

CONTRACT DATA

**A contract between
SENTECH, Sender Technology Park, Radiokop, Octave Road, Honeydew,
and**

for the

Appointment of a Set-Top Box Manufacturer (OEM), on a Standing Supply contract agreement, to Co-Develop and Supply of Set-Top Boxes (STBs) for DTT, DTH, and IP Networks, with feature-rich services, or a combination thereof, for a period of 5 years with the option to extend for a further three years.

Bid Number: SENT/006/2021-22

Contents

Part C1: Agreements and contract data

Form of Offer and Acceptance

Contract Data provided by the Sentech

Contract Data provided by the Supplier

Part C2: Pricing Data

Part C3: Scope of Work

Conditions of Contract (available separately)

PART C1: AGREEMENTS AND CONTRACT DATA –

Form of Offer and Acceptance

Offer

Sentech, identified in the acceptance signature block, has solicited offers to enter into a contract for the appointment of a preferred Appointment of a Set-Top Box Manufacturer (OEM), on a Standing Supply contract agreement, to **CO-DEVELOP** and Supply of Set-Top Boxes (STBs) for DTT, DTH, and IP Networks, with feature-rich services, or a combination thereof, for a period of 5 years with the option to extend for a further three years. The bidder, identified in the offer signature block, has examined the documents listed in the Tender Data and addenda thereto as listed in the Bid schedules. By submitting this offer, it has accepted the Bid conditions.

By the representative of the bidder, deemed to be duly authorized, signing this part of this form of offer and acceptance, the bidder offers to perform all of the obligations and liabilities of the bidder under the Contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the conditions of Contract identified in the Contract Data.

**THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF APPLICABLE TAXES;
(in the Bids applicable currency).**

_____ (amount in words);
 _____ (amount in figures)

NB: The Prices quoted above is the total Bid offer inclusive of all applicable taxes for the Contract duration. The price must be carried over from the price breakdown / schedule of rates provided in the Bid document.

This offer may be accepted by Sentech by signing the acceptance part of this form of offer and acceptance and returning one copy of this document to the bidder before the end of the period of validity stated in the Tender Data, whereupon the bidder becomes the party named as the bidder in the conditions of Contract identified in the Contract Data.

Bidder's Signature(s) _____

Signed by the Bidder at _____ **on this the** _____ **day of** _____ **20** _____

Name(s) _____

Capacity _____

Address (Domicillium)

Acceptance

By signing this part of this form of offer and acceptance, Sentech accepts the bidder's offer. In consideration thereof, Sentech shall pay the bidder the amount due in accordance with the conditions of Contract identified in the Contract Data. Acceptance of the bidder's offer by the signature by Sentech shall form an agreement between Sentech and the bidder upon the terms and conditions contained in this agreement and in the Contract that is the subject of this agreement.

The terms of the Contract, are contained in:

- Part C1 Agreements and contract data, (which includes this agreement)
- Part C2 Pricing data
- Part C3 Scope of work.

and drawings and documents or parts thereof, which may be incorporated by reference into Parts C1 to C3 above.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto as listed in the Bid schedules as well as any changes to the terms of the offer agreed by the bidder and the employer during this process of offer and acceptance, are contained in the schedule of deviations attached to and forming part of this agreement. No amendments to or deviations from the said documents are valid unless contained in this schedule of deviations.

Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the bidder receives one fully completed original copy of this document, including the schedule of deviations (if any). Unless the bidder within five working days of the date of such receipt notifies Sentech in writing of any reason why it cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the parties.

Sentech's Signature(s) _____

Signed by Sentech at _____ **on this the** _____ **day of** _____ **20** _____

Name(s) _____

Designation _____

SENTECH SOC LIMITED,

Sender Technology Park
Octave Road
Radiokop
Honeydew
Johannesburg

Date _____

Upon acceptance by Sentech of the bidder's offer, a contract will come into existence.

SCHEDULE OF DEVIATIONS

Notes:

- 1 The extent of deviations from the Bid documents issued by the Sentech before the Bid closing date is limited to those permitted in terms of the conditions of Bid.
- 2 A Bidder's covering letter shall not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid, become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.
- 3 Any other matter arises from the process of offer and acceptance either as a confirmation, clarification or change to the Bid documents and which it is agreed by the Parties becomes an obligation of the Contract shall also be recorded here.
- 4 Any change or addition to the Bid documents arising from the above agreements and recorded here shall also be incorporated into the Contract.

