

## SPiRiT GSM AMR-NB Codec

The AMR (Adaptive Multi-Rate) narrowband codec is based on algebraic code excited linear predictive (ACELP) model. It is the 3GPP standard codec for narrowband speech and multimedia messaging services. The codec provides toll quality speech starting at 7.4 kbps, with near-toll quality and better robustness at lower rates and better reproduction of non-speech sounds at higher rates.

SPiRiT Adaptive Multi-Rate Narrowband (AMR-NB) GSM speech codec is fully compliant to the ETSI GSM 06.90 specification. It operates on narrowband (200-3400 Hz) signals at variable bit rates in the range of 4.75 to 12.2 kbps.

### Features

- Eight input bitrates available (4.75, 5.15, 5.9, 6.7, 7.4, 7.95, 10.2, 12.2 kbit/sec)
- Encoder input in the form of 20 ms frames (160 samples per frame, sampled at 8 kHz)
- Decoder output in the form of 20 ms frames (160 samples per frame)
- Substitution and muting of lost frames
- Discontinuous Transmission (DTX) support
- Voice Activity Detection (VAD) support
- Comfort Noise Generation (CNG) support
- Simple application interface
- Code is reentrant, supports multithreading and dynamic memory allocation
- Can be easily ported to any DSP or RISC platform

### Resource Requirements

SPiRiT provides porting services to multiple DSP (Motorola, Analog Devices, etc), RISC and general-purpose processors.

PLATFORM	TI C64xx		
	Encoder	Decoder	Encoder+ Decoder
Peak MIPS*	7.85	1.58	9.43
Program Memory, KB	80	40	113
Constant Memory, KB	30.3	30.3	30.3
Dynamic Memory, KB	3.0	1.2	4.2
Scratch Memory, KB	5.9	1.4	5.9

PLATFORM	ARM9E			Tensilica HiFi2
	Encoder	Decoder	Encoder+ Decoder	Encoder+ Decoder
Peak MIPS*	24	4	28	20
Program Memory, KB			70	64.5
Constant Memory, KB			32	32.1
Dynamic Memory, KB	3.5	2.1	5.6	12.9
Scratch Memory, KB	5.6	1.3	6.9	

\*including VAD

CONTACTS	Russia: 7-495-661-21-78	Germany: 49-641-48-08300	Taiwan: 886-2-2888-1010, 886-2-2696-0055
<b>General: 1-408-540-6033</b> <a href="http://www.spiritdsp.com">www.spiritdsp.com</a>	France: 33-623-021-563	USA: 1-888-374-4410	Korea: 82-70-7780-9910, 82-2-33473-5080
	Israel: 972-3-736-9763	Canada: 1-888-374-4410	China: 86-21-63502288-820
	Italy: 39-02-6680-2557	Japan: +81-3-6361-8080	Singapore: 65-6744- 9789

### Benefits

- Highly optimized code ideal for resource constrained applications
- Easy integration and fast time-to-market

### Applications

- VoIP gateways
- IP-PBX
- VoIP clients
- Mobile phones
- Wireless communication

### Availability

- eXpressDSP compliant object code for TMS320C64xx
- Fully functional evaluation object code (available upon request)
- DLL for MS Windows
- ARM 9, 9E
- TI OMAP3
- Tensilica HiFi2