Industry Call to Action Report

Analogue social alarm communications on digital networks

Guidance for TEC Commissioners, Service Providers, Suppliers and Installers

Version 1 – March 2024

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1. Introduction

The Department of Health and Social Care (DHSC) hosted stakeholders from the Technology Enabled Care (TEC) sector to discuss the current status of the digital telephone switchover in the TEC sector and what actions needed to be taken in order to mitigate risk of harm to alarm users. At the conclusion of the meeting there was a call to action for those industry stakeholders present to complete TEC telecare device testing on digital networks and to share those results publicly. The focus was on the sharing of results on legacy analogue TEC devices that make up most of the TEC alarm devices in the UK, where there is the most risk to alarm users when working on digital telephone lines.

This report presents the information received from several of those key TEC stakeholder present at the DHSC event as well as information received from other organisations in TEC sector.

With this in mind, we would like to thank the following organisations for their contribution to this report:

- Argenti
- Appello Careline
- Astraline – Johnnie Johnson Housing
- Barnsley Metropolitan Borough Council
- BT PLC
- Careium
- Cheshire East Council
- Chubb Fire & Security
- City of Bradford Council
- Digital Health and Care Northern Ireland
- East Riding of Yorkshire Council
- Gloucestershire Council
- Great Yarmouth Borough Council
- Housing Learning & Improvement Network
- Local Government Association
- London Borough of Haringey
- Lifeline24
- London Borough of Tower Hamlets
- NHS Transformation Directorate
- North Hertfordshire Careline
- Openreach
- Possum
- Progress Lifeline
- Scottish Digital Office
- Skyresponse
- Southampton City Council
- Sovereign Housing Association
- Stockport Homes
- Taking Care
- Telealarm
- TEC Cymru
- Virgin Media
- Wolverhampton Homes
- Wolverhampton Metropolitan Borough Council
- Your Homes Newcastle

As well the TSA, the call for the information collated in this report was sponsored by the Local Government Association, the Housing Learning and Improvement Network, TEC Cymru, the Digital Office for Scottish Local Government and Digital Health and Care Northern Ireland.

Yours Sincerely,

Alyson Scurfield
Chief Executive
TEC Services Association CIC (TSA)

2. Executive Summary

The main risks from an analogue telecare device working on a digital network are alarm call failure as well as the impact of mains power failure as battery backup is not provided as standard to digital networks. Communications Providers are examining different options for battery backup but only for telephones and not telecare devices used by the 1.8 million telecare users in the UK.

The following text has been provided by Openreach in conjunction with Communications Providers regarding the use of analogue-only equipment on All IP networks:

> ***'Anyone that is intent on finding reasons to keep their analogue-only solutions in place, contrary to expert advice, rather than accepting and embracing change, will clearly be doing so for short-term financial reasons, and will be doing so despite offering an inferior service to their competitors and potentially putting their customers at unnecessarv risk'***

The TSA reviewed this advice and released guidance in November 2021 that requested TEC Service Providers and Commissioners to stop buying new analogue-only alarm units – that guidance was strengthened in June 2022 when it was introduced as a stipulation into the Quality Standards Framework (QSF).

This report identifies over 4,000 potential combinations of tests that are needed to fully understand the risk of all possible combinations of devices, protocols, networks, and Alarm Receiving Centre (ARC) platforms. The reality, given the level of resources that can be deployed, is that testing can only cover a fraction of the possible combinations, although the stakeholders involved in testing have tested some of the most popularly used. With thanks to all those manufacturers and telecare service providers that have provided test and real-world data for collation and analysis, and we continue to request further relevant evidential data to enable the ongoing monitoring of analogue over digital during the migration.

Given the limited testing and the general risk associated with analogue devices on digital networks, the report does not make any recommendations about which combinations should be employed but it does identify which combinations of devices, protocols, networks, and platforms ***should be avoided***. These 'red flags' are based on some less than satisfactory results under limited testing that reveal issues, on the basis that if 3 calls cannot be made successfully then there are serious concerns about a combination.

At a Communication Provider level, those 'red flags' include current recommendations not to use any Zen Internet or BT Enterprise lines for analogue alarm communication, given the level of failures reported. The report also details some specific combinations of devices, protocols and networks that should be avoided. There are device combinations that performed well in testing but no specific recommendations can be made to continue the use of these devices in analogue mode over digital networks, given the limited testing that has taken place and the variation between laboratory environments and the real world communications networks.

Finally, we have included some analysis around real world handshake failures to give an expectation of the current level of alarm call degradation in the UK. Over 2 million lines of call data were captured over nearly 2 years to understand the volume of successful alarm calls and alarm calls that failed to connect (handshake failures) – the average handshake failure rate was 3.5% over this period, meaning that 35 calls in every 1,000 attempts failed and led to a redial – this adds about 50 seconds of delay for each unsuccessful attempt for an alarm call to connect. This 3.5% can therefore be used a balance going forward to measure the ongoing degradation of alarm calls made at a micro and macro level to assist commissioners and buyers with the understanding of where analogue to digital replacement proprieties lie

3. Testing Combinations

Since the publication of the TSA's 'A Digital Future for Technology Enabled Care' in 2017, there has been a clear strategy for the sector to move to fully digital communications (digital alarm communicating over digital networks to the digital ARC). However inevitably, given the volume of existing analogue alarm users, there will be a period when analogue-only equipment will need to communicate over digital networks. This has been the driver for testing of analogue equipment – it is not that the use of analogue is encouraged but given the continued prevalence of analogue, there needs to be more understanding in the telecare industry and sector regarding the most unreliable combinations of alarm device, alarm protocols, digital telecommunication networks and ARC platforms.

