National Information & Communications Technology Authority

MINIMUM TECHNICAL REQUIREMENTS FOR

DVB-T2 DIGITAL SET-TOP BOX.

March 2017

Minimum Technical Requirements for DVB-T2 Digital Set-Top Box (STB).

The International Telecommunication Union (ITU) has developed a digital terrestrial television broadcasting frequency (DTTB) plan for the migration from Analogue to Digital television broadcasting. The proposed date to accomplish migration from Analogue to Digital television broadcasting is June 17, 2020. In compliance with the migration, the National Information and Communications Authority (NICTA), in line with the ITU *Guidelines for the transition from Analogue to Digital Broadcasting* adopted and approved **December, 2017 as the analogue switch-over date**. The implementation of the DTTB was planned based on DVB-T2 standard.

DVB-T2 is the world's most advanced digital terrestrial television (DTT) standard, offering more robustness, flexibility and efficiency than other DTT standard. It supports Standard Definition (SD), High Definition (HD), Ultra High Definition (UHD), mobile TV (MTV) or combination thereof and, therefore, targets innovative receivers such as computers, smart phones, and dongles.

The **DVB-T2's** enhanced features offer better sound and picture quality for viewing and for viewers to enjoy these features existing broadcast TV operators are hereby advised to upgrade their Analogue TV systems to the **DVB-T2** standard. The upgrade will mean that any subsequent rollout of digital broadcasting infrastructure in PNG shall be on the DVB-T2 platform. In order to access programmes on the DVB-T2 platform, consumers will have to acquire DVB-T2 compliant set- top boxes (STBs).

Vendors and consumers are advised that only   DVB-T2 compliant set-top boxes capable of receiving and correctly displaying digital DVB-T2 signals will be permitted to be imported and used in PNG. All equipment vendors shall comply with the NICTA approved DVB-T2 set-top box Minimum Technical Specifications.

 In accordance with section 30 of the Radio Spectrum Regulation, NICTA has set the following minimum technical specifications for DVB-T2 set top boxes for the purpose of Technical Compliance.

MINIMUM TECHINICAL SPECIFICATIONS

1	DVB-T2 Set Top Box complied Standard is **ETSI EN 302 755 V1.3.1 (2012-04)**		
2	T2 Channel	Input impedance	75 ohms
		Modulation	COFDM: QPSK, 16QAM, 64QAM, 256QAM
		Frequency	UHF IV (470 – 806 MHz), VHF III (174 – 230MHz)
		Input signal level	36~85dBµV
		FEC coding	LDPC Code + BCH Code, Code rates: 1 /2, 3/5, **2/3**, 3 /4, 4/5, 5/6
		FFT(Fast Fourier Transform)Size	1K, 2K, 4K, 8K, 16K, **32K**
		C/N range (Rice channel)	3dB (QPSK 1 /2) to 24dB (256QAM 5/6)
		Pilot Pattern	PP1 to PP8
		Guard intervals	1/128, 1/32, 1/16, 19/256, 1/8, 19/128, 1/4
		Channel raster	7 MHz (VHF), 8 MHz (UHF),
		Signal Bandwidth	7.61 MHz (Normal mode), 6.80, 7.77 MHz (Extended mode) 1.54 (optional), 6.66, 1.57,(optional),
		Service specific robustness	Physical Layer Pipes (PLP
		Interleaving	Bit + Cell +Time + Frequency
		Diversity	SISI, MISO, (SIMO, MIMI if diversity receiver)
		Rotated constellations	Significant robustness gain in channels with severe degradations (multipath, SFN operation, narrow band interference…)
		Mode of Extensions	Future Extension Frame (FEF)
		Max Bit Rates (8MHz)	50.3 Mbit/s, (32Ke, 256QAM, CR=5/6, GI=1/28, PP7)
		Used Bit Rates (8MHz)	Portable SFN: 25.0 Mbit/s, Fixed SFN: 37.0 Mbit/s, Fixed MFN: 40.2 Mbit/s

3	MPEG Transmission stream and video and Audio Decoding	Transmission stream	MPEG-4 ISO/IEC 14496-10
		Video decoding	MPEG-4 AVC (H.264)
		Aspect Ratio(image rate)	4:3, 16:9
		Frame frequency	25Hz (PAL)
		Video Resolution	720X576 (PAL)-standard definition, 1920X1080 (High definition-optional)
		Video Output Resolution HD (Picture Format)	576i, 576p, **720p, 1080i, 1080p, 4k** (Optional)
		Audio decoding	MPEG 2 (MusiCam) Layer I & II / HE AAC (optional)
		Audio mode	Single track/dual track/stereo
		Audio sampling rate	32KHz, 44.1KHz **48KHz. , 96 KHz** (optional)
4	Scanning function	• The STB should include a frequency scanning function to detect the availability of DVB-T signals. • It should also automatically list the content of the terrestrial bouquet by reading the PSI/SI streams and • Be capable of programme memory in case of cut off	
5	Quality reception thresholds	All STBs should have an on-screen visual signal level indicator which would aid in directing the antenna and troubleshooting reception problems	
6	Software	• EPG (Electronic Programme Guide): current and next programme information. 24x7 days schedule. • Capable of the Identity control, watch rating and parental lock • Auto/manual tuning • 24-hour clock • OTA supported for FTA (free to air) • CA supported (optional). Upgrade through USB or other digital interface. • Support Receive mail (optional) • Provides the instant and personalised message prompt (Optional) • Display and withdrawal of subtitles • Support multi-language information	

7	Additional Hardware	PVR (optional)	
8	Subtitle/Multi-language	Supports Subtitle or multi-language	
9	Interfaces	RF input connector: **IEC 169-2 female**, input impedance 75 ohms • RF by pass (loop) IEC 169-2 male (optional) • Composite Video output (CVBS)RCA (optional) • Coaxial output • **HDMI interface** for HD Output • Should include at least one RF cable to connect the unit with its associated analogue television receiver (optional) • USB 2.0 • Audio (L & R) RCA (optional) •	
10	Interfaces for Conditional Access (CA)	As an option, STB include at least one embedded smart card reader or a DVB-CI(Common Interface) slot to allow any type of conditional access (CA) module to be plugged into the set top box. However, individual operators can also make a choice of what CA to employ.	
11	Physical attributes	Power supply	AC 240±5%, 50 ±1Hz with an option of 12V DC input
12	Environmental attributes	Operating Temperature	0~45°C
		Operating humidity	Up to 90%
13	Reliability	Mean Time between failure (MTBF)	>80,000Hrs

For further information, please contact:

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