

Frequently Asked Questions

Q 01 – Why discrete carriers are used instead some spread spectrum like modulation technique?

All carriers are derived from the 19 kHz pilot tone, which allows block and bit synchronisation between the RDS carriers. The existing modulation technology is very robust. RDS2 supports all current applications and existing RDS devices. Anyone who wants to upgrade may need a software /middleware upgrade or replace a chip in some cases

Q 02 - RDS is also locked to the pilot in phase; so what about RDS2 – can phase locking there be applied as well and if yes, how?

An important requirement for proper RDS2 decoding is phase and bit synchronisation with the groups and blocks in the mainstream. This is achievable with DSP technology. At the encoder all carriers are derived from the 19 kHz pilot tone. RDS2 modulation is using next to 57 kHz three additional subcarriers. They are achieved using frequency shifting.

Q 03 – What are the differences between RDS and RDS2?

RDS2 offers three additional RDS streams. As a number of mandatory elements from the main stream such as AFs, PS and PTY.do not need to be present in the upper streams, RDS2 can achieve up to 5 times more net data capacity compared with RDS.

Q 04 – How can RDS2 increase the RDS-TMC capacity?

By using ODA on the upper carriers with high quality detailed traffic information for urban and specific regional areas.

Q 05 – How can we achieve that TMC device manufacturers use the RDS-TMC on the additional subcarriers in EXACTLY the same way as on the main subcarrier?

By means of a special TMC ODA. Existing PND devices with a new RDS2 external receiver can then receive an enhanced ODA data stream. The original PND software may remain unchanged. However, the number of 8A groups then increases from 3 to up to 45 per second.

Q 06 – On RDS is no IPR. If there is IPR on RDS2 –what will be the consequences for broadcasters, encoder manufacturers, chip makers and manufacturers of receiving devices?

There will be no IPR on RDS2 as well. RDS2 is free to use.

Q 07 – What advantages and innovation could RDS2 offer to the car industry?

First of all RDS2 can offer a much better TMC service with more detailed urban traffic information. Second, there can be attractive display information like station logos. Third, there can be local or regional information for special events or emergency warnings. Graphical features can also be used for more attractive commercials. RDS2 can also be used to update the car radio with new features and apps over its live time. Soon, we shall have connected cars. Thus, "remote update" functionality is important, not only for car radios, but also for the FM/RDS radio in smart phones.

Q 08 – Can TPEG be used on RDS2?

No. However, with the RDS-TMC ODAs automatically translated TPEG TEC (Traffic Event Compact) messages can of course be carried also over RDS2, compared to RDS with a much increased speed and total message transmission capacity. This may well need some form of adaptation of the existing ODAs for TMC, an issue still to be studied.

Q 09 – Why would chipset makers be interested in the RDS2 implementation?

It will create significant added value, and quantities may rise extremely fast since RDS2 is basically an extension of RDS, which itself is mature and well established. Through new products new service opportunities are created. Broadcast real time data services are significantly better for a lot of applications. This can boost the entertainment and advertising, and allows also for new radio show formats. Investments may be quite moderate in case RDS2 implementation and can be realized by a software or middleware modification.

Q 10 – Could RDS2 be used as a means to achieve Service Following with the Internet included?

Yes, it can give direct information via a new NFM protocol and how to find back your favourite station on the Internet. RDS2 will include the treatment of the Internet connection as an alternative frequency.

Q 11 – What are the recommended injection levels for RDS2?

Between 1.5 to 3.5 kHz, for each carrier.

Q 12 – Would RDS2 work for FM radio received on smart phones?

In principle, yes. However, the RDS propagation for the upper carriers must be tested thoroughly for smart phones with their commonly used (and sometimes built-in) FM antennas. RDS2 has been designed also for smart phones as a receiving device. Some work without a headset and with separate speakers. However, today most smart phones use the head phone cord as an antenna. As smart phones developed into universal communication devices, more broadcast data will be a logical extension.

Q 13 – In the USA, HD-Radio and occasionally SCA are used; is RDS2 compatible with them?

Since RDS2 developments are only very recent, no real tests on air have been made so far. Thus, the answer is based on assumptions only. With 92 kHz SCA probably yes and with 67 kHz SCA no. However, with RDS2 individual subcarriers can be also be switched off. Thus RDS2 maybe be usable with 67 kHz SCA at least with one additional subcarrier on 76 kHz. HD-Radio is also a target for some new functions. Some simple tests will be required soon to show that there are really no major problems. The RDS Forum and the RBDS Subcommittee will keep each other informed on all observations made during over the air tests.

Q 14 – In RDS2 there will be enhanced Radiotext and in RDS we have also RT. Why twice Radiotext?

Enhanced Radio text goes far beyond the character set which is available for RDS. With UTF-8 coding almost all languages (Arabic, Chinese Russian, etc.) can be covered. UTF-8 needs more data capacity which RDS2 can cope with. The eRT can also be used for longer ASCII text, up to 128 bytes.

Q 15 – Will RT+ work with enhanced Radiotext on RDS2?

Yes, with some restrictions, however. It may be preferable to create a version supporting all possible 128 characters and also using more than two tags. The possibilities to achieve this are already being studied within the RDS Forum.

Q 16 – What about the RDS propagation for the upper carriers at dynamic reception conditions?

The reduction in sensitivity for the upper carriers is marginal. The upper carriers are a bit more susceptible to adjacent channel interference at 100kHz. Extensive field trials will provide more clarity about this in practice. In case the reliability of RDS reception needs to be improved, additional redundancy, by repeating data more frequently, can be added.

Q 17 – Who will validate the performance of RDS2 on the road?

A team from the RDS Forum with involvement of IC development and production companies and the manufacturers of car radios in association with the car industry.

Q 18 – Will RDS2 improve the overall reception in a car?

*Yes - for example when 2A groups (**RT** Radiotext) are repeated also on an upper carrier, the reliability of correctly received RT messages will increase significantly, particularly at moderate reception conditions.*

Q 19 – How will this performance be communicated in objective and measurable terms?

By publishing measuring data and results from field trials. The performance will most probably be expressed in a relative way by comparison with the RDS performance on the main carrier.

Q 20 – How is RDS2 positioned in marketing terms next to DAB+?

RDS2 is an FM radio extension, available on frequencies from 64 to 108 MHz worldwide (and on the Internet). As a worldwide available radio application RDS2 offers much added value when compared with RDS. RDS2 is not meant to be a competitor for DAB+. Both can co-exist and have their own window of opportunity.

Q 21 – Is RDS2 possible as a running change on an existing platform?

Time needed to market RDS2 can be short for a number of reasons and this is an asset for RDS2. In certain cases no hardware changes are needed, only software. Probably a software update over the air would be possible in some particular cases.

Q 22 – Would an existing RDS receiver be completely unaffected by an RDS2 transmission?

Yes. All existing RDS features remain available. New features and services will exclusively use ODA. Backwards compatibility with RDS was a major pre-requisite for the RDS Forum.

Q 23 – Would a broadcaster need permission from their regulator to switch from RDS to RDS2?

Yes – but RDS2 complies with existing ITU regulations as far as the injection levels of audio, pilot tone and additional RDS data are concerned. Therefore, permission to use RDS2 on air for experimentation and/or a regular service may be obtained.

Q 24 – Does RDS2 have any negative effect on current FM/RDS reception?

No: Conventional RDS reception is not affected by adding RDS2 subcarriers. The reduction of audio quality is negligible when RDS2 data is added to the transmitted channel within the existing FM 75 kHz deviation budget. Using 1/4 phase spaced RDS2 data symbols reduces the peak-deviation.