3.1. Alarm Devices

These are the items of equipment in peoples homes that link peripherals (such as fall detectors and smoke alarms) to the outside world. There are many different manufacturers of alarm devices in the UK, and they must comply with British and European standards in order to be certified to carry life-critical alerts. In this report, data has been collated for 9 different analogue and hybrid (capable of analogue and digital transmission) devices.

Analogue	Hybrid
Tynetec Reach	Chubb CareUnity Digital
Chubb CareUnity Analogue	Telealarm TA74
Doro Sara	
Possum Neo	
Possum Novo	
Tunstall Vi	
Tunstall Vi+	

3.2. Alarm Protocols

These are the technical languages that the Alarm Devices and ARC use to communicate with each other. These protocols are governed by specific standards to ensure reliability and to promote interoperability. Alarm Protocols are either analogue (audible tone based) or digital (computer message based) and it has been recommended by those organisations responsible for migrating to digital networks (Openreach, Virgin Media etc…) that digital protocols are the only reliable means of communication. There are three different protocols that have been included in this report – all the protocols tested were open protocols which promote the theme of interoperability – whilst some telecare service providers have tested proprietary protocols, these results have not been included.

Analogue
BS8521
TT92-DTMF
CPC

3.3. Digital Telecommunication Networks

These digital telecommunication networks are replacing the analogue telecommunication networks in the UK by 31st December 2025, and this involves a huge programme of transformation involving the upgrading of equipment in peoples' homes as well as at telephone exchange buildings, the 'virtualisation' (replacing on-premise equipment with cloud-based technology) of IT hardware and the replacement of core cabling networks. The existing analogue networks belong to organisations such as Openreach (for BT, Sky, Vodafone, Talk Talk and over 600 other Communications

Providers) as well as Virgin Media and KCom. It is these Network and Communications Providers that are completing the migration, providing the testing centres (not only for Technology Enabled Care industry but also for lifts, security alarms, Point of Sale credit/debit card devices etc…) as well as expert advice with regards to the reliability of analogue alarm protocols working on digital networks. At the point of completing this report, results from three testing centres have been included, where the following communication networks have installed 23 different variants of network and equipment between them:

BT	Openreach	Virgin Media
BT Consumer (SOGEA & FTTP)	BT Consumer (SOGEA & FTTP)	Virgin Consumer (Hub 3, Hub 4 & Hub 5)
BT Enterprise (SOGEA & FTTP)	BT Enterprise (SOGEA & FTTP)	Virgin Enterprise (CHITA & CGNv4)
	Talk Talk Consumer (SOGEA, MPF & FTTP)	
	Sky (SOGEA, FTTP & SOGFAST)	
	Vodafone (SOGEA & FTTP)	
	Zen (SOGEA & FTTP)	

3.4. Alarm Receiving Centre platforms

ARC Platforms are the software and hardware used by trained Operators to answer emergency calls from alarm users that have fallen or where a smoke alert has been triggered or other such alerts. The ARC platforms must be capable of understanding the alarm protocol language used by the analogue and digital alarm devices and most ARC platform manufacturers have spent the last few years upgrading their platforms to understand digital protocols. The ARC platforms that have received test calls as part of this report are listed below:

Analogue	Hybrid	Digital
PNC (PSTN / ISDN)	Jontek (ISDN)	Umo (SIP)
Chubb (PSTN)	Carenet (ISDN)	Skyresponse (SIP)
		Chubb (SIP)

4. Sharing and Publication of Laboratory Test Results

Testing facilities have been in operation since 2018 and, whilst there was a pause in testing from March 2020 to June 2021 due to the Covid-19 pandemic, there has now been a significant amount of testing carried out. BT's was the first test centre to open, followed by Openreach in 2021 and a selection of the TEC manufacturers and Service Providers to have tested at both venues are shown below:

alertacall bring contact to life	appello
careium	Chubb POWERED BY APi GROUP
City of BRADFORD METROPOLITAN DISTRICT COUNCIL	CSL
Haringey LONDON	legrand®
Lifeline24	livity life
Progress Lifeline	possum life enhancing solutions
stockport homes Proud to be part of SHG	Taking Care Part of AXA Health
TeleAlarm® A KATEK Brand	Tunstall Enabling independent living

In addition to those test facilities, there are facilities operated by Virgin Media, Talk Talk and KCom but details of those organisations that have tested at those centres are not publicly available.

From those TEC manufacturers that have completed testing, some have refused to share test data and the statement on the next page is from one of those manufacturers that has refused to share data and it sets out one reason why.

"We have not been selling analogue devices for a number of years, and as an organisation we took the decision to focus on terms of communicating digital transformation with service providers back in 2018 through roadshows, events & customer meetings. We stated that the potential risks associated with using legacy analogue equipment on new digital networks was going to result in a less reliable service and that all our customers should seek to install digitally capable devices. After 5 years, it is our opinion that the organisations should already understand the risks and that as an industry we should be accelerating the transition to digital devices rather than prolonging the risk of maintaining legacy equipment.

