



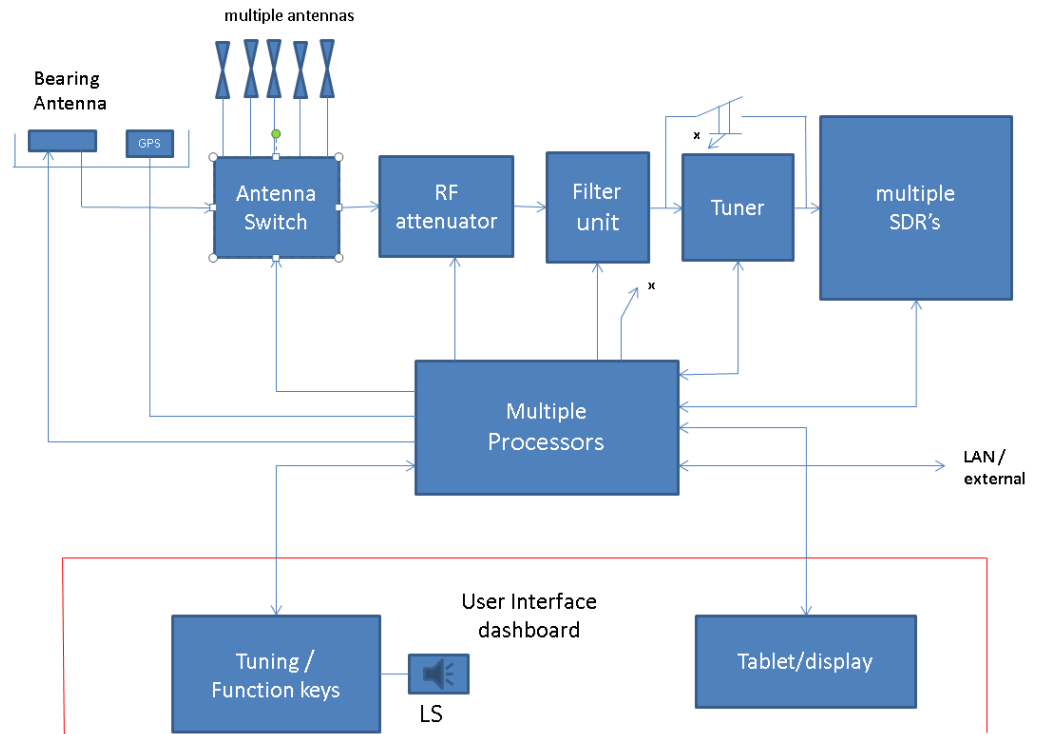
**Specification RDF PAN6000**  
**(CONCEPT – INDICATION ONLY)**

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SCHEME



## SPECIFICATIONS

<i>Antenna and GPS</i>	
Frequency range	500 kHz - 6000 MHz
Maximum antenna systems	3
Direction finder antenna < 2Ghz	In sunroof vehicle
GPS	Position, direction, compass, GIS
<i>Direction finder:</i> Map display, freeze signal direction on map, triple screen map/bearing/spectrum Amplitude based	
Frequency range	500 kHz - 6000 MHz
Minimal signal duration	> 20 milliseconds
Sensitivity (@ average 1 second) Frequency range 50 MHz - 1 GHz Frequency range 1 GHz – 3 Ghz	< 30 dB $\mu$ V/m. < 28 dB $\mu$ V/ m. Maximum deviation direction: 1° RMS
Average bearings	Possible to set average of a number of bearings, real-time, 0.5, 1, 2, 4, 8, and 16 seconds. Refresh minimal 20 times/second
Antenna settings	Delay time, bearing time. Rotation speed depends upon delay time, bearing time and number of antenna's in the selected array. Define arrays up to 16 antennas Define up to 8 arrays Combine 2 or more arrays in one configuration 4 configurations
Bandwidths	Pre-set span of the spectrum 20kHz, 150 kHz by using roofing filters, related to large signal behaviour
Oscilloscope image	triggering signals with low duty cycle Oscilloscope image of the DF signal (control)
<i>Antenna switch-sets</i> This module allows you to choose which antenna is used. The selection module must consist of six inputs including a DF input. Frequency range up to 6 GHz and cross-talk greater or equal to 50 dB, impedance 50 Ohm. The operation of the selection switch must be done from the control unit.	
<i>RF attenuator</i> The system must be equipped with an adjustable attenuator from 0 dB to 140 dB in 10 dB increments, with a maximum deviation of 2 dB. The control of the adjustable attenuator must be performed from the control unit. Frequency range up to 6 GHz and impedance 50 Ohm.	
The filter unit must consist of the following filter ranges (minimum 10 positions):	
<ul style="list-style-type: none"> <li>• FM Broadcast</li> <li>• Band 700 MHz</li> <li>• Band 800 MHz</li> <li>• Band 900 MHz</li> <li>• Band 1400 MHz</li> <li>• Band 1575 MHz</li> </ul>	

