

HAC VOLUME CONTROL TEST REPORT

**FCC 47 CFR § 20.19
ANSI C63.19-2019
ANSI/TIA-5050 2018**

For

GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax and NFC

MODEL NUMBER : SM-A366U, SM-A366U1, SM-S366V

FCC ID: A3LSMA366U

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Prepared for

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Testing Laboratory

TL-637

Revision History

Rev.	Date	Revisions	Revised By
V1	2024-12-18	Initial Issue	-
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1. Attestation of Test Results

Applicant Name	SAMSUNG ELECTRONICS CO.,LTD.
FCC ID	A3LSMA366U
Model Name	SM-A366U, SM-A366U1, SM-S366V
Applicable Standards	FCC 47 CFR § 20.19 ANSI C63.19-2019 ANSI/TIA-5050 2018
Conversational Gain	13.03 dB with hearing aid and 15.89 dB without hearing aid
Date Tested	2024-11-25 to 2024-12-17
Test Results	Pass

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released By: 	Prepared By: 
Justin Park Operations Leader UL Korea, Ltd. Suwon Laboratory	Gyurim Lee Laboratory Engineer UL Korea, Ltd. Suwon Laboratory

2. Test Methodology

The tests documented in this report were performed in accordance with FCC 47 CFR § 20.19, ANSI C63.19-2019 and ANSI/TIA-5050 2018 Communications Products – Receive Volume Control Requirements for Wireless (Mobile) Devices and FCC published KDB procedures.

KDB 285076 D01 HAC Guidance v06r04
 KDB 285076 D03 HAC FAQ v01r07
 KDB 285076 D04 Volume Control v02
 KDB 285076 D05 CG Interim Waiver DA 23-914 v01
 TCB workshop updates

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at

Suwon
Volume Control Room

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637.

The full scope of accreditation can be viewed at <https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf>

4. Calibration and Uncertainty

4.1. Measuring Instrument Calibration

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations and is traceable to recognized national standards.

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Head and Torso Simulator incl Right Ear Simulator and Handset Positioner	Brüel&Kjaer	-4128-C-001-	3285404	2025-06-19
Single Channel, Universal Microphone Conditioning Amplifier	Brüel&Kjaer	-1708---	100426	2025-06-14
Sound Calibrator, Class 1 and LS, 94 and 114 dB, 1 kHz	Brüel&Kjaer	-4231---	3026386	2025-06-14
Production Test USB-DAQ 8/2-ch.	Brüel&Kjaer	-3670-A-082-	3670-000120	2025-07-21
Sound Level Meter	Brüel&Kjaer	2250 Light	3031250	2025-06-14
Communications Tester	R & S	CMW500	150314	2025-07-24
Wireless Test Platform	Keysight	E7515B	MY57510596	2025-07-30
Audio Analyzer	AGILENT	U8903A	MY61170007	2025-07-30
Thermometer	LUTRON	MHB-382SD	AK.12121	2025-07-26

4.2. Measurement Uncertainty

Measurement Uncertainty for Volume Control Measurement

a	c	d	e f(d,k)	f	k	h = c×f/e
Uncertainty component	Tol.(±%)	Prob. Dist.	Div.	ci	vi	ui (± %)
Measurement System - Input channels of Audio Interface (Production Test USB DAQ Type 3670)						
Overall Frequency Response (re. 1 kHz)	0.02	Rectangular	1.732	1	∞	0.01
Measurement System - Output channels of Audio Interface (Production Test USB DAQ Type 3670)						
Measurement System - Pre-Amplifier (Signal Conditioner Type 1708)						
Gain Tolerance 10 Hz 100 kHz	0.01	Rectangular	1.732	1	∞	0.01
Measurement System - Ear-Simulator (Right Ear Simulator Type 4158-C)						
Typical Sensitivity	0.19	Rectangular	1.732	1	∞	0.11
Test Sample Related						
Repeatability Test(Conversational Gain)	5.76	Normal	1	1	40	5.76
Repeatability Test(Acoustic Frequency Response)	1.54	Normal	1	1	40	1.54
Repeatability Test(Distortion)	11.85	Normal	1	1	40	11.85
Combined Standard Uncertainty Uc(y) =		Expanded Uncertainty				
Conversational Gain	5.76	Conversational Gain				11.53
Acoustic Frequency Response	1.55	Acoustic Frequency Response				3.09
Distortion	11.85	Distortion				23.71
Notes for table						
1. Ci - is te sensitivity coefficient						
2. Expanded Std. Uncertainty on Pow er, Coverage Factor = 2, > 95% Confidence						

4.3. Decision Rule

Measurement Uncertainty is not applied when providing statements of conformity in accordance with IEC Guide 115:2023, 4.3.3.

5. Test Procedures for all Technologies

5.1. General Procedures ANSI/TIA-5050 2018, Section 5

The following requirements shall be met for at least one volume control setting for the narrowband transmission mode (if supported) and the wideband transmission mode (if supported).

Quiet room is a room with background noise no greater than 40 dBA.

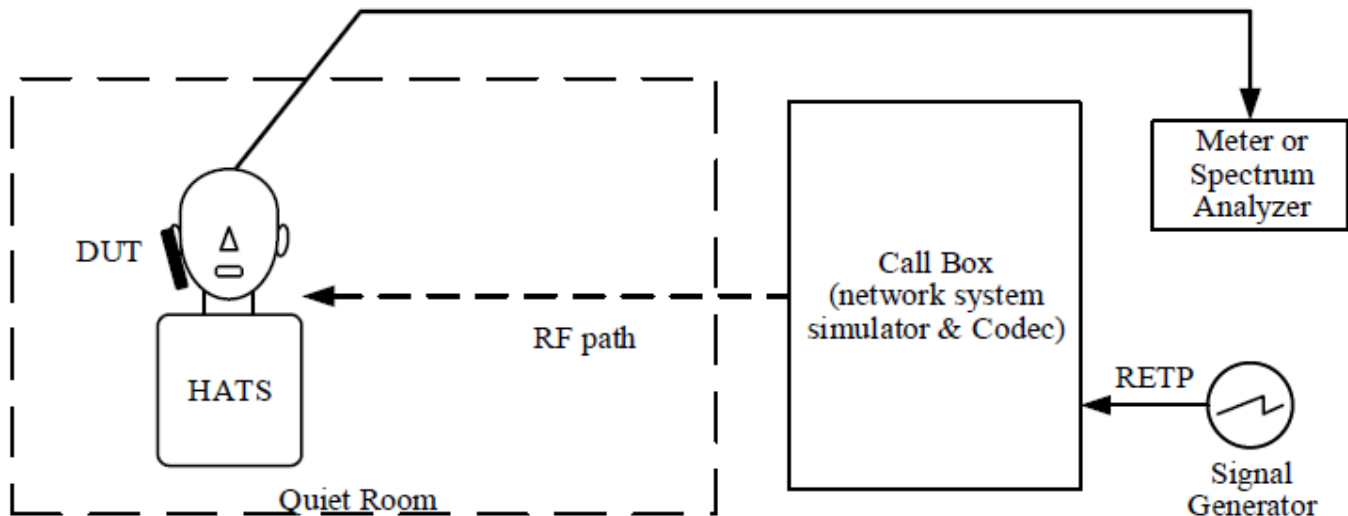


Figure 1. Test Arrangement

5.2. Receive Volume Control Performance

Method of Measurement

- 1) Configure the DUT with a mounting force of 8N and test equipment as shown in Figure 1 in an active call state with the applicable codec for the transmission mode under test.
- 2) Set the DUT volume control to the maximum setting.
- 3) If the DUT has an adjustable tone control feature, a tone control setting that meets the frequency response requirements in section 5.3.1 shall be used.
- 4) Apply the real speech test signal at a level of -20 dBm0 at the RETP and measure the acoustic output at the Drum Reference Point (DRP) over one complete sequence of the test signal.
- 5) Translate the measurement made at the DRP to the Free Field (FF) using the translation data in Annex B.
- 6) Over the applicable frequency band, determine the ASL in dBSPL for the resulting sound pressure level in accordance with Method B of ITU-T Recommendation P.56:
 - a. Narrowband 100 Hz through 4000 Hz.
 - b. Wideband 100 Hz through 7720 Hz.
- 7) Calculate the Conversational Gain by subtracting 70 dB from the measured dBSPL.
[Conversational Gain = (Measured dBSPL Level – 70 dBSPL) dB]
- 8) Measure the output distortion per clause 5.2. If a distortion failure occurs at the maximum volume control setting, reduce the volume control setting and repeat the measurement to determine if a setting can be found for which the conversational gain requirement is met without a distortion failure.
- 9) Repeat steps 2-8 with a mounting force of 2N.

5.3. Receive Distortion and Noise Performance (PN-SDNR)

Receive distortion is specified in terms of Signal-to-Distortion-and-Noise Ratio (SDNR) using a Pulsed Noise (PN) test signal. PN-SDNR is the ratio of the signal power to the total A-weighted distortion and noise power of the signal output expressed in dB. It is measured using a pulsed 1/3 octave pink noise input signal as described in TIA-5050 2018 Annex A.

Method of Measurement

- 1) Configure the DUT with a mounting force of 8N and test equipment as shown in Figure 1 in an active call state with the applicable codec for the transmission mode under test with the volume control at the setting determined in 5.1.1.
- 2) Receive distortion and noise is measured using the PN-SDNR procedure as described in Annex A.
- 3) To ensure DUT activation, apply the real speech test signal at a level of -20 dBm0 followed immediately by the initial 1/3 octave center frequency PN test signal in Table A.1 based on the narrowband or wideband operating mode. Measure the acoustic output at the DRP over the complete sequence of the PN test signal.
- 4) Translate the measurement made at the DRP to the FF using the translation data in Annex B.
- 5) Calculate the acoustic output unweighted total signal power of the stimulus measurement band as described in A.2.
- 6) Calculate the notched A-weighting distortion and noise components as described in A.3.
- 7) Calculate the ratio of the signal power to the total A-weighted distortion and noise power using Eq A-1.
- 8) Repeat for each of the remaining 1/3 octave center frequencies in Table A.1 based on the narrowband or wideband operating mode.

Repeat steps 2-8 with a mounting force of 2N.

5.4. Receive Acoustic Frequency Response Performance

For the volume control settings determined in 5.1.1 with a mounting force of 8N and 2N, the receive frequency response shall be measured at the DRP in 1/12 octave bands. After translation to the FF or DF, it shall fall between the applicable upper and lower limits.

The exact limit values at any 1/12 octave band center frequency falling between two consecutive points specified in the table may be calculated using the formula given in equation below:

$$X_f = X_1 + (X_2 - X_1) * \left(\frac{\log_{10} f - \log_{10} f_1}{\log_{10} f_2 - \log_{10} f_1} \right)$$

Method of Measurement

- 1) Configure the DUT with a mounting force of 8N and test equipment as shown in Figure 1 in an active call state with the applicable codec for the transmission mode under test with the volume control at the setting determined in 5.1.1.
- 2) If the DUT has an adjustable tone control feature the initial measurement is to be performed with the default tone control setting.
- 3) Apply the real speech test signal with a level of -20 dBm0 at the RETP.
- 4) Capture the frequency spectrum at the DRP of the HATS using real-time analysis with 1/12 octave bands over the frequency range from 100 Hz to 4000 Hz for narrowband measurements, or over the frequency range from 100 Hz to 8000 Hz for wideband measurements, averaged over the entire duration of the test signal.
- 5) Transform the DRP frequency spectrum measurement to the FF or DF (see Annex B).
- 6) Divide the 1/12 octave measurement data by the 1/12 octave frequency spectrum of the test signal at the RETP and present the measurement in terms of dB(Pa/V).
- 7) Apply the applicable frequency response limits to determine compliance.
- 8) If the default tone control setting does not meet the requirement, repeat the above steps for other tone control settings to determine a tone control setting that meets the requirements.
- 9) Repeat with a mounting force of 2N.

6. Base Station Simulator – software/firmware

6.1. VoLTE

Refer to the below software/firmware License list for measurement VoLTE.

Firmware	License Keys	Software Name (CMW500)
V3.7.70 for LTE	KS500	LTE FDD R8 SIG BASIC
	KS550	LTE TDD R8 SIG BASIC
V3.7.20 for Audio	KA100	IP APPL ENABLING IPv4
	KA150	IP APPL ENABLING IPv4
	KAA20	IP APPL IMS BASIC
	KM050	DATA APPL MEAS
	KS104	EVS SPEECH CODEC

6.2. VoNR

Refer to the below software/firmware License list for measurement VoNR.

License Option	Software Name (Keysight E7515B)
C8700201A	IMS-SIP Emulation
C87350P1A	5G NR IP data

6.3. VoWi-Fi

Refer to the below software/firmware License list for measurement VoWi-Fi.

