

Cubtek VS-93G012 RCR Functional Requirements

Revision 0.1

Issue Date: 08/28/2019

Revision Date: MM/DD/YYYY

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1 Introduction

1.1 Purpose of this specification

This specification specified the requirements and conditions for RCR behavior.

1.2 Definitions, Acronyms and Abbreviations

Listed are used in this document for clarification purposes.

1.2.1 Definitions

Term	Definition

1.2.2 Acronyms and Abbreviations

Acronym and Abbreviations	Definition
SV	Subject Vehicle
TV	Targe Vehicle
RCR	Rear Corner Radar
BSD	Blind Spot Detection
LCA	Lane Change Assist
RCTA	Rear Cross Traffic Assist
DOW	Door Open Warning

1.3 Change History

Version Number	Change Date	Change Description	Name	SVN revision
0.1	2019/08/28	Initial document	Samuel Chen	

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2 General Description

2.1 Purpose

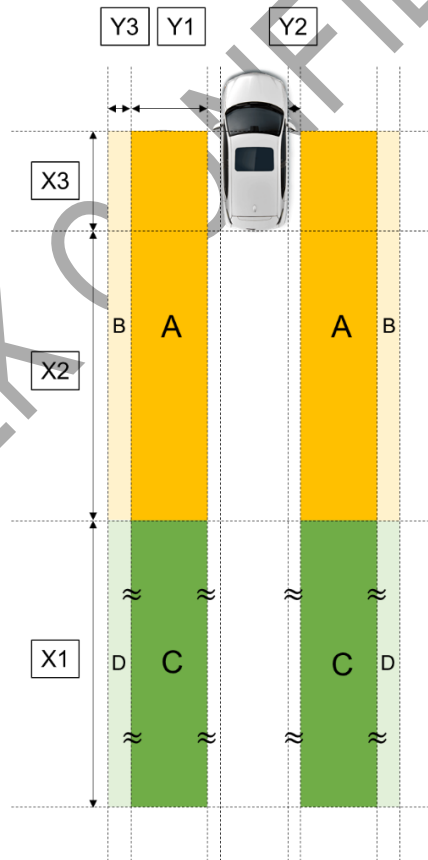
This document describes the default specifications of Cubtek VS-93G012 rear corner radar system.

3 Functional Requirements

3.1 Blind Spot Detection (BSD) / Lane Change Assist (LCA)

BSD is used for monitoring vehicles at the potential blind spots on either side of the vehicle. BSD alert will be active once the target vehicle entering the blind spot area of the SV. LCA scan a zone rewards from the blind spot area. LCA alert will active when a quickly closing vehicle is detected and may cause a threat during a lane-change maneuver.

3.1.1 Performance Indicator



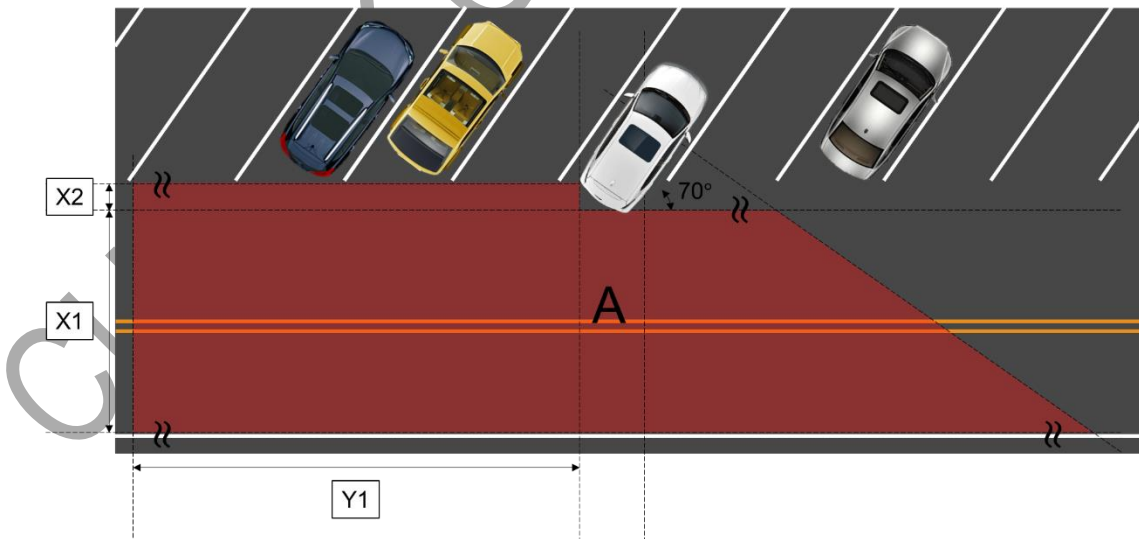
Item	Description	Specification
X1	Maximum LCA warning area length (m)	Up to 60
X2	BSD warning area length (m)	10