Laboratory testing can offer some real benefits but can also lead to further confusion in terms of interpretation and future decision making. Different products (including different build levels of the same products), different protocols and implementations and different networks mean it's almost impossible for providers to have the confidence that they know what they have and it's almost impossible for them to know if there are changes going on with a service user's communication provider. Testing in a lab one day, is not a guarantee that the following day, in the real world that the device will perform in the same way due to the ongoing evolution of the networks. We know there is clearly network instability and other factors such as Direct Dial-Ins (DDIs) or Non-Geographic Numbers (NGNs) can also impact this.

In conclusion, the ability to offer confidence to telecare service providers using unsupported legacy equipment introduces far too much risk for us and should not be the focus of sector driven communications. If a telecare service provider takes the information as given and believes that their deployment is going to perform reliably, and it doesn't, there is then the question of liability, and where does that sit? Due to this fact, we are unable to agree to providing our test results for public communication."

Whilst this view is understandable, the stakeholders that have supported this report feel that it is important to get evidential test information into the public domain to support risk-based decision making, understanding that no decision can be made with 100% certainty.

This report does not encourage the use of analogue devices on digital networks, but it seeks to minimise the risk in an unavoidable situation, given the pace of change of communication networks compared to the pace of change of analogue to digital devices in the TEC sector.

It is thought also that other TEC manufacturers have not shared test results for commercial or operational reasons.

5. Alarm Call Laboratory Test Results & Analysis

The test data collated has shown a significant amount of tests have been carried out against the large number of potential combinations of Devices, Protocols, Networks and Platforms, and whilst these results are a snapshot in time, it is intended that results will be collated on an ongoing basis via ALLIP@tsa-voice.org.uk and periodic collation will take place and be published via the TSA Digital Shift webpage (https://www.tsa-voice.org.uk/campaigns/digital-shift/) as appropriate.

In an ideal scenario from an analogue over digital testing perspective, the testing would be based on a minimum of 10 test calls per potential combination, but given that there are 9 analogue devices x 3 analogue protocols x 23 communication network configurations x 7 ARC Platform variants, this is not practical. Although not all 4,347 combinations are possible to configure, to complete over 43,000 test calls would require an estimated 200 days of testing (400 days of combined effort given 1 tester to make the calls and 1 operator to answer the calls).
It is more realistic to ask testers to test a minimum of 3 test calls per combination, although given the 114 variants of networks and up to 3 different analogue protocols per device, total testing coverage would amount to 2,166 combinations and 6,498 test calls. The current level of testing has reached 362 combinations and 1,084 test calls which represents about 16% coverage of all possible device, protocol, network, and platform sequences – the call to action remains in place and it is hoped that telecare service providers and manufacturers will continue to test and provide data during the period of migration.

The three-call minimum per combination gives a reasonable idea of where the red warning flags are and, whilst a green flag does not endorse the usage of analogue over digital, it is enough to give an indication of where the real problem combinations sit.

In terms of recording the results, a simple Red/Amber/Green system is used – this is a very simplified means of highlighting any issues and hopefully gives stakeholders a simple reference – the main areas of concern that the testing is seeking out are:

- Calls unable to connect to the ARC platform after multiple redials (RED)
- Calls unable to connect without at least one redial (AMBER)
- Voice quality poor at either the device end or the ARC platform end (AMBER)
- Voice quality very poor at either end – either party cannot be understood (RED)
- Operator must toggle to speak and listen, like a walkie-talkie technique (AMBER)
- ARC platform unable to close the call successfully (RED)

The legend below defines the interpretation of the results:

Legend	
	Testing Combination not viable or unavailable
R	Alarm Voice call fails to connect or close down (call failure)
A	Alarm Voice call connects but quality is poor or requires toggling (call control failure)
G	Alarm Voice connects successfully without additional configuration

The following tables give the collated detail of results by communications network:

5.1 BT Consumer

			ANALOGUE PROTOCOLS																						Vol. of Analogue Test Calls	% Analogue CP Success Rate
			Tynetech Reach		Chubb CareUnity Analogue		Chubb CareUnity Hybrid	Doro Sara			Possum Neo			Possum Novo			Telealarm TA74		Tunstall Vi		Tunstall Vi+					
CP	NTE	ARC	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF				
BT Consumer	SOGEA	Jontek ISDN	R G G					G G G	R G G		G G G G G G G G G			G G G G G G G G G			G G G G G G G G G		A R A R G G		G G G G G G		216	88%
	FTTP	Jontek ISDN	G G G					A G G G G G			G G G G G G G G G			G G G G G G G G G			G G G G G G G G G		R R G G R G		G G G G G G			
	SOGEA	Umo SIP	G G G R G G								G R G			G G G					G G G G G G		G G G G G G			
	FTTP	Umo SIP	G G G R G R								G R G			G G G					G G A G G G		G G G G G G			
	SOGEA	Carenet ISDN		G G G																		G R G				
	FTTP	Carenet ISDN		G G G																		G G G				
	SOGEA	Chubb PSTN			G G G G G G		G G G																			
	FTTP	Chubb PSTN			G G G G G G		G G G																			
	SOGEA	Skyresponse SIP			G G G A A A		G G G																			
	FTTP	Skyresponse SIP			G G G G G G		G G G																			
	SOGEA	Tunstall PNC	G G G						R R R							G G G				G G G					
	FTTP	Tunstall PNC	G G G						R R R							G G G				G G G		G G G			
Vol. of Test Combinations			6	4	4	4	4	2	4	0	4	2	2	4	2	4	2	2	4	8	4	6	30%			