1. **Subject** _____

Details _____

2. **Subject** _____

Details _____

3. **Subject** _____

Details _____

4. **Subject** _____

Details _____

By the duly authorised representatives signing this schedule of deviations, Sentech and the Bidder agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to the documents listed in the Tender Data and addenda thereto as listed in the Bid schedules, as well as any confirmation, clarification or changes to the terms of the offer agreed by the Bidder and Sentech during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the Bid documents and the receipt by the bidder of a completed signed copy of this agreement shall have any meaning or effect in the Contract between the parties arising from this agreement.

Contract Data

Part one - Data provided by Sentech given in all contracts

1. The Purchaser is

SENTECH SOC LIMITED,
Sender Technology Park
Octave Road
Radiokop
Honeydew
Johannesburg

2. General

The National Treasury General Conditions of Contract for goods and services (NT GCC, 2010) or General Conditions of Contract for Works (2015) as issued by National Treasury and the Construction Industry Development Board of the Republic of South Africa apply, respectively.

The goods are specified in the Scope of Work. The Special Conditions of Contract (SCC) are stipulated in the Tender Data.

3. Goods information:

The *Goods Information* is in the document called "Scope of Work" and in the documents and drawings referred to by it.

4. Terms of Delivery

The *Terms of Delivery* are contained in the General Conditions of Contract (GCC) and Special Conditions of Contract.

5. Language

The *language* of this Contract is English.

6. Governing Laws and Jurisdiction

The Contract shall be governed by and interpreted according to the laws of the Republic of South Africa.

In the event of a conflict between or inconsistency in the laws applicable in the various provinces of the Republic of South Africa, the law as applied and interpreted in the Gauteng Province shall prevail.

The parties irrevocably submit to the exclusive jurisdiction of the South Gauteng High Court, Johannesburg in respect of any action or proceeding arising from this Bid.

This Bid and all contracts emanating there from will be subject to the General Conditions of Contract issued in accordance with Treasury Regulation 16A published in terms of the Public Finance Management Act, 1999 (Act 1 of 1999). The Special Conditions of Contract are supplementary to that of the General Conditions of Contract. Where, however, the SCC are in conflict with the GCC, the SCC shall prevail.

7. Sub-contracting post award

A Bidder awarded a Bid may only enter into a subcontracting arrangement with the approval of Sentech. The successful bidder may not subcontract more than 25% of the value of the Contract to any other enterprise that does not have an equal or higher B-BBEE status level of contributor than the bidder concerned, unless the Contract is subcontracted to an EME that has the capability and ability to execute the subcontract.

8. Transformation Plan

A transformation plan is a record of activities an entity intends to undertake to improve its BBBEE Level through Ownership, Management and Control; Skills Development; Enterprise and Supplier Development and Socio-Economic Development.

Sentech reserves the right to request a BBBEE transformation plan with clearly defined timelines and milestones if the recommended bidder does not meet Sentech's transformation goals. These milestones must be achieved over the term of the Contract. This transformation plan shall be submitted within 10 working days from the written request, failing which Sentech reserves the right to withdraw its appointment of the preferred recommended bidder.

9. Warranty

“The minimum warranty period is 12 months. This warranty is effective from customer purchase”

10. Payment

The method and conditions of payment are contained in the Tender Data, GCC and SCC.

The interest on late payment is 0 % per complete week of delay.

11. Currency

South African registered businesses that purchase equipment overseas and quote in foreign currency will be required to provide Sentech a 6-month forward cover contract on appointment. The 6 months forward cover will be re-negotiated and renewed every 6 months should the contract term on this tender be longer than 6 months.

12. General - Prices

Unless approval has been obtained from Sentech, no adjustment in contract prices will be made.

Applications for price adjustment must be accompanied by documentary evidence in support of any adjustment.

13. Price Negotiations

Sentech reserves the right to negotiate market related prices. If market-related prices are not agreed to, Sentech reserves the right to cancel the Bid / Contract

14. Liabilities indemnities and insurance

Insurance is required from the bidder in respect of delivery and transportation where applicable.

15. Disputes

Should any dispute, disagreement or claim arise between the parties ("the dispute") concerning this agreement, the parties shall try to resolve the dispute by negotiation. This entails one party inviting the other party to meet and attempt to resolve the dispute within fourteen (14) days from the date of the written invitation.

