

# Dataset Definitions

## Mobile Network Performance Dataset

***Last Updated: 2023-04-14***

*Data before the date available will be blank or say "NULL" if the field is displayed*

Field Name	Definition	Data Type	Date Available	Max Field Size
id_result	A unique ID for every Speedtest performed based on the platform.	integer	2022-09-30	11
guid_result	A globally unique ID for every Speedtest performed.	string	2022-09-30	32
id_platform	Denotes the platform on which the test was taken: 1 = Android 2 = iOS	integer	2022-09-30	1
ts_result	Date and time of the test in UTC.	datetime	2022-09-30	19
ts_result_received	Date and time that Ookla received the test result from the device.	datetime	2022-09-30	19
attr_location_timezone	Name of user's timezone at location of test.	text	2022-09-30	50
id_device	Public-facing unique ID of the user/device.	integer	2022-09-30	11
attr_device_android_fingerprint	The device model and OS version of the user's device. Not standardized across all manufacturers. Rather than Android fingerprint, rely on the device and hardware fields for accurate information about the device hardware.	text	2022-09-30	255
attr_device_model	The Ookla-derived common name of the model of the device used for testing.	text	2022-09-30	255
attr_device_manufacturer	The manufacturer of the device used for testing.	text	2022-09-30	255
attr_device_model_raw	Raw (or Android API-returned) model of the device.	text	2022-09-30	255
attr_device_manufacturer_raw	Raw (or Android API-returned) manufacturer of the device.	text	2022-09-30	255
attr_device_brand_raw	Raw (or Android API-returned) brand of the device.	text	2022-09-30	255
attr_device_chipset	Ookla-maintained device chipset name.	text	2022-09-30	255

attr_device_chipset_manufacturer	Ookla-maintained device chipset manufacturer name.	text	2022-09-30	255
attr_device_hardware_name	The device hardware name, as reported by the Android kernel.	text	2022-09-30	255
attr_device_os_version	The version of the operating system being used by the device at the time of the test.	text	2022-09-30	20
attr_device_build	The Android build ID reflects the version of Android installed on the device. The build ID typically follows a standard convention of AAA##A, but some device manufacturers chose to implement their own convention. More information about Android build IDs can be found at <a href="https://source.android.com/source/build-numbers.html">https://source.android.com/source/build-numbers.html</a> .	text	2011-03-01	255
is_device_rooted	TRUE if the device allows running applications with root level permissions, otherwise FALSE. Note, if TRUE the device may be running software that reports false information.	boolean	2022-09-30	5
attr_device_radio	The version string for the radio firmware.	text	2022-09-30	255
attr_device_ram_mb	Maximum system memory in megabytes available to UE kernel.	integer	2022-09-30	19
attr_device_storage_mb	Maximum capacity in megabytes of UE file system, excluding any secondary storage such as SD cards.	integer	2022-09-30	19
is_device_world_phone	TRUE if the device is designated as a world phone by Android.	boolean	2022-09-30	5
attr_device_multi_sim_support	Indicates if the usage of multiple SIM cards is supported by the device and by the carrier. 0 = MULTISIM_ALLOWED if the device supports multiple SIMs 1 = MULTISIM_NOT_SUPPORTED_BY_HARDWARE if the device does not support multiple SIMs 2 = MULTISIM_NOT_SUPPORTED_BY_CARRIER in the device supports multiple SIMs, but the functionality is restricted by the carrier	integer	2022-09-30	1

num_device_active_modems	The number of logical modems currently configured to be activated. 0 = voice, sms, data is not supported 1 = single standby mode (single SIM functionality) 2 = dual standby mode (dual SIM functionality) 3 = tri standby mode (tri SIM functionality)	integer	2022-09-30	1
num_device_supported_modems	The number of logical modem that can be potentially active simultaneously, in terms of hardware capability.	integer	2022-09-30	1
is_device_concurrent_voice_data_supported	TRUE if the device is currently on a technology (e.g. UMTS or LTE) which can support voice and data simultaneously. This can change based on location or network condition.	boolean	2022-09-30	5
is_device_data_connection_allowed	TRUE if a cellular data connection is allowed in the device. Whether cellular data connection is allowed considers all factors below: User turned on data setting isDataEnabled(). Carrier allows data to be on. Network policy. And possibly others.	boolean	2022-09-30	5
is_device_data_capable	TRUE if the current device is "data capable" over a radio on the device. "Data capable" means that this device supports packet-switched data connections over the telephony network.	boolean	2022-09-30	5
is_device_data_roaming_enabled	TRUE mobile data roaming is enabled on the subscription.	boolean	2022-09-30	5
is_device_icc_card_present	TRUE if a ICC (Integrated Circuit Card or smart card) card is present.	boolean	2022-09-30	5

