

GMRS G2 MOBILE RADIO

USER MANUAL

V1.2 | 07/26

SAFETY

FCC NOTICE: The G2 operates on GMRS (General Mobile Radio Service) frequencies, which require a Federal Communications Commission (FCC) license. You must be licensed prior to operating on channels 1-7, 15-22 or RPT15-22 which comprise the GMRS channels of the G2. Serious penalties may result from unlicensed use of GMRS channels, in violation of FCC rules, as stipulated in the Communications Act's Sections 501 and 502 [amended]. You will be issued a call sign by the FCC that should be used for station identification when operating your radio on GMRS channels. You should also cooperate by engaging in permissible transmissions only, avoiding channel interference with other GMRS users, and being prudent with the length of your transmission time. To obtain a license or ask questions about the license application, contact the FCC at 1-888-CALL-FCC or go to the FCC's website: <http://www.fcc.gov> and request Form 605.

FCC compliance statement: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: [1] This device may not cause harmful interference, and [2] this device must accept any interference including received interference that may cause undesired operation. Note 1: The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment. Replacement of any transmitter component (crystal, semiconductor, etc.) not authorized by the FCC equipment authorization for this radio could violate FCC rules. Note 2: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC RF Exposure and Separation Distance: This radio transmitter has been approved by FCC to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

External Antenna:

Maximum Antenna Gain: 0 dBi

Antenna Impedance: 50 Ohms

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment shall be installed and operated with a minimum distance 114 cm between the radiator & body.

WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.



To program your radio and to access advanced features, visit

rtsystemsinc.com

or contact them at 800-921-4834



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USER SAFETY INFORMATION

- Do not attempt to configure your radio while driving.
- This radio is designed for a 12 Volt DC power supply. Do not use a 24 Volt battery to power this radio.
- Keep this radio away from devices that cause interference, such as TV's, Generators, etc.
- Do not expose the radio to long periods of direct sunlight. Do not expose the radio to heat sources.
- If an abnormal odor or smoke is detected coming from the radio, turn off the power immediately, disconnect the power source, and contact your dealer.
- Do not transmit at high power for extended periods as overheating may occur.

PACKAGE INCLUDES

- 1X G2 Radio: GMRS mobile radio (main control unit)
- 1x Display/Control Hand Mic
- 1x Magnetic Hand Mic Mount
- 1x Radio Mount: Universal Quick-Release U-Bracket
- 1x Power: DC power cable with in-line fuse set
- 1x Hardware Pack
- 2x Spare Fuses (15 Amp)
- 1x Rip-Stop Hand Mic Bag
- 1x Warranty Card
- 1x Sticker Sheet
- 1x User Guide

INTRODUCTION

From city streets to remote backroads, the G2 Mini delivers big performance in a compact form. Its low-profile remote head design allows for easy, discreet mounting in any vehicle. The G2 Mini provides clear, reliable communication wherever the road—or trail—takes you.

FEATURES:

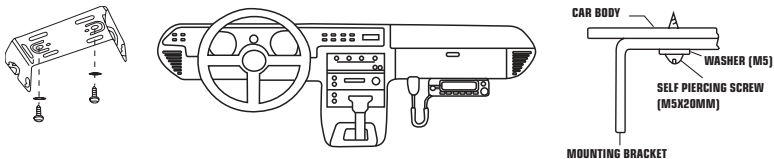
- Powerful: 30 Watts
- AMPLIFY 2.0: Stable Power Mitsubishi Transmit amplifier
- RIDEui: Friendly, intuitive menu system with LED display
- Universal Mounting: Easy mounting with our universal bracket.
- All Standard GMRS Channels: 15 GMRS channels (1-7 & 15-22)
- Repeater Channels: 10 repeater channels
- 259 Privacy Codes: 51 CTCSS / 208 DCS
- Tone Code: Adjustable, Split Tone Capable (repeater)
- P1 / P2 Preset Buttons: Programmable
- HWY Button: Channel 19 preset
- WX Alert: Weather Alert Capable
- Power Settings: High / Medium / Low
- Bands: Narrow / Wide
- Brightness: Adjustable
- Squelch: Adjustable
- Roger Beep: Adjustable
- TX / RX Alert: Adjustable
- Button Lock
- External Speaker Port
- Channel Scan
- Dual Monitor
- Listen Only Mode: UHF frequencies
- Connectivity: easily connect to headset or helmet kit with accessory port on display hand mic, or add an external speaker through the 3.5mm mono port on the radio body
- Dimensions:
4.25" x 4.75 x 1" (108*121*26 mm) (Body)
1.41" x 4.13" x 2.56" (36*105*65 mm) (Hand Mic)
Display/Control Hand Mic Cable Length
(Coiled):36 inches (Extended): 74 inches

