SmartRunway®, SmartLanding® and the Original RAAS
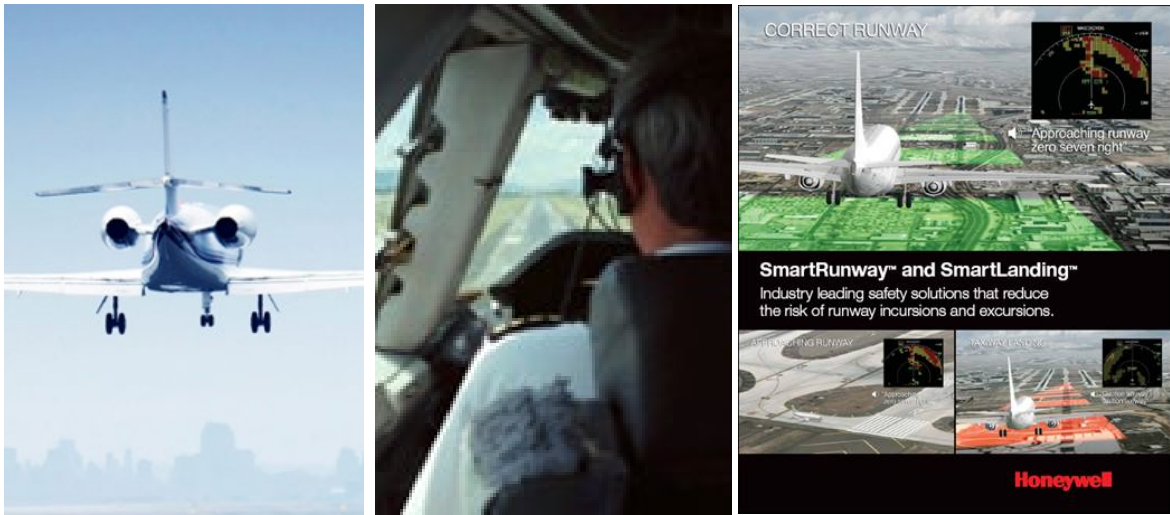
The purpose of this bulletin is to explain the difference between Honeywell EGPWS software updates titled Runway Awareness Advisory System (hereafter referred to as RAAS), SmartRunway & SmartLanding (hereafter referred to as SR/SL) and and communicate the value proposition for each offering.

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Effective Dates:	1/01/2020 through 12/31/2020

SMARTRUNWAY®, SMARTLANDING® AND THE ORIGINAL RAAS

1.   Introduction

The purpose of this bulletin is to explain the difference between Honeywell EGPWS software updates titled Runway Awareness Advisory System (hereafter referred to as RAAS), SmartRunway & SmartLanding (hereafter referred to as SR/SL) and provide an update on the pricing and status for these programs.

RAAS, SmartRunway and SmartLanding are simple software based updates to the Honeywell EGPWS MK V, MK VII & MKV-A boxes. All versions of EGPWS software from -218-218 to -228-228 are RAAS capable (note RAAS is not available for MKV-A). Software versions -230-230 and above are SR/SL capable. Incorporation on specific aircraft types is accomplished via either a Supplemental Type Certificate (STC) or an aircraft OEM Service Bulletin.

2.   RAAS & SmartRunway/SmartLanding Overview

RAAS was developed in 2003 to provide improved flight crew positional awareness to help minimize the potential of runway incursions. It does this by providing a package of 10 aural alerts to the flight crew.

SmartRunway evolved from RAAS and was released in 2009. The fundamental difference between RAAS and SmartRunway is that SmartRunway incorporates visual alerts to supplement the standard aural alerting. There is also the addition of a caution alert for Take-Off Flaps and Taxiway Landing, and options for Short Runway Takeoff/Landing cautions and Taxiway Takeoff cautions in SmartRunway, bringing the total number of alerts in the package to 15.

Most of the alerts for both RAAS and SmartRunway are ground based alerts although a couple are in-air alerts ("Approaching Runway…" in-air).

SmartLanding alerts were developed to provide improved flight crew situational awareness to help minimize the potential for runway excursions. There are 13 alerts in the SmartLanding package. SmartLanding adds a Stabilized Approach Monitor, and Long Landing Monitor, and an Altimeter Monitor. As with SmartRunway, the SmartLanding advisory alerts can be aural only, visual only, or both aural and visual (caution level alerts must have both visual and aural).

Most of the SmartLanding alerts are in-air alerts

The MKV-A box is a replacement for the MKV and is being delivered in production. It is not capable of running RAAS. SR/SL is available for this unit.

Please note that not all the alerts need to be enabled in any grouping. They are chosen based on specific customer need. The decision, on which alerts should be enabled/disabled, is typically based on discussions between the operator and the Dealer and specified in the RCD request. Honeywell will offer information on the intent of each callout to aid in the decision if requested.

2.1   The SmartRunway/SmartLanding -230-230 and above software updates DO NOT apply to the following Primus Epic equipped aircraft at the time this Sales Bulletin was written:

2.1.1   Any Gulfstream Planeview equipped aircraft (RAAS is available for these aircraft as a chargeable option in the APM, check with Gulfstream for future SR/SL availability).

2.1.2   Any Dassault EASy equipped aircraft (RAAS is available for these aircraft with Phase II upgrade as a chargeable option, check with Dassault for future SR/SL availability).

2.1.3   Any Sovereign Primus Epic equipped aircraft (RAAS is available for these aircraft with Phase V as a chargeable option, check with Cessna for future SR/SL availability).

Note that any EMBRAER Lineage 1000 or EMB-170/190 series aircraft with EPIC software load 27.2 or higher *can* incorporate SR/SL.

RAAS, SmartRunway and SmartLanding are technically possible on the Hawker 4000 Primus Epic equipped aircraft because these aircraft have a federated EGPWS MK V box as opposed to the EGPWM card as is the case on other Primus Epic, EASy and Planeview Primus Epic equipped aircraft. As of this revision, there are **_no_** STCs or aircraft Service Bulletins for this platform.