attr_device_service_state	Indicates the phone's service state: 0 = STATE_IN_SERVICE. Normal operation condition, the phone is registered with an operator either in home network or in roaming.1 = STATE_OUT_OF_SERVICE. Phone is not registered with any operator, the phone can be currently searching a new operator to register to, or not searching to registration at all, or registration is denied, or radio signal is not available.)2 = STATE_EMERGENCY_ONLY. The phone is registered and locked. Only emergency numbers are allowed.3 = STATE_POWER_OFF. Radio of telephony is explicitly powered off.	integer	2022-09-30	1
attr_device_thermal_status	The current thermal status of the device. 0 = not under thermal throttling1 = light throttling where UX is not impacted2 = moderate throttling where UX is not largely impacted3 = severe throttling where UX is largely impacted4 = critical, platform has done everything to reduce power5 = emergency, key components in platform are shutting down due to thermal condition. Device functionalities will be limited.6 = shutdown needed immediately	integer	2022-09-30	1
val_device_thermal_headroom	An estimate of how much thermal headroom the device currently has before hitting severe throttling. Values range from 0.0 to 1.0, where 1.0 indicates severe throttling threshold. Values may exceed 1.0, but there is no implied mapping to specific thermal status levels beyond that point.	number	2022-09-30	3
is_app_permission_phone_state	TRUE if the user granted the app phone state permissions.	boolean	2022-09-30	5
is_app_permission_fine_location	TRUE if the user granted the app fine location permissions.	boolean	2022-09-30	5
is_app_permission_coarse_location	TRUE if the user granted the app coarse location permissions.	boolean	2022-09-30	5
is_app_permission_background_location	TRUE if the user granted the app background location permission.	boolean	2022-09-30	5

is_app_permission_wifi_state	TRUE if the app has WiFi State permission. This enables access to information about Wi-Fi networks	boolean	2022-09-30	5
attr_sim_operator_common_name	The Ookla-maintained common name of the SIM card provider. In the case of MVNOs, this will be the name of the carrier that owns the PLMN network.	text	2022-09-30	255
attr_sim_operator_name_raw	The raw name of the SIM card provider as reported by the device. This will sometimes show the name of the MVNO rather than the carrier that owns the PLMN network.	text	2022-09-30	255
attr_sim_operator_mcc	The mobile country code (MCC) of the SIM card operator.	integer	2022-09-30	3
attr_sim_operator_mnc	The mobile network code (MNC) of the SIM card operator.	integer	2022-09-30	3
attr_altsim_operator_name	Mobile carrier name from alternate SIM card when using a dual SIM device.	text	2022-09-30	255
attr_altsim_operator_mcc	The mobile country code (MCC) from alternate SIM card when using a dual SIM device.	integer	2022-09-30	10
attr_altsim_operator_mnc	The mobile network code (MNC) from alternate SIM card when using a dual SIM device.	integer	2022-09-30	10
attr_network_operator_mcc	The mobile network code (MCC) associated with the connected cell site during the test.	integer	2022-09-30	3
attr_network_operator_mnc	The mobile network code (MNC) associated with the connected cell site during the test.	integer	2022-09-30	3
attr_network_operator_common_name	The Ookla-maintained name of the network operator.	text	2022-09-30	255
attr_isp_common_name	ISP common name associated with IP Address. This will be the name displayed in the Speedtest Intelligence portal.	text	2022-12-09	255
attr_isp_name_raw	ISP name associated with IP Address. In some cases, this may report a secondary name of an ISP, for example ABC Fiber.	text	2022-12-09	255
attr_sim_type_allocation_code	The device's Type Allocation Code (TAC) from the active SIM slot.	text	2022-09-30	8

