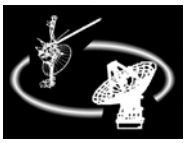

Deep Space Network

901
Handbook Glossary

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Review Acknowledgment

By signing below, the signatories acknowledge that they have reviewed this document and provided comments, if any, to the signatories on the Cover Page.

Signature Provided	11/14/2016
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Change Log

Rev	Issue Date	Prepared by	Affected Sections or Pages	Change Summary
-	11/30/2000	R. Sniffin	All	Initial Release
A	8/15/03	R. Sniffin	2	Corrected units of Boltzmann's constant and other typographical errors. Added abbreviations for new and revised modules.
B	10/7/04	R. Sniffin	2	Revised abbreviation list for new and revised modules.
C	10/21/05	R. Sniffin	2	Revised abbreviation list for new and revised modules.
D	10/31/2009	A. Kwok	Many	Replaced DSMS with DSN. Removed all references related to the 26-m stations.
E	4/29/2011	C. Chang	2	Revised abbreviation list for revised modules.
F	3/22/2012	C. Chang	2	Modified the abbreviation IERS
G	02/10/2017	C. Chang	Sections 1.1, 1.2, 1.4.3, & 2	Added terms used by various 810-005 modules. Obsoleted unused items.

Contents

1 Introduction

1.1 Purpose

The purpose of this document is to present a useful glossary of commonly used terms, abbreviations, and acronyms that are current and applicable to the Deep Space Network (DSN).

1.2 Scope

This scope of this document is limited to providing terms, abbreviations, and acronyms that are used within Document 810-005 and especially those that may be different from usage in other organizations.

Terms, abbreviations, and acronyms are included in this document if they meet any of the following criteria:

- used within the DSN but with a meaning that may be unique to the DSN,
- used within 810-005 in place of equivalent terms, abbreviations, and acronyms that may be used elsewhere, or
- commonly used in the field of telecommunications engineering but not necessarily known to all users of 810-005.

1.3 Revisions

This glossary will be periodically revised with changes, improvements, or additions. Usually, these revisions will be coincident with the publication of new or revised 810-005 modules that contain new or revised terminology.

1.4 Definitions

The following paragraphs define the types of items that appear in this glossary and give general rules for their formation.

1.4.1 Terms

A *term* is any word or expression that has a precise meaning in a particular field, in this case, telecommunications engineering.

1.4.2 Abbreviations

An *abbreviation* is a shortened or contracted form of a word or phrase. In a strict sense, the letters are individually pronounced (for example, rpm or DSN) or the reader might visualize and pronounce the complete form of the word (for example, "assembly" for "assy" or "telemetry" for "TLM").

1.4.3 Acronyms

An *acronym* is a pronounceable abbreviation formed by one of two methods: (1) combining the first syllables of the key words (for example, Caltech or FORTRAN) or (2) combining the first letter and other letters, as required, from the name or key words of an organization, project, or piece of equipment (for example, LAN).

2 Abbreviations and Terms

Abbreviation or Term	*Definition*
A	
A-D	analog-to-digital
A/S	anti-spoofing mode of operation (Global Positioning System) in which the encrypted, or Y-code, is unavailable to civilian users of the system
ACME	Antenna Calibration and Measurement Equipment
AFC	automatic frequency control
AFS	atomic frequency standard
AGC	automatic gain control
AIU	Antenna Interface Unit
alidade	The rotating but non-tilting portion of the DSN azimuth-elevation antennas.
AM	amplitude modulation
AMP	amplifier
AMMOS	Advanced Multi-mission Operations System
APID	Application Process Identifier
ASM	attached synchronization marker
atm	atmospheric
ATSE	Antenna Test Signal Equipment
AWGN	additive white Gaussian noise
az or AZ	azimuth
AZ-EL	azimuth-elevation
A_{zen}	Zenith Atmospheric Attenuation
B	
B3MCD	Block III Maximum Likelihood Convolutional Decoder
B/W or BW	bandwidth
b/s	Bits per second
BCH	Bose-Chaudhuri-Hocquenghem (code)