For the aforementioned EPIC aircraft (with the exception of the EMBRAER and Hawker 4000 mentioned above), an EPIC version of RAAS (equivalent to the federated box MK V & MK VII software version -224-224) is available. Consult with the aircraft OEM for pricing and installation on these platforms.

2.2   STC Availability and Market

2.2.1   Market Size:

As of the writing of this Sales Bulletin, **_ALL_** aircraft having a Honeywell EGPWS MK V, MK VII & MKV-A boxes are eligible to have RAAS or SmartRunway/SmartLanding installed **_PROVIDED_** a valid STC or Aircraft OEM Service Bulletin exists for the aircraft type in question. Nominally, this means dozens of aircraft types and thousands of aircraft.

Based on historical sales, most attractive platforms tend to be large cabin and above sized aircraft

2.2.2   STC Availability:

Appendices A & B contain lists, current at the time of the writing of this Sales Bulletin, of all STCs reported to Honeywell and aircraft types on which they are valid. If review of these lists does not reveal the Aircraft in question, check with Honeywell to determine if an STC is in the development phase.

Additionally it is recommended to check with the Aircraft OEM to determine if an Aircraft OEM Service Bulletin exists allowing the incorporation or RAAS, SmartRunway/SmartLanding on the aircraft type in question.

As of the time this HSB was written, the most current TSO'd version of software applicable to BGA is -238-238 (TSO received on January 19, 2016.) Any OEM or Dealer looking at SR/SL Service Bulletin or STC work to be certified by EASA should note that software version -236-236 or later are the only versions to date that meet the EASA SR/SL requirements for certification. No previous software version will be acceptable to EASA for SR/SL STC approval (but RAAS is acceptable).

3.   Program Benefits

3.1   Runway Incursions and Excursions are significant causes of incidents and accidents in commercial aviation today, so much so that the National Transportation Safety Board (NTSB) has placed them on their "Top 10 Causes" list of issues to address.

RAAS, SmartRunway/SmartLanding are simple cost effective software updates to the EGPWS MK V, MK VII & MKV-A boxes. They are stand alone and do not require the procurement of any other Honeywell programs or Services

RAAS and SmartRunway were designed to specifically address the issue of Runway Incursions by helping the flight crew achieve improved situational awareness around the airport environment. SmartLanding was specifically designed to address the issue of Runway Excursions also by helping the flight crew achieve improved situational awareness.
All operators need to do to their aircraft to achieve these benefits is simply update and activate the software in the EGPWS MK V, MK VII or MKV-A box.

The original RAAS system was developed as a "Talking" system. It issues up to 10 different alerts with an aural callout. It is important to note that even if the flight crew is doing everything properly the system will issue specific alerts if the specific callout is enabled.

SmartRunway adds visual alerting to the callouts thereby allowing the volume levels for advisory alerts to be set either very low or off depending on operator preference. This approach allows for keeping with the "Quiet Cockpit" concept. SmartLanding takes a slightly different approach. It will only generate an alert is there is something that has not been done or done improperly. An example would be the caution alert given if the aircraft was not set down on the runway with at least the minimum specified amount of runway remaining. In this case, if enabled, the flight crew would get an aural and visual alert indicating "Long Landing".

Again as with SmartRunway, the volume levels for advisory alerts can be turned down or off and the flight crew could just rely on the visual alert, although in the case of Long Landing and other caution level alerts, certification authorities require the volume to be set at a significant level assuring the attention of the flight crew.

3.2   The following Table #1 shows the callout comparison between RAAS, SmartRunway and SmartLanding as well as where the callout occurs, on ground or in the air. Also note that some callouts are contained in both the SmartRunway and SmartLanding packages. It is important to note that if both packages are procured, the callout will not be duplicated.

Table #1 – RAAS/SmartRunway/SmartLanding Alert Feature Comparison

Capability / Feature	Added in SW Version	Air	Ground	RAAS	Smart Runway	Smart Landing	Runway Excursion Prevention
Aural (A), Visual (V) Alert Method				*A*	*A/V*	*A/V*	*A/V*
Approaching Runway (ground)	-218-218		X	X	X		
On Runway	-218-218		X	X	X		
Extended Holding on Runway	-218-218		X	X	X		
Taxiway Takeoff (Advisory)	-218-218		X	X	X		
Taxiway Takeoff (Caution)	-230-230		X		X		
Short Runway Takeoff (Advisory)	-218-218		X	X	X		
Short Runway Takeoff (Caution)	-230-230		X		X		
Rejected Takeoff Distance Remaining	-218-218		X	X	X		
Approaching Runway (air)	-218-218	X		X	X	X	
Short Runway Landing (Advisory)	-218-218	X		X	X	X	
Short Runway Landing (Caution)	-230-230	X			X	X	X
Taxiway Landing	-230-230	X			X	X	
Landing Distance Remaining	-218-218	X	X	X	X	X	
Runway End	-218-218		X	X	X	X	
Takeoff Flaps	-230-230		X		X		
SAM Flaps	-230-230	X				X	X
SAM Too Fast *	-230-230	X				X	X
SAM Too High	-230-230	X				X	X
SAM Unstable	-230-230	X				X	X
Long Landing (Deep Landing)	-230-230	X				X	X
Long Landing Distance Remaining	-230-230	X				X	X
Altimeter Setting (Above/Below Transition Alt)	-230-230	X				X	

3.3   Value to the Operator:

3.3.1 RAAS, SmartRunway and SmartLanding are designed to provide flight crews with increased situational and positional awareness. They are simple, easy to install, cost effective software

upgrades to EGPWS MK V, MK VII & MKV-A boxes that minimize the potential for runway incursions and excursions thereby increasing the level of safety for the Operator.

3.3.2   Frequently asked questions (FAQs) and responses can be found in Appendix C contained towards the end of this document.

3.3.3   Honeywell's RAAS, SmartRunway and SmartLanding products have received recognition and acknowledgement in numerous Commercial Aviation articles, studies and accident reports as tools that could potentially reduce runway incursion and excursion accidents. In fact, most recently in March of 2013 at the ATC Global 2013 Excellence Awards ceremony, Honeywell received the Safety Leadership of the Year award for its SmartLanding / SmartRunway system which "delivers better information to crews at critical stages of flight, reducing risk of runway accidents."