attr_sim_state	<p>Indicates the state of the default SIM card (or active SIM for API 26 and above): 0 = SIM_STATE_UNKNOWN. Unknown. Signifies that the SIM is in transition between states. For example, when the user inputs the SIM pin under PIN_REQUIRED state, a query for sim status returns this state before turning to SIM_STATE_READY. 1 = SIM_STATE_ABSENT. No SIM card is available in the device. 2 = SIM_STATE_PIN_REQUIRED. Locked: requires the user's SIM PIN to unlock. 3 = SIM_STATE_PUK_REQUIRED. Locked: requires the user's SIM PUK to unlock. 4 = SIM_STATE_NETWORK_LOCKED. Locked: requires a network PIN to unlock. 5 = SIM_STATE_READY. Ready. 6 = SIM_STATE_NOT_READY. SIM Card is NOT READY. 7 = SIM_STATE_PERM_DISABLED. SIM Card Error, permanently disabled. 8 = SIM_STATE_CARD_IO_ERROR. SIM Card Error, present but faulty. 9 = SIM_STATE_CARD_RESTRICTED. SIM Card restricted, present but not usable due to carrier restrictions.</p>	integer	2022-09-30	2
attr_test_method	<p>The communication protocol (TCP or HTTP) used by the test. Whenever possible, the test makes a direct TCP connection with the testing server, which allows for greater testing accuracy, especially at higher speeds. In instances where the device is unable to establish a TCP connection with the test server on the appropriate port, the test falls back to using basic HTTP file transfers to determine the device's bandwidth.</p>	text	2022-09-30	4
attr_test_ip_version	<p>Denotes if the test was conducted over IPv4 (4) or IPv6 (6).</p>	integer	2022-09-30	1

attr_connection_type_start	<p>A number representing the device's connection type as detected before the test begins. Please see the connection type table for an explanation of each type. Android connection type as detected before the test starts: 0 = Unknown, 1 = Cell, 2 = Wi-Fi, 3 = GPRS, 4 = EDGE, 5 = UMTS, 6 = CDMA, 7 = EVDO0, 8 = EVDOA, 9 = OnexRTT, 10 = HSDPA, 11 = HSPA, 12 = IDEN, 13 = EHRPD, 14 = EVDOB, 15 = LTE, 16 = HSUPA, 17 = HSPAP, 18 = GSM, 19 = TDSCDMA, 20 = IWLAN, 21 = LTE-CA, 22 = Ethernet, 23 = Bluetooth, 24 = NR iOS connection type as detected before the test starts: 0 = unknown; 1 = cell, 2 = wifi; 3 = GPRS; 4 = Edge; 5 = WCDMA; 6 = HSDPA; 7 = HSUPA; 8 = CDMA1x; 9 = CDMAEVDORev0; 10 = CDMAEVDORevB; 11 = eHRPD; 12 = LTE; 13 = Ethernet; 14 = Bluetooth; 15 = HRPD; 16 = CDMAEVDORevA; 17 = NRNSA; 18 = NRSA</p>	integer	2022-09-30	4
attr_connection_type_end	<p>A number representing the device's connection type as detected at the end of the test. Please see the connection type table for an explanation of each type. Android connection type as detected at the end of the test: 0 = Unknown; 1 = Cell; 2 = Wi-Fi; 3 = GPRS; 4 = EDGE; 5 = UMTS; 6 = CDMA; 7 = EVDO0; 8 = EVDOA; 9 = OnexRTT; 10 = HSDPA; 11 = HSPA; 12 = IDEN; 13 = EHRPD; 14 = EVDOB; 15 = LTE; 16 = HSUPA; 17 = HSPAP; 18 = GSM; 19 = TDSCDMA; 20 = IWLAN; 21 = LTE-CA; 22 = Ethernet; 23 = Bluetooth; 24 = NR iOS connection type as detected at the end of the test: 0 = unknown; 1 = cell; 2 = wifi; 3 = GPRS; 4 = Edge; 5 = WCDMA; 6 = HSDPA; 7 = HSUPA; 8 = CDMA1x; 9 = CDMAEVDORev0; 10 = CDMAEVDORevB; 11 = eHRPD; 12 = LTE; 13 = Ethernet; 14 = Bluetooth; 15 = HRPD; 16 = CDMAEVDORevA; 17 = NRNSA; 18 = NRSA</p>	integer	2022-09-30	4