Firmware	License Keys	Software Name (CMW500)
V3.7.50 for WLAN	KS650	WLAN A/B/G SIG BASIC
	KS651	WLAN N SIG BASIC
	KS656	WLAN IEEE 802.11ac
	KS657	WLAN IEEE 802.11ax
V3.7.20 for Audio	KA100	IP APPL ENABLING IPv4
	KA150	IP APPL ENABLING IPv6
	KAA20	IP APPL IMS BASIC
	KM050	DATA APPL MEAS
	KS104	EVS SPEECH CODEC

7. Receive Volume Control Requirements

7.1. Receive Volume Control

1. With a mounting force of 8N, the DUT shall have at least one volume control setting that will produce a conversational gain of ≥ 18 dB with the output distortion and the frequency response meeting the requirements in clause 5.2.1 & 5.3.1 respectively.

2. With a mounting force of 2N, the DUT shall have at least one volume control setting that will produce a conversational gain of ≥ 6 dB with the output distortion and the frequency response meeting the requirements in clause 5.2.1 & 5.3.1 respectively.

7.2. Receive Distortion and Noise

With a mounting force of 8N and 2N, the ratio of the stimulus signal power to the 100 Hz to 8000 Hz total A-weighted distortion and noise power shall be ≥ 20 dB when tested over the range of 1/3 octave band center frequencies.

7.3. Receive Acoustic Frequency Response

The results for each 1/12 octave band measurement are to be evaluated against the upper and lower limit values only at the center frequency point for that band (i.e., not the entire width of the band). For graphical purposes, the individual 1/12 octave band measurement results are plotted as points on a linear dB scale (y-axis) versus the band's center frequency on a logarithmic frequency scale (x-axis). The frequency response limits are floating or "best fit" (i.e., the maximum and minimum deviations from the upper and lower limits should be equidistant from those limits).

1. Narrowband: The 1/12 octave band frequency response after translation to the FF or DF shall fall between the upper and lower limits given in Table 1 and shown in Figure 2.

Table 1 – Narrowband Receive Frequency Response Limits

Lower Limit Frequency (Hz)	Lower Limit (dB)	Upper Limit Frequency (Hz)	Upper Limit (dB)
300	-6	100	+6
3400	-6	4000	+6

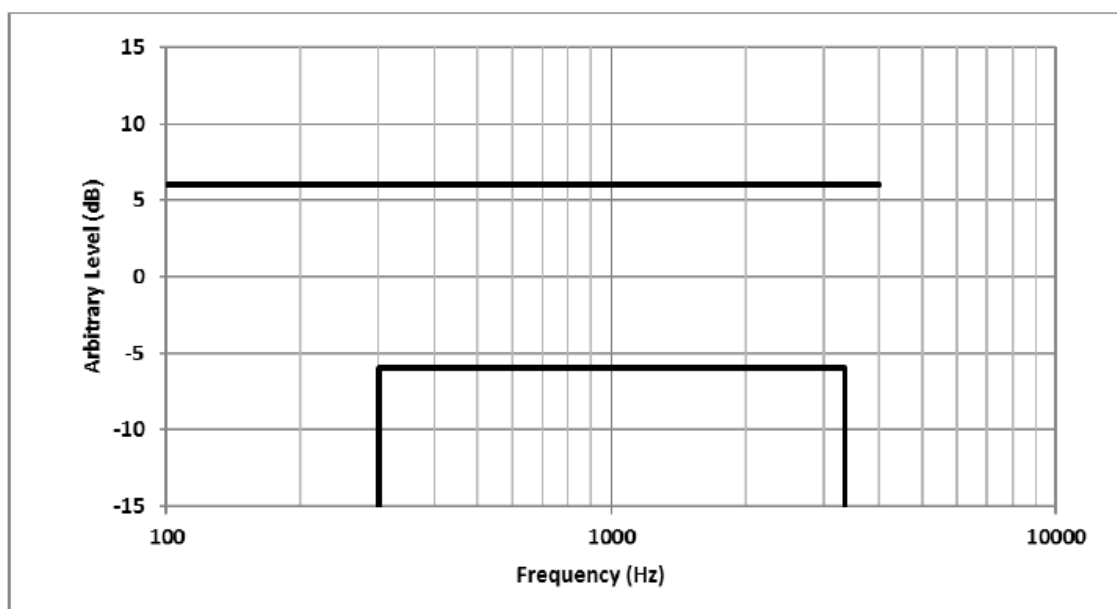


Figure 2 – Narrowband Receive Frequency Response Limits

2. Wideband: The 1/12 octave band frequency response after translation to the FF or DF shall fall between the upper and lower limits given in Table 2 and shown in Figure 3.

Table 2 – Wideband Receive Frequency Response Limits

Lower Limit Frequency (Hz)	Lower Limit (dB)	Upper Limit Frequency (Hz)	Upper Limit (dB)
200	-10	100	+6
300	-6	1000	+6
5000	-6	2000	+8
6300	-12	8000	+8

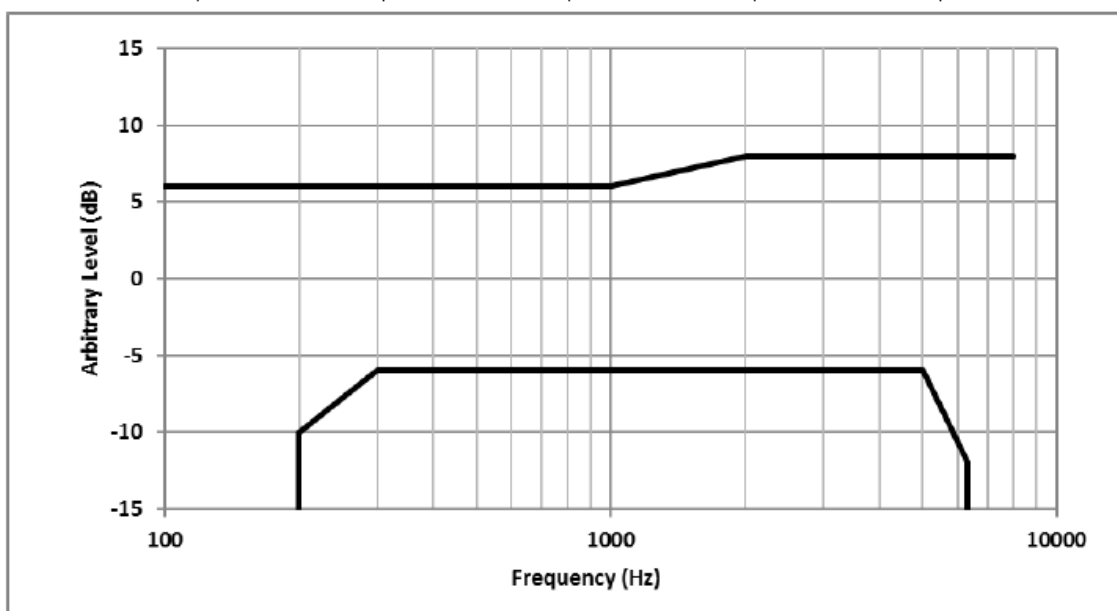


Figure 3 – Wideband Receive Frequency Response Limits

7.4. HAC Compliance under Waiver DA 23-914

The following technical testing requirements for the conversational gain, distortion, and frequency response tests that amends KDB 285076 D04 Volume Control under the conditions of the limited-term waiver DA 23-914.

- a. Under the waiver, only CMRS narrowband and CMRS wideband voice codecs are required to comply with the volume control requirements of the TIA 5050-2018 Volume Control Standard as amended as follows:
 1. For the 2N mounting force test, one narrowband and one wideband voice codec embedded with the handset must pass with at least one volume control setting with a conversational gain of ≥ 6 dB for all voice services, bands of operation and air interfaces over which it operates using one codec bit rate of the applicant's choosing.
 2. For the 8N mounting force test, one narrowband and one wideband voice codec embedded with the handset must pass with at least one volume control setting with a conversational gain of ≥ 6 dB for all voice services, bands of operation and air interfaces over which they operate but is not required to meet or exceed the full 18 dB of conversational gain specified in section 5.1.1 of the TIA 5050 Volume Control Standard using one codec bit rate of the applicant's choosing.
- b. For all other narrowband and wideband codecs not evaluated in **a.** above, TIA 5050-2018 Receive Distortion and Noise Performance and Receive Acoustic Frequency Response Performance evaluations are not required; however, these codecs shall be assessed for conversational gain and documented in the test report at the 2N and 8N levels with a gain of ≥ 6 dB for all voice services, bands of operation and air interfaces over which they operate. The handset volume setting used to comply with **a.** shall be used for these other CMRS codec evaluations.
- c. Any other codec for voice services embedded in the handset, not identified in **a.** and **b.** above, is not required to comply or demonstrate in the test reports for conversational gain.

8. Device Under Test

Normal operation	Held to head
Back Cover	The Back Cover is not removable
Test sample information	S/N R3CXA0QK8MB Notes Volume Control Test

8.1. Air Interfaces and Operating Mode

Air Interface	Bands (MHz)	Type	Volume Control Tested	Simultaneous Transmitter	OTT Testing Required Name of Voice Service	Audio Codecs Evaluated
GSM	850	VO	Yes ² FR V1, FR V2, HR V1	Wi-Fi and BT	CMRS	FR V1, FR V2, HR V1
	1900					
	GPRS/EDGE	VD	No ³	Wi-Fi and BT	No ³ Google Meet	OPUS
W-CDMA (UMTS)	850 (V)	VO	Yes ² AMR-NB, AMR-WB	Wi-Fi and BT	CMRS	AMR-NB & AMR-WB
	1750 (IV)					
	1900 (II)					
	HSPA	VD	No ³	Wi-Fi and BT	No ³ Google Meet	OPUS
LTE - FDD	680 (B71)	VD	Yes ¹ EVS-nb 24.4 kbps EVS-wb 24.4 kbps Yes ² AMR-NB, AMR-WB, EVS-nb, EVS-wb No ³ EVS-swb, OPUS	NR, Wi-Fi and BT	VoLTE No ³ Google Meet	AMR-NB, AMR-WB, EVS and OPUS
	700 (B12)					
	780 (B13)					
	790 (B14)					
	850 (B5/26)					
	1700 (B4/66)					
	1900 (B2/25)					
	2300 (B30)					
	2600 (B7)					
LTE - TDD	2600 (B38/41)	VD		NR, Wi-Fi and BT	VoLTE No ³ Google Meet	AMR-NB, AMR-WB, EVS and OPUS
	3600 (B48)					
NR - FDD	680 (n71)	VD	Yes ¹ EVS-nb 24.4 kbps EVS-wb 24.4 kbps Yes ² AMR-NB, AMR-WB, EVS-nb, EVS-wb	LTE, Wi-Fi and BT	VoNR No ³ Google Meet	AMR-NB, AMR-WB, EVS and OPUS
	850 (n5)					
	1700 (n66)					
	1700 (n70)					
	1900 (n2/25)					
	2300 (n30)					
NR - TDD	2600 (n41)	VD	No ³ EVS-swb, OPUS	LTE, Wi-Fi and BT	VoNR No ³ Google Meet	AMR-NB, AMR-WB, EVS and OPUS
	3600 (n48)					
	3500 (n77 DoD/n78 DoD)					
	3700 (n77/n78)					
Wi-Fi	2450	VD	Yes ¹ EVS-nb 24.4 kbps EVS-wb 24.4 kbps Yes ² AMR-NB, AMR-WB, EVS-nb, EVS-wb No ³ EVS-swb, OPUS	WWAN	VoWiFi No ³ Google Meet	AMR-NB, AMR-WB, EVS and OPUS
	5200 (U-NII-1)			WWAN and BT		
	5300 (U-NII-2A)					
	5500 (U-NII-2C)					
	5800 (U-NII-3)					
BT	2450	DT	N/A	WWAN and U-NII	N/A	N/A

Type

VO: Legacy Cellular Voice Service
 DT: Digital Transport only (no voice)
 VD: IP Voice Service over Digital Transport
 CMRS: Commercial Mobile Radio Service
 BT: Bluetooth

Note:

- Tested Conversational Gain, Frequency Response, PN-SDNR.
- Tested only Conversational Gain. (Waiver DA 23-914)
- Not required to comply with Volume Control standard. (Waiver DA 23-914)

Note(s):

All tests performed with the transmit power set to the maximum power for held-to-head conditions (RCV active). For air interfaces with a Time Averaged SAR (TAS) algorithm Pmax is considered the maximum power.

9. HAC (Volume Control) Test Results

CMRS NB/WB Codecs and bitrate; EVS-nb 24.4 kbps and EVS-wb 24.4 kbps were chosen by applicant. All Volume Control measurements were performed with volume max-1 level.

9.1. CMRS Narrow-band/Wide-band Codec Investigation

An investigation was performed to determine the worst-case CMRS NB/WB Codec per technology. All subsequent measurements were determined by this investigation.