- BT Consumer (the standard home BT broadband service) provided the strongest results of all the digital networks tested
  - Published testing combinations account for 30% of the total possible testing
  - Overall success rate for tests carried out on this network is 88% (volume of 'G' (Green) successful test calls versus the overall number of test calls) which is the highest percentage of successful calls recorded across all the digital networks (based on a minimum of 150 test calls completed)
- Combinations which have shown poor reliability in testing
  - Tynetec Reach (TT92-DTMF) to Umo SIP – Use BS8521 protocol to connect Tynetec Reach to Umo SIP platform via BT Consumer Broadband (based on 50% call failure rate)
  - Doro Sara (BS8521) to Tunstall PNC – **Avoid connecting Doro Sara to Tunstall PNC platform via BT Consumer Broadband** (based on 100% call failure rate)
  - Possum Neo (CPC) to Umo SIP – **Avoid connecting Doro Sara to Umo SIP platform via BT Consumer Broadband** (based on 33% call failure rate)
  - Tunstall Vi (BS8521& TT92-DTMF) to Jontek ISDN – no alternative protocol available – **Avoid connecting Tunstall Vi to Jontek ISDN platform via BT Consumer Broadband** (based on 42% call failure rate)

5.2 Talk Talk Consumer

CP	NTE	ARC	ANALOGUE PROTOCOLS																				Vol. of Analogue Test Calls	% Analogue CP Success Rate
			Tynetech Reach		Chubb CareUnity Analogue		Chubb CareUnity Hybrid	Doro Sara			Possum Neo			Possum Novo			Telealarm TA74		Tunstall Vi		Tunstall Vi+			
			BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF		
Talk Talk Consumer	SOGEA	Jontek ISDN	G G G						G G G											G G G			153	80%
	MPF	Jontek ISDN	G G G						G G G											G G G		G G G		
	FTTP	Jontek ISDN	G G G					G A A	G G G			G R G			G G G		G A G G G G	A A A	G G G	G G G G G G		
	SOGEA	Umo SIP																						
	MPF	Umo SIP																			G A G G G G			
	FTTP	Umo SIP									G G G			G G G					G A G G G G		G G G G G G			
	SOGEA	Carenet ISDN																						
	MPF	Carenet ISDN																						
	FTTP	Carenet ISDN		G G G																G G G				
	SOGEA	Chubb PSTN																						
	MPF	Chubb PSTN			G G G G G G		G G G																	
	FTTP	Chubb PSTN			G G G G G G		G G G																	
	SOGEA	Skyresponse SIP																						
	MPF	Skyresponse SIP			A A A A A A		G G G																	
	FTTP	Skyresponse SIP			A A A A A A		G G G																	
	SOGEA	Tunstall PNC	G G G						R R R											G G G				
	MPF	Tunstall PNC	G G G						R R R											G G G		G G G		
	FTTP	Tunstall PNC	G G G						R R R											G G G		G G G		
Vol. of Test Combinations			6	1	4	4	4	1	6	0	1	1	0	1	1	0	1	1	2	8	3	6	14%	

- Talk Talk consumer (the standard home Talk Talk broadband service) provided an 80% success rate for collated analogue testing
- Published testing combinations account for 14% of the total possible testing
    - There are three different types of networks under the Talk Talk brand, so the volume of tests required to complete all combinations is 50% more than many of the other networks – hence the reduced combination coverage when compared to BT
- Combinations which have shown poor reliability in testing
    - Chubb CareUnity Analogue (BS8521& TT92-DTMF) to Skyresponse SIP – no alternative protocol available – **Avoid connecting Chubb CareUnity Analogue to Skyresponse SIP platform via Talk Talk Consumer Broadband** (based on 100% call control failure rate)
    - Doro Sara (CPC) to Jontek ISDN – Use BS8521 protocol to connect Doro Sara to Jontek ISDN platform via Talk Talk Consumer Broadband (based on 66% call control failure rate)
    - Doro Sara (BS8521) to Tunstall PNC – **Avoid connecting Doro Sara to Tunstall PNC platform via Talk Talk Consumer Broadband** (based on 100% call failure rate)
    - Tunstall Vi (BS8521) to Jontek ISDN – Use TT92-DTMF protocol if connecting Tunstall Vi to Jontek ISDN platform via Talk Talk Consumer Broadband (based on 100% call control failure rate)

5.3 Sky Consumer

CP	NTE	ARC	ANALOGUE PROTOCOLS																						Vol. of Analogue Test Calls	% Analogue CP Success Rate
			Tynetech Reach		Chubb CareUnity Analogue		Chubb CareUnity Hybrid	Doro Sara			Possum Neo			Possum Novo			Telealarm TA74		Tunstall Vi		Tunstall Vi+					
			BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF				
Sky	SOGEA	Jontek ISDN	G G G					G G G	G G G			G G G			G G G		G G G G G G		A A A	G G G	G G G G G G				
	FTTP	Jontek ISDN	G G G					G G A	G G G			G G G			G G G		G G G G G G		A A A	G G G	G G G G G G				
	SOGFAST	Jontek ISDN	G G G					A G A	G G G			G R G			G G G		G R G G G G		A A A	G G G	G G G G G A				
	SOGEA	Umo SIP									G G G								G	G A G	G G G G G G				
	FTTP	Umo SIP									G G G								G G G	G G G	G G G G G G				
	SOGFAST	Umo SIP									G G G									G G G	G G G G G G				
	SOGEA	Carenet ISDN		G G G																A A A						
	FTTP	Carenet ISDN		G G G																G A G						
	SOGFAST	Carenet ISDN		G G G																A A A						
	SOGEA	Chubb PSTN			G G G G G G		A A A																			
	FTTP	Chubb PSTN			G G G G G G		R R R																			
	SOGFAST	Chubb PSTN			G G G G G G		A A A																			
	SOGEA	Skyresponse SIP			A A A G G G		G G G																			
	FTTP	Skyresponse SIP			G G G G G G		G G G																			
	SOGFAST	Skyresponse SIP			A A A G G G		G G G																			
	SOGEA	Tunstall PNC	G G G						R R R									G G G		G G G		G G G			256	82%
	FTTP	Tunstall PNC	G G G						R R R									G G G		G G G		G G G				
	SOGFAST	Tunstall PNC	G G G						R R R									G G G		G G G		G G G				
Vol. of Test Combinations			6	3	6	6	6	3	6	0	3	3	0	0	3	0	3	6	5	12	6	9			24%	