INSTALLATION

MOBILE INSTALLATION

Select a location that is safe in order to protect you and your passengers while the vehicle is in motion. Consider installing the radio in a location and position in which knees and legs will not strike the radio during sudden braking. Choose a well ventilated location that is shielded from direct sunlight and heat sources, but still easy to reach and access. Although the G2 body is IP54 rated it is best to mount radio body in a location that is free from dust and moisture.

Important Note: Extreme care should be taken if drilling into the dash or other areas of any vehicle to avoid damaging vehicle components.



1. Install the provided mounting bracket in the vehicle using the supplied self-piercing screws.
2. Align the radio so that the guides on the side of the radio line up with the tabs on the radio mount. Slide the radio into the mount until it clicks into place.
3. Double check that all screws are tightened to prevent vehicle vibration from loosening the bracket.

INSTALLATION

DC POWER CABLE CONNECTION

This radio is designed to operate on 12 Volt systems. Never connect to a 24 Volt system without reducing to 12 Volts. If the power supply is lower than 12 Volts, the display may darken during transmissions, transmit power may decrease dramatically, and/or the radio may reboot.

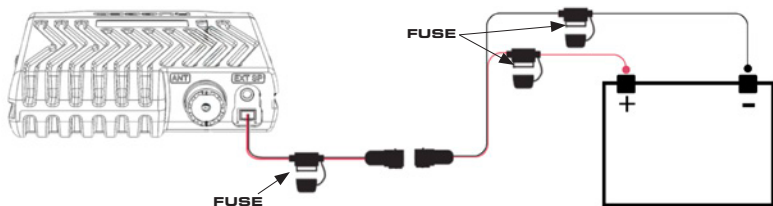
Note: Loose or poor connections can cause similar issues.

1. Route the DC power cable supplied with the radio directly to the vehicle's battery terminals.
 - A. We suggest that you do not use the cigarette lighter socket as some cigarette lighter sockets introduce an unacceptable voltage drop.
 - B. The entire length of the cable must be routed so it is isolated from heat, moisture, and the engine secondary (high voltage) ignition system, components, or cables.
2. Confirm the correct polarity of the connections, then attach the DC power cable to the battery terminals:
 - A. Red connects to the positive (+) terminal
 - B. Black connects to the negative (-) terminal.
3. Connect the DC power cable to the radio's power supply connector. Press the connectors firmly together until the locking tab clicks.

INSTALLATION

REPLACING FUSES

If a fuse blows, determine the cause and correct the problem. After the problem is resolved replace the fuse. If newly installed fuses continue to blow, disconnect the power cable and contact Rugged Radios at 805-541-1696 and ask for the Tech Department for further assistance. To prevent damage to the radio, ensure that only fuses of the specified type and rating are used.



Fuse Locations	Fuse Current Rating
Radio Power Harness	15A

ACCESSORY CONNECTIONS

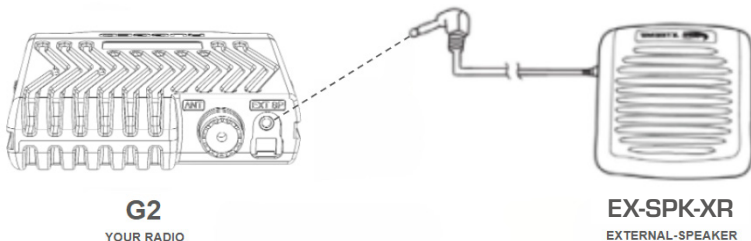
EXTERNAL SPEAKERS

Use the External Speaker Connection on the back of the radio to connect your external speaker device. Rugged Radios offers two external speakers calibrated to work with your G2 mobile radio.