If the dispute has not been resolved by such negotiation as referred to in this clause above, the Parties shall submit the dispute to the Arbitration Foundation of Southern Africa ("AFSA") for administered mediation, upon the terms set out by the AFSA secretariat.

Failing such resolution, the dispute shall be resolved by arbitration in accordance with the rules and procedures of AFSA by an arbitrator appointed by AFSA. Where the arbitration route is followed, the dispute must be adjudicated within Johannesburg in the English language and finally resolved in accordance with the rules of AFSA, by an arbitrator or arbitrators appointed by that Foundation.

The provisions of this clause shall not preclude any party from obtaining relief from a Court of competent jurisdiction. To this extent, the Parties hereby consent to the jurisdiction of the South Gauteng High Court, Johannesburg, South Africa. The provisions of this clause shall continue to be binding on the Parties, notwithstanding any termination or cancellation of this agreement.

16. Termination

Sentech shall have the right, at its sole and exclusive discretion, upon written notice to the bidder, to terminate this agreement, in whole or in part should the bidder fail to perform any of its obligations or deliver any deliverable timeously or should Sentech not be satisfied with the quality of any service/s in terms of this agreement, to the satisfaction of Sentech.

Sentech shall furthermore have the right, as a result of such termination, to appoint a third party to perform the obligations of the bidder in terms of the Agreement and the Bidder indemnifies Sentech against all costs incurred by Sentech in appointing such third party to fulfil the obligations of the bidder.

Sentech shall have the right, at its sole and exclusive discretion, to terminate this agreement, at any time, upon 30 (thirty) days' written notice to the bidder.

17. Contract Term

This Contract is a Standing Supply Contract for five (5) years with an option to extend for a further (3) three years. At the expiration of the initial 5-year term the agreement shall renew automatically for a further three (3)years). Sentech reserves the right to terminate this agreement with a 30 days written notice.

18. Supplier Due Diligence

Sentech reserves the right to conduct supplier due diligence at any time before, during, and after the contract period. This process may include announced or unannounced site visits.

Sentech's Representative is

Name: Mr. Zunaid Adams

Address: **SENTECH SOC LIMITED,**
Sender Technology Park
Octave Road
Radiokop
Honeydew
Johannesburg

Tel No. 0114714400

Email: adamsz@sentech.co.za

Sentech's Representative is the Executive: Legal and Regulatory.

14. Delay damages

Refer to and as stipulated in the Special Conditions of Contract.

Contract Data

Part two - Data provided by the Bidder

Statements given in all contracts

The Bidder is:

Name _____

Address _____

a company / close corporation / partnership duly incorporated in accordance with the laws of the Republic of South Africa.

PART C2: PRICING DATA

Price List

Tenderers will provide a single basic unit-price and minimum order quantities for units compliant with Section 20 of the Tender Data document. Pricing **evaluation** will be **on the Average total cost of all Unit Prices (Column B)**. Furthermore, provide a breakdown of this unit-price to assess the cost of the available features required for each STB type. Other Optional Items to be quoted separately and will not form part of the price adjudication. The Total Cost of ownership will be determined using SLA and Training costs.

Note the successful bidder shall provide the latest available model as and when the STBs are required.

Bidders are requested to fill in the following table, indicating the total price for minimum quantities in each of the Set-Top Box types. The options requested are as per section 4.1, Table of Specifications.

Table 1 Pricing Structure - For any forex related pricing bidders must use R15 – 1USD and or R17 – 1EUR

Schedule of Cost A: Supply Set-Top Box Cost					
Column A	Column B	Column C	Column D	Column E	Column F
DESCRIPTION Note: Sentech network consists of two multiplexers (MUX1 & 2) with two PLP's each.	Unit Price	Minimum Order Quantities	Total Price For minimum order quantities	DELIVERY TIME ARO (Lead time)	DELIVERY RATE (Units / Month)
DVB-T2 Set Top Box with dual tuners					
DVB-S2 Set Top Box with dual tuners					
Hybrid STB with single DVB-T2 and single DVB-S2 tuners					
Hybrid STB with dual DVB-T2 and dual DVB-S2 tuners					
Total Cost					

Evaluation is on the Average total cost of all unit prices (Column B).

Once the minimum order quantities are known, Sentech will seek pricing schedules for amounts greater than the minimum quantities indicated.