2N Mounting Force

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform / Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								2N				PN-SDNR margin (dB)
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		
									FF	DF		
LTE Band 66	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	13.42	1.99	1.80	6.67
	Main2	EVS-NB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	14.37	1.64	1.42	11.40
LTE Band 41	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	13.79	2.04	1.80	7.48
	Main2	EVS-NB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	14.51	1.49	1.27	10.00
NR Band n66	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.42	2.22	2.00	5.85
	Main2	EVS-NB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.94	1.84	1.62	11.37
NR Band n77 HPUE	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	13.53	2.15	2.20	5.60
	Sub3	EVS-NB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	14.19	1.69	1.48	6.62
WiFi 2.4GHz 802.11g	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	26.30	14.02	1.76	1.90	6.45
	SISO1 Sub4	EVS-NB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	26.30	14.78	1.52	1.31	9.36
WiFi 5GHz 802.11a	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	26.30	13.97	2.11	2.00	4.52
	MIMO	EVS-NB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.66	1.46	1.24	10.19

8N Mounting Force

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform / Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								8N				PN-SDNR margin (dB)
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		
									FF	DF		
LTE Band 66	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	16.70	1.59	1.70	5.90
	Main2	EVS-NB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	17.37	1.28	1.36	10.70
LTE Band 41	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.86	1.59	1.80	6.10
	Main2	EVS-NB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	17.61	1.20	1.32	10.90
NR Band n66	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.43	1.24	1.90	5.20
	Main2	EVS-NB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.87	1.66	1.56	9.40
NR Band n77 HPUE	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.25	1.40	2.20	5.40
	Sub3	EVS-NB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.86	1.77	1.56	9.20
WiFi 2.4GHz 802.11g	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.61	1.44	1.80	6.30
	SISO1 Sub4	EVS-NB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.28	1.01	1.43	10.70
WiFi 5GHz 802.11a	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.99	1.47	1.80	7.30
	MIMO	EVS-NB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.52	1.02	1.08	10.00

Note(s):

- For all technologies, it is observed that EVS-WB 24.4 kbps is the worst-case.

9.2. Antenna and Air Interface Investigation for VoLTE/VoNR/VoWiFi

Using the worst-case codec found in sec.9.1, a limited set of RBs/modulations/bandwidths/channels/bands/data rates were tested to confirm that there is no effect to compliance when changing the air interface.

2N Mounting Force – VoLTE FDD

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform/ Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								2N				PN-SDNR margin (dB)
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		
									FF	DF		
LTE Band 66	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	13.42	1.99	1.80	6.67
	Sub2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	13.58	1.86	1.70	6.82
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/49	Max - 1	27.80	13.52	2.05	1.70	5.77
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/99	Max - 1	27.80	13.46	2.08	1.90	4.49
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	50/0	Max - 1	27.80	13.51	2.00	1.80	5.85
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	50/24	Max - 1	27.80	13.49	2.01	1.80	6.19
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	50/50	Max - 1	27.80	13.50	1.99	1.80	5.42
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	100/0	Max - 1	27.80	13.46	2.01	1.80	4.90
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	16QAM	1/0	Max - 1	27.80	13.47	2.06	1.80	8.68
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	64QAM	1/0	Max - 1	27.80	13.48	2.06	1.90	6.00
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	256QAM	1/0	Max - 1	27.80	13.54	1.90	1.70	5.64
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	15 MHz	QPSK	1/0	Max - 1	27.80	13.53	1.93	1.70	7.60
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	10 MHz	QPSK	1/0	Max - 1	27.20	13.56	1.89	1.70	6.37
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	5 MHz	QPSK	1/0	Max - 1	27.20	13.57	2.10	1.80	8.51
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	3 MHz	QPSK	1/0	Max - 1	27.20	13.59	1.93	1.70	6.48
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	1.4 MHz	QPSK	1/0	Max - 1	27.20	13.56	1.95	1.70	4.78
	Main2	EVS-WB 24.4 kbit/s	132072 1720 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	13.54	1.93	1.70	8.19
	Main2	EVS-WB 24.4 kbit/s	132572 1770 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	13.59	1.95	1.80	6.38
LTE Band 7	Main2	EVS-WB 24.4 kbit/s	21100 2535 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	13.46	1.92	1.70	5.13
	Main2	EVS-NB 24.4 kbit/s	21100 2535 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	14.36	1.52	1.30	7.34
LTE Band 12	Main1	EVS-WB 24.4 kbit/s	23095 707.5 MHz	10 MHz	QPSK	1/0	Max - 1	27.20	13.50	1.93	1.70	7.00
	Main1	EVS-NB 24.4 kbit/s	23095 707.5 MHz	10 MHz	QPSK	1/0	Max - 1	27.20	14.33	1.79	1.58	11.27
LTE Band 13	Main1	EVS-WB 24.4 kbit/s	23230 782 MHz	10 MHz	QPSK	1/0	Max - 1	27.20	13.58	2.06	1.80	5.92
	Main1	EVS-NB 24.4 kbit/s	23230 782 MHz	10 MHz	QPSK	1/0	Max - 1	27.20	14.32	1.42	1.20	6.56
LTE Band 14	Main1	EVS-WB 24.4 kbit/s	23330 793 MHz	10 MHz	QPSK	1/0	Max - 1	27.20	13.92	1.95	1.90	7.96
	Main1	EVS-NB 24.4 kbit/s	23330 793 MHz	10 MHz	QPSK	1/0	Max - 1	27.20	14.50	1.58	1.36	12.13
LTE Band 25	Main2	EVS-WB 24.4 kbit/s	26365 1882.5 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	13.60	2.04	1.80	4.59
	Main2	EVS-NB 24.4 kbit/s	26365 1882.5 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	14.42	1.56	1.34	11.56
LTE Band 26	Main1	EVS-WB 24.4 kbit/s	26865 831.5 MHz	15 MHz	QPSK	1/0	Max - 1	27.80	13.54	1.97	1.70	4.78
	Main1	EVS-NB 24.4 kbit/s	26865 831.5 MHz	15 MHz	QPSK	1/0	Max - 1	27.20	14.29	1.60	1.38	10.15
LTE Band 30	Main2	EVS-WB 24.4 kbit/s	27710 2310 MHz	10 MHz	QPSK	1/0	Max - 1	27.20	13.03	1.90	1.60	5.13
	Main2	EVS-NB 24.4 kbit/s	27710 2310 MHz	10 MHz	QPSK	1/0	Max - 1	27.20	13.67	1.34	1.12	9.89
LTE Band 71	Main1	EVS-WB 24.4 kbit/s	133297 680.5 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	13.43	2.07	1.80	7.06
	Main1	EVS-NB 24.4 kbit/s	133297 680.5 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	14.09	1.63	1.42	13.28

2N Mounting Force – VoLTE TDD

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform/ Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								2N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
LTE Band 41	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	13.79	2.04	1.80	7.48
	Sub2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	13.81	1.74	1.80	6.44
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/49	Max - 1	27.80	13.91	1.75	1.90	6.39
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/99	Max - 1	27.80	13.83	2.06	1.90	5.49
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	50/0	Max - 1	27.80	13.84	1.96	1.80	6.20
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	50/24	Max - 1	27.80	13.83	2.04	1.90	6.67
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	50/50	Max - 1	27.80	13.87	2.02	1.80	5.46
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	100/0	Max - 1	27.80	13.82	1.92	1.70	6.94
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	16QAM	1/0	Max - 1	27.80	13.90	1.93	1.80	5.28
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	64QAM	1/0	Max - 1	27.80	13.89	1.96	1.80	5.11
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	256QAM	1/0	Max - 1	27.80	13.91	1.99	1.80	7.84
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	15 MHz	QPSK	1/0	Max - 1	27.80	13.86	2.01	1.80	5.25
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	10 MHz	QPSK	1/0	Max - 1	27.80	13.89	1.78	1.90	6.49
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	5 MHz	QPSK	1/0	Max - 1	27.80	13.85	2.06	1.90	5.80
	Main2	EVS-WB 24.4 kbit/s	39750 2506 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	13.88	2.05	1.90	7.33
	Main2	EVS-WB 24.4 kbit/s	40185 2549.5 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	13.89	2.02	1.90	7.50
	Main2	EVS-WB 24.4 kbit/s	41055 2636.5 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	13.84	2.01	1.80	5.33
	Main2	EVS-WB 24.4 kbit/s	41490 2680 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	13.86	2.02	1.80	5.20
LTE Band 48	Main2	EVS-WB 24.4 kbit/s	55773 3603.3 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	13.87	2.15	2.00	7.10
	Main2	EVS-NB 24.4 kbit/s	55773 3603.3 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	14.60	1.59	1.37	11.87

2N Mounting Force – VoNR FDD

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform / Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								2N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SNR margin (dB)
										FF	DF	
NR Band n66	Sub2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.00	13.64	2.05	1.90	6.48
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.42	2.22	2.00	5.85
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/107	Max - 1	28.00	13.71	2.21	2.00	5.03
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/214	Max - 1	28.00	13.56	2.22	2.00	5.60
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	108/0	Max - 1	28.00	13.61	2.15	2.10	6.77
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	108/54	Max - 1	28.00	13.63	2.11	2.00	6.53
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	108/108	Max - 1	28.00	13.64	2.21	2.00	5.08
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	216/0	Max - 1	28.00	13.97	2.08	2.20	5.89
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM pi/2 BPSK	1/1	Max - 1	28.00	13.77	2.34	2.10	9.85
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM 16QAM	1/1	Max - 1	28.00	13.72	2.08	2.00	5.48
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM 64QAM	1/1	Max - 1	28.00	13.70	2.42	2.20	4.97
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM 256QAM	1/1	Max - 1	28.00	13.71	2.25	2.10	6.36
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	1/1	Max - 1	28.00	13.76	2.17	2.00	7.10
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	1/107	Max - 1	28.00	13.65	2.30	2.10	8.61
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	1/214	Max - 1	28.00	13.60	2.20	2.00	6.75
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	108/0	Max - 1	28.00	13.64	2.04	2.00	5.38
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	108/54	Max - 1	28.00	13.65	2.18	2.00	5.69
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	108/108	Max - 1	28.00	13.62	2.28	2.10	5.38
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	216/0	Max - 1	28.00	13.68	2.15	2.00	7.15
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM 16QAM	1/1	Max - 1	28.00	13.63	2.34	2.10	6.02
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM 64QAM	1/1	Max - 1	28.00	13.68	2.20	2.00	7.45
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM 256QAM	1/1	Max - 1	28.00	13.66	2.13	1.90	5.60
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	30 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.80	2.17	2.00	5.93
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	25 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.76	2.30	2.10	5.51
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.74	2.19	2.00	7.70
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	15 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.72	1.96	2.10	4.27
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	10 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.75	2.22	2.00	9.23
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	5 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.74	2.24	2.00	3.33
	Main2	EVS-WB 24.4 kbit/s	346000 1730.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.00	13.62	2.18	2.00	7.22
	Main2	EVS-WB 24.4 kbit/s	352000 1760.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.00	13.57	2.16	2.00	5.01
NR Band n5	Main1	EVS-WB 24.4 kbit/s	167300 836.50 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.00	13.81	2.36	2.20	7.90
	Main1	EVS-NB 24.4 kbit/s	167300 836.50 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.00	14.23	1.78	1.56	10.91
NR Band n25	Main2	EVS-WB 24.4 kbit/s	376500 1882.5 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.73	2.32	2.10	4.80
	Main2	EVS-NB 24.4 kbit/s	376500 1882.5 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	14.21	1.77	1.55	10.73
NR Band n30	Main2	EVS-WB 24.4 kbit/s	462000 2310 MHz	10 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	13.56	2.24	2.10	4.35
	Main2	EVS-NB 24.4 kbit/s	462000 2310 MHz	10 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	13.80	1.27	1.06	7.58
NR Band n70	Main2	EVS-WB 24.4 kbit/s	340500 1702.5 MHz	15 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.63	2.32	2.00	2.76
	Main2	EVS-NB 24.4 kbit/s	340500 1702.5 MHz	15 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	14.00	1.82	1.61	8.61
NR Band n71	Main1	EVS-WB 24.4 kbit/s	136100 680.5 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.82	2.26	2.10	10.73
	Main1	EVS-NB 24.4 kbit/s	136100 680.5 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	14.29	1.81	1.59	10.08

