

# SKA2HR2x

## 60G mmW RF stamp hole module

### 1. Overview

SKA2HR2x is a series of RF stamp hole modules with various of horn antenna configuration. SKA2HR2x is based on leading edge ST60A2 60G mmW RF transceiver, which could achieve very low power, very high speed, short distance data transfer. These stamp hole modules can be easily mounted on other PCB motherboard.

### 2. Features

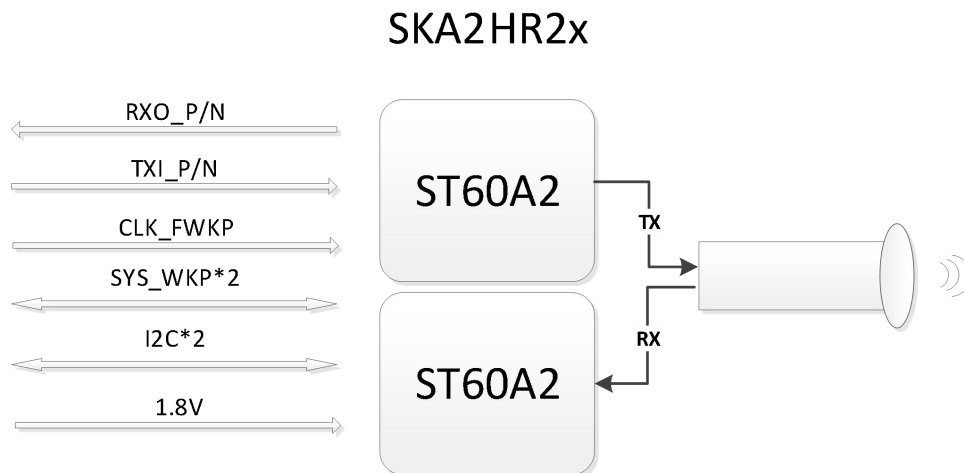
- 60GHz V-Band transceiver with ST Sparclink technology
- 4Gbps data rate, few centimeter transmission distance, preferred 2cm
- Full duplex, **Support coaxial high speed rotation**
- Stamp hole, simple installation
- I2C&GPIO control mode optional
- Used in pair

### 3. Application

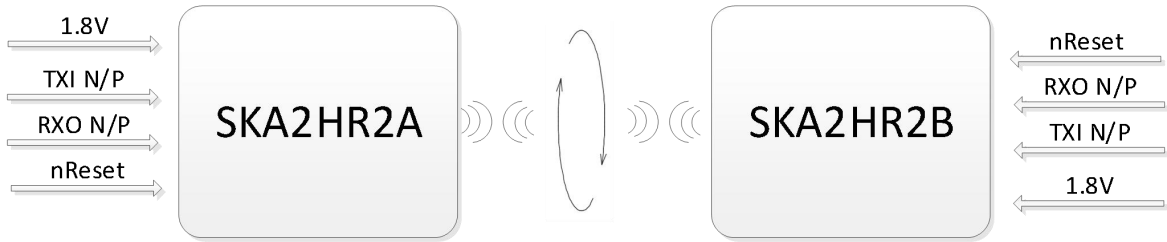
- Contactless high-speed rotation connector
- Rotation Gigabit Ethernet

### 4. Block

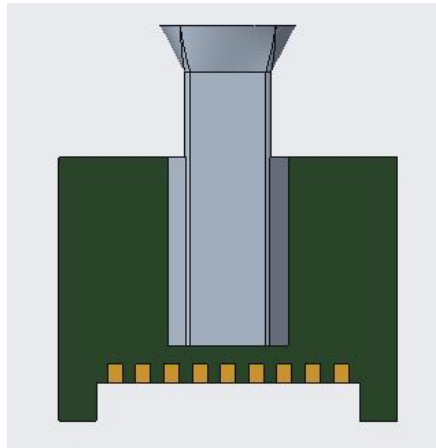
Internal block diagram:



Connection schematic:

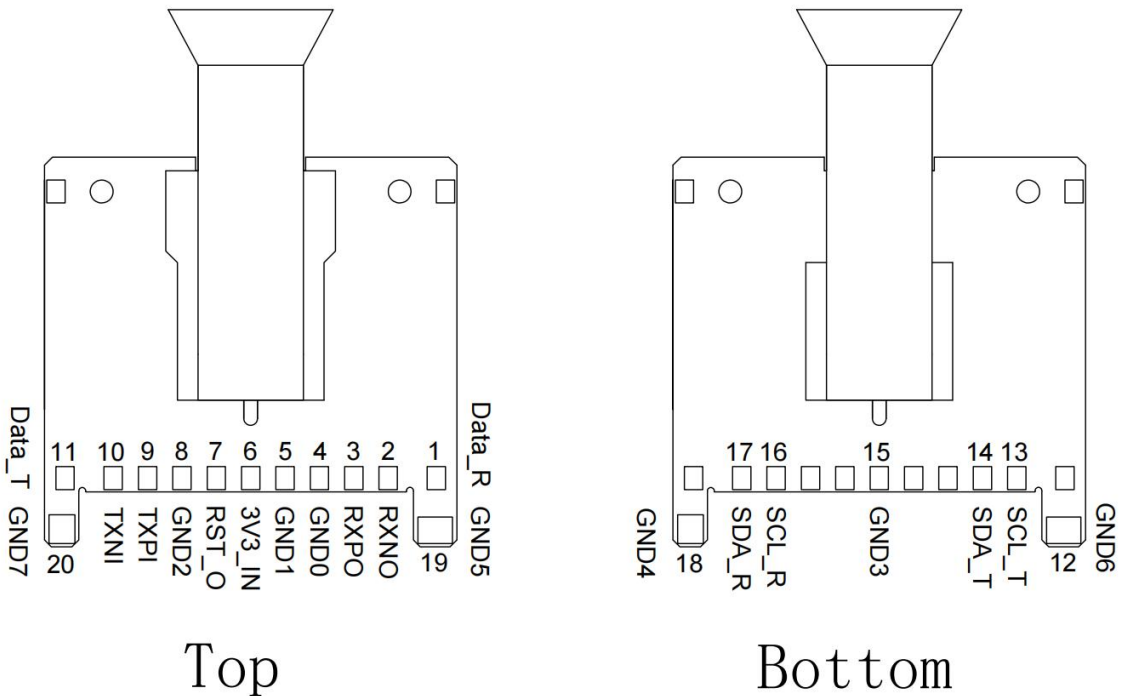


3D view:



## 5. Interface application

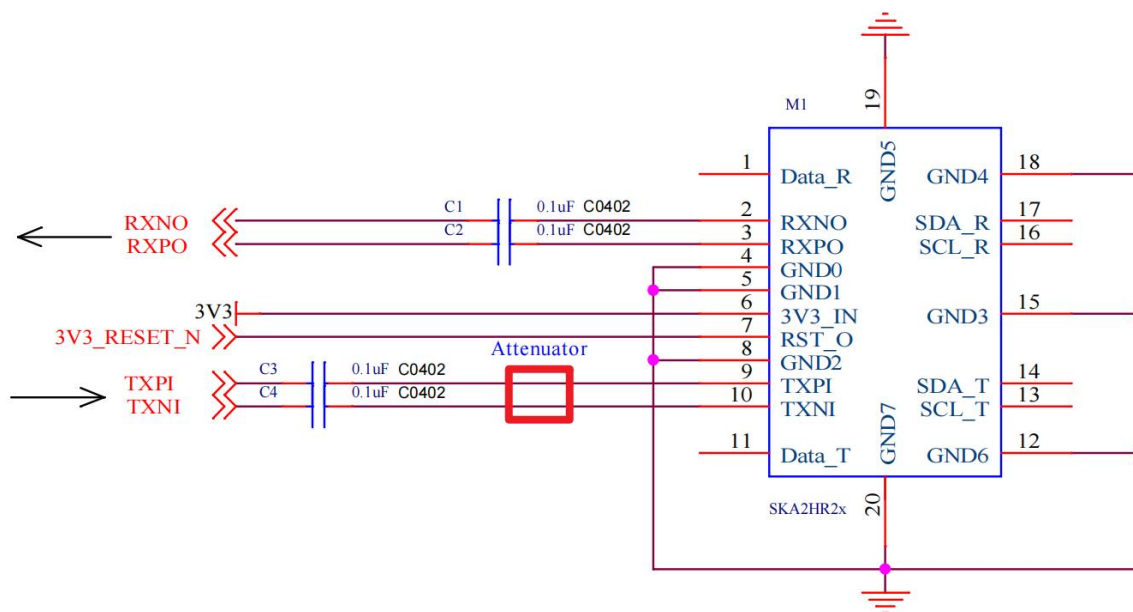
Pin distribution

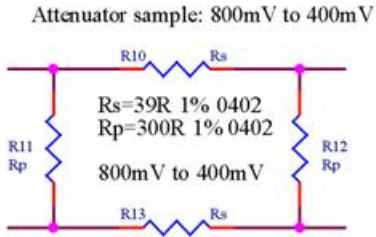


## Pin definition

Pin Number	Signal Name	Description
1	Data_R	Boot Strap pin, 1.8V level
2	RXNO	SERDES data for reception from the air
3	RXPO	
4	GND0	Ground
5	GND1	Ground
6	3V3_IN	Power supply, 3.3V
7	RST_O	Reset signal, low active. 3.3V level
8	GND2	Ground
9	TXPI	SERDES data for transmission the air
10	TXNI	
11	Data_T	Boot Strap pin, 1.8V level
12	GND6	Ground
13	SCL_T	Boot Strap pin, 1.8V level
14	SDA_T	Boot Strap pin, 1.8V level
15	GND3	Ground
16	SCL_R	Boot Strap pin, 1.8V level
17	SDA_R	Boot Strap pin, 1.8V level
18	GND4	Ground
19	GND5	Ground
20	GND7	Ground

## 6. Reference Design





Note:

1. DC blocking capacitor close to module for RXO
2. DC blocking capacitor close to CPU for TXI
3. Resistor attenuator for level shift. ST60 supports Max 400mv Vpp for differential signal input.

Default Mode configuration:

FDR: Full Data Rate - Differential, from 1Mbit/s up to 4Gbit/s with input/output on differential SLVS pair.

## 7. Characteristics

Recommended operating conditions and electrical characteristics

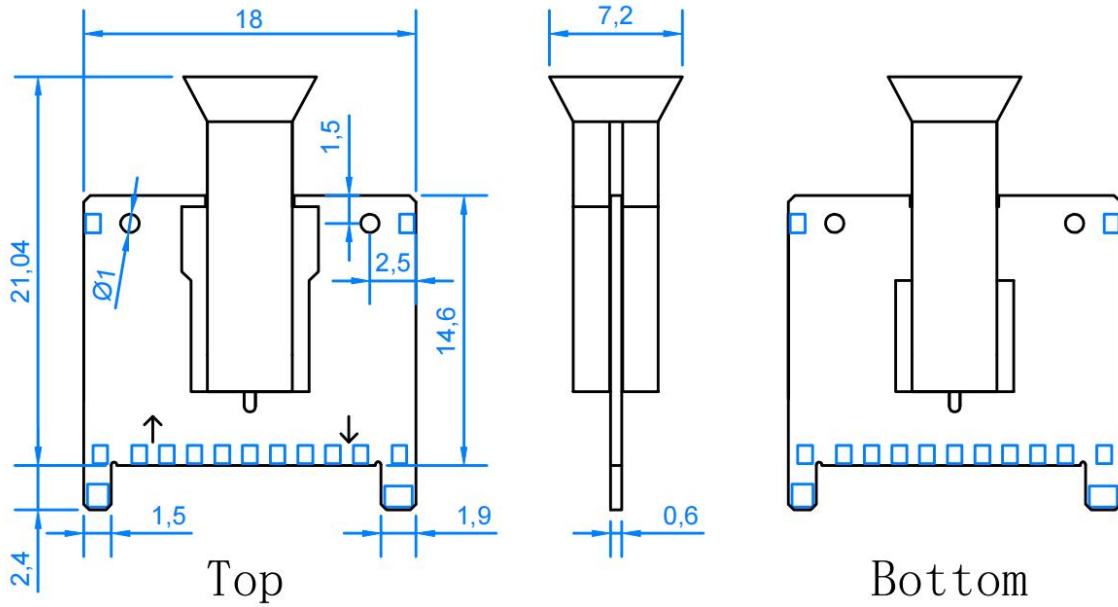
Symbol	Description	Minimum	Typical	Maximum	Unit
V <sub>IN</sub>	Power supply	2	3.3	6	V
C <sub>IN</sub>	Input current(*)	-	49	-	mA
P	Total Power consumption	-	0.16	-	W
T <sub>A</sub>	Ambient Operating Temperature	-20	-	85	°C
T <sub>J</sub>	Maximum Junction Temperature	-	-	125	°C
T <sub>STG</sub>	Storage Temperature	-40		105	°C
V <sub>IH</sub>	High level input voltage	1.2	1.3		V
V <sub>OH</sub>	High level output voltage	1.6			V
V <sub>IL</sub>	Low level input voltage		0.5	0.6	V
V <sub>OL</sub>	Low level output voltage			0.2	V
RX_IN_ N/P	SLVS common mode level	80	200	300	mV
	Output differential impedance		100		Ω
TX_OU T_N/P	SLVS common mode level	100	200	300	mV
	Output differential impedance	87	92	97	Ω
Fosc	Carrier Frequency	60.3	60.4	60.5	GHz