num_connections_failed	The number of unsuccessful TCP connections between the client and the server. A connection may fail due to delayed, lost, or corrupted packets resulting in new connection attempts to successfully complete a download test. Multiple failed connections may be an indicator of adverse network conditions.	integer	2022-09-30	2
is_connection_carrier_aggregation	TRUE if carrier aggregation is in use.	boolean	2022-09-30	5
attr_connection_nr_state	New Radio state of the mobile data network. Returns one of the following: 1 = RESTRICTED. The device is camped on an LTE cell that supports E-UTRA-NR Dual Connectivity(EN-DC) but either the use of dual connectivity with NR(DCNR) is restricted or NR is not supported by the selected PLMN.2 = NOT_RESTRICTED. The device is camped on an LTE cell that supports E-UTRA-NR Dual Connectivity(EN-DC) and both the use of dual connectivity with NR(DCNR) is not restricted and NR is supported by the selected PLMN.3 = CONNECTED. The device is camped on an LTE cell that supports E-UTRA-NR Dual Connectivity(EN-DC) and also connected to at least one 5G cell as a secondary serving cell.0 = NONE. The device isn't camped on an LTE cell or the LTE cell doesn't support E-UTRA-NR Dual Connectivity(EN-DC).	integer	2022-09-30	1
attr_connection_apn	Access Point Name (APN) is the name of a gateway between a GSM, GPRS, 3G or 4G mobile network and another computer network, frequently the public Internet.	text	2022-09-30	20
id_connection_net_speed	User ISP/connection type (estimated). 0 = Unknown, 1 = Dialup, 2 = Cable/DSL, 3 = Corporate and 4=Cellular. Results with a net_speed_id of 4 are excluded from all Fixed aggregates except for "Mobile Broadband".	integer	2022-09-30	1



is_connection_access_technology_nr	TRUE when the cellular data access network technology is NR. Useful for indicating if the underlying cellular connection is NR while connected to WiFi. Indicates the active data bearer for 5G standalone implementations.	boolean	2022-09-30	5
id_connection_network_override_type	Indicates if a network type override occurred. Often associated with the network type icon displayed on the device. 0 = no override 1 = LTE with carrier aggregation 2 = LTE advanced pro 3 = NR NSA 4 = NR NSA mmWave 5 = NR advanced (NR network with data rate that is higher than the generic 5G rate such as mmWave, unique bands, or carrier aggregation)	integer	2022-09-30	1
attr_connection_downstream_bandwidth_kbps	Downstream bandwidth for the network (in Kbps). This only refers to the estimated first hop transport bandwidth.	number	2022-09-30	8
attr_connection_upstream_bandwidth_kbps	Upstream bandwidth for the network (in Kbps). This only refers to the estimated first hop transport bandwidth.	number	2022-09-30	8
attr_connection_nat64_prefix	The NAT64 prefix in use on the link, if any. The NAT64 gateway is a translator between IPv4 and IPv6 protocols, for which function it needs at least one IPv4 address and an IPv6 network segment comprising a 32-bit address space.	text	2022-09-30	15
attr_location_latitude	The latitude of the device conducting the test. If location type equals 2, this value is approximate.	number	2022-09-30	10
attr_location_longitude	The longitude of the device conducting the test. If location type equals 2, this value is approximate.	number	2022-09-30	10
attr_location_start_latitude	The latitude of the device conducting the test at the beginning of the test. If location type equals 2, this value is approximate.	number	2022-09-30	10
attr_location_start_longitude	The longitude of the device conducting the test at the beginning of the test. If location type equals 2, this value is approximate.	number	2022-09-30	10