- Sky consumer broadband service provided an 82% success rate for collated analogue testing
- Published testing combinations account for 24% of the total possible testing
  - Although there are three different types of networks under the Sky brand, there has been significantly more test calls made over the Sky network than other networks (256 calls with the next highest being BT with 186)
- Combinations which have shown poor reliability in testing
  - Chubb CareUnity Analogue (BS8521) to Skyresponse SIP – Use TT92-DTMF protocol if connecting Chubb CareUnity Analogue Vi to Skyresponse SIP platform via Sky Consumer Broadband (based on 66% call control failure rate)
  - Chubb CareUnity Hybrid (BS8521) to Chubb PSTN – **Avoid connecting Chubb CareUnity Hybrid to Chubb PSTN platform via Sky Broadband** (based on 33% call failure rate)
  - Doro Sara (BS8521) to PNC – **Avoid connecting Doro Sara to Tunstall PNC platform via Sky Broadband** (based on 33% call control failure rate)
  - Tunstall Vi (BS8521) to Jontek ISDN – Use TT92-DTMF protocol if connecting Tunstall Vi to Jontek ISDN platform via Sky Broadband (based on 100% call control failure rate)
  - Tunstall Vi (BS8521) to Carenet ISDN – **Avoid connecting Tunstall Vi to Carenet ISDN platform via Sky Broadband** (based on 78% call control failure rate)

5.4 Vodafone Consumer

			ANALOGUE PROTOCOLS																				Vol. of Analogue Test Calls	% Analogue CP Success Rate
			Tynetech Reach		Chubb CareUnity Analogue		Chubb CareUnity Hybrid	Doro Sara			Possum Neo			Possum Novo			Telealarm TA74		Tunstall Vi		Tunstall Vi+			
CP	NTE	ARC	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF		
Vodafone	SOGEA	Jontek ISDN	R R R					G G G	R R R			G G G					G A A	G G G		G A G	G G G	G G G	150	57%
	FTTP	Jontek ISDN	R R R					G G G	R R R			G G G					G G G	G G A	A A A	G A G	G G G	G G G		
	SOGEA	Umo SIP									G G G									R G R		G G G		
	FTTP	Umo SIP									G G G									G G A		G G G		
	SOGEA	Carenet ISDN		G G G																G G G				
	FTTP	Carenet ISDN		G G G																G A G				
	SOGEA	Chubb PSTN			G G G	G G G	R R R																	
	FTTP	Chubb PSTN			G G G	G G G	R R R																	
	SOGEA	Skyresponse SIP			R R R	R R R	R R R																	
	FTTP	Skyresponse SIP			R R R	R R R	R R R																	
	SOGEA	Tunstall PNC	R R R						R R R							G G G				R A G		G G G		
	FTTP	Tunstall PNC	R R R						R R R							G G G				R A A				
Vol. of Test Combinations			4	2	4	4	4	2	4	0	2	2	0	0	0	2	2	2	1	8	2	5	21%	

- Vodafone consumer broadband service provided a 57% success rate for collated analogue testing – proportionately more failures than some other networks tested
- Published testing combinations account for 21% of the total possible testing
  - 150 test calls made which represents a reasonable level of testing
- Combinations which have shown poor reliability in testing
  - Tynetec Reach (BS8521) to Jontek ISDN – **Avoid connecting Tynetec Reach to Jontek ISDN platform via Vodafone Broadband** (based on 100% call failure rate)
  - Tynetec Reach (BS8521) to PNC – **Avoid connecting Tynetec Reach to Jontek ISDN platform via Vodafone Broadband** (based on 100% call failure rate)
  - Chubb CareUnity Analogue (BS8521 & TT92-DTMF) to Skyresponse SIP – **Avoid connecting Chubb CareUnity Analogue to Skyresponse SIP platform via Vodafone Broadband** (based on 100% call failure rate)
  - Chubb CareUnity Hybrid (BS8521) to Chubb PSTN – **Avoid connecting Chubb CareUnity Hybrid to Chubb PSTN platform via Vodafone Broadband** (based on 100% call failure rate)
  - Chubb CareUnity Hybrid (BS8521) to Skyresponse SIP – **Avoid connecting Chubb CareUnity Hybrid to Skyresponse SIP platform via Vodafone Broadband** (based on 100% call failure rate)
  - Doro Sara (BS8521) to Jontek ISDN – Use CPC protocol to connect Doro Sara to Jontek ISDN platform via Vodafone Broadband
  - Doro Sara (BS8521) to Tunstall PNC – **Avoid connecting Doro Sara to Tunstall PNC platform via Vodafone Broadband** (based on 100% call failure rate)