Schedule of Cost B: Set-Top Box SLA					
Column A	Column B	Column C	Column D	Column E	Column F
DESCRIPTION Note: Sentech network consists of two multiplexers (MUX1 & 2) with two PLP's each.	SLA Cost Year1	SLA Cost Year2	SLA Cost Year3	SLA Cost Year4	SLA Cost Year5
DVB-T2 Set Top Box with dual tuners					
DVB-S2 Set Top Box with dual tuners					
Hybrid STB with single DVB-T2 and single DVB-S2 tuners					
Hybrid STB with dual DVB-T2 and dual DVB-S2 tuners					

Evaluation is on the Average SLA cost for a unit in Year 1, 2, 3, 4, and 5 (Column B, C, D, E, F).

Once the minimum order quantities are known, Sentech will seek SLA pricing schedules for amounts greater than the minimum quantities indicated.

Schedule of Cost C: Set-Top Box Training

Column A	Column B	Column C	Column D
DESCRIPTION Note: Sentech network consists of two multiplexers (MUX1 & 2) with two PLP's each.	Training for a group of 5-10 heads per day	Training for a group of 10-20 heads per day	Training for a group of more than 20 heads per day
DVB-T2 Set Top Box with dual tuners			
DVB-S2 Set Top Box with dual tuners			
Hybrid STB with single DVB-T2 and single DVB-S2 tuners			
Hybrid STB with dual DVB-T2 and dual DVB-S2 tuners			

The evaluation is on the Average Training for 20 or more heads (Column D).

Summary Pricing:

Average Total Unit Cost: Schedule of Cost A _____

Average Total Unit Cost 5 Year SLA Cost: Schedule of Cost B _____

Total price 20 Heads or more for Training Schedule of Cost C _____

**PART C3: SCOPE OF WORK
PURCHASER'S GOODS INFORMATION**

1. Technical Requirements

SENTECH is a state-owned company and is the largest broadcasting signal distributor in South Africa. The company is a licensed Electronic Communications Network Service provider. It currently operates many telecommunication networks for Satellite, Television, Radio, and the Internet. As such, Sentech is a global enabler of broadcasting and digital content delivery.

SENTECH operates on several Intelsat Satellite IS-20 Transponder networks. Sentech has implemented digital Satellite television networks in the Ku-Band Frequency spectrum using the Digital Video Broadcast – Satellite first-generation (DVB-S) and second-generation (DVB-S2) standards. SENTECH adopted the European Technical Standards Institute (ETSI) EN 300 421 and ETSI EN 302 307 Part-1. MPEG2 and MPEG4 video encoding, as well as MPEG1 Layer2 and AAC audio encoding, are used. SENTECH's current Satellite network parameter configuration and capacity allocation are tabled in Table 1 and **are not limited** to the below:

Transmission Parameter	TP 1	TP 2	TP 3	TP 4
DVB Standard	DVB-S2	DVB-S2	DVB-S	DVB-S
Modulation Type	8-PSK	8PSK	QPSK	QPSK
FEC	5/6	5/6	2/3	1/2
Symbol Rate (MSys/s)	28.75	28.75	30.00	26.66
Roll-off	35%	25%	20%	35%
Pilots	Yes	Yes	No	No
Polarization	Vertical	Vertical	Vertical	Vertical

Table 1: SENTECH's current Satellite network parameter configuration

Sentech owns and operates several national terrestrial television and radio transmitter networks. Sentech has implemented digital terrestrial television (DTT) networks in the Ultra High Frequency (UHF) band using the Digital Video Broadcast – Terrestrial second-generation (DVB-T2) Modulator Interface (MI) Multiple Physical Layer Pipe (MPLP) technology. SENTECH adopted the European Technical Standards Institute (ETSI) EN 302755 v1.3.1 (2011-11). SENTECH uses MPEG4 video AAC audio encoding. SENTECH's current DTT network parameter configuration and capacity allocation are tabled in Table 2 and **are not limited** to the below:

Transmission Parameter	Mux 01		Mux 02	
Physical Layer Pipe	PLP 0	PLP 1	PLP 0	PLP 1
Transmission Mode (FFT)	32K Extended	32K Extended	32K Extended	32K Extended
Constellation	256 QAM rotated	256 QAM rotated	256 QAM rotated	256 QAM rotated
Guard Interval	1/16	1/16	1/16	1/16
Pilot Pattern	PP4	PP4	PP4	PP4
PAPR	None	None	None	None
SISO/ MISO	SISO	SISO	SISO	SISO
FEC Frame length	64800	64800	64800	64800
Input Mode	Mode B (MPLP)	Mode B (MPLP)	Mode B (MPLP)	Mode B (MPLP)
Code Rate	3/5	3/5	3/5	3/4

Table 2: SENTECH's current DTT network parameter configuration

Theoretical C/N value per type of channel, Multiplex & PLP is tabled in Table 2 below:

Type Stationary Channel	Mux 01 - Theoretical C/N		Mux 02 - Theoretical C/N	
	PLP 0	PLP 1	PLP 0	PLP 1
Physical Layer Pipe				
Additional White Gaussian Noise (AWGN)	16.1 dB	16.1 dB	16.1 dB	20.0 dB
Fixed Reception (LOS) - Rice	16.3 dB	16.3 dB	16.3 dB	20.3 dB
Portable Reception (NLOS) - Rayleigh	18.3 dB	18.3 dB	18.3 dB	22.6 dB
0dB @ 90% of Guard Interval (SFN)	18.4 dB	18.4 dB	18.4 dB	22.7 dB

Table 3: Theoretical C/N per type of channel, Multiplex & PLP

The primary requirement is the **CO-DEVELOPMENT**, supply, and delivery of Set-Top-Boxes for DTT and DTH networks with feature-rich services for the unsubsidized markets. The STB units are required to perform the following functionalities:

- Provide Satellite Signal reception, decodability, and interactive services on SENTECH's Satellite Network.
- Provide Terrestrial Signal Reception, decodability, and interactive services on SENTECH's DTT Network.
- Operate with Free-To-Air, Free-To-View, and premium services on the DTH network.
- Operate with Free-To-Air Free-To-View, and premium services on the DTT network.
- Operate with Free-To-Air Free-To-View, and premium services on in-home Streaming network.

Sentech intends to appoint a Set-Top Box Manufacture for 5 (five) years, CO-DEVELOP and supply DTT, DTH Set-Top Boxes with Feature-Rich IP services for the local market.

- **ICASA Type approval**

The successful bidder appointed will be required to provide ICASA approval certificates for each product they supply. The responsibility of obtaining type approval certificates is that of the OEM and supplier. ICASA has an online (via Google Chrome browser) registration process for type approval certification for the creation/registration of your entity. Once the entity verification process concludes successfully, you can lodge your application.

Registration website: <https://online.icasa.org.za>

Type Approval Regulations: <https://www.icasa.org.za/legislation-and-regulations/type-approval-regulations-2013>. Should you experience any challenges during the registration process, please feel free to contact the following ICASA officials for assistance:

Mark Deavall:	012 568 3843 (MDeavall@icasa.org.za)
Lenneth Bera	012 568 3337 (LBera@icasa.org.za)
Keneilwe Lonake:	012 568 3373 (KLonake@icasa.org.za)
Bethuel Nkgadime:	012 568 3993 (BNkgadime@icasa.org.za)
Thuli Mkhabela	012 568 4015 (TMkhabela@icasa.org.za)
Siyanda Nkamisa:	012 568 3802 (SNkamisa@icasa.org.za)

- **SABS Type Approval**

The successful bidder appointed will be required to provide SABS approval certificates for each product they supply. The appointed bidders must ensure they issue valid certificates for the units provided.

1.1. Glossary of Terms

Glossary of Terms	
Abbreviations	Descriptions
DTT	Digital Terrestrial Television
DTH	Direct-to-Home Satellite
Installations	Physical installation of DTT or DTH Set-top-Boxes
Set-to-box	Decoder for home installation
SAPO	South African Post Office
OS	Operating system
Hbbtv	Hybrid broadcast broadband TV
RAM	Random Access Memory
ETSI	European Telecommunications Standards Institute

2. Background

SENTECH's DTT and DTH networks carry various broadcaster TV bouquets, and it currently operates with 2xDTT Mux(s) and 7(Seven) Ku-Band IS20 transponders in the Sub-Saharan Africa region. SENTECH is working closely with the broadcasters to ensure the best TV experience's delivery to the viewers. Such delivery will require Set-Top Boxes to support specific standards and capabilities.