id_location_start_type	The method used to determine the device's location at the start of the test. Whenever possible, the speedtest.net mobile application uses the device's location services to determine an accurate latitude and longitude of the device. However, in an effort to maintain a quick and easy user experience, if the device's location services are either unavailable or unable to return an accurate location within a few seconds, we fall back to using third party Geo-IP location services. 1 = GPS / device location services, 2 = Geo-IP.	integer	2022-09-30	3
id_location_end_type	The method used to determine the device's location at the end of the test. Whenever possible, the speedtest.net mobile application uses the device's location services to determine an accurate latitude and longitude of the device. However, in an effort to maintain a quick and easy user experience, if the device's location services are either unavailable or unable to return an accurate location within a few seconds, we fall back to using third party Geo-IP location services. 1 = GPS / device location services, 2 = Geo-IP.	integer	2022-09-30	3
attr_location_accuracy_m	The accuracy of the location data collected from the device expressed in meters.	integer	2022-09-30	5
attr_location_age_ms	Indicates the time elapsed (in ms) from when the user's location information was collected and the test was taken.	integer	2022-09-30	11
attr_location_altitude_m	The altitude (in meters) above the WGS 84 reference ellipsoid. NULL If this location does not have an altitude value.	integer	2022-09-30	6
attr_location_vertical_accuracy_m	Estimated vertical (altitude) accuracy of this location, in meters.	integer	2022-09-30	6
attr_location_speed_mps	Indicates the speed that the device may have been moving during the test, measured in meters per second.	number	2022-09-30	5

attr_place_formatted_address	Full location name including city, county, region, and country, if available.	text	2022-09-30	100
attr_place_name	Unabbreviated location name; typically the city where the test is taken.	text	2022-09-30	100
attr_place_locality_type	Type of locality where test is taken. This is typically an incorporated city or town political entity.	text	2022-09-30	100
attr_place_country	Country where test is taken.	text	2022-09-30	100
attr_place_country_code	Country code where test is taken.	text	2022-09-30	2
attr_place_region	Region name where test is taken. This is the first-order civil entity in a country level. Depending on the country, these are states, provinces, or territories, etc.	text	2022-09-30	100
attr_place_subregion	Region name where test is taken. This is the second-order civil entity in a country level. Depending on the country, these are county-level names. Not all countries display this information.	text	2022-09-30	100
attr_place_subsubregion	Region name where test is taken. This is the third-order civil entity in a country level. Depending on the country, these are the level under counties. Not all countries display this information.	text	2022-09-30	250
attr_place_postal_code	Postal code for the test location. The postal code is that same as what is used to address mail within the country.	text	2022-09-30	100
num_packet_loss_sent	The number of packages sent to host server from device.	integer	2022-09-30	5
num_packet_loss_received	The number of packages received by the host server from device.	integer	2022-09-30	5
metric_packet_loss_percent	The percentage of packet loss measured.	number	2022-09-30	5
is_download_stopped	Indicates whether the speedtest was able to complete before the maximum test duration. TRUE = Early stop occurred FALSE = Early stop did not occur. Full test duration or byte limit was hit	boolean	2022-09-30	5

val_latency_min_ms	The minimum result of the latency portion of the test, measured in milliseconds.	integer	2022-09-30	6
val_latency_iqm_ms	The interquartile mean result of the latency portion of the test, measured in milliseconds.	number	2022-09-30	6
val_latency_max_ms	The maximum result of the latency portion of the test, measured in milliseconds.	number	2022-09-30	6
val_multiserver_latency_ms	The result of the multi-server latency, based on server selection, measured in milliseconds.	number	2022-09-30	8
val_download_latency_min_ms	The minimum latency value measured during the download portion of the test. Also referred to as "loaded latency".	number	2022-09-30	8
val_download_latency_iqm_ms	The interquartile mean latency value measured during the download portion of the test. Also referred to as "loaded latency".	number	2022-09-30	8
val_download_latency_max_ms	The maximum latency value measured during the download portion of the test. Also referred to as "loaded latency".	number	2022-09-30	8
val_upload_latency_min_ms	The minimum latency value measured during the upload portion of the test. Also referred to as "loaded latency".	number	2022-09-30	8
val_upload_latency_iqm_ms	The interquartile mean latency value measured during the upload portion of the test. Also referred to as "loaded latency".	number	2022-09-30	8
val_upload_latency_max_ms	The maximum latency value measured during the upload portion of the test. Also referred to as "loaded latency".	number	2022-09-30	8
num_traceroute_hops	The number of hops taken on the traceroute from the client to server.	integer	2022-09-30	3
attr_traceroute0_ip_address	This is the IP address of the first hop of traceroute during a test.	text	2022-09-30	15
val_traceroute0_latency_ms	The time taken for the packet to be received after the first hop in the traceroute, measured in milliseconds.	integer	2022-09-30	5
attr_traceroute1_ip_address	This is the IP address of the second hop of traceroute during a test.	text	2022-09-30	15