2N Mounting Force – VoNR TDD

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform / Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								2N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
NR Band n77 HPUE	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	13.53	2.15	2.20	5.60
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/136	Max - 1	27.90	13.73	2.07	2.20	5.81
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/271	Max - 1	27.90	13.71	1.68	2.20	5.78
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	135/0	Max - 1	27.90	13.65	1.84	2.20	6.96
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	135/69	Max - 1	27.90	13.68	1.72	2.20	6.74
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	135/138	Max - 1	27.90	13.72	2.12	2.10	5.78
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	270/0	Max - 1	27.90	13.63	1.89	2.20	5.35
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM pi/2 BPSK	1/1	Max - 1	27.90	13.65	2.28	2.10	7.24
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM 16QAM	1/1	Max - 1	27.90	13.61	1.82	2.20	6.29
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM 64QAM	1/1	Max - 1	27.90	13.62	1.80	2.10	5.97
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM 256QAM	1/1	Max - 1	27.90	13.58	2.29	2.20	5.07
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	1/1	Max - 1	27.90	13.82	1.60	2.20	7.90
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	1/136	Max - 1	27.90	13.77	1.69	2.20	7.73
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	1/271	Max - 1	27.90	13.72	1.87	2.10	3.57
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	135/0	Max - 1	27.90	13.68	1.59	2.10	4.48
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	135/69	Max - 1	27.90	13.64	1.82	2.20	7.20
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	135/138	Max - 1	27.90	13.55	1.88	2.20	6.12
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	270/0	Max - 1	27.90	13.59	2.15	2.20	5.69
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM 16QAM	1/1	Max - 1	27.90	13.55	2.19	2.20	5.59
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM 64QAM	1/1	Max - 1	27.90	13.59	2.17	2.10	5.60
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM 256QAM	1/1	Max - 1	27.90	13.57	2.00	2.20	4.64
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	90 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	13.56	2.28	2.20	5.97
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	80 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	13.59	2.20	2.30	7.53
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	70 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	13.56	2.40	2.10	8.00
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	60 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	13.54	2.32	2.10	7.67
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	50 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	13.56	1.50	1.80	8.55
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.57	2.04	2.10	6.60
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	30 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.59	2.17	2.20	5.35
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	25 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.55	2.38	2.20	7.30
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.60	2.07	2.10	8.42
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	15 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.58	2.07	2.10	6.90
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	10 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.57	1.67	2.10	6.07
	Sub3	EVS-WB 24.4 kbit/s	633334 3500.01 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.54	2.14	2.10	8.05
	Sub3	EVS-WB 24.4 kbit/s	662000 3930 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.56	1.73	2.10	7.08
NR Band n41 HPUE	Sub2	EVS-WB 24.4 kbit/s	518598 2592.99 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.58	2.21	2.10	5.70
	Main2	EVS-WB 24.4 kbit/s	518598 2592.99 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.59	2.26	2.10	7.96
	Sub2	EVS-NB 24.4 kbit/s	518598 2592.99 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.89	1.36	1.14	9.30
NR Band n48	Sub3	EVS-WB 24.4 kbit/s	641666 3624.99 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.66	1.99	2.10	6.35
	Sub3	EVS-NB 24.4 kbit/s	641666 3624.99 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	14.00	1.46	1.24	9.53

2N Mounting Force – VoWiFi 2.4GHz

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform/ Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								2N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
WiFi 2.4GHz 802.11g	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	26.30	14.02	1.76	1.90	6.45
	SISO2 Sub2	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.16	1.49	1.90	6.58
	MIMO	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.27	1.76	1.80	7.44
WiFi 2.4GHz 802.11b	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	DSSS 1 Mbps	N/A	Max - 1	25.80	14.06	1.89	1.90	5.85
	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	CCK 5.5 Mbps	N/A	Max - 1	25.80	14.10	1.68	1.90	6.53
	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	CCK 11 Mbps	N/A	Max - 1	25.80	14.14	1.65	1.90	6.34
WiFi 2.4GHz 802.11b	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	DSSS 1 Mbps	N/A	Max - 1	25.80	14.06	1.89	1.90	5.85
	SISO1 Sub4	EVS-NB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	DSSS 1 Mbps	N/A	Max - 1	25.80	14.76	1.49	1.27	8.70
WiFi 2.4GHz 802.11n HT20	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	MCS 3 26 Mbps	N/A	Max - 1	25.80	14.15	1.68	2.00	4.73
	SISO1 Sub4	EVS-NB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	MCS 3 26 Mbps	N/A	Max - 1	25.80	14.79	1.52	1.31	9.54
WiFi 2.4GHz 802.11ac VHT20	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	MCS 4 39 Mbps	N/A	Max - 1	25.80	14.11	2.14	2.00	9.23
	SISO1 Sub4	EVS-NB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	MCS 4 39 Mbps	N/A	Max - 1	25.80	14.78	1.41	1.19	7.05
WiFi 2.4GHz 802.11ax HE20	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	MCS 0 8.6 Mbps	N/A	Max - 1	25.80	14.14	1.46	1.80	4.57
	SISO1 Sub4	EVS-NB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	MCS 0 8.6 Mbps	N/A	Max - 1	25.80	14.74	1.59	1.37	10.25
WiFi 2.4GHz 802.11g	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.1 2412 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.10	1.32	1.60	6.79
	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.11 2462 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.05	1.87	1.90	4.49

2N Mounting Force – VoWiFi U-NII (Continued)

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform / Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								2N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
WiFi 5GHz 802.11a U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	26.30	13.97	2.11	2.00	4.52
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	QPSK 18 Mbps	N/A	Max - 1	26.30	13.99	1.98	1.90	4.96
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	64QAM 54 Mbps	N/A	Max - 1	26.30	14.03	1.89	1.80	5.31
WiFi 5GHz 802.11n HT20 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 0 6.5 Mbps	N/A	Max - 1	26.30	14.04	2.14	2.00	4.75
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 3 26 Mbps	N/A	Max - 1	26.30	14.00	2.11	1.90	8.20
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 7 65 Mbps	N/A	Max - 1	26.30	14.06	1.40	1.70	6.09
	MIMO	EV-S-NB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 3 26 Mbps	N/A	Max - 1	26.30	14.69	1.57	1.36	11.68
WiFi 5GHz 802.11n HT40 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 0 6.5 Mbps	N/A	Max - 1	26.30	14.05	1.99	1.90	4.96
	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 3 54 Mbps	N/A	Max - 1	26.30	14.07	1.97	2.00	5.22
	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 7 135 Mbps	N/A	Max - 1	26.30	14.12	1.60	1.90	6.06
	MIMO	EV-S-NB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 0 6.5 Mbps	N/A	Max - 1	26.30	14.73	1.67	1.45	10.18

2N Mounting Force – VoWiFi U-NII

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform / Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								2N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
WiFi 5GHz 802.11ac VHT20 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 0 6.5 Mbps	N/A	Max - 1	26.30	14.04	2.03	1.80	8.49
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 4 39 Mbps	N/A	Max - 1	26.30	14.02	1.87	1.90	5.67
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 8 78 Mbps	N/A	Max - 1	26.30	14.03	1.99	2.00	6.23
	MIMO	EVS-NB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 4 39 Mbps	N/A	Max - 1	26.30	14.68	1.44	1.22	11.01
WiFi 5GHz 802.11ac VHT40 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 0 13.5 Mbps	N/A	Max - 1	26.30	14.00	1.85	2.00	5.18
	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 4 108 Mbps	N/A	Max - 1	26.30	14.02	1.71	2.00	5.45
	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 9 180 Mbps	N/A	Max - 1	26.30	14.05	1.46	1.80	5.45
	MIMO	EVS-NB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 0 13.5 Mbps	N/A	Max - 1	26.30	14.71	1.45	1.23	10.13
WiFi 5GHz 802.11ac VHT80 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 0 29.3 Mbps	N/A	Max - 1	26.30	14.01	1.48	1.80	4.63
	MIMO	EVS-WB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 4 175.5 Mbps	N/A	Max - 1	26.30	13.99	2.17	2.00	8.61
	MIMO	EVS-WB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 9 390 Mbps	N/A	Max - 1	26.30	14.00	2.17	2.00	8.51
	MIMO	EVS-NB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 4 175.5 Mbps	N/A	Max - 1	26.30	14.69	1.61	1.39	11.77
WiFi 5GHz 802.11ax HE20 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 0 8.6 Mbps	N/A	Max - 1	26.30	14.01	1.80	1.90	6.01
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 6 77 Mbps	N/A	Max - 1	24.50	14.05	1.87	2.00	6.56
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 11 143 Mbps	N/A	Max - 1	24.50	14.10	2.07	1.90	6.06
	MIMO	EVS-NB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 0 8.6 Mbps	N/A	Max - 1	24.50	14.77	1.36	1.14	8.52
WiFi 5GHz 802.11ax HE40 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 0 17.2 Mbps	N/A	Max - 1	24.50	14.14	1.52	1.80	5.41
	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 6 155 Mbps	N/A	Max - 1	24.50	14.09	1.98	1.80	6.07
	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 11 287 Mbps	N/A	Max - 1	24.50	14.10	1.53	1.90	5.00
	MIMO	EVS-NB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 6 155 Mbps	N/A	Max - 1	24.50	14.74	1.63	1.42	8.72
WiFi 5GHz 802.11ax HE80 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 0 36 Mbps	N/A	Max - 1	24.50	14.09	1.92	1.90	5.28
	MIMO	EVS-WB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 6 324 Mbps	N/A	Max - 1	24.50	14.05	2.19	2.10	4.71
	MIMO	EVS-WB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 11 600 Mbps	N/A	Max - 1	24.50	14.07	2.01	2.00	4.68
	MIMO	EVS-NB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 6 324 Mbps	N/A	Max - 1	24.50	14.76	1.58	1.36	5.30
WiFi 5GHz 802.11a U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.36 5180 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	24.50	14.11	1.19	1.50	5.92
	MIMO	EVS-WB 24.4 kbit/s	CH.48 5240 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	24.50	14.16	1.62	1.90	5.15
WiFi 5GHz 802.11a U-NII-2A	MIMO	EVS-WB 24.4 kbit/s	CH.56 5280 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	24.50	14.12	1.71	1.90	4.46
	MIMO	EVS-NB 24.4 kbit/s	CH.56 5280 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	24.50	14.78	1.60	1.38	8.03
WiFi 5GHz 802.11a U-NII-2C	MIMO	EVS-WB 24.4 kbit/s	CH.120 5600 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	24.50	14.05	1.56	1.90	4.00
	MIMO	EVS-NB 24.4 kbit/s	CH.120 5600 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	24.50	14.76	1.46	1.25	11.31
WiFi 5GHz 802.11a U-NII-3	MIMO	EVS-WB 24.4 kbit/s	CH.157 5785 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	24.50	14.13	1.62	1.90	5.32
	MIMO	EVS-NB 24.4 kbit/s	CH.157 5785 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	24.50	14.75	1.39	1.18	9.52

8N Mounting Force – VoLTE FDD

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform/ Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								8N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
LTE Band 66	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	16.70	1.59	1.70	5.90
	Sub2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.78	1.59	1.70	7.40
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/49	Max - 1	28.30	16.87	1.18	1.60	5.10
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/99	Max - 1	28.30	16.85	1.24	1.60	5.30
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	50/0	Max - 1	28.30	17.04	1.21	1.70	4.40
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	50/24	Max - 1	28.30	16.98	1.30	1.80	5.40
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	50/50	Max - 1	28.30	16.97	1.22	1.70	6.20
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	100/0	Max - 1	28.30	16.90	1.36	1.60	8.10
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	16QAM	1/0	Max - 1	28.30	16.83	1.22	1.70	7.20
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	64QAM	1/0	Max - 1	28.30	16.91	1.51	1.80	7.90
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	256QAM	1/0	Max - 1	28.30	16.87	1.71	1.80	6.60
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	15 MHz	QPSK	1/0	Max - 1	28.30	16.98	1.67	1.70	4.20
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	16.89	1.43	1.70	6.10
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	5 MHz	QPSK	1/0	Max - 1	28.30	16.86	1.10	1.70	5.80
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	3 MHz	QPSK	1/0	Max - 1	28.30	16.82	1.69	1.80	5.50
	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	1.4 MHz	QPSK	1/0	Max - 1	28.30	16.85	1.45	1.80	4.90
	Main2	EVS-WB 24.4 kbit/s	132072 1720 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.84	1.49	1.70	5.50
	Main2	EVS-WB 24.4 kbit/s	132572 1770 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.80	1.23	1.60	5.60
LTE Band 7	Main2	EVS-WB 24.4 kbit/s	21100 2535 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.81	1.26	1.90	7.40
	Main2	EVS-NB 24.4 kbit/s	21100 2535 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	17.73	1.04	1.33	8.50
LTE Band 12	Main1	EVS-WB 24.4 kbit/s	23095 707.5 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	16.90	1.40	1.70	6.20
	Main1	EVS-NB 24.4 kbit/s	23095 707.5 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	17.59	1.21	1.21	11.20
LTE Band 13	Main1	EVS-WB 24.4 kbit/s	23230 782 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	16.84	1.36	1.70	7.20
	Main1	EVS-NB 24.4 kbit/s	23230 782 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	17.59	1.03	1.23	10.10
LTE Band 14	Main1	EVS-WB 24.4 kbit/s	23330 793 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	16.87	1.31	1.80	4.50
	Main1	EVS-NB 24.4 kbit/s	23330 793 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	17.58	1.47	1.37	10.00
LTE Band 25	Main2	EVS-WB 24.4 kbit/s	26365 1882.5 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.81	1.50	1.70	4.60
	Main2	EVS-NB 24.4 kbit/s	26365 1882.5 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	17.54	1.25	1.43	10.60
LTE Band 26	Main1	EVS-WB 24.4 kbit/s	26865 831.5 MHz	15 MHz	QPSK	1/0	Max - 1	28.30	16.81	1.43	1.70	4.50
	Main1	EVS-NB 24.4 kbit/s	26865 831.5 MHz	15 MHz	QPSK	1/0	Max - 1	28.30	17.45	1.06	1.27	9.30
LTE Band 30	Main2	EVS-WB 24.4 kbit/s	27710 2310 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	16.60	1.61	1.70	4.70
	Main2	EVS-NB 24.4 kbit/s	27710 2310 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	16.95	1.08	1.14	9.60
LTE Band 71	Main1	EVS-WB 24.4 kbit/s	133297 680.5 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.86	1.18	1.80	9.30
	Main1	EVS-NB 24.4 kbit/s	133297 680.5 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	17.62	1.13	1.36	11.30