3.3.4   Customer testimonial:

"Just avoiding a go-around can save a significant amount of fuel. And fewer incidents will result in lower insurance costs for operators. Honeywell produces excellent technology backed up by great product and technical support. Aircraft and passenger safety is improved. Simple solution can be installed during a crew change and cuts costs."

- Per Person

**Director, Avionics and New Business Development,
Aero Industries**

3.3.5   Value Proposition

For Business Aviation operators that want to reduce the potential for runway incursions or excursions, Honeywell's SmartRunway/SmartLanding provides timely messages that alert the crew to several situations that could escalate and result in an incursion or excursion as opposed to relying on current systems in the aircraft (including the crew) that DO NOT provide this enhanced capability.

We do this by increasing the capability of the software previously installed on our EGPWS systems, thereby enabling those existing systems to provide aural and visual alerts (on Terrain Display) to the crew during key phases of operation of a situation that could lead to an incursion or excursion event.

The system capability has been demonstrated by numerous testimonials and Aviation Safety Group reports indicating that the presence of SR/SL could have helped to avoid an incident or accident.

4.   Configuration & Part Numbers

There are 6 cases to consider when looking to establish the appropriate software upgrade for incorporation of RAAS, SmartRunway and/or SmartLanding on the aircraft in question.

4.1   Case #1 - Operator wants to procure RAAS for the aircraft and it currently *DOES NOT* have RAAS on the aircraft. The appropriate RAAS Enable Key part number for this case is 718-1597-001

4.2   Case #2 – Operator wants to procure SmartRunway for the aircraft and it currently *DOES NOT* have RAAS installed on the aircraft. The appropriate SmartRunway Enable Key part number for this case is 69000273-100

4.3   Case #3 – Operator wants to procure SmartLanding for the aircraft and it currently *DOES NOT* have either RAAS or SmartRunway installed on the aircraft. The appropriate SmartLanding Enable Key part number for this case is 69000273-200

4.4   Case #4 – Operator wants to procure SmartRunway *AND* SmartLanding for the aircraft and it currently *DOES NOT* have RAAS installed on the aircraft. The appropriate SmartRunway/SmartLanding Enable Key part number for this case is 69000273-300

4.5   Case #5 – Operator wants to *upgrade* from RAAS currently installed on the aircraft to SmartRunway only. The appropriate SmartRunway Enable Key part number for this case is 69000273-150

4.6   Case #6 – Operator wants to *upgrade* from RAAS currently installed on the aircraft to SmartRunway AND SmartLanding. The appropriate SmartRunway/SmartLanding Enable Key part number for this case is 69000273-350.

        With all the aforementioned cases, EGPWS part number and serial number must be specified, as Enable Keys are "keyed" to unlock only the specified PN / SN. In addition to the Enable Key specified above, you **MUST** also order the reloadable customer definitions (RCD) card. The RCD part number for RAAS only is 718-1598-XXX where the –XXX will be defined by Honeywell when processing the RCD card order. The RCD part number for SmartRunway or SmartLanding is 718-1601-XXX where the –XXX will be defined by Honeywell when processing the RCD card order. The RCD card is the card that configures the RAAS/SmartRunway/SmartLanding software to the requirements of the customer/aircraft type specified on the RCD worksheet. Note that the parameters in the RCD worksheet are typically defined in a collaborative effort between the Dealer and the operator in question. Honeywell will work with the Dealer and Operator to help with this process and in many cases may have a predetermined set of parameters established for the aircraft in question.

Please note that Dealers can assist in determining what the appropriate upgrate path for the Operator is.

4.7 Applicable Part Number Matrix

In 2014, Honeywell began deliveries of a new EGPWS unit to replace the MK V. The new unit is call MKV-A. While part pricing for RAAS and SmartRunway/SmartLanding are the same for all EGPWS units (MK V, MK VII, MKV-A), there are different RAAS and SmartRunway/SmartLanding part numbers associated with the different EGPWS boxes. MK V and MK VII parts are provided on PCMCIA card. MKV-A parts are provided on USB stick.

Please refer to Tables #2A & #2B for the appropriate part numbers to be ordered to incorporate RAAS or SmartRunway/SmartLanding.

Table #2A – MK V / MK VII Part Number Matrix

MODEL	PART NUMBERs	DESCRIPTION
1. RAAS (versions - 228-228 and earlier)	718-1597-001 and…	Original RAAS with Enable Key and
	718-1598-XXX	RCD for PRE -230-230 software versions (-218-218 thru -228-228)
2. SmartRunway	69000273-100 and…	SmartRunway: Runway Incursion Software Key – assumes no previous RAAS installed
	718-1601-XXX	RCD to configure system
3. SmartLanding	69000273-200 and…	SmartLanding: Runway Excursion Software Key– assumes no previous RAAS installed
	718-1601-XXX	RCD to configure system
4. Runway Safety Package	69000273-300 (contains 69000273-100 and 69000273-200) and…	Includes #2. SmartRunway and #3. SmartLanding Key (1 single Key) – assumes no previous RAAS installed
	718-1601-XXX	RCD to configure system
5. SmartRunway upgrade to existing RAAS	69000273-150 and…	SmartRunway: functionality upgrade, assuming existing RAAS installation
	718-1601-XXX	RCD to configure system
6. Runway Safety Package upgrade to existing RAAS	69000273-350 (contains 69000273-150 and 69000273-200) and…	SmartLanding: functionality upgrade assuming existing RAAS installation
	718-1601-XXX	RCD to configure system

Table #2B – MK V-A Part Number Matrix

MODEL	PART NUMBERs	DESCRIPTION
1. RAAS (versions - 228-228 and earlier)	Not Available on MKV-A	Not Available on MKV-A
2. SmartRunway	69900273-100 and…	SmartRunway: Runway Incursion Software Key – assumes no previous RAAS installed
	SWM69900074-XXX	RCD to configure system
3. SmartLanding	69900273-200 and…	SmartLanding: Runway Excursion Software Key– assumes no previous RAAS installed
	SWM69900074-XXX	RCD to configure system
4. Runway Safety Package	69900273-300 (contains 69900273-100 and 69900273-200) and…	Includes #2. SmartRunway and #3. SmartLanding Key (1 single Key) – assumes no previous RAAS installed
	SWM69900074-XXX	RCD to configure system
5. SmartRunway upgrade to existing RAAS	69900273-150 and…	SmartRunway: functionality upgrade, assuming existing RAAS installation
	SWM69900074-XXX	RCD to configure system
6. Runway Safety Package upgrade to existing RAAS	69900273-350 (contains 69900273-150 and 69900273-200) and…	SmartLanding: functionality upgrade assuming existing RAAS installation
	SWM69900074-XXX	RCD to configure system

