

Comparison DAB repeater package (Wittenberg) vs. Sumatronic MPRI-56-4 Summary of our test-report of 18.10.2021

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Since there is no technical DAB standard in Germany and the large consumer electronics markets needed a solution to be able to present DAB radios to customers, a solution was found by using commonly used TV amplifiers.

The association "Digital Radio Plattform e.V." managed to have a specially approved solution for the large consumer electronics markets, but not a solution outside these buildings and for other purposes. These buildings usually have a fully metal shell and in most cases no windows. Therefore, the signals emitted inside have little chance of reaching outside the building, where they could otherwise cause interference. The aim was to offer an extremely cheap solution for this special purpose.

The Swiss OFCOM also recognised the need, but wanted a solution that could also be used for small shops and in general. Therefore, it was carefully evaluated which specifications a DAB repeater must comply with in Switzerland so that interference, especially of emergency services such as the police, ambulance and fire brigade, could be ruled out.

Another consideration was the liability problem that could arise e.g. in a shopping centre, for example, if the fire brigade radio service were to be interfered with and a disabled person could not be rescued in time therefore. Who would then be liable? the authority that approved such equipment, the owner or the installer of such a device?

The Swiss OFCOM standard has now been tried and proven for many years and there are no known interferences or problems.

On request of Digital Radio Plattform e.V. (Germany) we have compared the two equipment sets from a technical standpoint.

Wittenberg Verstärker WB 1*

vs

Sumatronic DAB-MPRI-56-4/BLS



Prices depend a lot on the production quantities. Sumatronic's repeater is much more expensive than Wittenberg's consumer TV-amplifiers, because of much higher and complex technical performances and small production quantities.

If you need all the technical details, please request our non-public test report.

Summary of the test results

The main differences between the Wittenberg and Sumatronic devices are:

	Wittenberg	Sumatronic	
Number of units	Two	One	
Max. Transmitting power	6.3 mW (+ 8dBm).	25 mW (+14 dBm)	Higher power allows longer transmission lines or multiple Tx antennas on one repeater unit. → coverage of bigger areas are possible with Sumatronic (especially with higher power products such as HPRI) which Sumatronic currently offers for up to +24 dBm (250 mW).
Limiter function	Missing	Available	Needed in Swiss standard for safe operation. This allows the MPRI units to better handle sudden occurrences of higher input signals (e.g. radio signals in- and outside the DAB frequencies).
Fluctuations of the received signal	Are transmitted 1:1	Are compensated	MPRI: usually a control range of approx. 10 dB is used by means of the settings. If the received signal changes (e.g. due to weather conditions), the transmitting power indoors remains practically the same. The range has proven itself, but can also be selected larger.
Filtering:	The VHF III input covers the DAB frequency range	MPRI: has a sharp-edged filter for the DAB range.	MPRI's sharp-edged filter is needed to comply with Swiss standard.
Intermodulation robustness	Limited due to missing limiter DOES NOT FULFILL THE SWISS REQUIREMENTS.	MPRS: High robustness thanks to filtering and limiting functions. FULLY COMPLIES WITH SWISS REQUIREMENTS.	The high demands of filtering and intermodulation stability account for a large proportion of the costs of MPRI. MPRI is about 26 dB (400 times) more robust against intermodulation.
Product type	General amplifier for TV reception with simple filtering not designed for emissions (consumer product). This product has not been designed for this application.	Product specially developed and manufactured for this application. (not a consumer product)	

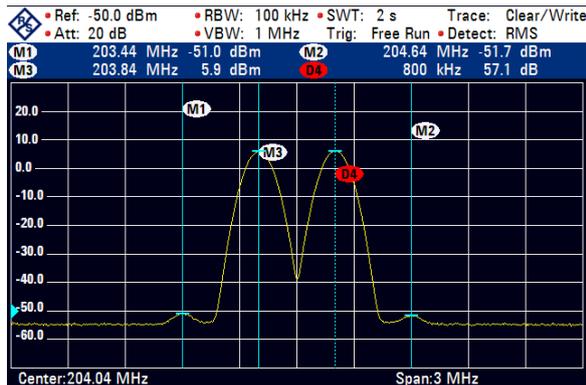
As Sumatronic's MPRI has much better (and safer) performances it could be used in both markets, where the TV-amplifier (Wittenberg) cannot.