- Tunstall Vi (BS8521) to Jontek ISDN – Use TT92-DTMF protocol if connecting Tunstall Vi to Jontek ISDN platform via Vodafone Broadband
- Tunstall Vi (TT92-DTMF) to Umo SIP – **Avoid connecting Tunstall Vi to Umo SIP platform via Vodafone Broadband** (based on 100% call failure rate)
- Tunstall Vi (TT92-DTMF) to Tunstall PNC – **Avoid connecting Tunstall Vi to Tunstall PNC platform via Vodafone Broadband** (based on 100% call failure rate)

5.5 Zen Internet

CP	NTE	ARC	ANALOGUE PROTOCOLS																								Vol. of Analogue Test Calls	% Analogue CP Success Rate
			Tynetech Reach				Chubb CareUnity Analogue				Chubb CareUnity Hybrid			Doro Sara				Possum Neo				Possum Novo				Telealarm TA74			Tunstall Vi			Tunstall Vi+				
			BS8521			TT92 - DTMF	BS8521			TT92 - DTMF	BS8521			CPC	BS8521		TT92 - DTMF	CPC	BS8521		TT92 - DTMF	CPC	BS8521		TT92 - DTMF	BS8521	TT92 - DTMF		BS8521	TT92 - DTMF		BS8521	TT92 - DTMF			
Zen	SOGEA	Jontek ISDN	R	R	R									R	R	R			R	R	R						R	R	R	R	A	R	R	R	R	R	R	147	12%
	FTTP	Jontek ISDN	R	R	R									R	R	R			R	R	R						R	R	R	R	R	R	R	R	R	R	R	R	
	SOGEA	Umo SIP																G	G	G										R	R	R						
	FTTP	Umo SIP																G	G	G										R	R	R						
	SOGEA	Carenet ISDN				G	G	G																							R	R	R						
	FTTP	Carenet ISDN				G	G	G																							R	R	R						
	SOGEA	Chubb PSTN							R	R	R	R	R	R	R	R																							
	FTTP	Chubb PSTN							R	R	R	R	R	R	R	R																							
	SOGEA	Skyresponse SIP							R	R	R	R	R	R	R	R																							
	FTTP	Skyresponse SIP							R	R	R	R	R	R	R	R																							
	SOGEA	Tunstall PNC	R	R	R										R	R	R								R	G	G					R	R	R					
	FTTP	Tunstall PNC	R	R	R										R	R	R								R	G	G					R	G	R			R	R	R
Vol. of Test Combinations			4			2	4			4	4			2	4		0	2	2		0	0	0		2	2		2	2		8	2		3	20%		

- Zen Internet broadband service provided a 12% success rate for collated analogue testing – by some distance the most unreliable network tested
- Published testing combinations account for 21% of the total possible testing
    - 147 test calls made which represents a reasonable level of testing
- Most combinations demonstrated very poor reliability in testing
    - Issues ranged from calls failing to connect to the ARC failing to be able to close the calls down successfully
- **Given the level of failure, it is recommended that Zen Broadband SHOULD NOT BE USED with any combination of analogue devices and protocols until further testing and analysis has taken place** (based on 88% call failure rate).

5.6 BT Enterprise

CP	NTE	ARC	ANALOGUE PROTOCOLS: Tynetech Reach		Chubb CareUnity Analogue		Chubb CareUnity Hybrid	Doro Sara			Possum Neo			Possum Novo			Telealarm TA74		Tunstall Vi		Tunstall Vi+		Vol. of Analogue Test Calls	% Analogue CP Success Rate
			BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF		
BT Enterprise	SOGEA	Jontek ISDN	G A G						G G G					R R R	R R R	R R R				G R G			105	25%
	FTTP	Jontek ISDN	R R R					R R R	R R R								R R R	R R R		R R R				
	SOGEA	Umo SIP																		G G G				
	FTTP	Umo SIP		G G G															A A A	G G G	G G G			
	SOGEA	Carenet ISDN																						
	FTTP	Carenet ISDN																						
	SOGEA	Chubb PSTN			R R R	R R R	R R R																	
	FTTP	Chubb PSTN			R R R	R R R	R R R																	
	SOGEA	Skyresponse SIP			R R R	R R R	R R R																	
	FTTP	Skyresponse SIP			R R R	R R R	R R R																	
	SOGEA	Tunstall PNC	R R R						R R R											G G G				
	FTTP	Tunstall PNC	G G G						R R R											A A G				
Vol. of Test Combinations			4	1	4	4	4	1	4	0	0	0	0	1	1	1	1	1	1	6	1	0	15%	

- BT Enterprise is the business version of the BT home broadband service
- BT Enterprise broadband service provided a 25% success rate for collated analogue testing which is the 2nd lowest testing performance across all networks
- The BT enterprise solution features an external Analogue Terminal Adaptor (ATA) which was the only network tested with this feature
- Published testing combinations account for 15% of the total possible testing
  - Testing tended to focus more on the consumer networks than the business networks given the prevalence of consumer broadband in peoples' homes
- **Given the level of failure, it is recommended that BT Enterprise Broadband SHOULD NOT BE USED with any combination of analogue devices and protocols until further testing and analysis has taken place** (based on 73% call failure rate)