5.   MSP Avionics Coverage

Honeywell MSP Avionics is a maintenance service plan that offers coverage for your Honeywell Avionics. Choose the plan that best meets your needs. Specially priced plans are also available for fleet operators. Take the uncertainty out of repair and maintenance costs. A fixed-price MSP Avionics contract guarantees that your repair bills will not exceed your budget. For more information about MSP Avionics, please contact Honeywell at MSPAvionicsSales@Honeywell.com .

6.   Customer and Technical Support

Please contact your local Honeywell authorized Dealer for any assistance regarding RAAS or SmartRunway/SmartLanding

Additionally if further technical assistance is required, please contact :

> ***Technical Assistance***
> US & Canada: 1-855-808-6500
> All other countries: 1-602-365-6500
> Fax: 1-877-484-2980
> Email: AeroTechSupport@honeywell.com

6.1   For additional information on SmartRunway and/or SmartLanding, please contact:

Steven Gomez
BGA Senior Mgr, Technical Sales
TFE731 Propulsion & Safety Products
Ph: 602-333-8790
Fx: 602-365-3444
Cell: 602-432-3205
Email: steven.gomez@honeywell.com

7.   Honeywell Forge Connectivity Services

The new GoDirect services platform is your single source of support. With a push of a button, you can view all your services. From Maintenance Service Plans to Avionics and Flight Support, Honeywell's GoDirect will get you there. Contact your Honeywell Area Sales Manager for details and pricing.

Honeywell

8.   Sales Contact Information

Find your nearest Sales contact by visiting our [Direct Access Directory for Business Aviation](#).
Click on **Area Sales Managers** and use your current location or the Manual Search option.

You may also download our **Honeywell Direct Access app**:

The Direct Access mobile app launched last year provides business aviation customers quick access to Honeywell Aerospace's technical, business, parts and sales support; the closest dealers and service centers, the Aircraft on Ground (AOG) desk and other valuable resources.

The Direct Access app is free and can be downloaded at the [Apple iTunes](#) and [Google Play](#) stores.

Need immediate support?
[Contact Us](#)

Honeywell reserves the right to rescind or revise this information bulletin at any time, or through future information bulletins.

**Appendix A
RAAS STC List by OEM Aircraft Type
EGPWS RAAS STC List**

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Platform	Aircraft Type	STC Number	EGPWS P/N	STC Holder	Installation Notes	GPS P/N
A300-600	A300	ST00440SE	965-0976-003-222-222	Honeywell	RAAS, MK V	Collins GLU-920 MMR, PN 822-1152-121
A310-200/300	A300	ST00440SE	965-0976-003-222-222	Honeywell	RAAS, MK V	Collins GLU-920 MMR, PN 822-1152-121
A318/319/320/321	Airbus Single Aisle (SA)	SB 34-13-81	965-1676-002	Airbus (SB)	RAAS, MK V	Various
A330	A330 (all)	SB 34-32-00	965-1676-002	Airbus (SB)	RAAS, MK V	Various
A340	A340 (all)	SB 34-41-92	965-1676-002	Airbus (SB)	RAAS, MK V	Various
B727-100/200	B727 Series	ST00535SE	965-1076-001-222-222	Honeywell	RAAS, MK VII	Internal GPS (P-xPress GPS) or Honeywell HT-9100 w/ SW -007C
B737-300/400/500	B737 Classic	ST00389SE	965-0976-060-222-222	Honeywell	RAAS, MK V Mercury	Internal GPS card (Mercury GPS)
B737-400	B737 Classic	ST00389SE	965-0976-003-222-222	Honeywell	RAAS, MK V	Honeywell GNSSU, PN HG2021GC01 and Collins GLU-920 MMR, PN 822-1152-002
B737-700	B737-700 Series	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	
B737-700	B737-700 Series	ST00389SE	965-0976-003-222-222 and 965-1690-052	Honeywell	RAAS, MK V	Collins GLU-920 MMR, PN 822-1152-002
B737-800	B737-800 Series	ST00389SE	965-0976-003-222-222 and 965-1690-052	Honeywell	RAAS, MK V	Collins GLU-920 MMR, PN 822-1152-002
B737-900	B737-900 Series	ST00389SE	965-0976-003-222-222 and 965-1690-052	Honeywell	RAAS, MK V	Collins GLU-920 MMR, PN 822-1152-002
B747-400	B747-400 series	ST00705SE	965-0976-003-218-218 and 965-0976-003-222-222	Honeywell	RAAS, MK V	Collins GLU-920 MMR, PN 822-1152-002, or Honeywell GNSSU, PN 066-50029-1101, or Honeywell GNSSU, PN HG2021GC02, or Litton GPSSU, PN 466200-0104-0101
B767	B767-200/300/400ER	ST10466SC	965-0976-003-218-218	L2 Consulting Services, Inc.	RAAS, MK V, with option RAAS Inhibit switch	Collins MMR/GPS, PN 822-1152-002
B777-200/200ER/300	Boeing 777-200/-200ER/-300 series	ST01491SE		Honeywell	RAAS, MK V	Honeywell GNSSU, PN 066-50029-1101 and Honeywell GNSSU, PN HG2021GP01
Bombardier CL300	Bombardier BD-100-1A10 (CL-300)	ST00288BO	965-0976-040-226-226	Bombardier	RAAS, MK V	Collins GPS-4000x
Bombardier CL300	Bombardier BD-100-1A10 (CL-300)	ST02130LA	965-0976-040-226-226	Pro Star Aviation LLC	RAAS, MK V	Collins GPS-4000x
Bombardier CL600/601/604	Bombardier CL-600-1A11 (CL-600); CL-600-2B16 (CL-601-3A/3R);CL-600-2B16 (CL-604)	ST01981CH	965-0976-0XX-218-218	Pentastar Aviation, LLC	Optional RAAS, Software upgrade only for -212-212 and later units.	