Abbreviation or Term	*Definition*
BER	bit error rate
BET	bit error tolerance
Bi-φ	Bi-phase
Bi-φ-L	Bi-phase, level
Bi-φ-M	Bi-phase, mark
Bi-φ-S	Bi-phase, space
B_L	loop bandwidth
Boltzmann's constant	–198.6 dBm/(Hz □ K)
BP	Belief Propagation
bps	Bits per second
BPSK	binary phase shift keyed
BVR	Block V Receiver (part of DTT Subsystem)
BWG	Beam Waveguide (antenna or subnet)

C

c	speed of light, 299,792.458 km/s
Category A	missions within 2 million km of Earth
Category B	missions at distances greater than 2 million km from Earth
C/A	Coarse Acquisition (GPS code)
CCSDS	Consultative Committee for Space Data Systems
CCW	counter-clockwise
CD	cumulative distribution
CDF	cumulative distribution function
CDSCC	Canberra (Australia) Deep Space Communications Complex
CFDP	CCSDS file Delivery Protocol
CLTU	Communications Link Transmission Unit
CLTUF	Communications Link Transmission Unit File
CMD	command
CONSCAN	conical scanning
CRC	Cyclic Redundancy Check
CRG	Coherent Reference Generator

Abbreviation or Term	*Definition*
cryo	cryogenic
CSO	Cryogenic Sapphire Oscillator (frequency standard)
CSS	Channel-Select Synthesizer
CTT	Compatibility Test Trailer
CV	connection vector
CVCDU	Coded Virtual Channel Data Unit
CW	clockwise

D

D/C	downconverter
D/L	downlink
DAT	Data Acquisition Terminal
dB	decibel(s)
dBc	decibel(s) with respect to carrier
dBi	decibel(s) with respect to isotropic
dBm	decibel(s) with respect to one milliwatt
dBV	decibel(s) with respect to one Volt
dBW	decibel(s) with respect to one Watt
DDC	Digital Downconverter
DCC	Downlink Channel Controller
DCPC	Downlink Channel Processing Cabinet
DCT	design control table
DDC	Digital Downconverter
dec or DEC	declination
deg	degree(s)
ΔDOR	Delta-Differential One-way Ranging
DIG	digitizer (assembly)
DMD	DSS Media Calibration (subsystem) or Data Monitor and Display (assembly)
DN, dn	down
DOR	differential one-way range
DRVID	differenced range versus integrated Doppler

Abbreviation or Term	*Definition*
DSCC	Deep Space Communications Complex
DSG	Downlink Signal Generator (a DSN Subsystem)
DSN	Deep Space Network
DSOC	Deep Space Operations Center
DSS	Deep Space Station
DSS-13	34-m research & development antenna at Goldstone DSCC
DSS-14	70-m antenna at Goldstone DSCC
DSS-15	34-m HEF antenna at Goldstone DSCC
DSS-24	34-m BWG antenna at Goldstone DSCC
DSS-25	34-m BWG antenna at Goldstone DSCC
DSS-26	34-m BWG antenna at Goldstone DSCC
DSS-34	34-m BWG antenna at Canberra DSCC
DSS-35	34-m BWG antenna at Canberra DSCC
DSS-36	34-m BWG antenna at Canberra DSCC
DSS-43	70-m antenna at Canberra DSCC
DSS-54	34-m BWG antenna at Madrid DSCC
DSS-55	34-m BWG antenna at Madrid DSCC
DSS-63	70-m antenna at Madrid DSCC
DSS-65	34-m HEF antenna at Madrid DSCC
DTF	Development and Test Facility
DTT	Downlink Tracking and Telemetry (Subsystem)
DVP	DSN VLBI Processor

E

Eb/N0	energy per bit divided by noise power spectral density
EEIS	End-to-End Information System
EGRS	extra-galactic radio source
EIRP	effective isotropic radiated power
el, EL, elev	elevation
EOP	Earth Orientation Parameters (of the International Earth Rotation Service [IERS]) or Earth Orientation and Polar motion