2.1. Features and Usecases

The Set-Top Box capabilities will allow broadcasters to offer various premium services beyond receiving traditional broadcast linear channels. These STBs will support richer premium services to provide viewers with a standard and richer viewing experience.

2.1.1. Tuners, PVR & PushVoD:

The DTT and DTH STBs will have dual tuners to allow recording of one channel while watching another. Furthermore, this is to enable the PushVoD functionality.

Combo/Hybrid 1:

The STB will have a 1xDTT tuner and 1 DTH tuner. This STB may not support PushVoD as it only has one tuner per network.

Combo/Hybrid 2:

The STB will have 2xDTT tuners and 2xDTH tuners. This STB will be able to record one channel on the network while watching another channel.

2.1.2. WiFi Hotspotting:

Devices such as tablets, smartphones, or laptops need to connect to the Set-Top Boxes through WiFi. This connection will allow devices to stream directly from the STB for households without a WiFi network or internet connectivity.

2.1.3. HbbTV

The STBs are to adopt the HbbTV standard. Both broadcast-only applications, as well as broadband-related applications, are to be supported. The user will launch HbbTV applications using the portal button or the Red, Green, Blue, and Yellow buttons. The STBs will be able to launch applications pushed via broadcast (and stored locally). The STBs will launch applications over the internet where a URL is available and connected to the internet.

2.1.4. In-Home Streaming

The STBs will offer in-home OTT-like services. The STBs will act as a local streaming server to a minimum of 5 connected devices in the home network.

2.1.4.1. Linear Services

The STBs will allow for streaming of currently broadcasted traditional linear channels received via satellite or terrestrial channels to devices connected directly via WiFi or a home WiFi network.

2.1.4.2. Video On Demand

The STBs will allow for streaming video files to mobile devices connected directly via WiFi or a home WiFi network. The files are pushed via satellite or terrestrial networks and stored on the STB. This process will require middleware integration with a push VoD agent.

2.1.5. Storage

The STBs will support a minimum of 500GB of internal storage. The STBs will support extended/external storage via the USB port.

2.1.6. Analytics & Reporting

The STBs shall support reporting of viewer behavior analytics whenever connected to the internet.

3. Optional Features

SENTECH reserves the option to revise the optional features and elements based on bidders submission BUT at Sentech sole discretion.

4. Technical Information and Requirements

4.1 Table of Specifications

Specification / Features		DTT	DTH	Hybrid 1	Hybrid 2
Tuners	DVB-T2	2	N/A	1	2
	DVB-S2	N/A	2	1	2
	Universal LNB	N/A	Yes	Yes	Yes
Storage	Internal HDD** • Support for a minimum of 500GB	Yes	Yes	Yes	Yes
External Storage	• Support for a minimum of 500GB	Yes	Yes	Yes	Yes
Connectivity	Both built-in Ethernet & WiFi • Ethernet standard minimum 802.3u. Base 100 Mbps • WIFI standard minimum version 802.11n/ac • Stream services to a minimum of 5 Mobile Clients/Devices	Yes	Yes	Yes	Yes
Connectivity	Local WIFI Hotspot/Router capability • Ability to interface with the existing WLAN router using a network cable. • WLAN to support dedicated frequency channels for Streaming services.	Yes	Yes	Yes	Yes
Memory	RAM and Flash sizes are to be determined by STB functionality requirements	Yes	Yes	Yes	Yes
Processor	CPU and GPU sizes are to be determined by STB functionality requirements	Yes	Yes	Yes	Yes