<ul style="list-style-type: none"> <li>• Band 1800 MHz</li> <li>• Band 2.100 MHz</li> <li>• Band 2.600 MHz</li> <li>• Automatic tuned preselection</li> </ul>	
Receiver / Panorama Display (Tuner)	
General	The block Tuner refers to a converter to a fixed IF output. The receiver system must be structured so that it can easily be extended to multiple receivers (future proof).
Frequency range	Frequency range from 100 kHz to 6000 MHz must be captured with one receiver system.
Panorama real-time spectrum	Spectrum span: 100 kHz, 500 kHz, 1 MHz, 2,5 MHz, 5 MHz, 10 MHz, 20 MHz en 40 MHz.
Spectrum display	Average, linear average, max hold, spectrogram, linear spectrum, freeze, marker, 2 (dual) traces, split screen.
Dynamic Range	Greater or equal to 90 dB at 100 kHz. Furthermore depending on the bandwidth.
Display range	Greater than or equal to 90 dB max.
Amplitude inaccuracy	Less than 3 dB
Strong signal behaviour of the RDF	<p>The value shown here applies to the Panorama RDF entry and without the attenuator.</p> <p>Range from 100 kHz to 30 MHz:  IP 2 greater or equal to 50 dBm  IP 3 greater than or equal to 25 dBm</p> <p>Range of 30 MHz to 3000 MHz:  IP2 greater than or equal to 45 dBm  IP3 greater or equal to 15 dBm</p> <p>Range of 3000 MHz to 6000 MHz:  IP2 greater or equal to 40 dBm  IP3 greater than or equal to 10 dBm</p>
Climate control	Relative humidity 20% to 85%
Ambient temperature	The complete system must maintain its operation in the temperature range of -20°C to +55°C and its specification is maintained in the temperature range from 0°C to +50°C.
Demodulation modes including audio	The following demodulation must be possible with the device: AM, FM, QM, ISB, I / Q, Pulse, LSB, USB, CW, DAB +, DVB-T, DVB-T2
Decodes	RDS, Atis, subaudio
Noise figure	Range from 100 kHz to 30 MHz: Less than or equal to 15 dBm Range of 30 MHz to 3000 MHz: Less than or equal to 16 dBm Range from 30 MHz to 6000 MHz: Less than or equal to 20 dBm

SDR: The system should be structured so that it can easily be extended to multiple SDRs (future-proof).	
External bus controller (LAN) The Panorama RDF must be equipped with a standard Ethernet bus connection to control the system. TCP/IP protocol runs at a speed of 1000 Mbit / sec. All operating functions, measurement results and settings must be controllable or retrievable via the bus connection. The applied control protocol used for control and retrieve data should be based on a TCP/IP protocol. The accompanying instructions should be fully documented.	
User Interface (Control Unit, Tuning, Function Keys)	
General	The operation of the panorama RDF takes place mainly by the passenger and occasionally by the driver. Tests by Agency Telecom by using touchscreen controls have shown that not all features are safely by touchscreen operation. The following operating mode must be done via a manual operation: <ul style="list-style-type: none"> <li>• Tuning the receiver.</li> <li>• Audio setting.</li> <li>• Screen switches.</li> <li>• Turn on / off the direction finder.</li> <li>• On / off map.</li> <li>• Possibility of two VFOs (a and b). When switching between the VFOs, however, hold the receiver settings.</li> </ul>
Audio Output	Audio Output: Symmetrical and Free from Earth Output level: 0 dBm Output impedance: 600 Ohm
Display/tablet	
General	Display of the information must be built up in separate screens, especially applicable when driving.
Brightness screen	The brightness of the screen should be adjustable from completely dark to full brightness.
Dimension screen	Screen diagonal of at least 10 inches.
Shock and vibration	Display/Tablet is mounted on a service vehicle dashboard, which means that the display is subject to shocks and vibrations of the vehicle. The display/tablet should therefore be shock and vibration resistant.
Emission display /tablet	The emission (transmitting electromagnetic radiation and electrical voltage) measured over the entire frequency range must be measured at 0 dB $\mu$ V per meter at a distance of 1 meter.

General features	
Emission device	The emission (measured over the entire frequency range) of the device including wiring should be less than or equal to 0 dB $\mu$ V per meter measured at a distance of 1 meter from the installation.
Power DC (power supply)	The panorama RDF is used in a vehicle and must be capable of operating on a DC voltage. The new device will be powered from a 12 Volt battery. The device must maintain its specification at a power supply variation of 10.8 Volt to 15 Volt (Variable Battery Voltage).
Availability	The device is used in a vehicle, so high requirements are made on the structure and lifetime of the system. The panorama RDF must be modular, so that the entire system is consistent and easy to maintain.
Emission and immunity	The emission (measured over the entire radio spectrum) of the device including cabling must be such that no own signals (any signals from the device) are received on the antenna placed in the immediate vicinity of the device.  The immunity of the RDF must comply with MIL-SPEC numbers 461-D and 462-D.
Static charges	The new equipment to be purchased must be protected against electrostatic influences.
Dimensions	19 inches, 3 HE
Documentation	The device must be supplied with an extensive operating manual, technical specifications and a service manual.