



Date: July 9, 2021

Federal Communications Commission  
Office of Engineering and Technology Laboratory Division  
7435 Oakland Mills Rd.  
Columbia MD 21046

Attn: Office of Engineering and Technology

HAC Attestation - FCC ID: BCG-E4003A

To whom it may concern:

Apple Inc. hereby declares that the MIF values detailed below are based on worst case operating modes for all air interfaces for which the HAC rating is provided based on the current methodology for determining MIF values.

Reference Test report Number(s): UL Verification Services Test Report 13573771.

**SPEAG test files**

UID	Communication System Name	MIF (dB)
10021-DAC	GSM-FDD (TDMA, GMSK)	3.63
10011-CAB	UMTS-FDD (WCDMA)	-27.23
10295-AAB	CDMA2000 (1xRTT, RC1, SO3, 1/8th Rate 25 fr.)	3.26
10170-CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16QAM)	-9.76
10182-CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16QAM)	-9.76
10176-CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16QAM)	-9.76
10173-CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16QAM)	-1.44
10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	-2.02
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	0.12
10069-CAC	IEEE 802.11a/n WiFi 5 GHz (OFDM, 54 Mbps)	-3.15
10671-AAA	IEEE 802.11ax (20MHz, MCS0, 90pc duty cycle)	-5.58
10866-AAC	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	-16.69
10903-AAA	5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)	-16.68
10929-AAA	5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)	-15.06
10930-AAA	5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz)	-15.06
10931-AAA	5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)	-15.06
10934-AAA	5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz)	-15.07

Sincerely,

Abhishek Rala  
Apple Inc.  
Global Certification Manager