8N Mounting Force – VoLTE TDD

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform/ Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								8N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
LTE Band 41	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.86	1.59	1.80	6.10
	Sub2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	17.00	1.46	1.70	4.90
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/49	Max - 1	28.30	17.07	1.17	1.80	5.20
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/99	Max - 1	28.30	16.93	1.65	1.70	4.50
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	50/0	Max - 1	28.30	16.89	1.85	1.60	7.00
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	50/24	Max - 1	28.30	16.93	1.64	1.80	6.00
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	50/50	Max - 1	28.30	16.92	1.42	1.70	6.50
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	100/0	Max - 1	28.30	16.95	1.56	1.70	4.20
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	16QAM	1/0	Max - 1	28.30	16.92	1.38	1.70	5.70
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	64QAM	1/0	Max - 1	28.30	16.99	1.17	1.60	6.20
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	256QAM	1/0	Max - 1	28.30	16.96	1.42	1.90	6.90
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	15 MHz	QPSK	1/0	Max - 1	28.30	16.94	1.42	1.90	5.00
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	17.00	1.40	1.90	7.10
	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	5 MHz	QPSK	1/0	Max - 1	28.30	17.19	1.34	1.70	4.80
	Main2	EVS-WB 24.4 kbit/s	39750 2506 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.98	1.36	1.80	5.60
	Main2	EVS-WB 24.4 kbit/s	40185 2549.5 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.96	1.48	1.70	7.20
	Main2	EVS-WB 24.4 kbit/s	41055 2636.5 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.95	1.14	1.70	6.10
	Main2	EVS-WB 24.4 kbit/s	41490 2680 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.92	1.44	1.90	6.30
LTE Band 48	Main2	EVS-WB 24.4 kbit/s	55773 3603.3 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.88	1.48	1.80	7.80
	Main2	EVS-NB 24.4 kbit/s	55773 3603.3 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	17.67	1.03	1.42	10.90

8N Mounting Force – VoNR FDD

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform / Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								8N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SNR margin (dB)
										FF	DF	
NR Band n66	Sub2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.50	16.63	1.37	2.00	5.00
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.43	1.24	1.90	5.20
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/107	Max - 1	27.50	16.64	1.07	2.10	6.40
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/214	Max - 1	27.50	16.62	1.13	2.10	6.90
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	108/0	Max - 1	27.50	16.59	1.33	2.20	6.40
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	108/54	Max - 1	27.50	16.60	1.21	2.10	7.70
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	108/108	Max - 1	27.50	16.63	1.07	2.10	5.20
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	216/0	Max - 1	27.50	16.59	1.07	2.00	5.60
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM pi/2 BPSK	1/1	Max - 1	27.50	16.69	1.03	2.10	4.10
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM 16QAM	1/1	Max - 1	27.50	16.75	1.03	2.00	6.20
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM 64QAM	1/1	Max - 1	27.50	16.67	1.25	2.10	6.10
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM 256QAM	1/1	Max - 1	27.50	16.64	1.10	2.10	6.80
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	1/1	Max - 1	28.50	16.71	1.08	2.00	4.40
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	1/107	Max - 1	28.50	16.86	1.21	2.10	6.00
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	1/214	Max - 1	28.50	16.75	1.16	2.10	8.70
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	108/0	Max - 1	28.50	16.78	1.07	2.00	4.50
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	108/54	Max - 1	28.50	16.72	1.03	2.10	8.50
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	108/108	Max - 1	28.50	16.76	1.35	2.10	7.40
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM QPSK	216/0	Max - 1	28.50	16.75	1.10	2.00	3.20
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM 16QAM	1/1	Max - 1	28.50	16.71	1.24	2.10	4.30
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM 64QAM	1/1	Max - 1	28.50	16.72	1.16	2.00	4.90
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	CP-OFDM 256QAM	1/1	Max - 1	28.50	16.75	1.03	2.10	3.10
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	30 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.50	16.61	1.05	2.00	4.80
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	25 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.50	16.56	1.44	2.00	5.90
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.50	16.68	1.20	2.10	7.30
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	15 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.50	16.57	1.67	2.00	6.50
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	10 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.50	16.61	1.38	2.00	8.50
	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	5 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.50	16.54	1.21	2.00	4.70
	Main2	EVS-WB 24.4 kbit/s	346000 1730.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.50	16.51	1.17	1.90	4.70
	Main2	EVS-WB 24.4 kbit/s	352000 1760.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.64	1.06	1.80	6.00
NR Band n5	Main1	EVS-WB 24.4 kbit/s	167300 836.50 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.67	1.07	2.00	6.50
	Main1	EVS-NB 24.4 kbit/s	167300 836.50 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	17.08	1.34	1.41	9.70
NR Band n25	Main2	EVS-WB 24.4 kbit/s	376500 1882.5 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.66	1.34	2.10	5.10
	Main2	EVS-NB 24.4 kbit/s	376500 1882.5 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.97	1.61	1.61	9.80
NR Band n30	Main2	EVS-WB 24.4 kbit/s	462000 2310 MHz	10 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	15.97	1.74	2.00	7.70
	Main2	EVS-NB 24.4 kbit/s	462000 2310 MHz	10 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	16.20	1.27	1.05	8.90
NR Band n70	Main2	EVS-WB 24.4 kbit/s	340500 1702.5 MHz	15 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.64	1.08	1.80	10.80
	Main2	EVS-NB 24.4 kbit/s	340500 1702.5 MHz	15 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	17.03	1.53	1.46	7.80
NR Band n71	Main1	EVS-WB 24.4 kbit/s	136100 680.5 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.67	1.45	2.10	5.40
	Main1	EVS-NB 24.4 kbit/s	136100 680.5 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	17.09	1.52	1.51	8.00

8N Mounting Force – VoNR TDD

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform / Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								8N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
NR Band n77 HPUE	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.25	1.40	2.20	5.40
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/136	Max - 1	28.60	16.30	1.29	2.00	8.60
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/271	Max - 1	28.60	16.26	1.08	2.00	3.60
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	135/0	Max - 1	28.60	16.27	1.07	1.90	7.80
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	135/69	Max - 1	28.60	16.26	1.27	2.10	8.30
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	135/138	Max - 1	28.60	16.26	1.19	2.10	7.20
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	270/0	Max - 1	28.60	16.30	1.09	2.00	8.60
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM pi/2 BPSK	1/1	Max - 1	28.60	16.37	1.46	2.20	8.00
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM 16QAM	1/1	Max - 1	28.60	16.27	1.12	2.00	5.20
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM 64QAM	1/1	Max - 1	28.60	16.34	1.14	2.10	7.30
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM 256QAM	1/1	Max - 1	28.60	16.37	1.05	2.00	5.30
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	1/1	Max - 1	28.60	16.27	1.13	2.00	5.80
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	1/136	Max - 1	28.60	16.38	1.24	2.10	8.80
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	1/271	Max - 1	28.60	16.38	1.23	2.10	6.80
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	135/0	Max - 1	28.60	16.36	1.29	2.00	3.30
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	135/69	Max - 1	28.60	16.39	1.30	1.90	9.10
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	135/138	Max - 1	28.60	16.39	1.41	2.10	4.30
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM QPSK	270/0	Max - 1	28.60	16.35	1.51	2.20	5.80
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM 16QAM	1/1	Max - 1	28.60	16.36	1.31	2.10	7.70
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM 64QAM	1/1	Max - 1	28.60	16.36	1.00	1.90	3.70
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	CP-OFDM 256QAM	1/1	Max - 1	28.60	16.36	1.80	2.20	6.90
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	90 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.33	1.00	2.00	8.50
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	80 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.36	1.01	2.10	8.10
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	70 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.30	1.19	1.80	8.70
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	60 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.29	1.70	2.20	7.40
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	50 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.27	1.30	2.20	6.20
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.27	1.04	1.80	7.50
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	30 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.26	1.02	1.80	6.70
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	25 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.25	1.06	2.00	6.50
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.27	1.41	2.20	7.40
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	15 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.29	1.12	2.10	6.00
	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	10 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.32	1.28	2.10	6.40
	Sub3	EVS-WB 24.4 kbit/s	633334 3500.01 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.37	1.45	2.20	4.40
	Sub3	EVS-WB 24.4 kbit/s	662000 3930 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.38	1.21	1.90	5.70
NR Band n41 HPUE	Sub2	EVS-WB 24.4 kbit/s	518598 2592.99 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.11	1.58	2.30	7.50
	Main2	EVS-WB 24.4 kbit/s	518598 2592.99 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.64	1.07	2.00	3.10
	Sub2	EVS-NB 24.4 kbit/s	518598 2592.99 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.46	1.83	1.62	6.80
NR Band n48	Sub3	EVS-WB 24.4 kbit/s	641666 3624.99 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.15	1.39	2.00	7.20
	Sub3	EVS-NB 24.4 kbit/s	641666 3624.99 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.42	1.75	1.53	8.50

8N Mounting Force – VoWiFi 2.4GHz

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform/ Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								8N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
WiFi 2.4GHz 802.11g	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.61	1.44	1.80	6.30
	SISO2 Sub2	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.19	1.14	1.60	10.70
	MIMO	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.36	1.07	1.30	8.30
WiFi 2.4GHz 802.11b	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	DSSS 1 Mbps	N/A	Max - 1	25.80	16.67	1.04	1.60	4.80
	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	CCK 5.5 Mbps	N/A	Max - 1	25.80	16.63	1.52	1.80	4.80
	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	CCK 11 Mbps	N/A	Max - 1	25.80	16.65	1.34	1.80	5.30
WiFi 2.4GHz 802.11b	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	CCK 5.5 Mbps	N/A	Max - 1	25.80	16.63	1.52	1.80	4.80
	SISO1 Sub4	EVS-NB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	CCK 5.5 Mbps	N/A	Max - 1	25.80	17.29	1.16	1.45	11.30
WiFi 2.4GHz 802.11n HT20	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	MCS 0 6.5 Mbps	N/A	Max - 1	25.80	16.64	1.29	1.80	7.30
	SISO1 Sub4	EVS-NB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	MCS 0 6.5 Mbps	N/A	Max - 1	25.80	17.31	1.12	1.45	7.40
WiFi 2.4GHz 802.11ac VHT20	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	MCS 8 78 Mbps	N/A	Max - 1	25.80	16.84	1.05	1.80	6.60
	SISO1 Sub4	EVS-NB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	MCS 8 78 Mbps	N/A	Max - 1	25.80	17.55	1.02	1.56	8.80
WiFi 2.4GHz 802.11ax HE20	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	MCS 0 8.6 Mbps	N/A	Max - 1	25.80	16.66	1.11	1.70	7.40
	SISO1 Sub4	EVS-NB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	MCS 0 8.6 Mbps	N/A	Max - 1	25.80	17.29	1.04	1.45	11.30
WiFi 2.4GHz 802.11g	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.1 2412 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	26.30	16.77	1.06	1.80	5.80
	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.11 2462 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.94	1.05	1.50	4.30

8N Mounting Force – VoWiFi U-NII (Continued)

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform/ Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								8N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
WiFi 5GHz 802.11a U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.99	1.47	1.80	7.30
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	QPSK 18 Mbps	N/A	Max - 1	26.20	17.71	1.10	1.70	6.20
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	64QAM 54 Mbps	N/A	Max - 1	26.20	17.68	1.10	1.80	6.50
WiFi 5GHz 802.11n HT20 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 0 6.5 Mbps	N/A	Max - 1	26.20	17.58	1.42	1.70	4.30
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 3 26 Mbps	N/A	Max - 1	26.20	17.61	1.15	1.50	6.00
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 7 65 Mbps	N/A	Max - 1	26.20	17.62	1.21	1.80	5.00
	MIMO	EVS-NB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 0 6.5 Mbps	N/A	Max - 1	26.20	18.27	1.09	1.47	10.50
WiFi 5GHz 802.11n HT40 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 0 6.5 Mbps	N/A	Max - 1	26.20	17.61	1.26	1.80	6.80
	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 3 54 Mbps	N/A	Max - 1	26.20	17.64	1.15	1.80	6.60
	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 7 135 Mbps	N/A	Max - 1	26.20	17.62	1.15	1.80	6.00
	MIMO	EVS-NB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 0 6.5 Mbps	N/A	Max - 1	26.20	18.27	1.03	1.55	10.90