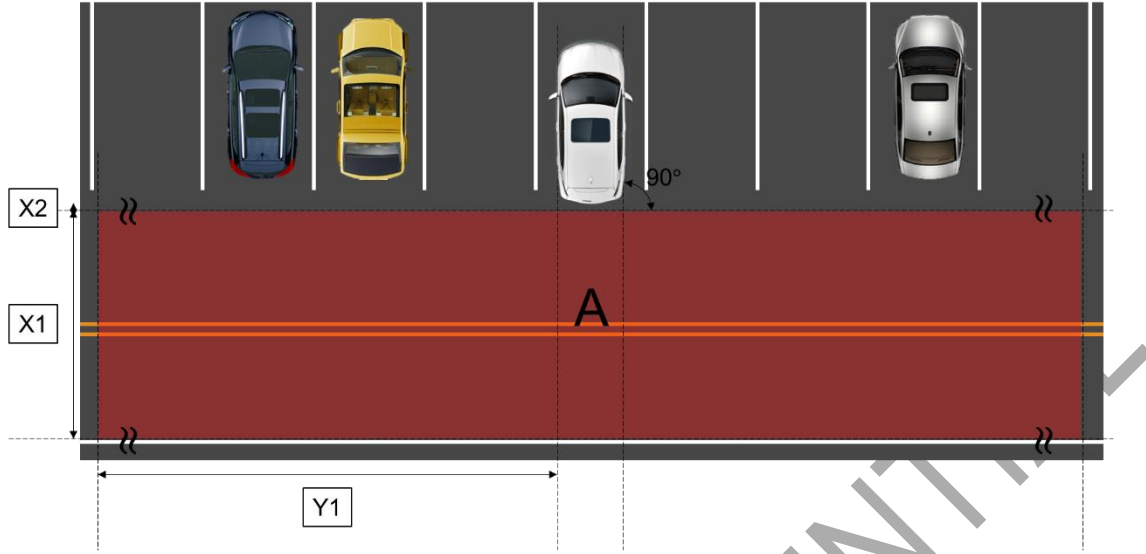
X3	The length of warning area from rear of SV in front (m)	Car C pillar
Y1	Warning area width (m)	3.0
Y2	Non-warning area width (m)	0.5
Y3	Possible warning area width (m)	0.3
TTC	Time to collision (s)	< 2
V_t	The relative speed range of the target vehicle for warning (m/s)	-19.44 ~ 4.17
V_s min	Minimum activation speed (km/h)	20
V_s max	Maximum activation speed (km/h)	135
V_{ovtk}	Overtaking function activation speed (km/h)	35
Gear	SV gear for system activation	Non-R gear
A	BSD warning area	
B	BSD possible warning area	
C	LCA warning area	
D	LCA possible warning area	

3.2 Rear Cross Traffic Assist (RCTA)

The RTCA system provides information to the driver in the event of a vehicle approach from the left-hand-side or right-hand-side rear of the vehicle during reversing maneuvers. In this mode, the omni-directional tracking algorithm is used to detect targets in the radar FOV, and the warning area is adjusted by the attack angle of each target vehicle individually.

3.2.1 Performance Indicator



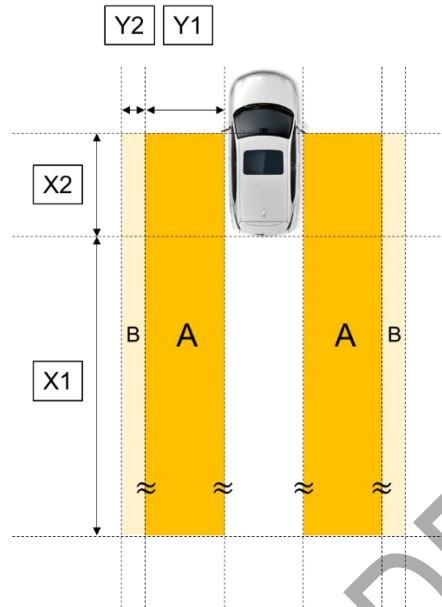


Item	Description	spec
X1	Warning area length (m)	6.5
X2	RCTA warning area compensation length (m)	Will be adjusted by the target's attack angle accordingly
Y1	Maximum RCTA warning area length (m)	Up to 35
TTC	Time to collision (s)	< 2
V_t	The relative speed range of the target vehicle for warning (m/s)	-10 ~ 0
V_s min	Minimum SV speed activation speed (km/h)	0
V_s max	Maximum SV speed activation speed (km/h)	8
Gear	SV gear for system activation	R gear
A	The warning area for the TV's incident angle is 70° and 110° , with respect to the SV's centerline	

3.3 Door Open Warning (DOW)

This feature is intended to assist passengers when exiting the SV when parked alongside busy roads. The radar modules continuously scan the side-rear of the SV to detect approaching vehicles. If the approaching vehicle satisfies the TTC criteria and also has a direction vector that intersects a defined activation area, then a warning will be triggered.

3.3.1 Performance Indicator



Item	Description	spec
X1	Maximum DOW warning area length (m)	Up to 35
X2	The length of detection area from rear of SV in front (m)	Car B pillar
Y1	Warning area width (m)	2
Y2	Possible warning area width (m)	0.3
TTC	Time to collision	< 2
V_t	The relative speed range of the TV for warning (m/s)	-19.44 ~ 0
V_s min	Minimum SV activation speed (km/h)	0
V_s max	Maximum SV activation speed (km/h)	2
Gear	SV gear for system activation	Non-R gear
A	DOW warning area	
B	DOW possible warning area	

4 Appendix

4.1 Test execution and test requirements

4.2 Exemption

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