92FT3826	HAD4006A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	6W / 60W
APX2500/ APX4500 VHF (144-150.8 MHz) ISED: 109U-92FT3826	HAD4007A 1/4 wave, 0dBd
Max Power: DVR / Mobile	6W / 60W
APX2500/ APX4500 VHF (150.8-162 MHz) ISED: 109U-92FT3826	HAD4008A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	6W / 60W
APX2500/APX4500 VHF (162-174 MHz) ISED: 109U-92FT3826	HAD4009A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	6W / 60W
APX2500/APX4500 VHF (132-174 MHz) ISED: 109U-92FT3826	*HAD4022A 5/8 wave, 3dBd
Max Power: DVR / Mobile	6W / 60W
APX2500/APX4500 VHF (136-174 MHz) ISED: 109U-92FT3826	*RAD4010ARB 1/2 wave,3dBd
Max Power: DVR / Mobile	6W / 60W

*Antenna length trimmed to frequency

Table 6 Approved VHF DVRS Configuration APX 2500 and APX 4500

DVR: 7V083X05

Freq Range: 764-806 MHz, Trunk Mounted Antenna: HAF4016A, 1/4 wave, 0dBd

IC:2098B-DVRS700

Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Roof Mounted

Mobile	Antenna
APX2500/ APX4500 VHF (136-162MHz) ISED: 109U-92FT3826	HAD40016A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	5W / 60W
APX2500/ APX4500 VHF (146-174 MHz) ISED: 109U-92FT3826	HAD40017A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	5W / 60W
APX2500/ APX4500 VHF (136-174 MHz) ISED: 109U-92FT3826	HAD40021A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	5W / 60W
APX2500/ APX4500 VHF (136-144 MHz) ISED: 109U-92FT3826	HAD4006A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	5W / 60W
APX2500/ APX4500 VHF (144-150.8 MHz) ISED: 109U-92FT3826	HAD4007A 1/4 wave, 0dBd
Max Power: DVR / Mobile	5W / 60W
APX2500/ APX4500 VHF (150.8-162 MHz) ISED: 109U-92FT3826	HAD4008A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	5W / 60W
APX2500/APX4500 VHF (162-174 MHz) ISED: 109U-92FT3826	HAD4009A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	5W / 60W
APX2500/APX4500 VHF (132-174 MHz) ISED: 109U-92FT3826	*HAD4022A 5/8 wave, 3dBd
Max Power: DVR / Mobile	5W / 60W
APX2500/APX4500 VHF (136-174 MHz) ISED: 109U-92FT3826	*RAD4010ARB 1/2 wave, 3dBd
Max Power: DVR / Mobile	5W / 60W

*Antenna length trimmed to frequency

Table 7 Approved 700 DVRS Configuration APX 2500 and APX 4500

DVR: 7V083X06

Freq Range: 806-869 MHz, Trunk Mounted Antenna: HAF4016A, 1/4 wave, 0dBd

IC:2098B-DVRS800

Maximum conducted power delivered to antenna: DVR (W) / Mobile (W)

Roof Mounted

Mobile	Antenna
APX2500/ APX4500 VHF (136-162MHz) ISED: 109U-92FT3826	HAD40016A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	10W / 60W
APX2500/ APX4500 VHF (146-174 MHz) ISED: 109U-92FT3826	HAD40017A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	10W / 60W
APX2500/ APX4500 VHF (136-174 MHz) ISED: 109U-92FT3826	HAD40021A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	10W / 60W
APX2500/ APX4500 VHF (136-144 MHz) ISED: 109U-92FT3826	HAD4006A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	10W / 60W
APX2500/ APX4500 VHF (144-150.8 MHz) ISED: 109U-92FT3826	HAD4007A 1/4 wave, 0dBd
Max Power: DVR / Mobile	10W / 60W
APX2500/ APX4500 VHF (150.8-162 MHz) ISED: 109U-92FT3826	HAD4008A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	10W / 60W
APX2500/APX4500 VHF (162-174 MHz) ISED: 109U-92FT3826	HAD4009A, 1/4 wave, 0dBd
Max Power: DVR / Mobile	10W / 60W
APX2500/APX4500 VHF (132-174 MHz) ISED: 109U-92FT3826	*HAD4022A 5/8 wave, 3dBd
Max Power: DVR / Mobile	10W / 60W
APX2500/APX4500 VHF (136-174 MHz) ISED: 109U-92FT3826	*RAD4010ARB 1/2 wave, 3dBd
Max Power: DVR / Mobile	10W / 60W

*Antenna length trimmed to frequency

Table 8 Approved 800 DVRS Configuration APX 2500 and APX 4500

Antenna Installation Instructions

IMPORTANT

To assure optimum performance and compliance with RF Energy Safety standards, these antenna installation guidelines and instructions are limited to metal-body vehicles with appropriate ground planes and take into account the potential exposure of back seat passengers and bystanders outside the vehicle.