val_traceroute1_latency_ms	The time taken for the packet to be received after the second hop in the traceroute.	integer	2022-09-30	5
val_jitter_ms	The variance in latency over time which determines the stability of the internet connection.	number	2022-09-30	4
val_multiserver_jitter_ms	The result of the multi-server jitter, based on server selection, measured in milliseconds.	number	2022-09-30	6
val_download_kbps	The result of the download portion of the test, measured in kilobits per second.	integer	2022-09-30	11
val_test_download_kb	The bytes used during a test for the download portion, in kilobytes.	integer	2022-09-30	8
num_test_download_threads	The maximum number of download threads used during adaptive testing, maximum of 22 threads	integer	2022-09-30	3
val_test_download_duration_ms	The length, in milliseconds, of the speedtest based on adaptive testing, maximum test length being 15 seconds	integer	2022-09-30	5
val_upload_kbps	The result of the upload portion of the test, measured in kilobits per second.	integer	2022-09-30	11
val_test_upload_kb	The bytes used during a test for the upload portion, in kilobytes.	integer	2022-09-30	8
num_test_upload_threads	The maximum number of upload threads used during testing.	integer	2022-09-30	6
val_test_upload_duration_ms	The length, in milliseconds, of the upload phase of the test.	integer	2022-09-30	5
attr_network_ipv4_address	This is the IPv4 address from which the request to Ookla's reporting API was generated. The last octet of the user's external IP address is masked for addresses that are not on your network. Full IP addresses are available for your network. Devices behind networks with carrier grade NAT may appear to share the same IP address.	text	2022-09-30	15

attr_network_ipv6_address	Speedtest user's IPv6 address. We mask IP addresses for end users privacy, but show enough to allow clients to see which provider is offering the user's internet service. Please note that this address may not be the connection that the Speedtest was taken over (unless there is no IPv4 address populated).	text	2022-09-30	255
attr_network_asn	The Autonomous System Number (ASN) associated with the client's IP address.	integer	2022-09-30	10
attr_app_version	Speedtest app version used for the test.	text	2022-09-30	50
attr_app_store	App store that app was downloaded from, such as the Amazon android app store, Google Play, Yandex, Samsung app store, etc.	text	2022-09-30	50
attr_server_name	The name of the server used for the test. This is typically the city where the server is located.	text	2022-09-30	255
attr_server_sponsor_name	The name of the test server sponsor. Combining server name and server sponsor will create a unique name for each server.	text	2022-09-30	255
attr_server_latitude	The latitude of the server used for the test.	number	2022-09-30	10
attr_server_longitude	The longitude of the server used for the test.	number	2022-09-30	10
val_server_distance_km	The distance (in kilometers) between user and location of server.	number	2022-09-30	9
attr_server_country	The country where the server used for the test is located.	text	2022-09-30	255
attr_server_country_code	The two letter country code (ISO 3166-1 alpha-2) of where the test server is located.	text	2022-09-30	2
is_server_auto_selected	Whether the server used in the Speedtest was selected automatically or manually by the user "TRUE" indicates that the server was selected automatically "FALSE" indicates that the server was selected manually by the user	boolean	2022-09-30	5
is_server_on_network	TRUE if the test was taken on a server sponsored by the network operator.	boolean	2022-09-30	5