Abbreviation or Term	*Definition*
F	
F/O	fiber optic
FER	frame error rate
FET	field effect transistor
FFT	Fast Fourier transform
FM	frequency modulation
FODA	Fiber-optic Distribution Assembly
FOM	figure of merit
FRD	Frequency Reference Distribution (a DSN Assembly)
FSP	Full Spectrum Processing
FSTL	Frequency Standards Test Laboratory (at JPL)
FTP, ftp	file transfer protocol
FTS	Frequency and Timing Subsystem
G	
G/T	(antenna) gain divided by (operating system) temperature
GCF	Ground Communications Facility
GCN	Ground Communications Network
GCR	Ground Communications Router
GDS	Ground Data System
GDSCC	Goldstone (California) Deep Space Communications Complex
GMSK	Gaussian minimum-shift keying
GPS	Global Positioning System
GRA	GPS Receiver/Processor Assembly
GSFC	Goddard Spaceflight Center
GSSR	Goldstone Solar System Radar
H	
H/P	high power
HA	hour angle

Abbreviation or Term	*Definition*
HEF	high efficiency (antenna)
HEMT	high electron-mobility (field-effect) transistor
HPBW	half-power beamwidth
HRM	high-rate (radio loss) model
Hz	hertz

I

I/F	interface
IF	intermediate frequency
ICRF	International Celestial Reference Frame
ID	identifier or identification
IDC	IF-to-Digital Converter
IERS	International Earth Rotation and Reference Systems Service
IF	intermediate frequency
IIRV	Improved Inter-range Vector
IL_BET	In-lock Bit Error Tolerance
IPN	Interplanetary Networks (JPL Directorate)
ITRF	International Terrestrial Reference Frame
ITU	International Telecommunications Union
IVS	International VLBI Service for Geodesy and Astrometry

J-K

JPL	Jet Propulsion Laboratory
J_y	Janskys
K	Kelvin
KEOF	Kalman Earth Orientation Function
km	kilometer
KSC	Kennedy Space Center
kW	kiloWatts
kHz	kilohertz

L

Abbreviation or Term	*Definition*
L/P	low power
LAN	local area network
LDPC	Low-Density Parity-Check
LCP	left (-hand) circular polarization
LITS/VCXO	Linear Ion-trap/Voltage Controlled Crystal Oscillator (frequency standard)
LNA	low noise amplifier
LO	local oscillator
LRM	low-rate (radio loss) model

M

m	meters
MAP	maximum *a posteriori* probability
MASER	microwave amplification by stimulated emission of radiation
max	maximum
MB	medium bandwidth
MB/s	Megabyte per second
MCD	Maximum Likelihood Convolutional Decoder
mdeg	millidegree
MDSCC	Madrid (Spain) Deep Space Communications Complex
ME	Master Equatorial
MGC	manual gain control
MGSS	Multimission Ground Systems and Services
MHz	megahertz
MIL-71	Merritt Island Launch Area at the Kennedy Space Center
MILA	Merritt Island Launch Area
min	Minimum or Minute
MJD	Modified Julian Day
MRN	metric normalization rate
MOC	Mission Operations Center
MOCC	Mission Operations Control Center
mod	modulation, module

Abbreviation or Term	*Definition*
MOS	Mission Operations System
mph	miles per hour
MRE	mean radial error
MRT	major range tone
Ms/s	Mega samples per second
MSL	mean sea level
MSPA	multiple spacecraft per antenna

N

NA, N/A	not applicable
NASA	National Aeronautics and Space Administration
NAV	Navigation
NB	narrowband, narrow bandwidth
NCO	numerically controlled oscillator
NISN	NASA Integrated Service Network
NIST	National Institute of Standards and Technology
NMC	Network Monitor and Control (Subsystem)
NOAA	National Oceanic and Atmospheric Administration
NOCC	Network Operations Control Center
NRZ	non-return to zero
NRZ-L	non-return to zero, level
NRZ-M	non-return to zero, mark
NRZ-S	non-return to zero, space
NTIA	National Telecommunications and Information Administration
NTP	Network Time Protocol

O

OD	Operator Directive
OOL_BET	Out-of-lock Bit Error Tolerance
OQPSK	offset quadrature phase-shift keyed
ORT	Operational Readiness Test