Specification / Features		DTT	DTH	Hybrid 1	Hybrid 2
OS	The OS and appropriate drivers shall provide complete functionality for STB setup, configuration, and TV operation. Not limited to support for STB agent porting and integration.	Yes	Yes	Yes	Yes
Middleware	HbbTv (latest version) <ul style="list-style-type: none"> Include support for targeted advertisements. 	Yes	Yes	Yes	Yes
	PVR functions Provision on Ex. Storage Provision for STB and Mobile Application/Devices <ul style="list-style-type: none"> Time-shift Playback Scheduled Record Rewind Fast Forward Slow Motion Minimum 2Hr ring-buffer Event Auto-Reminder Functionalities to be allowed for multiple streams at any given time to each device.	Yes	Yes	Yes (Excluding Recordings)	Yes
	Push VoD:				
	<ul style="list-style-type: none"> Support of the following standards and minimum versions, <ul style="list-style-type: none"> DVB Data Broadcast standard ETSI 301 192 v1.6.1 in conjunction with, DVB SI specification standard ETSI 300 468 v1.16.1, Implementation Guidelines for Data Broadcasting ETSI TR 101 202 V1.2.1 and DSM-CC standard ISO 13818-6:1998/Amd 3:2001. Other proprietary standards acceptable Indicate your service acquisition flow diagram referencing parameters of the above standards (where possible) Provide Pre-Cache feature to store live segments for linear services. Provide Pre-Cache feature to store VOD segments for On-Demand Services. Provide a webserver Ability to work with Quadrille STB MStore agent or Ability to work with Broadpeak STB agent or Ability to work with Enensys STB Cube agent or Provide the ability to work with another STB agent. 	Yes	Yes	N/A	Yes
	<ul style="list-style-type: none"> Provide the ability to provide for Analytics and Reports using the broadband network as a return channel. 	Yes	Yes	Yes	Yes
	OTT over Sat & DTT (For broadcasted Linear services)				
SAT > IP integration SAT>IP Protocol Specification. Support minimum ver 1.2.2 <ul style="list-style-type: none"> Sat>IP certification (if not acquired, indicate a timeline for the certification process). If not certified, indicate any proprietary standard or any other that can achieve the same objectives of SAT>IP. Provide the linear reception for Satellite(DVB-S2) and Terrestrial (T2) signal. Transcoding – Multi-Media Profiles Provide Unicast session(s) per services. 	Yes	Yes	Yes	Yes	

Specification / Features		DTT	DTH	Hybrid 1	Hybrid 2
	<ul style="list-style-type: none"> Develop a client application for STB, mobile devices embedding the SAT>IP client, or other proprietary clients. 				
	<ul style="list-style-type: none"> Support a minimum of 5 mobile devices (excluding the STB) 	Yes	Yes	Yes	Yes
Mobile application	<ul style="list-style-type: none"> Provide a white label web and iOS or Android mobile client application to support other OTT features. Embed DRM media players in mobile devices. 	Yes	Yes	Yes	Yes
Security	<ul style="list-style-type: none"> Nagra CAS interface using smartcards or Nagra CAS using card-less technology Nagra PRM/DRM (Possible off-line DRM solution) Protection for Media on External Storage. 	Yes	Yes	Yes	Yes
Software Code download	<ul style="list-style-type: none"> DVB SSU support <ul style="list-style-type: none"> Minimum required: Simple Profile Secure software download mechanism to be established 	Yes	Yes	Yes	Yes
Interfaces	<ul style="list-style-type: none"> USB Support for minimum version 3.0 	2	2	2	2
	<ul style="list-style-type: none"> RCA 	Yes	Yes	Yes	Yes
	HDMI <ul style="list-style-type: none"> Support for minimum version 1.4b Support for HDCP 	Yes	Yes	Yes	Yes
4K Support	<ul style="list-style-type: none"> Minimum HEVC compression standard Backward compatible with MPEG2 and MPEG4(AVC) 	Yes	Yes	Yes	Yes
Warranty	<ul style="list-style-type: none"> Minimum 1(one) year Option for Extended Warranty 	Yes	Yes	Yes	Yes
SLA Support		Yes	Yes	Yes	Yes
Repair Centre		Yes	Yes	Yes	Yes

4.2 Table of Optional Items

Specification / Features		DTT	DTH	Hybrid 1	Hybrid 2
Tuners	Multi-tuners using Unicable with single LNB**	N/A	Yes	N/A	Yes
Interfaces	Optical Audio	Yes	Yes	Yes	Yes
Application Support	<ul style="list-style-type: none"> e.g., Netflix, DStv Now (A need for commercial discussions) 	Yes	Yes	Yes	Yes
Google Certified	OEM to advise on the certification application	Yes	Yes	Yes	Yes

5. Non-Technical Requirements

5.1 Marketing; Selling and Distribution

For distribution of the STBs, SENTECH will leverage the manufacturer / OEM's retail network. The STBs should be white labeled to allow SENTECH to brand it accordingly per requirement (of SENTECH's strategy, clients, and partners).

5.2 Intellectual Property

Any unique IP produced as a result of this co-development will be co-owned by both parties. Upon appointment, SENTECH will require the successful bidder to sign a Non Disclosure Agreement.