attr_server_asn	The Autonomous System Number (ASN) associated with the primary server's IP.	integer	2022-09-30	10
num_server_download	The number of servers utilized during the download portion of the test.	integer	2022-09-30	2
val_signal_rsrp_dbm	Reference Signal Received Power (RSRP) LTE metric displaying the received power of the reference LTE signal, often referred to as "signal strength". Range: [-40, -140], where -140 is poor and -44 is best	number	2022-09-30	4
val_signal_csi_rsrp_dbm	CSI Reference Signal Received Power (CSI-RSRP) The linear average over the power contributions (in [W]) of the resource elements of the antenna port(s) that carry CSI reference signals configured for RSRP measurements within the considered measurement frequency bandwidth in the configured CSI-RS occasions. Reference: 3GPP TS 38.215. Range: [-40, -140], where -140 is poor and -44 is best	number	2022-09-30	6
val_signal_ss_rsrp_dbm	Synchronization Signal Reference Signal Received Power (SS-RSRP) The linear average over the power contributions (in [W]) of the resource elements that carry secondary synchronization signals. Reference: 3GPP TS 38.215. [-40, -140], where -140 is poor and -44 is best	number	2022-09-30	6
val_signal_rsrq_db	Reference Signal Received Quality (RSRQ) The received quality of the LTE reference signal. Range: [-20, -3] where -20 is poor and -3 is best	number	2022-09-30	5
val_signal_csi_rsrq_db	CSI Reference Signal Received Quality (CSI-RSRQ) The ratio of $N \times \text{CSI-RSRP}$ to $\text{CSI-RSSI}$ , where $N$ is the number of resource blocks in the CSI-RSSI measurement bandwidth. Reference: 3GPP TS 38.215. Range: [-20, -3] where -20 is poor and -3 is best	number	2022-09-30	4

val_signal_ss_rsrq_db	Synchronization Signal Reference Signal Received Quality (SS-RSRQ) The ratio of $N \times \text{SS-RSRP}$ / NR carrier RSSI, where N is the number of resource blocks in the NR carrier RSSI measurement bandwidth. Reference: 3GPP TS 38.215. Range: [-20, -3] where -20 is poor and -3 is best	number	2022-09-30	4
val_signal_rssnr_db	Reference Signal Signal-to-Noise Ratio Perhaps the most important KPI, but it's rarely properly reported in Android OS. It's the ratio between the noise and signal of the LTE data transmission. Range: [-30, +30], where -30 is poor and +30 is best	number	2022-09-30	3
val_signal_csi_snr_db	CSI signal-to-noise and interference ratio (CSI-SNR) The linear average over the power contribution (in [W]) of the resource elements carrying CSI reference signals divided by the linear average of the noise and interference power contribution (in [W]). Reference: 3GPP TS 38.215. Range: [-30, +30], where -30 is poor and +30 is best	number	2022-09-30	4
val_signal_ss_snr_db	SS signal-to-noise and interference ratio (SS-SNR) The linear average over the power contribution (in [W]) of the resource elements carrying secondary synchronisation signals divided by the linear average of the noise and interference power contribution (in [W]). Reference: 3GPP TS 38.215. Range: [-30, +30], where -30 is poor and +30 is best	number	2022-09-30	4
val_signal_wcdma_ecno_db	Energy per chip over the noise spectral density ( $E_c/N_o$ ) as dB. Range: [-24, 1]	number	2022-09-30	11
val_signal_rssi_dbm	Received Strength Signal Indicator (non-LTE).	number	2022-09-30	11
val_signal_gsm_rssi_dbm	Received Signal Strength Indicator Range: [-113, -51]	number	2022-09-30	11
val_signal_timing_advance_ts	LTE Timing Advance measured in Ts.	number	2022-09-30	11