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Platform	Aircraft Type	STC Number	EGPWS P/N	STC Holder	Installation Notes	GPS P/N
Bombardier CL600/601/604	Bombardier CL-600-1A11 (CL-600); CL-600-2B16 (CL-601-3A);CL-600-2B16 (CL-604)	ST01270WI		Duncan Aviation	MKV & MK VII, RAAS	
Bombardier CL601	Bombardier CL-600-2B16 (CL-601-3A); CL-600-2B16 (CL-601-3R)	ST00205BO	965-0976-0XX-218-218	Learjet Inc.	RAAS, MK V	
Bombardier CL601/604	Bombardier CL-600-2B16 (CL-601-3A); CL-600-2B16 (CL-601-3R); CL-600-2B16 (CL-604)	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	
Bombardier CL604	Bombardier CL600-2B16 (CL-604)	ST01319WI-D	965-0976-0XX-218-218	Midcoast Aviation Inc	RAAS, MK V	
Bombardier CRJ100/200	CL-600-2B19 (Regional Jet Series 100)	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	
Cessna Citation Bravo	Cessna 550	By Cessna SB	965-1076-040-219-219	Cessna Aircraft	RAAS, MK VII	
Cessna Citation Excel	Cessna 560XL	By Cessna SB	965-0976-040-219-219	Cessna Aircraft	RAAS, MK V	
Cessna Citation Excel	Cessna 560XL	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	
Cessna Citation V/Ultra/Encore	Cessna 560	By Cessna SB	965-1076-040-219-219	Cessna Aircraft	RAAS, MK VII	
Cessna Citation X	Cessna 750	By Cessna SB	965-0976-040-219-219	Cessna Aircraft	RAAS, MK V	
Cessna Citation X	Cessna 750	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	Honeywell GNSSU, PN HG2021GD02
Cessna Citation X	Cessna 750	STC01372CH-D		Duncan Aviation	RAAS, MK V	
Cessna CJ1/CJ2	Cessna 525/525A	By Cessna SB	965-0976-040-219-219	Cessna Aircraft	RAAS, MK V	
DO 328/328J	Fairchild Dornier GmbH -- 328-100	ST00204BO		Pro Star Aviation LLC	RAAS, MK V	
Douglas DC-10	DC-10	ST00536SE	965-1076-020-222-222	Honeywell	RAAS, MK VII	Internal GPS card (PxPress GPS)
Falcon 20	Mystere-Falcon 20-C5/D5/E5/F5	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	
Falcon 20/200	Mystere-Falcon 20-C5/D5/E5/F5 200	ST01933CH-D		Garrett Aviation - SPI	RAAS	
Falcon 50	Mystere-Falcon 50	ST02451NY		Dassault Falcon Service	RAAS	
Falcon 50	Mystere-Falcon 50	ST01778NY-D		Dassault Falconjet, Wilmington	RAAS	
Falcon 50	Mystere-Falcon 50	ST01933CH-D		Garrett Aviation - SPI	RAAS	
Falcon 50	Mystere-Falcon 50	ST01270WI		Duncan Aviation	MKV & MK VII, RAAS	
Falcon 50	Mystere-Falcon 50	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	
Falcon 900	Mystere-Falcon 900	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	
Falcon 900	Mystere-Falcon 900	ST2033CH ST2035CH		Premier Air Center	RAAS, MK V	

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Platform	Aircraft Type	STC Number	EGPWS P/N	STC Holder	Installation Notes	GPS P/N
Falcon 900/900EX	Mystere-Falcon 900, Falcon 900EX	ST00600CH-D		Duncan Aviation	RAAS, MK V	
Falcon 900/900EX	Mystere-Falcon 900, Falcon 900EX	ST01933CH-D		Garrett Aviation - SPI	RAAS	
Falcon 900C/900EX	Mystere-Falcon 900C, Falcon 900EX	ST02629NY	965-0976-0XX-224-224	Dassault Falcon Service	RAAS, MK V	Honeywell GNSSU, PN HG2021GD02
Falcon 900EX	Falcon 900EX	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	Honeywell GNSSU, PN HG2021GD02
Falcon 2000	Falcon 2000	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	Collins GPS-4000A PN 822-1377-001
Falcon 2000	Falcon 2000	ST00603CH-D		Duncan Aviation	RAAS, MK V	
Falcon 2000 / 2000EX	Falcon 2000 / 2000EX	ST02513NY		Dassault Falcon Service	RAAS	
Falcon 2000EX	Falcon 2000EX	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	Collins GPS-4000A PN 822-1377-001
G-100/Astra SPX	Gulfstream G100	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	
G-200/Galaxy	Gulfstream G200	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	Collins GPS-4000A PN 822-1377-001
G-200/Galaxy	Gulfstream G200	ST02873AT-D	965-0976-0XX-222-222	Gulfstream Aerospace	RAAS, MK V	
G-II/IIB/III	Gulfstream G1159/A/B	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	
G-II/IIB/III	Gulfstream G1159/A/B	ST00641CH-D		Gulfstream Aerospace	Windshear, Obstacles, Peaks, Optional RAAS	
G-III	Gulfstream 1159B	ST01270WI		Duncan Aviation	MKV & MK VII, RAAS	
G-IV	Gulfstream G IV	ST02848AT-D	965-0976-003-218-218	Gulfstream Aerospace	RAAS, MK V	Honeywell GNSSU, PN HG2021GD02
G-IV	Gulfstream G IV	ST01512LA-D	965-0976-003-218-218	Gulfstream Aerospace	RAAS, MK V	Honeywell GNSSU, PN HG2021GD02
G-IV	Gulfstream G IV	ST01761CH-D		Duncan Aviation	Windshear, Peaks Display, Obstacles, RAAS	Honeywell GNSSU, PN HG2021GD02
G-IV	Gulfstream G IV	ST00898CH		Pentastar Aviation, LLC	Optional RAAS, all G-IV aircraft.	Honeywell GNSSU, PN HG2021GD02
G-IV	Gulfstream G IV	ST10242SC ST10282SC	965-0976-003-219-219	McKinney Aerospace	RAAS, MK V	Honeywell GNSSU, PN HG2021GD02
G-V	Gulfstream G V	ST02848AT-D	965-0976-003-218-218	Gulfstream Aerospace	RAAS, MK V	Honeywell GNSSU, PN HG2021GD02
G-V	Gulfstream G V	ST01512LA-D	965-0976-003-218-218	Gulfstream Aerospace	RAAS, MK V	Honeywell GNSSU, PN HG2021GD02
G-V	Gulfstream G V	ST02174CH		Mayday Avionics Inc	RAAS, MK V	
Global Express	Bombardier BD-700-1A10	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	
Global Express	Bombardier BD-700-1A10/-1A11	ST00203BO	965-0976-0XX-218-218	Learjet Inc.	RAAS, MK V	Honeywell GNSSU, PN HG2021GD02
Hawker 700	HS125 Series 700	ST01933CH-D		Garrett Aviation - SPI	RAAS	
Hawker 800A	BAe125 Series 800A	ST10355SC	965-1076-001-219-219	McKinney Aerospace	RAAS, MK V	
Hawker 800A/800XP	Hawker 800A/XP	ST02067CH	965-1076-001-220-220	Pentastar Aviation, LLC	RAAS, MK V	
Hawker 800A/800XP	BAe125 Series 800A(C-29A) Hawker 800XP	ST01921NY		Pacific Aero Tech Inc		