Abbreviation or Term	*Definition*
OVT	Operational Verification Test
P	
PCG	Phase Calibration Generator
PCFS	Personal Computer Field System
PCM	pulse-code modulation
PDF	probability density function portable document format (type or extension of computer file)
PDRVID	pseudo-DRVID
PDU	Protocol Data Unit
PFD	Photonic Frequency Distribution
PLL	phase-locked loop
PM	phase modulation
PN	pseudo-random noise
POCC	Project Operations Control Center
PSK	phase-shift keyed
Q	
QPSK	quadrature phase-shift keying
QQCL	quantity, quality, continuity, and latency
R	
R/T	real-time
R&D	Research and Development
RA	right ascension
RCP	right (-hand) circular polarization
rev	revision
RF	radio frequency
RH	relative humidity
RID	RF-to-IF Downconverter
RMDC	Radio-Metric Data Conditioner

Abbreviation or Term	*Definition*
RMS; rms	root-mean-square
RNG	range
RRP	Receiver and Ranging Processor
RRT	Receiver, Ranging and Telemetry
RS	Reed-Solomon (code), radio science
RSR	Radio Science Receiver
rss, RSS	root-sum-square
RTLT	round-trip light time
RU	range unit

S

S/C	spacecraft
S/X	S-band or X-band
S/N	Signal-to-Noise
SCMF	Spacecraft Command Message File
sec	seconds
SEP	Sun-Earth-Probe (angle)
SER	Symbol error rate
SETSI	Secretaria de Estado de Telecomunicaciones para la Sociedad de la Informacion
SFDU	Standard Formatted Data Unit
SFODA	Stabilized Fiber-optic Distribution Assembly
SFTP	Secure File Transfer Protocol
SFU	solar flux units (one SFU = 1 □ 10^{-22} W/m^2/Hz)
SGA	Signal Generation Assembly
SLE	Space Link Extension
SMS	Service Management System (a DSN system)
SNR	signal-to-noise ratio
SPC	Signal Processing Center
SPD	S-Band Polarization Diplexed (feedcone)
sps	symbols per second
SPS	Service Preparation Subsystem (a DSN subsystem)

Abbreviation or Term	*Definition*
SPT	System Performance Test or System Performance Test Assembly
SSH	Secure Shell
STEC	slant total electron content
stowed	With respect to an antenna, aimed near zenith for protection from the wind.
sub, subcarr	subcarrier
SYM	symbol
SYS	system

T

T_{AMW}	Antenna-Microwave Noise Temperature
TBD	to be determined
TCT	Time Code Translator
TDDS	Tracking and Data Delivery System
TDM	Time-division multiplex
TDRSS	Tracking and Data Relay Satellite System
TDS	Telemetry Delivery Subsystem
TEC	total electron content
TLM	telemetry, Telemetry Service
TLP	Telemetry Processor
T_{OP}	T sub OP (operating system noise temperature)
TSDA	Telemetry Signal Distribution Assembly
T_{sky}	sky noise
TXR	transmitter or Transmitter Subsystem

U

U/C	upconverter
U/L	uplink
UPA	Uplink Processor Assembly
UPL	Uplink (Subsystem)

Abbreviation or Term	*Definition*
URA	Uplink Ranging Assembly
USNO	United States Naval Observatory
USO	Ultra-Stable Oscillator
UTC	Universal Time, Coordinated
UTPM	Universal Time and Polar Motion

V

VAC	vacuum
VC	virtual channel
VCDU	Virtual Channel Data Unit
VCO	voltage controlled oscillator
VCXO	voltage-controlled crystal oscillator
VEX	VLBI experiment
VLBI	Very-Long Baseline Interferometry
VMF	Vienna Mapping Function
VSR	VLBI Science Receiver

W

W/B, WB	wideband
WD	waveform distortion
WGS	World Geodetic System
WRMS	Weighted Root Mean Square
WVSR	Wideband VLBI Science Receiver

X

X/KA	X-band or Ka-band
X-EL, XEL	cross-elevation
XMIT	transmit
XOR	modulo two addition
XRO	X-band receive only (feedcone)

Abbreviation or Term	*Definition*
XTR	X-band transmit-receive (feedcone)

Y-Z

yr	year
ZDD	Zero-delay Device
ZEN	zenith