8N Mounting Force – VoWiFi U-NII

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform/ Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								8N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
WiFi 5GHz 802.11ac VHT20 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 0 6.5 Mbps	N/A	Max - 1	26.20	17.56	1.35	1.80	5.60
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 4 39 Mbps	N/A	Max - 1	26.20	17.55	1.56	1.80	5.00
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 8 78 Mbps	N/A	Max - 1	26.20	17.52	1.27	1.90	6.60
	MIMO	EVS-NB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 8 78 Mbps	N/A	Max - 1	26.20	18.28	1.64	1.51	9.80
WiFi 5GHz 802.11ac VHT40 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 0 13.5 Mbps	N/A	Max - 1	26.20	17.58	1.74	1.80	5.70
	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 4 108 Mbps	N/A	Max - 1	26.20	17.55	1.08	1.70	7.00
	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 9 180 Mbps	N/A	Max - 1	26.20	17.57	1.45	1.70	4.50
	MIMO	EVS-NB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 4 108 Mbps	N/A	Max - 1	26.20	18.25	1.31	1.52	9.40
WiFi 5GHz 802.11ac VHT80 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 0 29.3 Mbps	N/A	Max - 1	26.20	17.62	1.03	1.80	5.30
	MIMO	EVS-WB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 4 175.5 Mbps	N/A	Max - 1	26.20	17.55	1.13	1.70	4.70
	MIMO	EVS-WB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 9 390 Mbps	N/A	Max - 1	26.20	17.60	1.12	1.70	7.50
	MIMO	EVS-NB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 4 175.5 Mbps	N/A	Max - 1	26.20	18.26	1.68	1.46	10.30
WiFi 5GHz 802.11ax HE20 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 0 8.6 Mbps	N/A	Max - 1	25.80	17.00	1.13	1.70	7.40
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 6 77 Mbps	N/A	Max - 1	25.80	17.04	1.07	1.90	6.90
	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 11 143 Mbps	N/A	Max - 1	25.80	17.07	1.14	1.70	5.70
	MIMO	EVS-NB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	MCS 0 8.6 Mbps	N/A	Max - 1	25.80	17.69	1.05	1.24	9.90
WiFi 5GHz 802.11ax HE40 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 0 17.2 Mbps	N/A	Max - 1	25.80	17.06	1.21	1.70	6.50
	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 6 155 Mbps	N/A	Max - 1	25.80	17.03	1.44	1.70	5.40
	MIMO	EVS-WB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 11 287 Mbps	N/A	Max - 1	25.80	17.01	1.17	1.70	6.20
	MIMO	EVS-NB 24.4 kbit/s	CH.38 5190 MHz	40 MHz	MCS 11 287 Mbps	N/A	Max - 1	25.80	17.72	1.15	1.24	9.30
WiFi 5GHz 802.11ax HE80 U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 0 36 Mbps	N/A	Max - 1	25.80	17.08	1.36	1.80	6.20
	MIMO	EVS-WB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 6 324 Mbps	N/A	Max - 1	25.80	17.05	1.19	1.70	7.30
	MIMO	EVS-WB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 11 600 Mbps	N/A	Max - 1	25.80	17.04	1.28	1.80	5.70
	MIMO	EVS-NB 24.4 kbit/s	CH.42 5210 MHz	80 MHz	MCS 11 600 Mbps	N/A	Max - 1	25.80	17.67	1.02	1.20	11.50
WiFi 5GHz 802.11a U-NII-1	MIMO	EVS-WB 24.4 kbit/s	CH.36 5180 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.23	1.11	1.70	5.30
	MIMO	EVS-WB 24.4 kbit/s	CH.48 5240 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.19	1.34	1.80	6.70
WiFi 5GHz 802.11a U-NII-2A	MIMO	EVS-WB 24.4 kbit/s	CH.56 5280 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.07	1.24	1.80	6.20
	MIMO	EVS-NB 24.4 kbit/s	CH.56 5280 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.64	1.11	1.29	9.50
WiFi 5GHz 802.11a U-NII-2C	MIMO	EVS-WB 24.4 kbit/s	CH.120 5600 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.27	1.26	1.80	6.90
	MIMO	EVS-NB 24.4 kbit/s	CH.120 5600 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.85	1.12	1.16	10.60
WiFi 5GHz 802.11a U-NII-3	MIMO	EVS-WB 24.4 kbit/s	CH.157 5785 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.25	1.47	1.80	5.70
	MIMO	EVS-NB 24.4 kbit/s	CH.157 5785 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.89	1.17	1.33	9.70

9.3. Other Voice Codecs Investigation for GSM/WCDMA/VoLTE/VoNR/VoWiFi

An investigation between the various other voice codecs configurations (Low/Mid/High bit rates for Narrowband and Wideband) and conversational gain is documented to evaluate conversational gain for each voice service type. The table below compares the varying codec configurations.

A codec investigation was performed of each GSM, W-CDMA, LTE FDD/TDD, NR FDD/TDD and VoWiFi.

2N Mounting Force (Continued)

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform/ Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								2N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
GSM 850	Main1	FR V1	190 836.6 MHz	N/A	N/A	N/A	Max - 1	25.40	14.62	N/A	N/A	N/A
	Main1	FR V2	190 836.6 MHz	N/A	N/A	N/A	Max - 1	25.40	14.74	N/A	N/A	N/A
	Main1	HR V1	190 836.6 MHz	N/A	N/A	N/A	Max - 1	25.40	14.81	N/A	N/A	N/A
GSM 1900	Main2	FR V1	661 1880 MHz	N/A	N/A	N/A	Max - 1	25.40	14.62	N/A	N/A	N/A
WCDMA Band V	Main1	AMR-NB 4.75 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	25.40	13.83	N/A	N/A	N/A
	Main1	AMR-NB 7.4 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	25.40	14.27	N/A	N/A	N/A
	Main1	AMR-NB 12.2 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	25.40	14.56	N/A	N/A	N/A
	Main1	AMR-WB 6.6 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	25.40	13.37	N/A	N/A	N/A
	Main1	AMR-WB 12.65 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	25.40	13.77	N/A	N/A	N/A
	Main1	AMR-WB 23.85 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	25.40	13.89	N/A	N/A	N/A
WCDMA Band II	Main2	AMR-WB 6.6 kbps	9400 1880.0 MHz	N/A	N/A	N/A	Max - 1	25.40	13.26	N/A	N/A	N/A
WCDMA Band IV	Main2	AMR-WB 6.6 kbps	1413 1732.6 MHz	N/A	N/A	N/A	Max - 1	25.40	13.13	N/A	N/A	N/A
LTE Band 66	Main2	AMR-NB 4.75 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.82	N/A	N/A	N/A
	Main2	AMR-NB 7.4 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	14.38	N/A	N/A	N/A
	Main2	AMR-NB 12.2 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	14.54	N/A	N/A	N/A
	Main2	AMR-WB 6.6 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.23	N/A	N/A	N/A
	Main2	AMR-WB 15.85 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.79	N/A	N/A	N/A
	Main2	AMR-WB 23.85 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.86	N/A	N/A	N/A
	Main2	EVS-NB 5.9 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.96	N/A	N/A	N/A
	Main2	EVS-NB 13.2 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	14.24	N/A	N/A	N/A
	Main2	EVS-WB 5.9 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.03	N/A	N/A	N/A
	Main2	EVS-WB 64 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.86	N/A	N/A	N/A
LTE Band 41	Main2	EVS-WB 128 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	14.22	N/A	N/A	N/A
	Main2	AMR-NB 4.75 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.80	N/A	N/A	N/A
	Main2	AMR-NB 7.4 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	14.26	N/A	N/A	N/A
	Main2	AMR-NB 12.2 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	14.53	N/A	N/A	N/A
	Main2	AMR-WB 6.6 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.09	N/A	N/A	N/A
	Main2	AMR-WB 15.85 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.67	N/A	N/A	N/A
	Main2	AMR-WB 23.85 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.77	N/A	N/A	N/A
	Main2	EVS-NB 5.9 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.70	N/A	N/A	N/A
	Main2	EVS-NB 13.2 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	14.10	N/A	N/A	N/A
	Main2	EVS-WB 5.9 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.06	N/A	N/A	N/A
	Main2	EVS-WB 64 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.75	N/A	N/A	N/A
	Main2	EVS-WB 128 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	14.10	N/A	N/A	N/A

2N Mounting Force (Continued)

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform/ Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								2N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
NR Band n66	Main2	AMR-NB 4.75 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.53	N/A	N/A	N/A
	Main2	AMR-NB 7.4 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	14.03	N/A	N/A	N/A
	Main2	AMR-NB 12.2 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	14.24	N/A	N/A	N/A
	Main2	AMR-WB 6.6 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.31	N/A	N/A	N/A
	Main2	AMR-WB 15.85 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.79	N/A	N/A	N/A
	Main2	AMR-WB 23.85 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.82	N/A	N/A	N/A
	Main2	EVS-NB 5.9 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.60	N/A	N/A	N/A
	Main2	EVS-NB 13.2 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.92	N/A	N/A	N/A
	Main2	EVS-WB 5.9 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.14	N/A	N/A	N/A
	Main2	EVS-WB 64 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.81	N/A	N/A	N/A
	Main2	EVS-WB 128 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	14.15	N/A	N/A	N/A
NR Band n77 HPUE	Sub3	AMR-NB 4.75 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	14.30	N/A	N/A	N/A
	Sub3	AMR-NB 7.4 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	14.72	N/A	N/A	N/A
	Sub3	AMR-NB 12.2 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	15.02	N/A	N/A	N/A
	Sub3	AMR-WB 6.6 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	14.36	N/A	N/A	N/A
	Sub3	AMR-WB 15.85 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	14.88	N/A	N/A	N/A
	Sub3	AMR-WB 23.85 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	14.98	N/A	N/A	N/A
	Sub3	EVS-NB 5.9 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	14.47	N/A	N/A	N/A
	Sub3	EVS-NB 13.2 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	14.57	N/A	N/A	N/A
	Sub3	EVS-WB 5.9 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	14.23	N/A	N/A	N/A
	Sub3	EVS-WB 64 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	14.87	N/A	N/A	N/A
	Sub3	EVS-WB 128 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	15.24	N/A	N/A	N/A
WiFi 2.4GHz 802.11g	SISO1 Sub4	AMR-NB 4.75 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	13.90	N/A	N/A	N/A
	SISO1 Sub4	AMR-NB 7.4 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.53	N/A	N/A	N/A
	SISO1 Sub4	AMR-NB 12.2 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.79	N/A	N/A	N/A
	SISO1 Sub4	AMR-WB 6.6 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	13.66	N/A	N/A	N/A
	SISO1 Sub4	AMR-WB 15.85 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.19	N/A	N/A	N/A
	SISO1 Sub4	AMR-WB 23.85 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.29	N/A	N/A	N/A
	SISO1 Sub4	EVS-NB 5.9 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.02	N/A	N/A	N/A
	SISO1 Sub4	EVS-NB 13.2 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.49	N/A	N/A	N/A
	SISO1 Sub4	EVS-WB 5.9 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	13.47	N/A	N/A	N/A
	SISO1 Sub4	EVS-WB 64 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.27	N/A	N/A	N/A
	SISO1 Sub4	EVS-WB 128 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.60	N/A	N/A	N/A

2N Mounting Force

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform / Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								2N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		FN-SDNR margin (dB)
WiFi 5GHz 802.11a	MIMO	AMR-NB 4.75 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	13.97	N/A	N/A	N/A
	MIMO	AMR-NB 7.4 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.45	N/A	N/A	N/A
	MIMO	AMR-NB 12.2 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.74	N/A	N/A	N/A
	MIMO	AMR-WB 6.6 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	13.64	N/A	N/A	N/A
	MIMO	AMR-WB 15.85 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.14	N/A	N/A	N/A
	MIMO	AMR-WB 23.85 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.26	N/A	N/A	N/A
	MIMO	EVS-NB 5.9 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.17	N/A	N/A	N/A
	MIMO	EVS-NB 13.2 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.50	N/A	N/A	N/A
	MIMO	EVS-WB 64 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	13.42	N/A	N/A	N/A
	MIMO	EVS-WB 128 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.25	N/A	N/A	N/A
	MIMO	EVS-WB 128 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	14.59	N/A	N/A	N/A

8N Mounting Force (Continued)

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform/ Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								8N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
GSM 850	Main1	FR V1	190 836.6 MHz	N/A	N/A	N/A	Max - 1	27.10	17.67	N/A	N/A	N/A
	Main1	FR V2	190 836.6 MHz	N/A	N/A	N/A	Max - 1	27.10	17.97	N/A	N/A	N/A
	Main1	HR V1	190 836.6 MHz	N/A	N/A	N/A	Max - 1	27.10	18.06	N/A	N/A	N/A
GSM 1900	Main2	FR V1	661 1880 MHz	N/A	N/A	N/A	Max - 1	27.10	17.93	N/A	N/A	N/A
WCDMA Band V	Main1	AMR-NB 4.75 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	28.30	17.31	N/A	N/A	N/A
	Main1	AMR-NB 7.4 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	28.30	17.80	N/A	N/A	N/A
	Main1	AMR-NB 12.2 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	28.30	17.99	N/A	N/A	N/A
	Main1	AMR-WB 6.6 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	28.30	16.66	N/A	N/A	N/A
	Main1	AMR-WB 12.65 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	28.30	17.09	N/A	N/A	N/A
	Main1	AMR-WB 23.85 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	28.30	17.29	N/A	N/A	N/A
WCDMA Band II	Main2	AMR-WB 6.6 kbps	9400 1880.0 MHz	N/A	N/A	N/A	Max - 1	28.30	16.61	N/A	N/A	N/A
WCDMA Band IV	Main2	AMR-WB 6.6 kbps	1413 1732.6 MHz	N/A	N/A	N/A	Max - 1	28.30	16.58	N/A	N/A	N/A
LTE Band 66	Main2	AMR-NB 4.75 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	16.66	N/A	N/A	N/A
	Main2	AMR-NB 7.4 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	17.15	N/A	N/A	N/A
	Main2	AMR-NB 12.2 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	17.49	N/A	N/A	N/A
	Main2	AMR-WB 6.6 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	16.20	N/A	N/A	N/A
	Main2	AMR-WB 15.85 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	16.66	N/A	N/A	N/A
	Main2	AMR-WB 23.85 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	16.76	N/A	N/A	N/A
	Main2	EVS-NB 5.9 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	16.79	N/A	N/A	N/A
	Main2	EVS-NB 13.2 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	16.99	N/A	N/A	N/A
	Main2	EVS-WB 5.9 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	16.05	N/A	N/A	N/A
	Main2	EVS-WB 64 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	16.74	N/A	N/A	N/A
LTE Band 41	Main2	EVS-WB 128 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	17.08	N/A	N/A	N/A
	Main2	AMR-NB 4.75 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.10	17.11	N/A	N/A	N/A
	Main2	AMR-NB 7.4 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.10	17.63	N/A	N/A	N/A
	Main2	AMR-NB 12.2 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.10	17.89	N/A	N/A	N/A
	Main2	AMR-WB 6.6 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.10	16.56	N/A	N/A	N/A
	Main2	AMR-WB 15.85 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.10	17.14	N/A	N/A	N/A
	Main2	AMR-WB 23.85 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.10	17.18	N/A	N/A	N/A
	Main2	EVS-NB 5.9 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.10	17.14	N/A	N/A	N/A
	Main2	EVS-NB 13.2 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.10	17.50	N/A	N/A	N/A
	Main2	EVS-WB 5.9 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.10	16.47	N/A	N/A	N/A
	Main2	EVS-WB 64 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.10	17.18	N/A	N/A	N/A
	Main2	EVS-WB 128 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.10	17.51	N/A	N/A	N/A