Platform	Aircraft Type	STC Number	EGPWS P/N	STC Holder	Installation Notes	GPS P/N
Hawker 800 800A/800XP	BAe125 Series 800A, Hawker 800/800XP	ST01933CH-D		Garrett Aviation - SPI	RAAS	
Hawker 800 800A/800XP	BAe125 Series 800A, Hawker 800/800XP	ST00865CH-D		Duncan Aviation	RAAS, MK V	
Hawker 800 800A/800B/800XP	BAe125 Series 800A/800B, Hawker 800/800XP	ST02173CH		Mayday Avionics Inc		
Hawker 800 800A/800B/800XP	BAe125 Series 800A/800B, Hawker 800/800XP	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	
Hawker 800XP	Hawker 800XP	ST02412NY-D	965-1076-040-228-228	StarPort	RAAS, MK VII	Applicable to Honeywell cockpit, with NZ2000 FMS and GNSSU
Hawker 1000	Hawker 1000, BAe125 Series 1000A/1000B	ST01933CH-D		Garrett Aviation - SPI	RAAS	
Hawker 1000	Hawker 1000	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	Honeywell GNSSU, PN HG2021GD02
Learjet 45	Learjet 45	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	Honeywell GNSSU, PN HG2021GD02
Learjet 45	Learjet 45	ST01270WI		Duncan Aviation	MKV & MK VII, RAAS	Honeywell GNSSU, PN HG2021GD02
Learjet 45	Learjet 45	ST00195BO	965-0976-040-218-218	Learjet Inc.	RAAS, MK V	Honeywell GNSSU, PN HG2021GD02
Learjet 60	Learjet 60	ST01596LA-D		Learjet Inc.	RAAS, MK V	
Learjet 60	Learjet 60	ST01512LA-D	965-0976-0XX-218-218	Gulfstream Aerospace	RAAS, MK V	
MD10F	MD10F	ST00536SE		Honeywell	RAAS, MK V	Collins MMR/GPS, PN 822-1152-220
MD11F	MD11F	ST00536SE		Honeywell	RAAS, MK V	Collins MMR/GPS, PN 822-1152-220
MD-82/83	MD-80	ST00491SE	965-0976-003-222-222	Honeywell	RAAS, MK V	Honeywell HT-9100 w/ SW -007C

This table is current as of the release date of this sales bulletin; please contact Honeywell to obtain latest STC information.

**Appendix B
SmartRunway/SmartLanding STC List by OEM Aircraft Type
EGPWS SmartRunway / SmartLanding STC List**

Honeywell

EGPWS SmartRunway / SmartLanding STC List

Rev: 10/8/19

Platform	Aircraft Type	FAA STC Number	EGPWS P/N	STC Holder	Installation Notes
Airbus A320	A318/319/320/321	ST01642WI-D	965-1676-006 965-0976-003-236-236	Honeywell	SmartRunway and SmartLanding
Airbus A320	A320/321 (including NEO)	ST04336CH	965-1676-006 965-0976-003-236-236 69000942-151 or later	CertifyNation	SmartRunway and SmartLanding
Airbus A330	330-200/200F/300	ST01619WI-D	965-1676-005 965-0976-003-232-232	Honeywell	SmartRunway and SmartLanding
Airbus A340	340-200/300/500/600	ST01644WI-D	965-1676-005 965-0976-003-232-232	Honeywell	SmartRunway and SmartLanding
Boeing B737	737-300/400/500	ST01610WI-D	965-0976-003-236-236 965-1690-057	Honeywell	SmartRunway and SmartLanding
Boeing B737NG	737-600/700/700C/ 800/900/900ER	ST01610WI-D	965-1690-055 965-0976-003-232-232 69000940-102 or later	Honeywell	SmartRunway and SmartLanding
Boeing B737NG	737-600/700/700C/ 800/900/900ER	ST04040CH FAA, EASA, CAAC approved EASA 10059003	965-1690-057 965-0976-003-236-236 69000940-102 or later	CertifyNation	SmartRunway and SmartLanding
Boeing B747	747-400/400D/400F	ST01673WI	965-0976-003-236-236	Honeywell	SmartRunway and SmartLanding
Boeing B767	767-200/300/400ER	ST10466SC	965-0976-003-236-236	L2 Aviation	SmartRunway and SmartLanding with INOP and OVRD
Boeing 777	777-200/200LR/300/ 300ER and 777F	ST01618WI-D	965-0976-003-236-236	Honeywell	SmartRunway and SmartLanding
Boeing 777	777-200/200LR/300/ 300ER and 777F	ST03438CH	69000940-101 (MKV-A)	CertifyNation	SmartRunway and SmartLanding
Bombardier CL350	Bombardier BD-100-1A10 (CL-350)	SB 350-34-008	965-0976-040-236-236 69000941-102	Bombardier	SmartRunway and SmartLanding, except Too Fast Callout
Bombardier CL601	Bombardier CL-601-3A/3R	ST03461CH	965-0976-003-236-236	West Star	SmartRunway and SmartLanding, except Too Fast Callout