5.7 Virgin Consumer

			ANALOGUE PROTOCOLS																				Vol. of Analogue Test Calls	% Analogue CP Success Rate
			Tynetech Reach		Chubb CareUnity Analogue		Chubb CareUnity Hybrid	Doro Sara			Possum Neo			Possum Novo			Telealarm TA74		Tunstall Vi		Tunstall Vi+			
CP	NTE	ARC	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF		
Virgin Consumer	Hub 3	Jontek ISDN																					60	98%
	Hub 4	Jontek ISDN																						
	Hub 5	Jontek ISDN																						
	Hub 3	Umo SIP	G G G	G G G				G G G		G G G									G G G	G G G				
	Hub 4	Umo SIP	G R G	G G G				G G G		G G G									G G G	G G G				
	Hub 5	Umo SIP	G G G	G G G				G G G		G G G									G G G	G G G				
	Hub 3	Carenet ISDN																						
	Hub 4	Carenet ISDN		G G G																G G G				
	Hub 5	Carenet ISDN																						
	Hub 3	Chubb PSTN																						
	Hub 4	Chubb PSTN																						
	Hub 5	Chubb PSTN																						
	Hub 3	Skyresponse SIP																						
	Hub 4	Skyresponse SIP																						
	Hub 5	Skyresponse SIP																						
	Hub 3	Tunstall PNC																						
	Hub 4	Tunstall PNC																						
	Hub 5	Tunstall PNC																						
Vol. of Test Combinations			3	4	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3	4	0	0	6%	

- Virgin Broadband Consumer service provided a 98% success rate for collated analogue testing, although this figure must be mitigated by the limited volume of testing that has taken place so far (60 calls compared to circa 150 to 250 calls on other networks)
- Published testing combinations account for only 6% of the total possible testing
    - The Virgin test centre was only opened for testing in late 2022 so there has been less opportunity for testing to take place
    - Virgin Media O2 have mandated that any testers sign a Non-Disclosure Agreement covering the Virgin equipment rather than the sharing of test results, but this has slowed the testing process
- No combinations tested so far have shown poor reliability in testing

5.8 Virgin Enterprise

			ANALOGUE PROTOCOLS																				Vol. of Analogue Test Calls	% Analogue CP Success Rate
			Tynetech Reach		Chubb CareUnity Analogue		Chubb CareUnity Hybrid	Doro Sara			Possum Neo			Possum Novo			Telealarm TA74		Tunstall Vi		Tunstall Vi+			
CP	NTE	ARC	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	CPC	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF	BS8521	TT92 - DTMF		
Virgin Enterprise	CHITA	Jontek ISDN																					36	100%
	CGNv4	Jontek ISDN																						
	CHITA	Umo SIP	G G G	G G G				G G G		G G G									G G G	G G G				
	CGNv4	Umo SIP	G G G	G G G				G G G		G G G									G G G	G G G				
	CHITA	Carenet ISDN																						
	CGNv4	Carenet ISDN																						
	CHITA	Chubb PSTN																						
	CGNv4	Chubb PSTN																						
	CHITA	Skyresponse SIP																						
	CGNv4	Skyresponse SIP																						
	CHITA	Tunstall PNC																						
	CGNv4	Tunstall PNC																						
Vol. of Test Combinations			2	2	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2	2	0	0	5%	

- Virgin Enterprise is the business version of the Virgin home broadband service
- Virgin Broadband Consumer service provided a 100% success rate for collated analogue testing, although this figure must be mitigated by the limited volume of testing that has taken place so far (36 calls compared to circa 150 to 250 calls on other networks)
- Published testing combinations account for only 5% of the total possible testing
    - The Virgin test centre was only opened for testing in late 2022 so there has been less opportunity for testing to take place
    - At the time of testing, Virgin Media O2 have mandated that any testers sign a Non-Disclosure Agreement covering the Virgin equipment rather than the sharing of test results but this has slowed the testing process (the NDA has now been removed).
- No combinations tested so far have shown poor reliability in testing.

6. Alarm Call Real World Results

Alongside the call to action for alarm test results has been a request for Service Providers to send in anonymised alarm call history data from various platforms to try and reconcile some of the results found in testing.

There have been several Service Providers that have returned real-word call history data although telecare service providers have not been able to identify which types of installation that the calls are coming from – e.g. Analogue via a digital router or analogue via a standard landline.

There has, however, been a vast amount of call data received and analysed – over 2 million call records between April 2021 and December 2022 and a summary of the data is contained in the tables below:

	2021											
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Pass				14,677	31,836	34,878	39,168	127,248	242,902	217,133	223,980	232,292
Fail				335	718	800	1,186	3,249	5,193	4,904	7,385	7,618
TOTAL				**15,012**	**32,554**	**35,678**	**40,354**	**130,497**	**248,095**	**222,037**	**231,365**	**239,910**
%				**98%**	**98%**	**98%**	**97%**	**98%**	**98%**	**98%**	**97%**	**97%**

	2022												
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
Pass	240,944	100,340	96,835	61,536	56,273	59,015	57,460	59,185	9,809	10,224	39,525	5,344	**1,960,604**
Fail	5,131	2,797	6,364	5,374	4,093	4,462	3,569	2,629	898	1,752	1,274	941	**70,672**
TOTAL	**246,075**	**103,137**	**103,199**	**66,910**	**60,366**	**63,477**	**61,029**	**61,814**	**10,707**	**11,976**	**40,799**	**6,285**	**2,031,276**
%	**98%**	**97%**	**94%**	**92%**	**93%**	**93%**	**94%**	**96%**	**92%**	**85%**	**97%**	**85%**	**96.5%**

Over the 21-month period of data supplied, whilst deeper analysis to device or network level has not been possible, the data shows an overall average of circa 3.5% call failure rate.