8N Mounting Force (Continued)

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform/ Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								8N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)
										FF	DF	
NR Band n66	Main2	AMR-NB 4.75 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.48	N/A	N/A	N/A
	Main2	AMR-NB 7.4 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.91	N/A	N/A	N/A
	Main2	AMR-NB 12.2 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	17.16	N/A	N/A	N/A
	Main2	AMR-WB 6.6 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.19	N/A	N/A	N/A
	Main2	AMR-WB 15.85 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.74	N/A	N/A	N/A
	Main2	AMR-WB 23.85 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.81	N/A	N/A	N/A
	Main2	EVS-NB 5.9 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.56	N/A	N/A	N/A
	Main2	EVS-NB 13.2 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.84	N/A	N/A	N/A
	Main2	EVS-WB 5.9 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.16	N/A	N/A	N/A
	Main2	EVS-WB 64 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.79	N/A	N/A	N/A
	Main2	EVS-WB 128 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	17.11	N/A	N/A	N/A
NR Band n77 HPUE	Sub3	AMR-NB 4.75 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.07	N/A	N/A	N/A
	Sub3	AMR-NB 7.4 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.66	N/A	N/A	N/A
	Sub3	AMR-NB 12.2 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.85	N/A	N/A	N/A
	Sub3	AMR-WB 6.6 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.05	N/A	N/A	N/A
	Sub3	AMR-WB 15.85 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.60	N/A	N/A	N/A
	Sub3	AMR-WB 23.85 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.64	N/A	N/A	N/A
	Sub3	EVS-NB 5.9 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.23	N/A	N/A	N/A
	Sub3	EVS-NB 13.2 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.53	N/A	N/A	N/A
	Sub3	EVS-WB 5.9 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	15.89	N/A	N/A	N/A
	Sub3	EVS-WB 64 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.65	N/A	N/A	N/A
	Sub3	EVS-WB 128 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.97	N/A	N/A	N/A
WiFi 2.4GHz 802.11g	SISO1 Sub4	AMR-NB 4.75 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.77	N/A	N/A	N/A
	SISO1 Sub4	AMR-NB 7.4 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.34	N/A	N/A	N/A
	SISO1 Sub4	AMR-NB 12.2 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.61	N/A	N/A	N/A
	SISO1 Sub4	AMR-WB 6.6 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.30	N/A	N/A	N/A
	SISO1 Sub4	AMR-WB 15.85 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.92	N/A	N/A	N/A
	SISO1 Sub4	AMR-WB 23.85 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.06	N/A	N/A	N/A
	SISO1 Sub4	EVS-NB 5.9 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.11	N/A	N/A	N/A
	SISO1 Sub4	EVS-NB 13.2 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.31	N/A	N/A	N/A
	SISO1 Sub4	EVS-WB 5.9 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.24	N/A	N/A	N/A
	SISO1 Sub4	EVS-WB 64 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.02	N/A	N/A	N/A
	SISO1 Sub4	EVS-WB 128 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.36	N/A	N/A	N/A

8N Mounting Force

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform / Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results				
								8N				
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		FN-SDNR margin (dB)
WiFi 5GHz 802.11a	MIMO	AMR-NB 4.75 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.79	N/A	N/A	N/A
	MIMO	AMR-NB 7.4 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.35	N/A	N/A	N/A
	MIMO	AMR-NB 12.2 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.56	N/A	N/A	N/A
	MIMO	AMR-WB 6.6 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.43	N/A	N/A	N/A
	MIMO	AMR-WB 15.85 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.02	N/A	N/A	N/A
	MIMO	AMR-WB 23.85 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.08	N/A	N/A	N/A
	MIMO	EVS-NB 5.9 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.07	N/A	N/A	N/A
	MIMO	EVS-NB 13.2 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.29	N/A	N/A	N/A
	MIMO	EVS-WB 5.9 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.34	N/A	N/A	N/A
	MIMO	EVS-WB 64 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.05	N/A	N/A	N/A
	MIMO	EVS-WB 128 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	17.38	N/A	N/A	N/A

9.4. HAC (Volume Control) Test Results

2N Mounting Force – Summary

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform / Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results					Plot No.
								2N					
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)	
		FF	DF										
GSM 850	Main1	FR V1	190 836.6 MHz	N/A	N/A	N/A	Max - 1	25.40	14.62	N/A	N/A	N/A	
GSM 1900	Main2	FR V1	661 1880 MHz	N/A	N/A	N/A	Max - 1	25.40	14.62	N/A	N/A	N/A	
WCDMA Band V	Main1	AMR-WB 6.6 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	25.40	13.37	N/A	N/A	N/A	
WCDMA Band II	Main2	AMR-WB 6.6 kbps	9400 1880.0 MHz	N/A	N/A	N/A	Max - 1	25.40	13.26	N/A	N/A	N/A	
WCDMA Band IV	Main2	AMR-WB 6.6 kbps	1413 1732.6 MHz	N/A	N/A	N/A	Max - 1	25.40	13.13	N/A	N/A	N/A	
LTE Band 7	Main2	EVS-WB 24.4 kbit/s	21100 2535 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	13.46	1.92	1.70	5.13	1
LTE Band 12	Main1	EVS-WB 24.4 kbit/s	23095 707.5 MHz	10 MHz	QPSK	1/0	Max - 1	27.20	13.50	1.93	1.70	7.00	2
LTE Band 13	Main1	EVS-WB 24.4 kbit/s	23230 782 MHz	10 MHz	QPSK	1/0	Max - 1	27.20	13.58	2.06	1.80	5.92	3
LTE Band 14	Main1	EVS-WB 24.4 kbit/s	23330 793 MHz	10 MHz	QPSK	1/0	Max - 1	27.20	13.92	1.95	1.90	7.96	4
LTE Band 25	Main2	EVS-WB 24.4 kbit/s	26365 1882.5 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	13.60	2.04	1.80	4.59	5
LTE Band 26	Main1	EVS-WB 24.4 kbit/s	26865 831.5 MHz	15 MHz	QPSK	1/0	Max - 1	27.80	13.54	1.97	1.70	4.78	6
LTE Band 30	Main2	EVS-WB 24.4 kbit/s	27710 2310 MHz	10 MHz	QPSK	1/0	Max - 1	27.20	13.03	1.90	1.60	5.13	7
LTE Band 66	Main2	EVS-WB 5.9 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.03	N/A	N/A	N/A	
LTE Band 66	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	13.42	1.99	1.80	6.67	8
LTE Band 71	Main1	EVS-WB 24.4 kbit/s	133297 680.5 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	13.43	2.07	1.80	7.06	9
LTE Band 41	Main2	EVS-WB 5.9 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	13.06	N/A	N/A	N/A	
LTE Band 41	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	13.79	2.04	1.80	7.48	10
LTE Band 48	Main2	EVS-WB 24.4 kbit/s	55773 3603.3 MHz	20 MHz	QPSK	1/0	Max - 1	27.80	13.87	2.15	2.00	7.10	11
NR Band n5	Main1	EVS-WB 24.4 kbit/s	167300 836.50 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.00	13.81	2.36	2.20	7.90	12
NR Band n25	Main2	EVS-WB 24.4 kbit/s	376500 1882.5 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.73	2.32	2.10	4.80	13
NR Band n30	Main2	EVS-WB 24.4 kbit/s	462000 2310 MHz	10 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	13.56	2.24	2.10	4.35	14
NR Band n66	Main2	EVS-WB 5.9 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.14	N/A	N/A	N/A	
NR Band n66	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.42	2.22	2.00	5.85	15
NR Band n70	Main2	EVS-WB 24.4 kbit/s	340500 1702.5 MHz	15 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.63	2.32	2.00	2.76	16
NR Band n71	Main1	EVS-WB 24.4 kbit/s	136100 680.5 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.10	13.82	2.26	2.10	10.73	17
NR Band n41 HPUE	Sub2	EVS-WB 24.4 kbit/s	518598 2592.99 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.58	2.21	2.10	5.70	18
NR Band n48	Sub3	EVS-WB 24.4 kbit/s	641666 3624.99 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	13.66	1.99	2.10	6.35	19
NR Band n77 HPUE	Sub3	EVS-WB 5.9 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	14.23	N/A	N/A	N/A	
NR Band n77 HPUE	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	13.53	2.15	2.20	5.60	20
WiFi 2.4GHz 802.11g	SISO1 Sub4	EVS-WB 5.9 kbps	CH.6 2437 MHz	20 MHz	BPSK6 Mbps	N/A	Max - 1	25.80	13.47	N/A	N/A	N/A	
WiFi 2.4GHz 802.11g	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	BPSK6 Mbps	N/A	Max - 1	26.30	14.02	1.76	1.90	6.45	21
WiFi 5GHz 802.11a	MIMO	EVS-WB 5.9 kbps	CH.40 5200 MHz	20 MHz	BPSK6 Mbps	N/A	Max - 1	25.80	13.42	N/A	N/A	N/A	
WiFi 5GHz 802.11a	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	BPSK6 Mbps	N/A	Max - 1	26.30	13.97	2.11	2.00	4.52	22

Note:

- Under the waiver, at least one of the device's narrowband and one of the device's wideband codecs need to be chosen for the distortion and frequency response testing. Testing of the chosen narrowband and wideband codecs for the distortion/noise and frequency response is limited to one bit rate and only those air interfaces associated with the chosen codecs-EVS NB 24.4 kbps & EVS WB 24.4 kbps. The other narrowband and wideband codecs used for the 2N and 8N force level conversational gain tests are not required to undergo distortion/noise and frequency response testing. This codec is therefore not subjected to the distortion and frequency response testing.
- Worst conversational gain for 2N mounting force is 13.03 dB.