Mini External Speaker PN: EX-SPEAKER-MINI

Xtreme Waterproof Speaker PN: EX-SPK-XR

- If you plan to use an external speaker, choose a speaker with an impedance of 8 ohms.
- The external speaker jack accepts a 3.5mm mono (2-conductor) plug.



ANTENNA AND CABLE

Radio Antenna is an optional additional purchase.

Compatible Antennas:

- POINT5

- STEALTH-UHF

Radio performance relies greatly on the antenna and antenna cable!

Do NOT use the radio without an antenna or damage to the radio may occur.

Before operating, install an efficient, well-tuned antenna and a high-quality antenna cable.

NOTES:

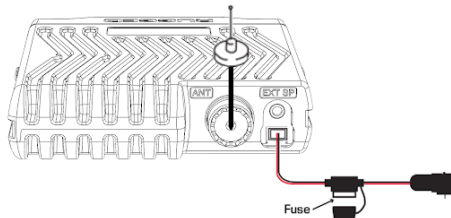
- This radio must be used with a 50Ω impedance antenna and antenna cable.
- Transmitting without an antenna may damage the radio.

INSTALLING THE ANTENNA

NOTE: Do NOT use the radio without an antenna or damage to the radio may occur.

For the best range, only the Rugged Radios GMRS POINT5 antenna should be used. Specific installation requirements vary between vehicles. Use the following guidelines to install the antenna. The location of your antenna will significantly effect your radio's performance!

1. Mount the antenna as high on the vehicle as possible. The higher the better.
2. If possible, mount the antenna in the center of a metal roof. This is the ideal placement for an antenna.
3. Be sure the mounting location is clean and dry before installing the antenna.
4. Route the antenna cable through an accessible entry point, such as a door or trunk opening.
5. When routing the antenna cable inside the vehicle, keep the cable away from electrical noise sources, such as the ignition system, gauges, etc.
6. Exercise care to prevent cable damage. Make use of existing gaskets, grommets and weather stripping to protect the cable along its route.

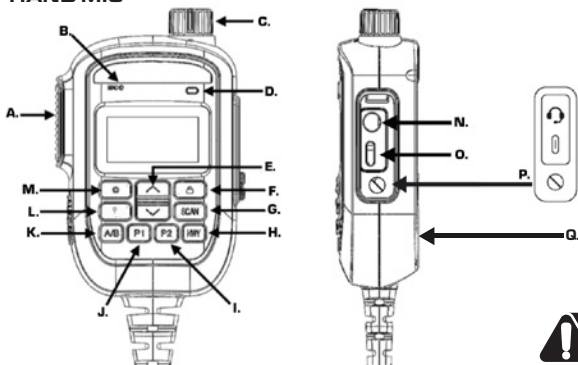


Important: Mount antenna as high as possible and away from obstructions.

Do not coil excess cabling. This will drastically reduce radio performance.

GETTING ACQUAINTED

DISPLAY HAND MIC



Display Hand Mic is rated IP67 waterproof only when the side port cover is firmly secured.

No.	Item	Function	Quick-Press	Long-Press
A	PTT	Press and hold to transmit, release to receive.	TX	TX
B	Mic	Speak here.	N/A	N/A
C	Power/ Volume Knob	Press and hold for 1 second to turn on/off. Turn clockwise to increase or counterclockwise to decrease volume.	N/A	POWER ON/OFF
D	Indicator Light	Illuminates red while transmitting, green while receiving.	N/A	N/A
E	Up & Down Keys	Scroll through items and channels.	Scroll one item or CH at a time.	N/A

GETTING ACQUAINTED

DISPLAY HAND MIC

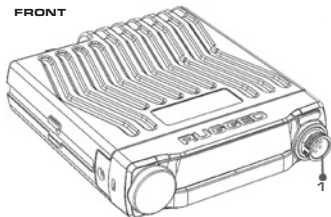
*Button can be programmed via software available from RT Systems (Cable and software sold separately from radio).