Selecting an Antenna Site/Location on a Metal Body Vehicle

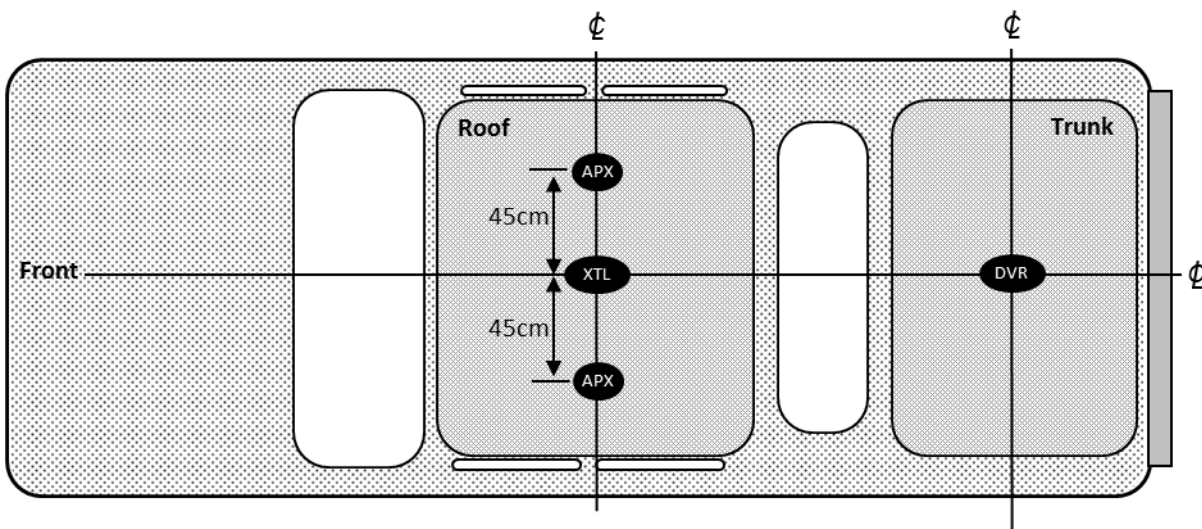
External installation

Check the requirements of the antenna supplier and install the vehicle antenna external to a metal body vehicle in accordance with those requirements.

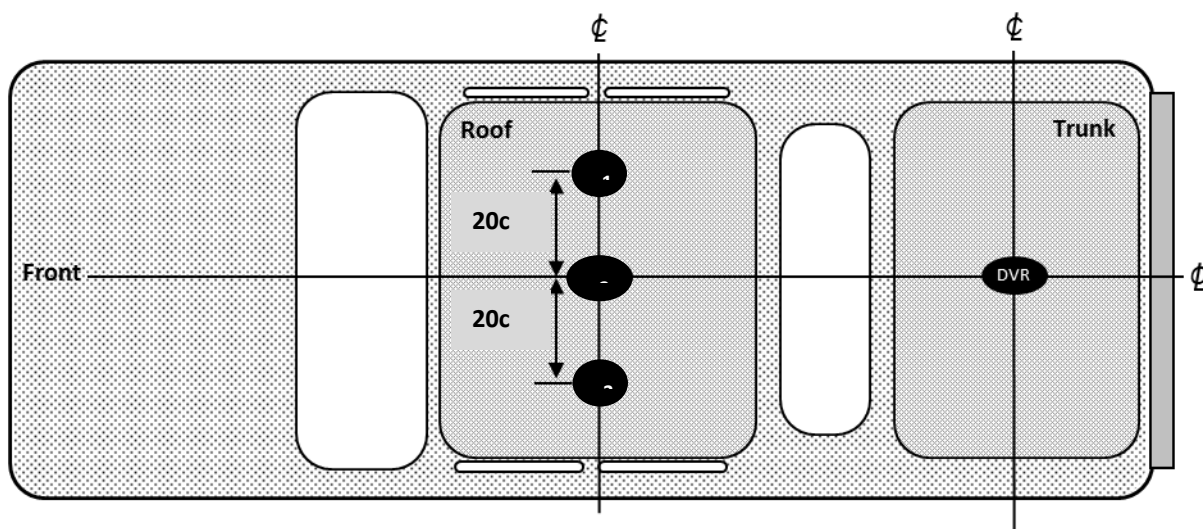
Roof top

XTL mobile radio: For optimum performance and compliance with RF Energy Safety standards, mount the mobile radio antenna in the center area of the roof.