8N Mounting Force – Summary

Mode / Band	Antenna	Voice Codec / Codec bitrate (kbps)	Channel and Frequency	Bandwidth	Waveform / Modulation	RB (Allocation/ Offset)	Volume Control Level	Volume Control Results					Plot No.
								8N					
								Noise (LAF_MAX) (dBA)	Conversational Gain (dB)	Frequency Response Margin (dB)		PN-SDNR margin (dB)	
FF	DF												
GSM 850	Main1	FR V1	190 836.6 MHz	N/A	N/A	N/A	Max - 1	27.10	17.67	N/A	N/A	N/A	
GSM 1900	Main2	FR V1	661 1880 MHz	N/A	N/A	N/A	Max - 1	27.10	17.93	N/A	N/A	N/A	
WCDMA Band V	Main1	AMR-WB 6.6 kbps	4183 836.6 MHz	N/A	N/A	N/A	Max - 1	28.30	16.66	N/A	N/A	N/A	
WCDMA Band II	Main2	AMR-WB 6.6 kbps	9400 1880.0 MHz	N/A	N/A	N/A	Max - 1	28.30	16.61	N/A	N/A	N/A	
WCDMA Band IV	Main2	AMR-WB 6.6 kbps	1413 1732.6 MHz	N/A	N/A	N/A	Max - 1	28.30	16.58	N/A	N/A	N/A	
LTE Band 7	Main2	EVS-WB 24.4 kbit/s	21100 2535 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.81	1.26	1.90	7.40	23
LTE Band 12	Main1	EVS-WB 24.4 kbit/s	23095 707.5 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	16.90	1.40	1.70	6.20	24
LTE Band 13	Main1	EVS-WB 24.4 kbit/s	23230 782 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	16.84	1.36	1.70	7.20	25
LTE Band 14	Main1	EVS-WB 24.4 kbit/s	23330 793 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	16.87	1.31	1.80	4.50	26
LTE Band 25	Main2	EVS-WB 24.4 kbit/s	26365 1882.5 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.81	1.50	1.70	4.60	27
LTE Band 26	Main1	EVS-WB 24.4 kbit/s	26865 831.5 MHz	15 MHz	QPSK	1/0	Max - 1	28.30	16.81	1.43	1.70	4.50	28
LTE Band 30	Main2	EVS-WB 24.4 kbit/s	27710 2310 MHz	10 MHz	QPSK	1/0	Max - 1	28.30	16.60	1.61	1.70	4.70	29
LTE Band 66	Main2	EVS-WB 5.9 kbps	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	25.40	16.05	N/A	N/A	N/A	
LTE Band 66	Main2	EVS-WB 24.4 kbit/s	132322 1745 MHz	20 MHz	QPSK	1/0	Max - 1	27.20	16.70	1.59	1.70	5.90	30
LTE Band 71	Main1	EVS-WB 24.4 kbit/s	133297 680.5 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.86	1.18	1.80	9.30	31
LTE Band 41	Main2	EVS-WB 5.9 kbps	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	27.10	16.47	N/A	N/A	N/A	
LTE Band 41	Main2	EVS-WB 24.4 kbit/s	40620 2593 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.86	1.59	1.80	6.10	32
LTE Band 48	Main2	EVS-WB 24.4 kbit/s	55773 3603.3 MHz	20 MHz	QPSK	1/0	Max - 1	28.30	16.88	1.48	1.80	7.80	33
NR Band n5	Main1	EVS-WB 24.4 kbit/s	167300 836.50 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.67	1.07	2.00	6.50	34
NR Band n25	Main2	EVS-WB 24.4 kbit/s	376500 1882.5 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.66	1.34	2.10	5.10	35
NR Band n30	Main2	EVS-WB 24.4 kbit/s	462000 2310 MHz	10 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	27.90	15.97	1.74	2.00	7.70	36
NR Band n66	Main2	EVS-WB 5.9 kbps	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.16	N/A	N/A	N/A	
NR Band n66	Main2	EVS-WB 24.4 kbit/s	349000 1745.00 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.43	1.24	1.90	5.20	37
NR Band n70	Main2	EVS-WB 24.4 kbit/s	340500 1702.5 MHz	15 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.64	1.08	1.80	10.80	38
NR Band n71	Main1	EVS-WB 24.4 kbit/s	136100 680.5 MHz	20 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.50	16.67	1.45	2.10	5.40	39
NR Band n41 HPUE	Sub2	EVS-WB 24.4 kbit/s	518598 2592.99 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.11	1.58	2.30	7.50	40
NR Band n48	Sub3	EVS-WB 24.4 kbit/s	641666 3624.99 MHz	40 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.15	1.39	2.00	7.20	41
NR Band n77 HPUE	Sub3	EVS-WB 5.9 kbps	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	15.89	N/A	N/A	N/A	
NR Band n77 HPUE	Sub3	EVS-WB 24.4 kbit/s	650000 3750 MHz	100 MHz	DFT-s-OFDM QPSK	1/1	Max - 1	28.60	16.25	1.40	2.20	5.40	42
WiFi 2.4GHz 802.11g	SISO1 Sub4	EVS-WB 5.9 kbps	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.24	N/A	N/A	N/A	
WiFi 2.4GHz 802.11g	SISO1 Sub4	EVS-WB 24.4 kbit/s	CH.6 2437 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.61	1.44	1.80	6.30	43
WiFi 5GHz 802.11a	MIMO	EVS-WB 5.9 kbps	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.34	N/A	N/A	N/A	
WiFi 5GHz 802.11a	MIMO	EVS-WB 24.4 kbit/s	CH.40 5200 MHz	20 MHz	BPSK 6 Mbps	N/A	Max - 1	25.80	16.99	1.47	1.80	7.30	44

Note:

- Under the waiver, at least one of the device's narrowband and one of the device's wideband codecs need to be chosen for the distortion and frequency response testing. Testing of the chosen narrowband and wideband codecs for the distortion/noise and frequency response is limited to one bit rate and only those air interfaces associated with the chosen codecs-EVS NB 24.4 kbps & EVS WB 24.4 kbps. The other narrowband and wideband codecs used for the 2N and 8N force level conversational gain tests are not required to undergo distortion/noise and frequency response testing. This codec is therefore not subjected to the distortion and frequency response testing.
- Worst conversational gain for 8N mounting force is 15.89 dB.

9.5. Worst Case Volume Control Test Plot

2N Mounting Force – VoLTE Band 66_Main2_EVS-WB 5.9 kbps_ch.132322

Conversational Gain 13.03 dB (tested conversational gain only)

2N Mounting Force – VoLTE Band 30_Main2_EVS-WB 24.4 kbps_ch.27710

Conversational Gain 13.03 dB



TIA-5050 Receive Volume Control Measurements - 2N

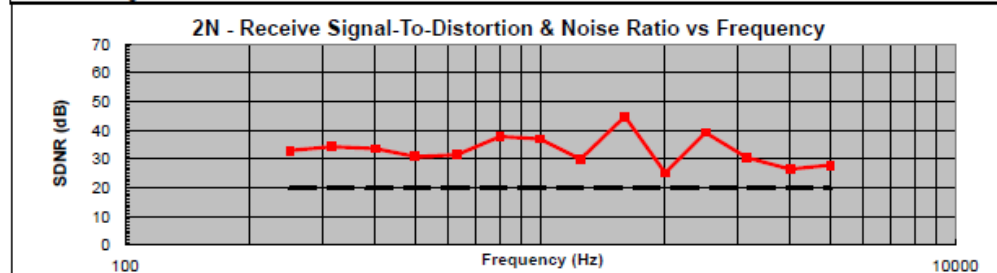
Device Under Test:	20241128_L30_WB_2N
Bandwidth	Wideband
Test Date:	2024-11-28

Receive Volume Control Performance

TIA-5050	Test	Measured	Limits	Result	Reference
Clause 5.1	Recv output level dBSPL 2N	83.03 dB	info only		
	Recv conversational gain 2N	13.03 dB	6.00	PASS	

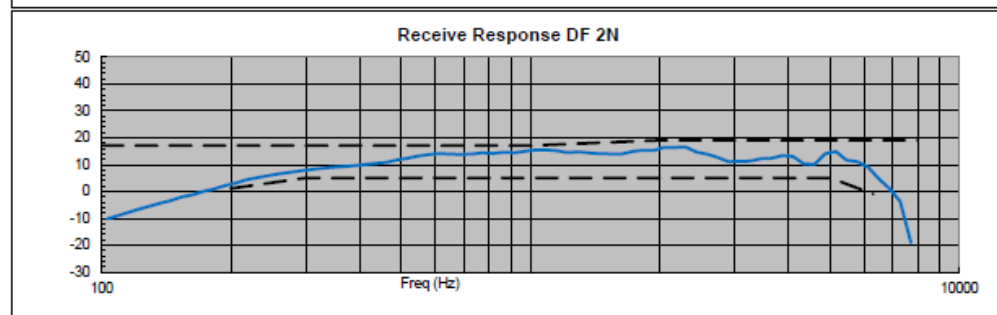
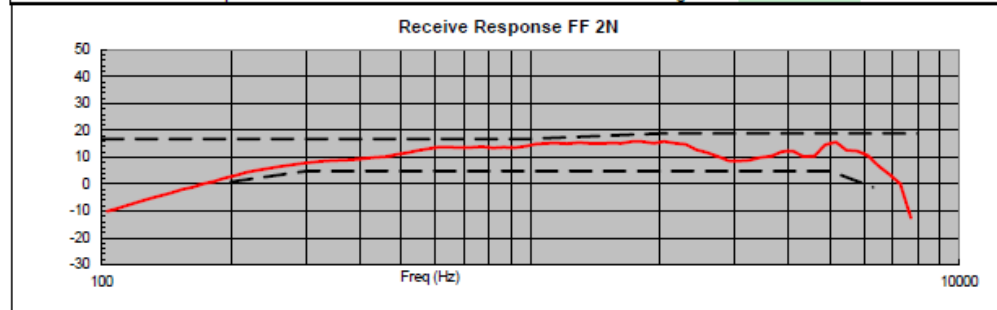
Receive Distortion and Noise Performance

TIA-5050	Test	Margin	Limits	Result	Reference
Clause 5.2	Recv PN-SDNR 2N	5.13 dB	Absolute Limits	PASS	
Note: SDNR includes noise and distortion products.					
Stimulus level				-20 dBPa	
Sentence conditioning				-20 dBPa	
Short conditioning				-20 dBPa	



Receive Acoustic Frequency Response Performance

TIA-5050	Test	Margin	Limits	Result	Reference
Clause 5.3	Recv resp FF 2N	1.9 dB	Floating Limits	PASS	
	Recv resp DF 2N	1.6 dB	Floating Limits	PASS	



8N Mounting Force – VoNR Band n77_Sub3_EVS-WB 5.9 kbps_ch.650000

Conversational Gain 15.89 dB (tested conversational gain only)

8N Mounting Force – VoNR Band n30_Main2_EVS-WB 24.4 kbps_ch.462000

Conversational Gain 15.97 dB



TIA-5050 Receive Volume Control Measurements - 8N

Device Under Test:	20241216_N30_WB_8N
Bandwidth	Wideband
Test Date:	2024-12-16

Receive Volume Control Performance

TIA-5050	Test	Measured	Limits	Result	Reference
Clause 5.1	Recv output level dBSPL 8N	85.97 dB	info only		
	Recv conversational gain 8N	15.97 dB	6.00	PASS	

Receive Distortion and Noise Performance

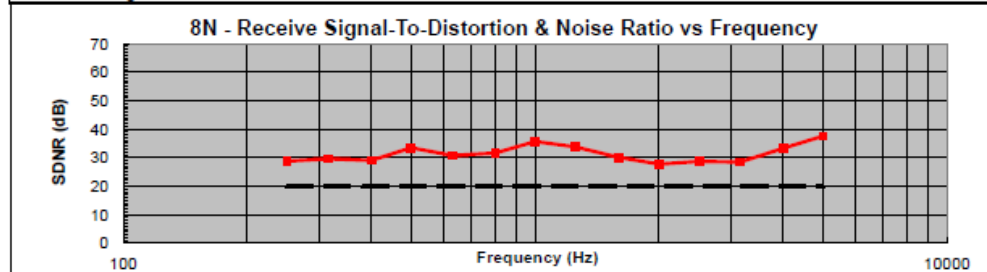
TIA-5050	Test	Margin	Limits	Result	Reference
Clause 5.2	Recv PN-SDNR 8N	7.7 dB	Absolute Limits	PASS	

Note: SDNR includes noise and distortion products.

Stimulus level -20 dBP_a

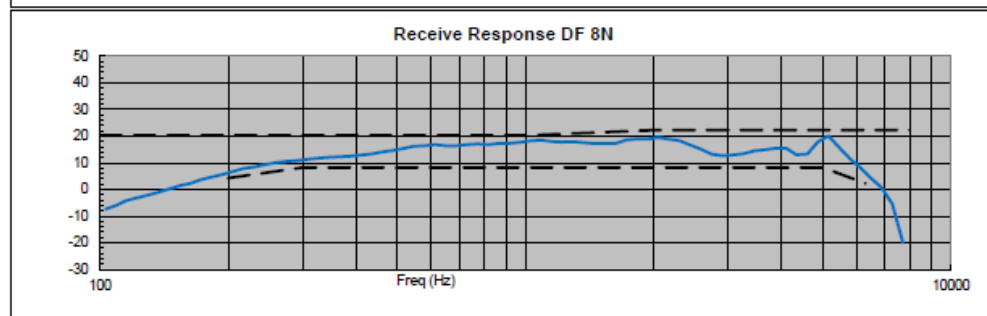
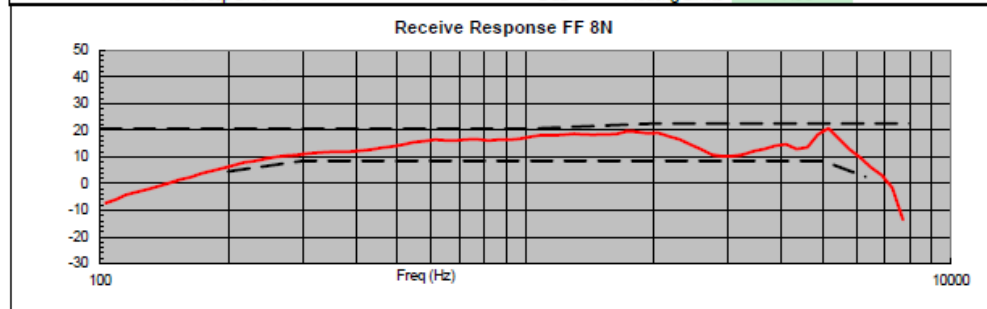
Sentence conditioning -20 dBP_a

Short conditioning -20 dBP_a



Receive Acoustic Frequency Response Performance

TIA-5050	Test	Margin	Limits	Result	Reference
Clause 5.3	Recv resp FF 8N	1.74 dB	Floating Limits	PASS	
	Recv resp DF 8N	2 dB	Floating Limits	PASS	



Appendix

Refer to separated files for the following appendixes

S-4791547056-S4 Appendix A_Setup Photo

S-4791547056-S4 Appendix B_Test Plots

END OF REPORT