\* when the module is transceiving at 3Gbps .

## 8. Assembly

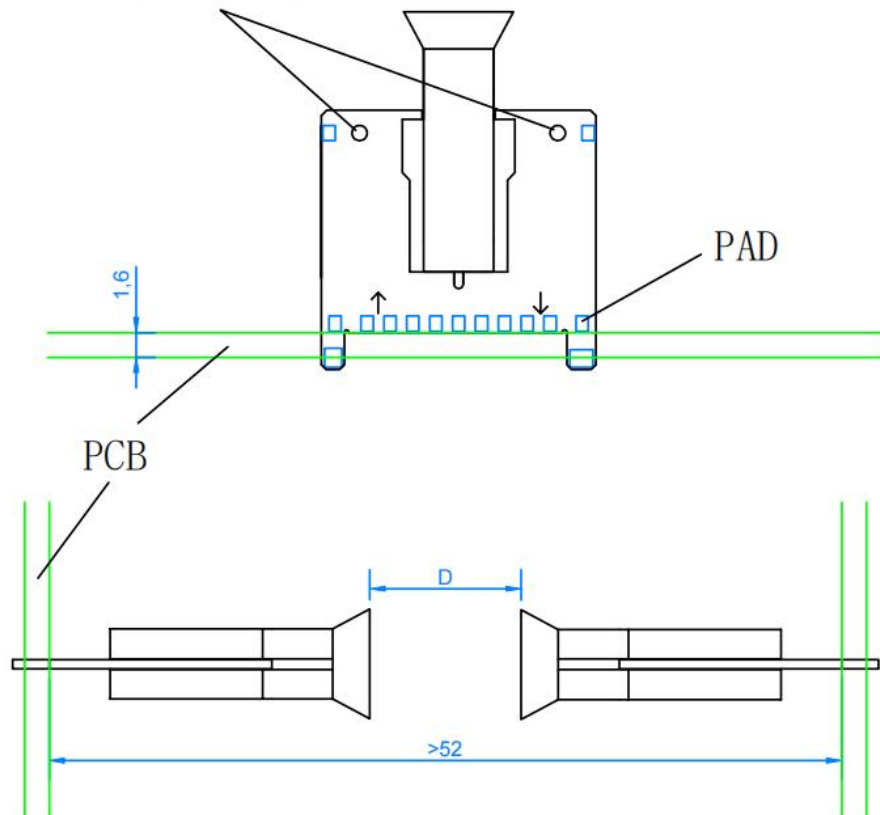
### Module Sizes:

Unit: mm

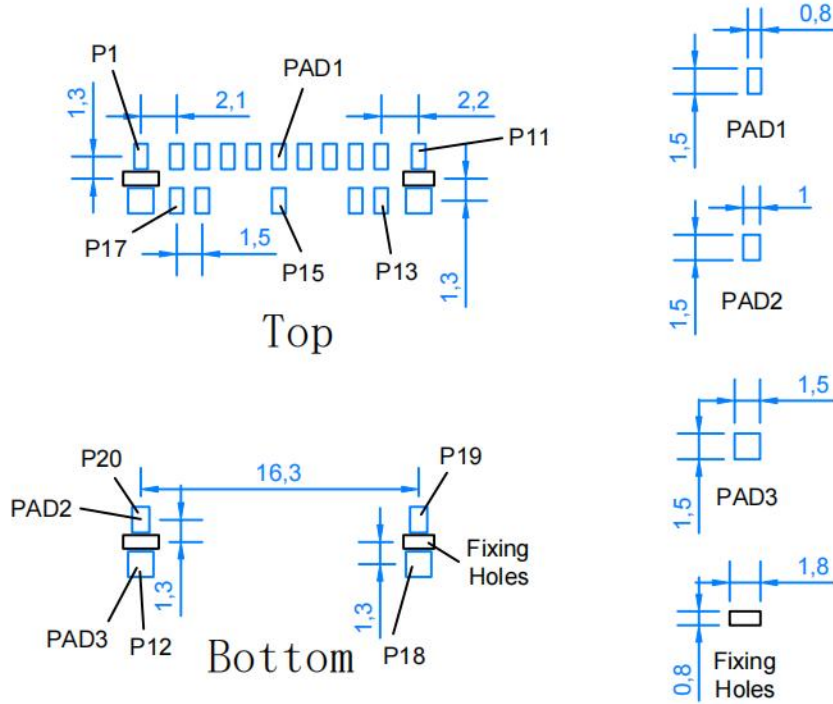


### Vertical Installation:

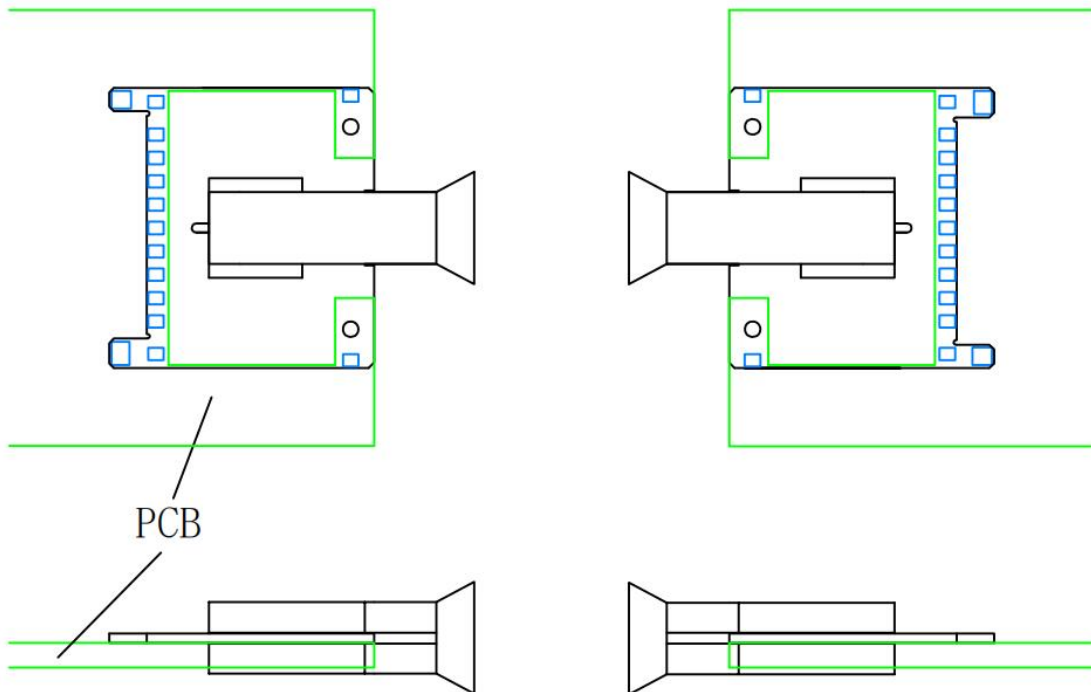
Auxiliary fixing holes



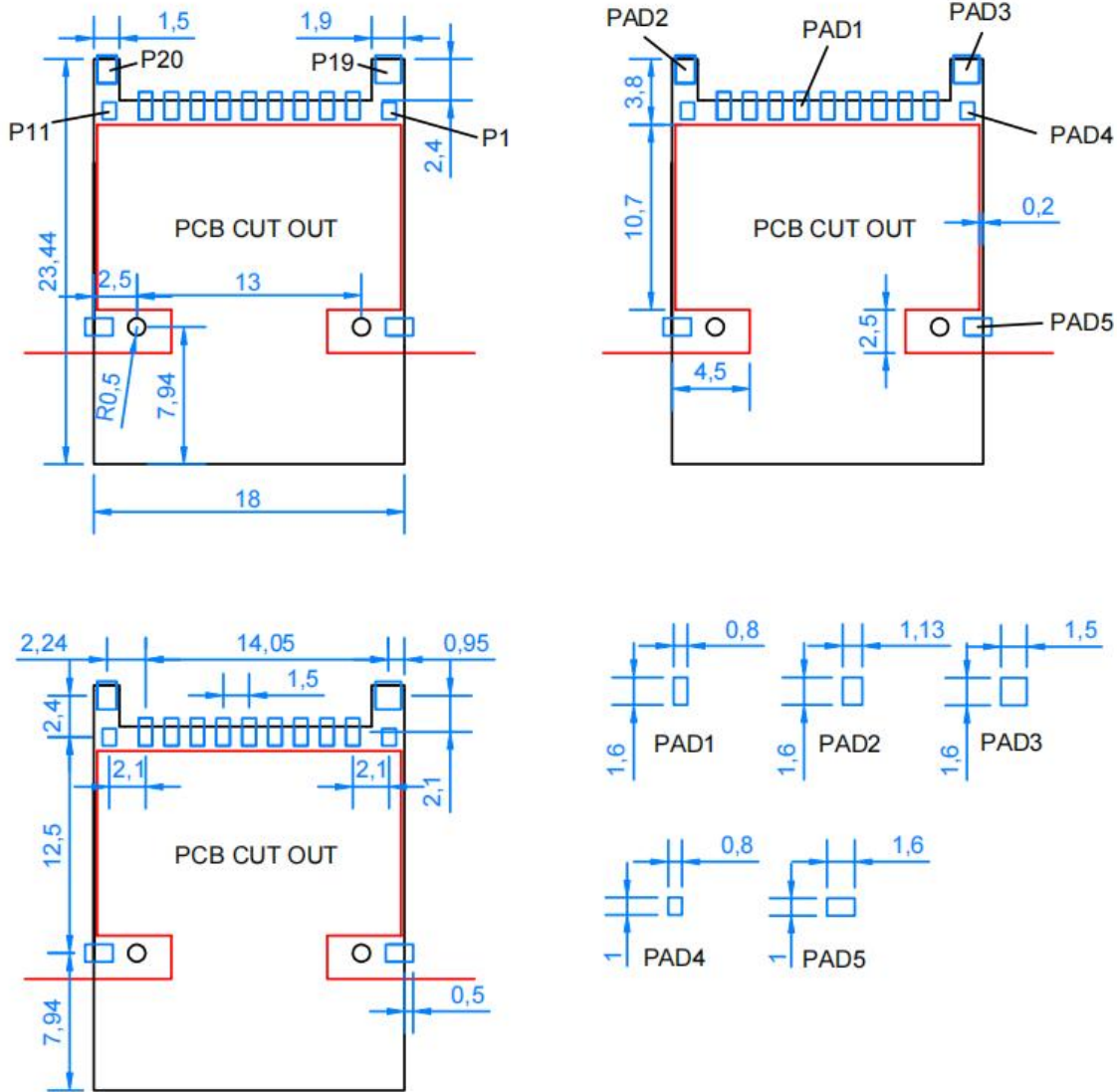
**Vertical PCB Installation:**



**Horizontal Installation:**



### Horizontal PCB Installation:



Unit: mm

- (1) Note: If a metal cover is used, a window should be added for microwave signal. Plastic or other microwave insensitive materials can be used to fill the window.
- (2) The distance between the two modules is determined by the speed of the data and the assembly environment. It is recommended that the installation distance ('D') is greater than 10mm and less than 30mm.

### 9. Order Information

Part number	DESCRIPTION
SKA2HR2A	Full duplex stamp hole module, horn antenna, Port A
SKA2HR2B	Full duplex stamp hole module, horn antenna, Port B

**IMPORTANT:**

**The SKA2HR2x module is a low-power product based on 60G millimeter wave communication. It is very sensitive to its application environment. Customers must confirm with the supplier whether the installation environment is suitable.**

Revision History

	Version	Changes
NOV 15 2021	TBD	First Draft
MAR 07 2022	1.0	Update Interface application, Reference Design, Characteristics, Assembly
MAR 08 2022	1.1	Update Assembly