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Bombardier CL601, CL604, CL605	Bombardier CL600-2B16 (CL-601-3A, CL-601-3R, CL-604, CL-605)	ST00205BO	965-0976-003-230-230	Bombardier (Learjet)	SmartRunway and SmartLanding, except Too Fast Callout
Bombardier CL604, CL605	Bombardier CL-600-2B16 (CL-604, CL-605)	ST01270WI-D	965-0976-003-230-230+	Duncan Aviation	SmartRunway and SmartLanding, except Too Fast Callout
Bombardier CL605, CL650	Bombardier CL600-2B16 (CL-605, CL-650)	SB 650-34-010	965-0976-003-236-236 69000940-102	Bombardier	SmartRunway and SmartLanding, except Too Fast Callout
Bombardier Global Express	Bombardier BD-700-1A10, BD-700-1A11	ST00203BO	965-0976-0XX-236-236	Bombardier (Learjet)	SmartRunway and SmartLanding, except Too Fast Callout, with CAS message INOP, Inhbit switch, adjustable volume
Bombardier Global Express	Bombardier BD-700-1A10	ST01270WI-D	965-0976-003-230-230+	Duncan Aviation	SmartRunway and SmartLanding, except Too Fast Callout
Bombardier Global Express	Bombardier BD-700-1A10, BD-700-1A11	ST03293CH	965-0976-0XX-236-236	StandardAero	Upgrade of the Honeywell MK V EGPWS to include the Runway Safety Package
Cessna Citation X	Citation X (750)	ST03271CH	965-0976-040-236-236	Cessna Textron	SmartRunway and SmartLanding, except Too Fast Callout, with adjustable volume
Dassault Falcon 50	Falcon 50EX	EASA STC 10029540	965-0976-003-230-230	Jet Aviation AG, Basel	SmartRunway (duplicating only 228-228 RAAS functions)
Dassault Falcon 50 Dassault Falcon 900	Falcon 50/50EX Falcon 900/900EX	ST03064CH-D	965-0976-003-234-234	StandardAero	SmartRunway and SmartLanding, except Too Fast Callout

Dassault Falcon 50/50EX	Falcon 50/50EX	ST04216CH	965-0976-0XX-238-238	Dassault FalconJet	SmartRunway and SmartLanding, <u>except</u> Too Fast Callout
Dassault Falcon 900A/B/CEX	Falcon 900/A/B/C, 900EX	ST04218CH	965-0976-0XX-238-238	Dassault FalconJet	SmartRunway and SmartLanding, <u>except</u> Too Fast Callout
Dassault Falcon 2000/2000EX	Falcon 2000/2000EX	ST04217CH	965-0976-0XX-238-238	Dassault FalconJet	SmartRunway and SmartLanding, <u>except</u> Too Fast Callout
Dassault Falcon 2000/2000EX	Falcon 2000/2000EX	ST03407CH	965-0976-0XX-236-236	StandardAero	SmartRunway and SmartLanding, <u>except</u> Too Fast Callout
Embraer Legacy 600/650	EMB-145BJ	SB145LEG-34-0029	965-0976-040-232-232	Embraer	SmartRunway and SmartLanding
Embraer ERJ 170/175/190/195	Embraer ERJ 170/175/190/195	Embraer SB	EGPWM with Load 27.2	Embraer	SmartRunway and SmartLanding
Gulfstream IV/V	Gulfstream IV Gulfstream V	ST00623NY-D	965-0976-040-234-234	Delta Engineering	SmartRunway and SmartLanding, <u>except</u> Too Fast Callout
Learjet 60/60XR	Learjet 60	ST00646WI-D	965-0976-040-230-230	Bombardier (Learjet)	SmartRunway and SmartLanding, <u>except</u> Too Fast Callout
Sabreliner 65	NA-265-65, S/N 465-58 only	ST01553WI	965-0976-003-234-234 69000940-101 (MKV-A)	Honeywell	SmartRunway and SmartLanding, <u>except</u> Too Fast Callout

Appendix C
FAQs & Responses

This section is intended to provide insight on Frequently Asked Questions (FAQs) and how we typically think about these questions or comments encountered during discussions on RAAS/SmartRunway/SmartLanding with customers.

<u>**Primary:**</u>

1. ***"I've heard that RAAS is too loud! What do you think?"***

    The original version of RAAS (software version -218-218) did NOT have volume configurability. While the volume of the different RAAS alerts were tied to specific dB levels below EGPWS warnings, some cockpits set EGPWS warnings to a very high level, and in these cockpits the default RAAS alert volume level remained quite loud.

    There are a number of ways to address this objection…

    a. **Incorporation of an improved version of RAAS at software version -222-222 or greater.** Changes were made to the RAAS software starting at -222-222 to make each alert volume configurable at time of STC development. During this time the STC developer and the original customer would agree on a volume level or a range that was then approved by the FAA during evaluation of the STC. Note that this volume adjustment is not made or controlled in real time by the pilots. Changes can only made with the Reloadable Customer Definitions (RCD) PCMCIA card that is used to program the RAAS software. Volume can be set at or within a range according to STC being utilized for installation to help eliminate or mitigate the loudness issue. If the software is already at -222-222 to -228-228, and adjustable volume is already in use, see Appendix D - Section 1b below.

    b. **Incorporation of the Enhanced RAAS known as SmartRunway.** At software level -230-230, SmartRunway added in visual alerts and added in SmartLanding functionality intended to prevent runway excursions. The visual alerts allows the volume level of the alerts to be set to a very low level, or off entirely, within the constraints of the STC. The flight crews still have the functionality and benefit of the alerts, with the added benefit of being displayed on the terrain display and at a lower volume. This approach can reduce or eliminate the volume annoyance factor and any confusion that may be created if SmartRunway is alerting during Air Traffic Control (ATC) communications.