APX mobile radio: For optimum performance and compliance with RF Energy Safety standards, mount the mobile radio antennas (dual and single band) at 45cm (17.7 inches) from the center as shown in the figure below. NOTE: For single band applications (one antenna), choose either side for the installation (not the center).



APX8500 mobile radio: For optimum performance and compliance with RF Energy Safety standards, mount the mobile radio antennas (all band and LMR 700/800 band) at location 2 only. Standard LMR VHF and UHF antennas should only be placed at location 1 & 3, which is 20cm (8 inches) from the center as shown in the figure below.



Applicable to APX8500 only

Trunk lid

For optimum performance and compliance with RF Energy Safety standards, mount the DVR antenna (DVR) in the center area of the trunk as shown above.

Before installing an antenna on the trunk lid:

- Ensure that the distance from the antenna location on the trunk lid will be at least 85 cm (33.5 inches) from the front surface of the rear seat-back to assure compliance with RF Energy Safety standards.
- Ensure that the trunk lid is grounded by connecting grounding straps between the trunk lid and the vehicle chassis.
- Ensure that the antenna cable can be easily routed to the radio. Route the antenna cable as far away as possible from any vehicle electronic control units and associated wiring.
- Check the antenna location for any electrical interference.
- Ensure that any other mobile radio antenna on this vehicle is at least 1ft (30.5cm) away from the DVR and its associated mobile radio antennas.

NOTE:

Any two metal pieces rubbing against each other (such as seat springs, shift levers, trunk and hood lids, exhaust pipes etc.) in close proximity to the antenna can cause severe receiver interference.

Mobile Radio / DVR Antenna separation

To ensure interference-free performance when both the Mobile Radio and the DVR are active, the two antennas must be mounted in such way as to provide 30dB minimum antenna isolation.

Fixed DVRS Site Antennas

Mobile radio equipment is sometimes installed at a fixed location and operated as a control station or as a fixed unit. In such cases the antenna installation must comply with the following requirements in order to assure optimal performance and make sure human exposure to radio frequency electromagnetic energy is within the guidelines set forth in the above standards.

- The antennas must be mounted outside the building.
- Mount the antennas on a tower if at all possible.
- If the antennas are to be mounted on a building then it must be mounted on the roof.
- As with all fixed site antenna installations, it is the responsibility of the licensee to manage the site in accordance with applicable regulatory requirements and may require additional compliance actions such as site survey measurements, signage, and site access restrictions in order to insure that exposure limits are not exceeded.

Temporary-Fixed Site

Futurecom requires the P25 Transportable DVRS (TDVRS) operator to ensure FCC/ISED Requirements for Radio Frequency Exposure are met. It is the responsibility of the Licensee to ensure that the appropriate separation distances between the antennas and bystanders are established and followed to meet the FCC and ISED Maximum Permissible Exposure (MPE) Requirements in any particular Temporary-Fixed location. In situations where a site assessment is not practical, it is recommended that the antennas be located **at least 9 feet from bystanders**. This should ensure MPE compliance in any Temporary-Fixed application and is likely to be a much greater separation distance than is necessary in most cases. Failure to observe the MPE distance exclusion area around the antenna may expose persons within this area to RF energy above the FCC/ISED exposure limits for bystanders (general population).

Approved Antennas and Maximum output power (W) for combination DVR and APX mobiles for Temporary-Fixed Site

NOTE:

APX mobile RF conducted antenna power in the tables below denotes up to 50% Tx duty cycle.
DVR RF conducted antenna power in the tables below denotes up to 100% Tx duty cycle.

DVR

Band	Antenna	Power (W)
VHF (136-174MHz)	DDN9014	6
UHF1 (406-430MHz)	DDN9015	10
UHF2 (450-470MHz)	DDN9015	10
UHF3 (470-512MHz)	DDN9015	10
700 (768-806MHz)	DDN9016	5
800 (806-869MHz)	DDN9016	10

APX

Band	Antenna	Power (W)
VHF (136-174MHz)	DDN9014	60
UHF1 (406-470MHz)	DDN9015	48
UHF2 (450-520MHz)	DDN9015	54
700/800 (764-870MHz)	DDN9016	42

Max Power (W) for combination DVR and APX

		APX			
DVR/APX		VHF	UHFR1	UHFR2	700/800MHz
DVR	VHF	6/60	6/48	6/54	6/42
	UHFR1	10/60	10/48	10/54	10/42
	UHFR2	10/60	10/48	10/54	10/42
	UHFR3	10/60	10/48	10/54	10/42
	700MHz	5/60	5/48	5/54	5/42
	800MHz	10/60	10/48	10/54	10/42