No.	Key*	Function	Quick-Press	Long-Press
F	Lock Icon 	Exit or back in menu / Locks the radio controls	Back in menu/ exit	Lock/Unlock
G	Scan	Allows the radio to automatically scan for signals on every channel included in the list.	N/A	Scan
H	HWY Key	Quick access to Highway Channel 19	Preset CH19	Programmable
I	P2 Key	Quick access to P2 channel preset/Adjust LSO 1.5 MHz	Preset CH16/ 1.5 MHz LSO Change	Saves current channel to P2
J	P1 Key	Quick access to P1 channel preset/Adjust LSO 10 MHz	Preset CH15/ 10 MHz LSO Change	Saves current channel to P1
K	A/B Key	Switches between monitored channels while in "Dual Monitor Mode"/ Switches between Digital Code to Inverse Code in the Tone Code list.	A/B	Programmable
L	Brightness	Increases/decreases the display brightness. Displaying the battery voltage reading.	Brightness Level	Battery Voltage
M	Menu Key 	Enters the menu/Confirms the current selection.	Menu/Confirm	N/A
N	Accessory Port	3.5mm port provides connection for HK-SPORT	N/A	N/A
O	Display Hand Mic Programming Port	USB Type C programming port.	N/A	N/A
P	Waterproof Side Port Cover	To maintain IP67 protection, the side cover must be installed when ports are not in use.	N/A	N/A
Q	Hand Mic Speaker	Designed for clear transmission in high noise environments.	N/A	N/A

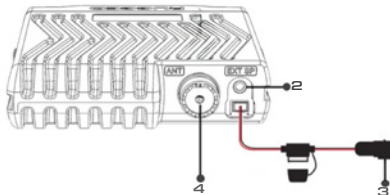
GETTING ACQUAINTED

FRONT / REAR RADIO BODY

FRONT



REAR



The G2 radio body is IP54 rated, mount the body in a location free from dust and moisture.

No.	Key	Function
1	Display Hand Mic Connector	Port to connect the G2 main body to hand mic display.
2	External Speaker Port	Connects to external speaker
3	Power Plug	Connects to the radio power cable. Ensure a direct connection to the battery
4	Antenna Port	Port to attach antenna coax cable.

GETTING ACQUAINTED

MENU

Menu Item	Operation
Scan	Scans for signals on every channel in the scan list.
Tone Codes	Prevents hearing radio traffic on the same frequency. Comes with Digital and Analog options for RX, TX and both (Cross Tone).
Squelch	Increases or decreases the sensitivity of the receiver. Higher Squelch settings will block more interference but also limit range. NOTE: Rugged Radios suggests using the factory-set Squelch level.
Backlight	Dims the display after 5, 10, 20, or 30 seconds of inactivity.
Dimmer Level	Increases or decreases the display brightness.
CH Display	Displays the channel name.
Dual Monitor	Allows you to switch between monitoring 1 or 2 Channels.
Menu Timeout	Sets the length of time before the menu times out and returns to default display.
Autolock	Enables automatic keypad locking feature after the selected duration. Keypad can be unlocked by long pressing the [] button.

GETTING ACQUAINTED

MENU

Menu Item	Operation
Beep	Emits a tone while scrolling through menu
TalkPrmtTone	The transmitting radio emits a tone to alert when to begin speaking after pressing the PTT (push to talk).
Roger Beep	Emits a tone to the receiving radio alerting to others that the user is finished talking.