val_signal_cqi	CQI stands for Channel Quality Indicator. As the name implies, it is an indicator carrying the information on how good/bad the communication channel quality is. In LTE, there are 15 different CQI values ranging from 1 to 15 and mapping between CQI and modulation scheme. In HSDPA, the CQI value ranges from 0 to 30. 30 indicates the best channel quality and 0,1 indicates the poorest channel quality.	number	2022-09-30	2
attr_cell_nr_frequency_range	The frequency range of 5G NR. 0 = FREQUENCY_RANGE_UNKNOWN. Indicates frequency range is unknown. 1 = FREQUENCY_RANGE_LOW. Indicates the frequency range is below 1GHz. 2 = FREQUENCY_RANGE_MID. Indicates the frequency range is between 1GHz to 3GHz. 3 = FREQUENCY_RANGE_HIGH. Indicates the frequency range is between 3GHz and 6GHz. 4 = FREQUENCY_RANGE_MMWAVE. Indicates the frequency range is above 6GHz.	integer	2022-09-30	1
attr_cell_bandwidth_khz	Bandwidth of the primary serving cell, measured in kHz.	number	2022-09-30	6
attr_cell_bandwidths_khz	An array (JSON string containing an array of integers) of cell bandwidths (in kHz) for the current serving cells.	text	2022-09-30	255
id_cell_primary	The primary cell ID that the device is connected to during the test.	integer	2022-09-30	11
id_cell_lte_enodeb	The eNodeB ID of the cell site that the device is connected to during the test.	integer	2022-09-30	10
attr_cell_pci	LTE Physical Cell Identity. An integer to identify the physical LTE cell the user is connected to. The value is unique to the physical cell antennae rather than a specific cell tower. Valid values are 0 to 503.	integer	2022-09-30	5
attr_cell_nr_pci	New Radio Physical Cell Identity. An integer to identify the physical nr cell the user is connected to. The value is unique to the physical cell antennae rather than a specific cell tower. Valid values are 0 to 1007.	integer		5

attr_cell_tac	LTE Tracking Area Code. A 16 bit integer used to facilitate handoff of a device between cells. The Tracking Area Identity can be determined by prepending the MCC and MNC to the Tracking Area Code.	integer	2022-09-30	9
attr_cell_lac	GSM, WCDMA. A 16-bit integer representing a cell's location within a given operator's system.	integer	2022-09-30	5
attr_cell_psc	Primary Scrambling Code, applies to GSM and WCDMA only. Range: [0, 512]	integer	2022-09-30	5
attr_cell_frequency_channel	The Absolute Radio Frequency Channel Number (ARFCN) is a unique number given to each radio channel in GSM. The ARFCN can be used to calculate the exact frequency of the radio channel. Within the GSM900 band ARFCN 1 to 124 are used. In the GSM1800 band ARFCN 512 to 885 are used. The UTRA Absolute Radio Frequency Channel Number (UARFCN) is a unique number given to each radio channel within the frequency bands used by the UMTS UTRA. The UARFCN can be used to calculate the carrier frequency. The E-UTRA Absolute Radio Frequency Channel Number (EARFCN). In LTE, the carrier frequency in the uplink and downlink is designated by EARFCN, which ranges between 0-65535. EARFCN uniquely identify the LTE band and carrier frequency. EARFCN is independent of channel bandwidth.	number	2022-09-30	8
attr_cell_frequency_channel_type	The type of cell frequency channel, such as ARFCN, UARFCN, EARFCN.	text	2022-09-30	9
attr_cell_nr_arfcn	New Radio Absolute Radio Frequency Channel Number. Reference: 3GPP TS 38.101-1 section 5.4.2.1 NR-ARFCN and channel raster. Reference: 3GPP TS 38.101-2 section 5.4.2.1 NR-ARFCN and channel raster.	number	2022-09-30	7
attr_cell_lte_bands	An array of band numbers or empty array if not available.	text	2022-09-30	255
attr_cell_nr_bands	An array of band numbers or empty array if not available.	text	2022-09-30	255

is_network_roaming	TRUE if the device is roaming.	boolean	2022-09-30	5
is_network_international_roaming	TRUE if the device is roaming internationally.	boolean	2022-09-30	5
is_network_vpn	TRUE if the device was connected to a VPN.	boolean	2022-09-30	5
is_device_5g_capable	TRUE if the device is 5G-capable.	boolean	2022-09-30	5
is_portal_included	TRUE if the test is included in the Speedtest Intelligence portal. FALSE if the test has been excluded from the Speedtest Intelligence portal.	boolean	2022-09-30	5
attr_portal_categories	A comma-separated list of Speedtest Intelligence portal aggregates where the test is included. Example: 4G LTE, 5G, Modern Chipsets	text	2022-09-30	100
attr_connection_type_start_string	The connection type in string format at the test start.	text	2023-03-22	50
attr_connection_type_end_string	The connection type in string format at the test end.	text	2023-03-22	50
attr_device_esim_embedded	TRUE if the device has an eSIM embedded.	boolean	2023-03-22	5