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Cover Letter – Brief Description of Device Differences and measurement mode

IC Company Number 21407

FCC Company Number 2AJRS

TO WHOM IT MAY CONCERN

Our iSDR-G5 2D radar family covers 8 devices, that are electronically identical:

<u>IC</u>	<u>FCC ID</u>	<u>list of HVIN</u>	
21407-ISDRG5	2AJRSISDRG5	iSDR-M-G5-DN135	iSDR-M-G5-DN135V
		iSDR-H-G5-DN190	iSDR-H-G5-DN190V
		iSDR-M-G5-DN135F	iSDR-M-G5-DN135VF
		iSDR-H-G5-DN190F	iSDR-H-G5-DN190VF

The model number pattern is iSDR-x-DNyyyyzz with

- x indicating the main product variant, which is currently only "M" and "H"
- yyy indicating the mounted antenna type, which is currently either "135" or "190"
- zz a mirror type variation with a different gain in case it is relevant, currently it can be unused or "V". Additionally, a "F" might be appended for a fixed mirror, with disabled mirror motor.
This Results in "F" or "VF"

Specifically, the parabolic antenna/mirror size requires different housing sizes, as any parts are inside the housing, with no moving parts outside. The motor to rotate the mirror and radar electronics including power supply are exactly equal. The fixed variants have the motor disabled, and the parabolic mirror set to a fixed position.

All 8 devices share the same measurement mode: FMCW as ramp up, ramp down or alternating ramps. The entire timing is controlled via a FPGA, a DDS and HF power switches. The latter only will activate the HF stage within the configured frequency limits. As a safety margin minimal 50MHz is allowed as tolerance and not used by the configuration. Thus the configuration is limited from 76.05GHz to 80.95GHz. The ramp slope must not exceed 100MHz/μs .

During assessment the device has been tuned with the following parameters:

- FMCW: ramp-up
- Transmission is enabled at 76.05GHz
- Transmission is disabled at 80.95GHz
- Ramp Slope: 100MHz/ μ s. resulting in 49 μ s Tx time
- Measurement rate has been 8000Hz
- Mirror Rotation rate assessed at 20Hz and 0Hz (stopped)

The parameters result in a duty cycle of 39.2% (tx-time multiplied with measurement rate, relative to one second in percent). The productive used device configuration may only deviate:

- With a smaller duty cycle
- With a lower bandwidth, within the shown limits of 76.05 to 80.95GHz

With this policy, during assessment measured peak power values and measured mean power values are never exceeded. The upper limit of the ramp slope, which is the one shown at certification, the device will never overshoot neither upward nor downward modulated.

If you have any questions, please feel free to contact me at the address shown above.

Sincerely,

A handwritten signature in blue ink, appearing to read "M. Rabel".

Dr.-Ing. Matthias Rabel
(VP R&D Embedded Hardware and Sensors)