GETTING ACQUAINTED

ADVANCED MENU

Menu Item	Operation
Tx Power	The level of power output used during transmission. (High/Medium/Low)
Bandwidth	<u>Changes operating bandwidth</u> <u>Wide (25 kHz)</u> - Used for shorter distances, with a broader range of frequency communication. <u>Narrow (2.5 kHz)</u> - Used for long range communication with a comparatively smaller range of frequency communication.
B CH Alert	When monitoring two channels (dual monitor), B Channel Alert emits a tone when radio calls are received on "B" or "Sub" Channel.
Mic Level	Adjusts the transmit volume of the microphone.
SPK Setting	Adjusts the speaker settings on the control hand mic and the main control unit.
Weather Alert	Turn on to receive severe weather / emergency alerts.
Listen Only (LSO)	Enables Listen-Only (LSO) mode. LSO allows users to listen to transmissions on UHF frequencies outside of the GMRS band.
Radio Info	Displays firmware version and the date it was updated.
Reset	Resets the radio to factory settings.

TONE CODES

Along with the standard GMRS channels, all Rugged GMRS radios come preprogrammed with two "tone coded" channel options.

Example:

- Channel 1 is GMRS 1, with Frequency of 462.5625 MHz
- Channel 1-10 is GMRS 1, with Frequency of 462.5625 MHz, and Tone Code 94.8 [10]
- Channel 1-25 is GMRS 1, with Frequency of 462.5625 MHz, and Tone Code 156.7 [25]

This continues throughout the channel list.

NOTE: Custom tone codes can be added through the menu to any of the non tone-coded channels.

CHANGING TONE CODES

To Access Tone codes:

1. Press the [] to access the menu
2. Use the Up & Down arrows [^ v] to scroll and navigate to "Tone Codes" then press [] to select it
3. Use the Up & Down arrows [^ v] to select the desired tone code type: "Cross Tone", "TX Tone" (Transmit Only), or "RX Tone" (Receive Only). Then press [] to select it.

FOR "CTC" (ANALOG) TONE CODE TYPES	FOR "DCS" (DIGITAL) TONE CODE TYPES
• Press [] • Press the [^ v] to select the desired tone code frequency and their number. • Press the [] button to confirm. • Press the [] button to exit.	• Press [] • Press the [v] • Press [] to select it. • Press the [^ v] to select the desired tone code frequency and their number TO SWITCH TO INVERTED DIGITAL TONE CODES • Press the A/B button • Press the [] to confirm. • Press the [] to exit.

See the lists of Tone Codes below:



GMRS TONE CODES

CTCSS Analog Tone Codes

*This is the
number you
toggle to on
your radio!*

No.	Freq. (Hz)
1	67.0
2	71.9
3	74.4
4	77.0
5	79.7
6	82.5
7	85.4
8	88.5
9	91.5
10	94.8
11	97.4
12	100.0
13	103.5
14	107.2
15	110.9
16	114.8
17	118.8
18	123.0
19	127.3
20	131.8
21	136.5
22	141.3
23	146.2
24	151.4
25	156.7
26	162.2

No.	Freq. (Hz)
27	167.9
28	173.8
29	179.9
30	186.2
31	192.8
32	203.5
33	210.7
34	218.1
35	225.7
36	233.6
37	241.8
38	250.3
39	62.5
40	69.3
41	159.8
42	165.5
43	171.3
44	177.3
45	183.5
46	189.9
47	196.6
48	199.5
49	206.5
50	229.1
51	254.1

*Codes 38-51
may not be
supported by
other brand
GMRS radios*

For info on updating firmware, call us at: (888) 541-7223

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ABOUT OUR INDUSTRY LEADING GMRS RADIOS**



GMRS TONE CODES

DCS Digital Tone Codes

*This is the number
you toggle to on
your radio!*

No.	DCS (Digital) Code
1	23
2	25
3	26
4	31
5	32
6	43
7	47
8	51
9	54
10	65
11	71
12	72
13	73
14	74
15	114
16	115
17	116
18	125
19	131
20	132
21	134
22	143
23	152
24	155
25	156
26	162

No.	DCS (Digital) Code
27	165
28	172
29	174
30	205
31	223
32	226
33	243
34	244
35	245
36	251
37	261
38	263
39	265
40	271
41	306
42	311
43	315
44	331
45	343
46	346
47	351
48	364
49	365
50	371
51	411
52	412