The report gives an indication of the level of call failure under real-world scenarios using data supplied by telecare service providers around the UK. From the data supplied, tracking alarm failures over nearly two years, the level of call failures are rising and this provides a baseline for service providers to monitor and take action as appropriate, basing their performance against a national average made up of over 2 million calls. Service Providers are encouraged to continue to share information on call failure rates throughout 2024 and beyond

7. Impact of Analogue Disconnections

There has been limited testing so far on the impact of different levels of disconnections of alarms from digital routers and more testing is required in this area, but initial results are listed below:

	Alarm can be raised to an ARC?	Service User alerted by the alarm?	Service Provider alerted to disconnection?	Details
Disconnect device from Analogue Terminal Adaptor (ATA)	No	Yes	No	Audible 'line disconnected' message
Disconnect ATA from router	No	Yes	No	Audible 'line disconnected' message
Disconnect home router from network	No	No	No	No audible message but unit dials and redials
Mains power disconnected from router (for 60mins)	No	No	No	No audible message but unit dials and redials
Mains power disconnected from router (for 24hrs)	No	No	No	No audible message but unit dials and redials
Mains power disconnected from alarm device (for 60mins)	Yes	Yes	Yes	Audible 'Power Failure' message
Mains power disconnected from alarm device (for 24hrs)	Yes	Yes	Yes	Audible 'Power Failure' message

8. Glossary of Terms

Term	Explanation in the Context of this Report
Alarm Call Failure	When an alarm unit fails to connect to the Alarm Receiving Centre (ARC). The Unit would normally redial to attempt the connection again.
ARC	**Alarm Receiving Centre** The name given to the contact centres where operators accept emergency calls from Telecare devices
Analogue Devices	These are alarm units that transmit non-digital alarm signals
Analogue-Only Equipment	Alarm units that can only transmit in analogue protocols
ATA	**Analogue Terminal Adaptor** A device which digitises an analogue tone-based protocol to enable it to traverse a digital network with less disruption.
Battery Backup	A solution which provides electricity to device(s) connected to it in the event of a mains power failure
Communications Providers	These are telecommunications companies such as BT, Virgin, Talk Talk, Sky, KCom etc… that are responsible for providing a telecommunications service to personal and business customers in the UK
DDI	**Direct Dial In** The feature provides service for multiple telephone numbers to dial into specific telephone numbers at a particular site or Alarm Receiving Centre.
Digital Networks	These are the telecommunications networks owned by BT, Virgin, KCOM etc… that have been built to convey digital voice and data
Digital Transition	This refers to the period of time between circa 2017 and 2025 when it is expected that all analogue telecommunications networks in the UK will be replaced with digital networks by Communications Providers.
FTTC	**Fibre To The Curb** A mix of Optical Fibre to the street cabinet linked to copper wire into the home or business premises. Lower internet speed than FTTP.
FTTP	**Fibre To The Premises** Optical Fibre cable directly wired from a local exchange directly into an individual home or business premises
Hybrid Devices	Alarm Units that are capable of transmitting wither analogue or digital protocols
Interoperability	The term used to describe the ability of products and solutions created by different manufacturers to link together to share data and insights
ISDN	**Integrated Services Digital Network** Despite the name, this is an analogue network operated by Openreach, Virgin Media and KCom that is due to be phased out by December 2025 at the latest.

Legacy	This is a loose term for products or services which are no longer sold but are present in the marketplace
Life-Critical Alerts	Emergency alerts that are linked to potentially serious, life-threatening situations (e.g. smoke detectors, fire detectors, fall detectors etc…)
Mains Power Failure	The primary electricity supply to a property is not active
NGN	**Non Geographic Numbers** A non-geographic number is a type of telephone number that is not linked to any specific locality. Such numbers are an alternative to the traditional 'landline' numbers that are assigned geographically using a system of location-specific area codes.
Open Protocols	Analogue and/or Digital signalling that is interoperable between different platforms and devices
Peripherals	Analogue or Digital devices that are linked to a hub (e.g. fall detectors, smoke detectors etc…)
Proprietary Protocols	Analogue and/or Digital signalling that is restricted to devices and platforms from a single manufacturer and their authorised partner solutions
PSTN	**Public Switched Telephony Network** He name given to the traditional analogue telephony network in the UK operated by Openreach, Virgin Media and KCom. To be phased out by December 2025 at the latest.
SIP	**Session Initiation Protocol** The generic name given to the new digital networks in the UK which will replace PSTN/ISDN and are operated by Openreach, Virgin Media and KCom plus other smaller network operators.
Technology Enabled Care (TEC) sector	This refers to the industry that connects circa 1.8 million vulnerable people in the UK to an operator automatically when an alarm is raised by their device
Telecare	Technology which automatically connects vulnerable people's voice and/or data to operators at Alarm Receiving Centres (ARCs)
Testing Centres	Locations around the UK where manufacturers and service providers can test analogue and digital equipment with new digital communications networks
Virtualisation	The process of replacing on-premise computer hardware with cloud-based computer software