    An additional benefit of this approach is that SmartLanding alerts are also available to help minimize the potential of runway excursions.

2. *"I've heard that RAAS talks too much and at the worst possible time! Is there anything that can be done to eliminate or reduce this issue?"*

RAAS by definition is an informational system intended to provide input to the flight crew even when they are doing everything in an appropriate manner. It is a "talking system." As such there are occasions with specific alerts that occur when there are communications going on between the flight crew and ATC. An example would be the alert "On Runway XX" being given as the aircraft aligns with the runway in question. This is a timeframe when it would be normal for the flight crew to be given take off instructions from ATC.

There are a number of ways to address this objection…

a. **Incorporation of an improved version of RAAS at software version -222-222 or greater.** If the version of RAAS installed is pre -222-222, the software can be updated (along with and within the constraints of the STC) to incorporate the version of RAAS with adjustable volumes as referenced in Appendix D - Section 1a above.

b. **Deactivate specific annoying alerts with a revision of the RCD.** This approach is not recommended because there is a loss of alerts and corresponding information being relayed to the flight crew. Hence the full value of RAAS is not being utilized as intended.

c. **Incorporation of the Enhanced RAAS known as SmartRunway.** At software level -230-230, SmartRunway added in visual alerts and added in SmartLanding functionality intended to prevent runway excursions. The visual alerts allows the volume level of the alerts to be set to a very low level, or off entirely, within the constraints of the STC. The flight crews still have the functionality and benefit of the alerts, with the added benefit of being displayed on the terrain display and at a lower volume. This approach can reduce or eliminate the volume annoyance factor and any confusion that may be created if SmartRunway is alerting during Air Traffic Control (ATC) communications.

An additional benefit of this approach is that SmartLanding alerts are also available to help minimize the potential of runway excursions.

3. **"I have a highly trained professional flight crew and don't need the system!"** or **"I am a very competent pilot and don't need the system!"**

There are a number of ways to response to these comments…

a. **Acknowledge the skill, professionalism and training of the flight crews.** Aircrews operating aircraft in the category (Air Transport and Part 25 category aircraft) that EGPWS, RAAS and SmartRunway/SmartLanding are available in are type certificated and highly trained, including recurrent annual training.

b. **Acknowledgement that events still occur.** As we have seen with numerous recurring incidents and accidents, this advanced level of training and professionalism does not guarantee 100% safe operation. Runway incursion and excursion events are

happening every day either do to some oversight, confusion, poor weather, lack of effective communication or professionalism.

c. **Acknowledgement that RAAS, SmartRunway and SmartLanding are simple cost effective enhancements that can help mitigate the chance of Runway Incursions and Runway Excursions.** The RAAS/SmartRunway/SmartLanding systems were developed specifically to provide information to the flight crews that can help to mitigate the potential for Runway Incursions or Runway Excursions. Extensive human factors testing have been done to refine the package of alerts offered.

The changes to the aircraft are simple….
   i. Software upgrade of the EGPWS box which occurs with the EGPWS box installed in the aircraft.
   ii. Activation and configuration of the new software.
   iii. Incorporation of a pilot activated inhibit switch if specified by the STC

Pricing for the software varies based on the package chosen but ranges from $24,000 for RAAS to a maximum of $48,000 for the full SmartRunway/SmartLanding package. See Section #4 for a complete list of the various pricing options.

Secondary:

4. **"I already have an Electronic Flight Bag (EFB) installed in the aircraft with Own Ship Moving Map (OSMM) display so I know where I am! Why would I need to upgrade with RAAS or SR/SL?"**

   a. An EFB with OSMM display is a good step at helping to reduce runway incursions by helping to provide aircraft position while on the ground at an airport.

   However, the EFB **_does not_** provide a number of benefits to the flight crew such as…

   I. aural alerting to the flight crew (EFB is a heads-down device)
   II. aural alerting for specific cases such as "Approaching Runway" while in the air.
   III. SmartLanding alerts affecting stabilized approaches

The combination of EFBs and RAAS/SmartRunway/SmartLanding provides the best overall system for helping to prevent runway incursions and runway excursions.

See Appendix D for a matrix showing the drawbacks of an EFB only system and the benefits of combining both systems.

Appendix D
EFB and RAAS/SmartRunway/SmartLanding Benefits Comparisons

This matrix is intended to show the capability of RAAS/SmartRunway/SmartLanding (Column titled Smart) versus the Electronic Flight Bag Own ship Moving Map (EFB OSMM) individually and when paired together.

Capability / Feature	Smart	EFB OSMM	Smart + EFB OSM
Heads down	🟢	🟢	🟢
Heads up	🟢	🔴	🟢
Visual	🟡	🟢	🟢
Audio	🟢	🔴	🟢
Awareness of…			
** Approaching runway - on ground**	🟢	🟢	🟢
** Approaching runway - in air**	🟢	🔴	🟢
** On runway**	🟢	🟢	🟢
** On taxiway**	🟡	🟢	🟢
** Distance remaining - rejected takeoff**	🟢	🔴	🟢
** Distance remaining - after landing**	🟢	🔴	🟢
** Runway end**	🟢	🟡	🟢
** Extended Hold on Runway**	🟢	🔴	🟢
** Taxiway takeoff**	🟢	🟢	🟢
** Taxiway landing**	🟢	🟡	🟢
** Short runway takeoff**	🟢	🟡	🟢
** Short runway landing**	🟢	🟡	🟢

Smart = SmartRunway and SmartLanding
EFB = Electronic Flight Bag
OSMM = Own Ship Moving map

Note that the YELLOW oval under Smart for Visual alert ONLY refers to the RAAS system since SmartRunway and SmartLanding both have visual alerts but don't display the actual path of the aircraft. RAAS has no visual capability and would therefore be RED.

Neither RAAS nor SmartRunway know if the aircraft is actually taxiing on a taxiway but the systems do alert if approaching a runway from a taxiway. Furthermore, SR/SL will alert if the aircraft is attempting to land on a taxiway (any non-runway surface).