No.	DCS (Digital) Code
53	413
54	423
55	431
56	432
57	445
58	464
59	465
60	466
61	503
62	506
63	516
64	532
65	546
66	565
67	606
68	612
69	624
70	627
71	631
72	632
73	654
74	662
75	664
76	703
77	712
78	723

No.	DCS (Digital) Code
79	731
80	732
81	734
82	743
83	754
84	36
85	53
86	122
87	145
88	212
89	225
90	246
91	252
92	255
93	266
94	274
95	325
96	332
97	356
98	446
99	452
100	454
101	455
102	462
103	523
104	526

*Codes 84-104
may not be
supported by
other brand
GMRS radios*

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STANDARD GMRS CHANNELS

Channel	Frequency (MHz)
1	462.5625
2	462.5875
3	462.6125
4	462.6375
5	462.6625
6	462.6875
7	462.7125
8	467.5625
9	467.5875
10	467.6125
11	467.6375
12	467.6625
13	467.6875
14	467.7125
15	462.5500
16	462.5750
17	462.6000
18	462.6250
19	462.6500
20	462.6750
21	462.7000
22	462.7250

GMRS REPEATER CHANNELS

Channel	Transmit Frequency (MHz)	Receive Frequency (MHz)
15RP	467.5500	462.5500
16RP	467.5750	462.5750
17RP	467.6000	462.6000
18RP	467.6250	462.6250
19RP	467.6500	462.6500
20RP	467.6750	462.6750
21RP	467.7000	462.7000
22RP	467.7250	462.7250

TROUBLESHOOTING

Problem	Possible Cause and Potential Solutions
(a) Power is on, nothing appears on Display.	+ and - polarities of power connection are reversed. Connect red lead to plus terminal and black lead to minus terminal of DC power supply. Make sure display mic is securely connected to the port on the front of the radio body.
(b) Fuse is blown.	Check and solve problem resulting in blown fuse and replace fuse with new fuse.
(c) No sound comes from speaker	Squelch is muted. Decrease squelch level. Confirm Speaker settings is set to On. Tone or CTCSS/DCS squelch is active. Turn CTCSS or DCS squelch off. Increase volume on radio.
(d) Key and Dial do not function.	Key-lock function is activated. Cancel Key-lock function. Long press the lock icon to unlock.

For additional help call our Tech Department at (805) 541-1696.

We are here to help!

HOURS OF OPERATION: Monday - Friday: 8:00 AM - 5:00 PM PST

SPECIFICATIONS

GENERAL

Frequency Range	400-480MHz
Channel Capacity	300
Frequency Stability	±2ppm
Working Temperature	-30°C ~ +60°C -22 °F ~ +140 °F
Working Voltage	13.8V DC
Main Control Unit Dimensions (HxWxD)	1.05" x 4.2" x 5"
Display Hand Mic Dimension (Hx- WxD)	4.15" x 2.6" x 1.33"
Weight	Combined: 1.15 LBS Mic: .45LBS MCU: .65 LBS

SPECIFICATIONS

RECEIVER

Receiving Sensitivity	0.25 μ V @ 12dB SINAD
Adjacent Channel Selectivity	$\leq$ 60dB@12.5KHz
Inter-modulation	$\geq$ 60dB
Spurious Rejection	$\geq$ 70dB
Audio response	+1 ~ -3dB
Audio Distortion	$<$ 5%
Audio power	$\leq$ 3W
Hum/Noise	$\geq$ 40dB@25KHz / $\geq$ 35dB @12.5KHz
Standby current	0.16A

SPECIFICATIONS

TRANSMITTER

Output Power	High:25W Low:5W
TX Current	≤5A
FM Modulation	11KOF3E @ 12.5KHz 14KOF3E @ 20KHz 16KOF3E @ 25KHz
Modulation Distortion	<5%
Hum/Noise	≥40dB@25KHz / ≥35dB@12.5KHz
Adjacent Channel Power	≤60dB@12.5KHz
Audio Response	+1~-3dB
Spurious	≤-20dBm

[illegible]



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