Major difference: Intermodulation robustness (details)

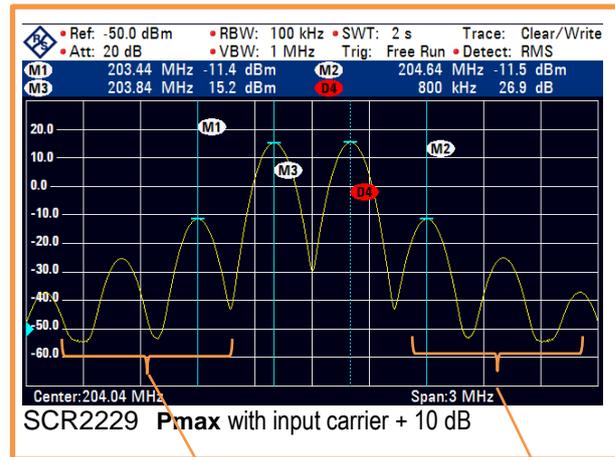
In the intermodulation-robustness test, the output must still comply with a 10dB (10 fold) higher signal than in normal situation (e.g. by a fire-brigade radio is operated near the repeater → the repeater shall not become a jammer and endanger the rescue operation).

Wittenberg

WB1 #2 nom. Leistung $P_{out\ max} = + 8\ dBm$



SCR2228 P_{max} for input carriers for nom. power



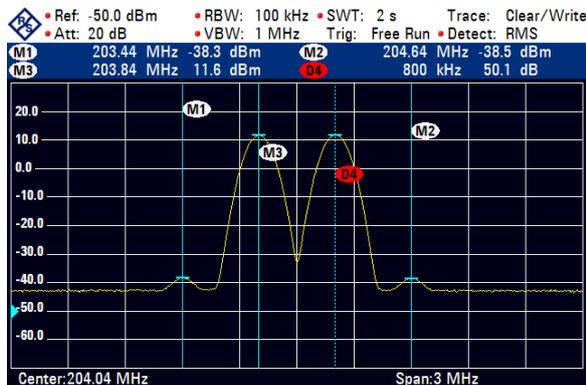
SCR2229 P_{max} with input carrier + 10 dB

These intermodulation signals can cause a jamming of emergency radio services

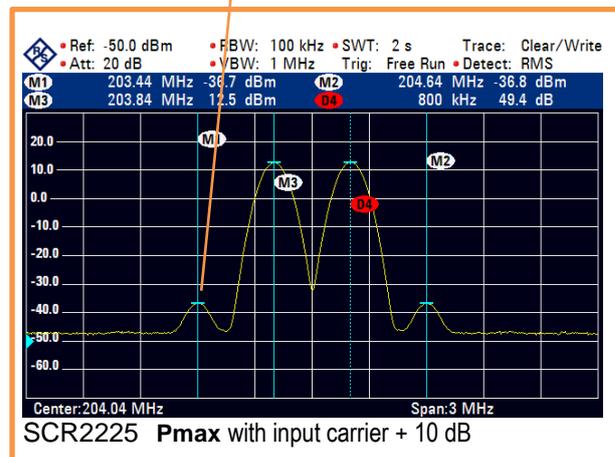
This intermodulation signal is suppressed by factor 315 compare to above.

Sumatronic MPRI

MPRI nom. Leistung $P_{out\ max} = + 14\ dBm$



SCR2222 P_{max} for input carriers for nom. power



SCR2225 P_{max} with input carrier + 10 dB

Conclusion

The German solution – specifically limited to consumer electronics markets – should not be used in general. Currently there is a demand from the industry (e.g. for workshops), car parks and many others. The Swiss Standard has been proven for many years, so there is no recognizable risk to use it in other countries too.